

SYNTHETIC ORGANIC CHEMICALS

United States Production
and Sales, 1987

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UNITED STATES INTERNATIONAL TRADE COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1987

**U.S. Government Printing Office
Washington, 1987**

USITC Publication 2118

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Introduction

This is the 71st annual report of the U.S. International Trade Commission on domestic production and sales of synthetic organic chemicals and the raw materials from which they are made. The report, along with the quarterly report titled *Preliminary Report on U.S. Production of Selected Synthetic Organic Chemicals (Including Synthetic Plastics and Resin Materials)*, is prepared under investigation No. 332-135, Synthetic Organic Chemicals Reports. This investigation is conducted under the authority of section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1322(g)), for the purpose of collecting data and preparing public reports on synthetic organic chemicals, plastics materials, medicinal chemicals, pesticides, and other organic chemical products. The annual report consists of 15 sections, each covering a specified group (based principally on use) of organic chemicals as follows: Coal tar, tar crudes and pitches; primary products from petroleum and natural gas for chemical conversion; cyclic intermediates; dyes; organic pigments; medicinal chemicals; flavor and perfume materials; plastics and resin materials; rubber-processing chemicals; elastomers; plasticizers; surface-active agents; pesticides and related products; miscellaneous end-use chemicals and chemical products; and miscellaneous cyclic and acyclic chemicals. Data have been supplied by approximately 742 producers.

Each of the 15 sections is headed by a summary of the statistical data. The first table in each section gives statistics on products and groups of products in as great detail as is possible without revealing the operations of individual producers. Statistics for an individual chemical or group of chemicals are given only when there are three or more producers, no one or two of which may be predominant. Moreover, even when there are three or more producers, statistics are not given if there is any possibility that their publication would violate the statutory provisions relating to unlawful disclosure of information accepted in confidence by the Commission.¹

Data are reported by producers for only those items where the volume of production or sales or value of sales exceeds certain minimums. Those minimums for all sections are 5,000 pounds of production or sales or \$5,000 of value of sales with the following exceptions: Plastics and resin materials—50,000 pounds or \$50,000; pigments, medicinal chemicals, flavor and perfume materials, and rubber-processing chemicals—1,000 pounds or \$1,000. They are usually given in terms of undiluted materials; however, products of 95 percent or greater purity are considered to be 100 percent pure. Commercial concentrations are applicable for dyes, certain plastics and resins, and a few solvents; such concentrations are specifically noted.

The statistics given in this report include data from all known domestic producers of the items covered and include the total output of each company's plants, i.e., the quantities produced for consumption within the producing plant, as well as the quantities produced for domestic and foreign sale. The quantities reported as produced, therefore, generally exceed the quantities reported as sold. Some of these differences, however, are attributable to changes in inventory.

The second table in each section lists all items for which data on production or sales have been reported, by primary manufacturers, identified by manufacturers' codes. Each code consists of not more than three capital letters and is assigned on a permanent basis.

The third table in each section is a directory, alphabetized by the codes of the manufacturers reporting in that section.

Appendix A is a directory, alphabetized by the names of the manufacturers reporting in all sections and which includes their general corporate phone numbers and office addresses.

Appendix B lists synonymous names for cyclic intermediates. Information on synonymous names of the organic chemicals included in this report may be found in the *SOCMA Handbook: Commercial Organic Chemical Names*, published by the Chemical Abstracts Service of the American Chemical Society, or the *Colour Index (Revised Third Edition)*, published jointly by the Society of Dyes and Colourists and the American Association of Textile Chemists and Colorists.

Appendix C presents the data in this report aggregated in the format of the Harmonized System (HS) nomenclature on a 6-digit HS basis.

Appendix D is an alphabetical index of all the products in this edition of the report.

Data contained in this report are compiled primarily from Commission's questionnaires sent to domestic producers and represent the best data available to the Commission. While the data supplied in the questionnaires are checked against data previously supplied by the submitting firm and with data supplied by other domestic producers, data are not independently verified by direct Commission examination of the books of companies furnishing information. Data contained in this report should not be used for investment and other purposes without independent verification.

As specified in the reporting instructions sent to manufacturers, production and sales (unless otherwise specified) are defined as follows:

PRODUCTION is the total quantity of a commodity made available by **Original Manufacturers Only** within the customs territory of the United States (includes the 50 states, the District of Columbia, and Puerto Rico). It covers synthetic organic chemicals, specified crudes from petroleum and coal tar, and certain chemically described natural products, such as, alkaloids, enzymes, and

¹ 18 U.S.C. u 1905 and 44 U.S.C. u 3508.

Introduction

perfume isolates. It is the sum—expressed in terms of 100% active ingredient unless otherwise specified in the reporting instructions—of the quantities:

Produced, separated, and consumed in the same plant or establishment. A Commodity is considered separated either when it is isolated from the reactive system or when it is not isolated, but weighed, analyzed, or otherwise measured. This includes by-products and co-products that are not classifiable as waste materials;

Produced and not isolated, but directly converted to a finished or semifinished item not included in this report (e.g., polyester film, polyurethane tires, nylon fiber, bar soap, etc.). (See specific instructions in individual sections);

Produced and transferred to other plants or establishments of the same firm or 100% owned subsidiaries or affiliates;

Produced and sold to, or bartered with, other firms (including less than 100% owned subsidiaries);

Produced *for others* under toll agreements (see general instructions);

Produced and held in stock.

PRODUCTION EXCLUDES:

Purification of a commodity, which is purchased by, or transferred from within, the company, unless inclusion of such processing is specifically requested in the reporting instructions for individual sections;

Intermediate products which are formed in the manufacturing process, but are not isolated from the reaction system—that

is, not weighed, analyzed, or otherwise measured; except such products as described above as being produced and not isolated, but directly converted to a finished or semifinished item.

Materials that are used in the process but which are recovered for re-use or sale;

Waste products having no economic significance.

SALES are actual quantities of commodities sold by **Original Manufacturers Only**. Sales include the quantity and value of:

Shipments of a commodity for domestic use or for export, or segregation in a warehouse when title has passed to the purchaser in a bona fide sale;

Shipments of a commodity produced for you *by others* under toll agreement;

Shipments to subsidiary or affiliated companies, provided the ownership is less than 100%.

SALES EXCLUDE:

All intra-company transfers within a corporate entity;

All shipments to 100% owned subsidiary or affiliated companies;

All resales of imported or purchased material, including materials obtained by barter;

All shipments of commodity produced *for others* under toll agreements.

VALUE OF SALES is the net dollar receipts of sales f.o.b. plant or warehouse, or delivered. F.o.b. values are preferred, but if they are not readily available from your records, delivered values are acceptable.

Summary

Combined production of all synthetic organic chemicals and primary products from petroleum and natural gas in 1987 was 378,465 million pounds—an increase of 7.9 percent from the output in 1986 (which also included data on tars) (table 1). Sales of these materials in 1987, which totaled 206,049 million pounds, valued at \$74,012 million, were 11.7 percent larger than in 1986 in terms of quantity and 13.0 percent more in terms of value. These figures include data on production and sales of chemicals measured at several successive steps in the manufacturing process, and, therefore, they necessarily reflect some duplication. During 1983–87, the total output of these products rose each year except for 1985 (figure 1). During that period the output of these products generally followed the trend of the Federal Reserve Board Index of U.S. Production.

In 1987, production of all synthetic organic chemicals, including cyclic intermediates and finished products totaled 253,055 million pounds, or 7.6 percent more than the output in 1986. Ten

sections showed an increase in production in 1987 over 1986. Rubber-processing chemicals (382 million pounds) increased by 17.9 percent; plasticizers (1,998 million pounds) increased by 16.0 percent; elastomers (synthetic rubber) (4,690 million pounds) increased by 14.9 percent; plastics and resin materials (59,481 million pounds) increased by 13.4 percent; cyclic intermediates (55,196 million pounds) increased by 10.0 percent; miscellaneous end-use chemicals and chemical products (25,223 million pounds) increased by 9.5 percent; dyes (255 million pounds) increased by 8.3 percent, surface-active agents (6,269 million pounds) increased by 6.3 percent; organic pigments (94 million pounds) increased by 6.1 percent; miscellaneous cyclic and acyclic chemicals (98,040 million pounds) increased by 2.5 percent; of the remaining sections, pesticides and related products (1,040 million pounds) showed a decreased of 11.9 percent; flavor and perfume materials (126 million pounds) decreased 9.7 percent and medicinal chemicals (261 million pounds) also decreased 1.3 percent in 1987 from that in 1986.

Table 1

Synthetic organic chemicals and their raw materials U.S. production and sales, 1986 and 1987

Chemical	Production		Increase or decrease (-), 1987 over 1986 ¹	Sales					
	1986	1987		Quantity			Value		
				1986	1987	Increase or decrease (-), 1987 over 1986 ¹	1986	1987	Increase or decrease (-), 1987 over 1986 ¹
	Million pounds	Million pounds	Percent	Million pounds	Million pounds	Percent	Million dollars	Million dollars	Percent
Grand total	350,859	378,465	7.9	184,454	206,049	11.7	65,486	74,012	13.0
Tars	2,046	2,291	12.0	(³)	(³)	(³)	(³)	(³)	(³)
Primary products from petroleum and natural gas	113,545	123,119	8.4	53,035	59,677	12.5	6,020	7,620	26.6
Synthetic organic chemicals, total ²	235,267	253,055	7.6	131,419	146,371	11.4	59,466	66,392	11.6
Cyclic intermediates	50,193	55,196	10.0	22,333	23,206	3.9	7,150	7,562	5.8
Dyes	236	255	8.3	226	230	1.8	652	677	3.9
Organic pigments	89	94	6.1	77	83	8.6	513	586	14.3
Medicinal chemicals	264	261	-1.3	158	167	5.1	1,518	1,534	1.1
Flavor and perfume materials	138	126	-8.7	96	81	-15.5	623	726	16.5
Plastics and resin materials	52,447	59,481	13.4	45,144	51,170	13.3	20,355	26,066	28.1
Rubber-processing chemicals	324	382	17.9	235	289	22.8	297	359	21.1
Elastomer (synthetic rubber)	4,081	4,690	14.9	2,489	3,109	24.9	2,213	2,714	22.7
Plasticizers	1,722	1,998	16.0	1,624	1,876	15.5	765	896	7.1
Surface-active agents	5,895	6,269	6.3	3,567	3,923	10.0	1,606	1,713	6.6
Pesticides and related product	1,180	1,040	-11.9	940	911	-3.2	4,234	4,171	-1.5
Miscellaneous end-use chemicals and chemical products	23,033	25,223	9.5	16,600	21,010	26.6	8,731	7,355	-15.8
Miscellaneous cyclic and acyclic chemicals	95,666	98,040	2.5	37,930	40,317	6.3	10,809	12,032	11.3

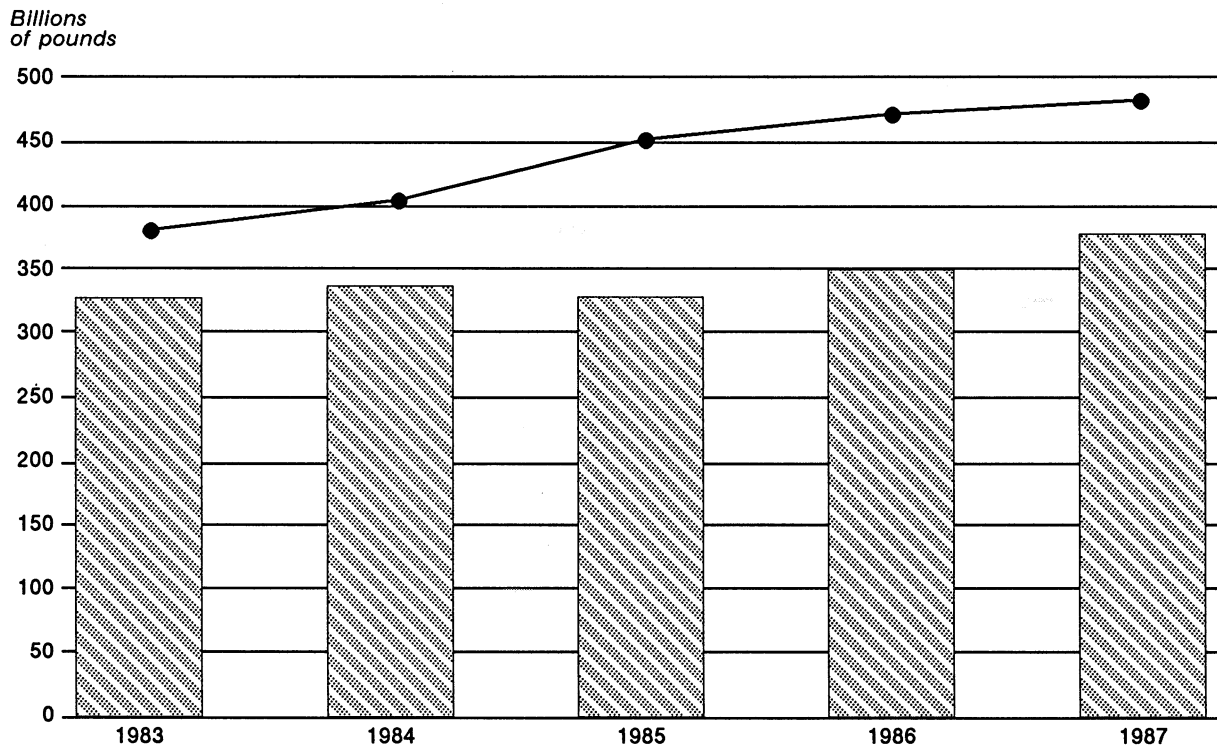
¹ Percentage calculated from figures rounded to thousands.² Because of rounding, figures may not add to the totals shown.³ Not available

Source: Compiled from data received in response to questionnaire of the U.S. International Trade Commission.

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Summary

Figure 1
Synthetic organic chemicals and their raw materials, total, vs FRB Index



Source: Production, U.S. International Trade Commission, *Synthetic Organic Chemicals: United States Production and Sales*; FRB index, The Board of Governors of the Federal Reserve System.

General

In this report, synthetic organic chemicals are classified on the basis of their principal use as follows: Cyclic intermediates, dyes, organic pigments, medicinal chemicals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers (synthetic rubber), plasticizers, surface-active agents, pesticides and related products, miscellaneous end-use chemicals and chemical products, and miscellaneous cyclic and acyclic chemicals. Most of these groups are further subdivided either by use or by chemical composition. As intermediates, chemicals are used in the manufacture of finished products, aggregate figures that cover both intermediates and finished products necessarily include considerable duplication.

Total production of synthetic organic chemicals (intermediates and finished products combined) in 1987 was 253,055 million pounds, or 7.6 percent more than the output of 235,267 million pounds reported for 1986, and 141.7 percent more than the output of 104,711 million pounds reported in 1967 (see table 2). Sales of synthetic organic chemicals in 1987 amounted to

146,371 million pounds, valued at \$66,392 million, compared with 131,419 million pounds, valued at \$59,466 million, in 1986, and 55,177 million pounds, valued at \$10,438 million, in 1967. Production of all cyclic (ring chemical structure) products (intermediates and finished products combined) in 1987 totaled 84,979 million pounds, or 9.4 percent more than the 77,674 million pounds reported for 1986, and 172.5 percent more than the 31,182 million pounds reported for 1967; however, the transfer of eight items, in 1979, from the primary products from petroleum and natural gas section to the section on cyclic intermediates has caused the output of cyclic products to appear much higher in relation to 1967 than would otherwise have resulted. Production of all acyclic (linear or branch chemical structure) products in 1987 totaled 163,386 million pounds, or 6.5 percent more than the 153,462 million pounds reported for 1986, and 134.4 percent more than the 69,707 million pounds reported for 1967. Differences in trends between cyclic and acyclic products reflect the aggregation of changes in usage of individual chemicals rather than preferences for cyclic versus acyclic chemicals.

Table 2
Synthetic organic chemicals summary of U.S. production and sales of intermediates and finished products, 1967, 1986, and 1987

(Production and sales in thousands of pounds; sales value in thousands of dollars)

Chemical	1967 ¹	1986	Increase or decrease (-)		
			1987	1987 over 1967	1987 over 1986
Organic chemicals, cyclic and acyclic, grand total:					
Production	104,711,357	235,267,490	253,055,030	141.7	7.6
Sales	55,176,823	131,419,041	146,371,462	165.3	11.4
Sales value	10,438,453	59,465,667	66,391,979	536.0	11.6
Cyclic, total:²					
Production	31,181,832	77,674,272	84,979,001	172.5	9.4
Sales	17,388,529	43,071,693	46,129,029	165.3	7.1
Sales value	4,170,713	27,923,080	31,158,174	647.1	11.6
Acyclic, total:²					
Production	69,706,980	153,462,151	163,385,671	134.4	6.5
Sales	34,526,250	85,858,812	97,133,672	181.3	13.1
Sales value	5,393,503	29,329,973	32,519,757	502.9	10.9
1. Cyclic Intermediates					
Production	20,793,132	50,192,839	55,196,139	165.5	10.0
Sales	9,461,180	22,332,679	23,205,872	145.3	3.9
Sales value	1,000,359	7,150,386	7,562,427	656.0	5.8
2. Dyes					
Production	206,240	235,547	255,198	23.7	8.3
Sales	198,592	225,695	229,763	15.7	1.8
Sales value	332,049	651,804	677,424	104.0	3.9
3. Organic Pigments					
Production	53,322	88,521	93,915	76.1	6.1
Sales	42,867	76,711	83,302	94.3	8.6
Sales value	108,354	513,132	586,254	441.1	14.3
4. Medicinal Chemicals					
Cyclic:					
Production	110,129	207,619	196,029	78.0	-5.6
Sales	70,120	106,195	103,833	48.1	-2.2
Sales value	348,873	1,364,394	1,364,930	291.2	.1
Acyclic					
Production	69,941	56,442	64,588	-7.7	14.4
Sales	56,804	52,253	62,668	10.3	19.9
Sales value	36,402	153,136	169,196	364.8	10.5

See notes at end of table.

General

Table 2—Continued
Synthetic organic chemicals summary of U.S. production and sales of intermediates and finished products, 1967, 1986, and 1987

(Production and sales in thousands of pounds; sales value in thousands of dollars)

Chemical	1967 ¹	1986	Increase or decrease (-)		
			1987	1987 over 1967	1987 over 1986
5. Flavors and Perfume Materials					
Cyclic:					
Production	57,978	84,818	70,740	22.0	-16.6
Sales	47,285	72,335	56,239	18.9	-22.3
Sales value	52,866	566,944	647,255	1124.3	14.2
Acyclic:					
Production	53,558	53,312	55,414	3.5	3.9
Sales	49,311	24,108	25,225	-48.8	4.6
Sales value	40,495	56,502	79,081	95.3	40.0
6. Plastics and Resin Materials					
Cyclic:					
Production	5,033,497	15,576,662	17,665,771	251.0	13.4
Sales	4,224,121	13,182,073	14,941,653	253.7	13.3
Sales value	1,036,940	8,264,044	10,582,852	920.6	28.1
Acyclic:					
Production	8,759,452	36,870,013	41,814,939	377.4	13.4
Sales	7,753,242	31,962,014	36,228,390	367.3	13.3
Sales value	1,635,690	12,090,744	15,483,286	846.6	28.1
7. Rubber-Processing Chemicals					
Cyclic:					
Production	220,139	296,853	354,372	61.0	19.4
Sales	169,970	210,539	262,853	54.6	24.8
Sales value	116,318	273,380	336,204	189.0	23.0
Acyclic:					
Production	43,994	27,257	27,642	-37.2	1.4
Sales	30,878	24,727	25,978	-15.9	5.1
Sales value	15,477	23,170	22,783	47.2	-1.7
8. Elastomers (Synthetic Rubber)					
Production	3,822,545	4,081,067	4,690,358	22.7	14.9
Sales	3,262,044	2,488,536	3,108,761	-4.7	24.9
Sales value	874,237	2,212,614	2,714,048	210.4	22.7
9. Plasticizers					
Cyclic:					
Production	929,871	1,312,105	1,455,074	56.5	10.9
Sales	865,084	1,245,349	1,451,905	67.8	16.6
Sales value	167,827	516,501	627,675	274.0	21.5
Acyclic:					
Production	332,908	410,021	543,421	63.2	32.5
Sales	296,767	378,821	423,667	42.8	11.8
Sales value	93,142	248,286	267,991	187.7	7.9
10. Surface-Active Agents					
Cyclic: ³					
Production	1,418,444	2,567,382	2,646,680	(⁴)	3.1
Sales	852,238	1,864,282	1,991,374	(⁴)	6.8
Sales value	95,810	567,806	595,083	(⁴)	4.8
Acyclic:					
Production	2,060,851	3,327,999	3,621,853	(⁴)	8.8
Sales	897,786	1,702,727	1,931,643	(⁴)	13.4
Sales value	220,877	1,038,354	1,117,633	(⁴)	7.6
11. Pesticides and Related Products					
Cyclic:					
Production	823,158	862,184	647,516	-21.3	-24.9
Sales	681,532	692,262	592,839	-13.0	-14.4
Sales value	627,742	2,964,065	2,828,226	350.5	-4.6
Acyclic:					
Production	226,505	317,858	392,021	73.1	23.3
Sales	215,831	248,076	317,756	47.2	28.1
Sales value	159,301	1,269,605	1,342,357	742.7	5.7
12. Miscellaneous End-Use Chemicals and Chemical Product					
Cyclic:					
Production	(1,535,922)	3,534,252	3,510,100	(⁵)	-0.7
Sales	(775,540)	1,897,205	1,904,165	(⁵)	0.4
Sales value	(283,575)	4,050,468	3,952,458	(⁵)	-2.4

See notes at end of table.

Table 2—Continued

Synthetic organic chemicals summary of U.S. production and sales of intermediates and finished products, 1967, 1986, and 1987

(Production and sales in thousands of pounds; sales value in thousands of dollars)

Chemical	1967 ¹	1986	Increase or decrease (-)		
			1987	1987 over 1967	1987 over 1986
12. Miscellaneous End-Use Chemicals and Chemical Product —Continued					
Acyclic:					
Production	(58,159,771)	19,499,122	21,713,001	(⁵)	11.4
Sales	(25,225,631)	14,702,583	19,106,276	(⁵)	30.0
Sales value	(3,192,119)	4,680,944	3,402,665	(⁵)	-27.3
13. Miscellaneous Cyclic and Acyclic Chemicals					
Cyclic:					
Production	(⁵)	2,715,490	2,887,467	(⁵)	6.3
Sales	(⁵)	1,166,368	1,305,231	(⁵)	11.9
Sales value	(⁵)	1,040,156	1,397,386	(⁵)	34.3
Acyclic:					
Production	(⁵)	92,950,127	95,152,792	(⁵)	2.4
Sales	(⁵)	36,763,503	39,012,069	(⁵)	6.1
Sales value	(⁵)	9,769,232	10,634,765	(⁵)	8.9

¹ Standard reference base period for Federal Government general-purpose index numbers.² Does not include data for elastomers.³ Includes ligninsulfonates.⁴ The data for 1967 are not comparable with current data as a result of a change in accounting procedures.⁵ Items in these two sections were previously included in the section named miscellaneous chemicals.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1987 of one or more of the chemicals included in each group.

Chemical group	Number of companies	Chemical group	Number of companies
Cyclic intermediates	177	Elastomers (synthetic rubber)	32
Dyes	36	Plasticizers	45
Organic pigments	32	Surface-active agents	164
Medicinal chemicals	85	Pesticides and related products	74
Flavor and perfume materials	33	Miscellaneous end-use chemicals and chemicals products	164
Plastics and resins materials	261	Miscellaneous cyclic and acyclic chemicals	266
Rubber-processing chemicals	25		

Section 1

Coal Tar, Tar Crudes and Pitches

Coal tar is produced chiefly by the steel industry as a by-product of the manufacture of coke; water-gas tar and oil-gas tar are produced by the fuel-gas industry. Production of coal tar, therefore, depends on the demand for steel; production of water-gas tar and oil-gas tar reflects the consumption of manufactured gas for industrial and household use. Water-gas and oil-gas tars have properties intermediate between those of petroleum asphalts and coal tar. Petroleum asphalts are not usually considered to be raw materials for chemicals.

The U.S. International Trade Commission began collecting data on crude coal tar for the 1986 reporting year. In 1987, U.S. production of crude coal tar was 189 million gallons and crude light oil amounted to 66 million gallons.

Tar crudes are obtained from coke-oven gas and by distilling coal tar, water-gas tar, and oil-gas tar. The most important tar crudes are benzene, toluene, xylene, creosote oil, and pitch of tar.

Some of these products are identical with those obtained from petroleum. Data for materials obtained from petroleum are included, for the most part, with the statistics for like materials obtained from coke-oven gas and tars, and are shown in table 3.

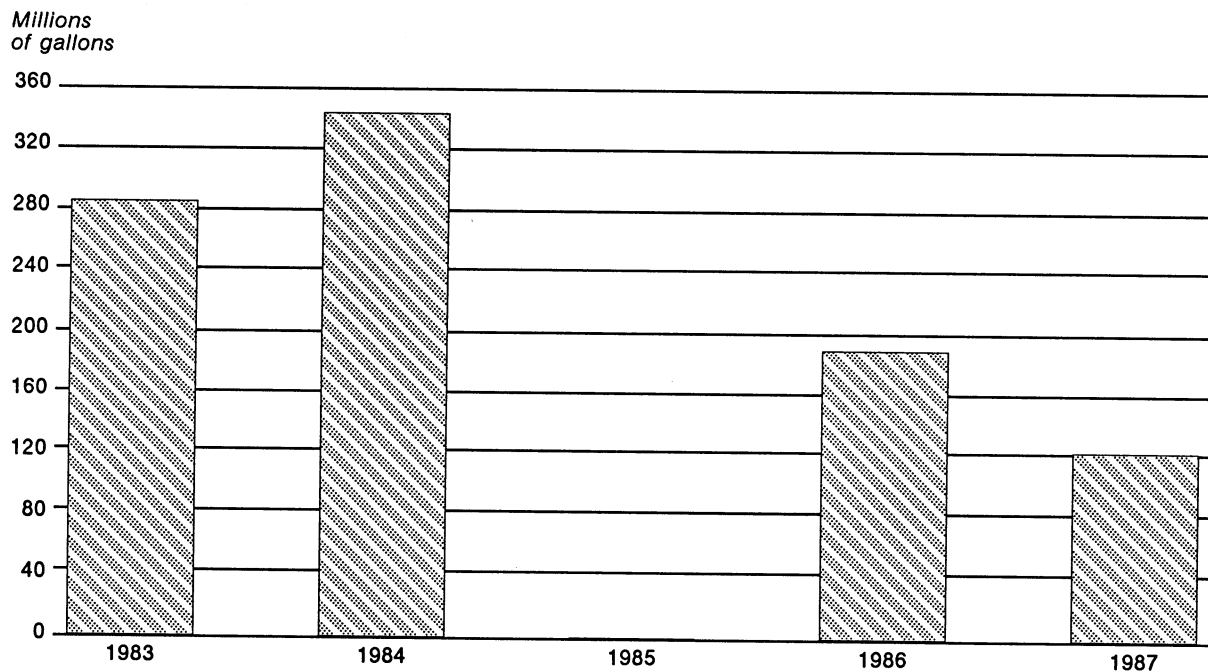
The domestic production by coke-oven operators of industrial and specification grades of benzene and xylene cannot be published since to do so would disclose the operations of individual companies. Some of the products obtained from tar and included in the statistics in table 3 are obtained from other products for which data are also included in the table. The statistics, therefore, involve considerable duplication, and for this reason no group totals or grand totals are given.

Table 4 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 5.

Data for 1987 tar crudes were supplied by 28 companies and company divisions.

Cynthia B. Foreso
202-252-1348

Figure 2
Coal tar and tar crudes: U.S. production, 1983-87



Note.—Data for 1985 are not available.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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1-1

Section 1

Table 3

Coal tar, tar crudes and pitches: U.S. production and sales, 1987

Coal tar, tar crudes and pitches	Unit of Quantity	Production	Sales Quantity	Value	Average Unit value ¹
				1,000 dollars	
Crude coal tar:					
Coke-oven operators	1,000 gal	188,504	165,422	71,489	\$0.43
Crude light oil:					
Coke-oven operators	1,000 gal	66,066	65,852	44,034	.67
Light-oil distillates:					
Benzene, all grades, total ²	1,000 gal	(³)	(³)	(³)	(³)
Coke-oven operators	1,000 gal	(³)	(³)	(³)	(³)
Petroleum refiners ⁴	1,000 gal	1,575,522	(³)	(³)	(³)
Toluene, all grades, total ²	1,000 gal	(³)	(³)	(³)	(³)
Coke-oven operator	1,000 gal	(³)	(³)	(³)	(³)
Petroleum refiners ⁵	1,000 gal	966,692	(³)	(³)	(³)
Xylene, all grades, total ²	1,000 gal	(³)	(³)	(³)	(³)
Coke-oven operators	1,000 gal	(³)	(³)	(³)	(³)
Petroleum refiners ⁶	1,000 gal	649,428	391,641	319,152	.82
Creosote oil (Dead oil) (100% creosote basis):					
Distillate as such (100% creosote basis)	1,000 gal	47,331	32,685	22,282	.68
Creosote in coal tar solution (100% solution basis)	1,000 gal	(³)	34,285	19,748	.58
Pitch of tar:					
Hard	1,000 tons	493	459	100,519	218.88
Medium	1,000 tons	(³)	652	31,103	47.72

¹ Unit value per gallon or ton as specified.

² Includes data for material produced for use in blending motor fuels. The annual production statistics for petroleum refiners on benzene, toluene, and xylene are not comparable with the combined monthly production figures because of fiscal year revisions.

³ Statistics cannot be published; to do so would disclose the operations of individual companies.

⁴ Benzene, all grades.

⁵ Toluene, all grades.

⁶ Mixed xylenes, high purity (98-100%).

Note 1.—Statistics for materials produced in tar and petroleum refineries are compiled by the U.S. International Trade Commission.

Note 2.—Data for all other tars and tar crudes are not included in the 1987 report because publication would disclose the operations of individual companies.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 4

Coal tar, tar crudes and pitches for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Coal tar, tar crudes and pitches	Separate statistics ¹	Manufacturers' identification codes (according to list in table 5)
Light oil, light oil distillates, and tar bases:		
Crude coal tar	Yes	ABP, ALS, ART, CDT, CGU, DTR, EKO, GSS, ILI, INL, LTV, NBC, SGO, TWD, WPS.
Crude light oil	Yes	ABP, ALS, ART, BTS, CGU, GSS, IGC, ILI, INL, LTV, NBC, NTS, SGO, TWD, WPS.
Pyridine, tar bases:		
Benzene (Benzol):		
Tar bases: crude bases (dry basis)	No	ART, KPT, NTS.
Xylene (Xylol):		
Xylene (Xylol): 90-100%	No	ART.
All other:		
All other light-oil distillates	No	LYP.
Other tar distillates:		
Naphthalene, crude:		
Methylnaphthalene	No	KPT.
Naphthalene, crude, solidifying at less than 74° C ...	No	BTS, GSS.
Naphthalene, crude, solidifying at 76° C to less than 79° C	No	ACS, KPT.
Crude tar acid oils:		
Crude tar acid oils having a tar acid content of 5 percent to less than 24 percent	No	ACS, KPT.
Cresylic acid crude:		
Sodium cresylate	No	KPT.
Creosote oil (Dead oil):		
Creosote oil (Dead oil): creosote content in solution (100 percent basis)	No	RIL.
Creosote oil (Dead oil): creosote in coal tar solution (100 percent solution basis)	Yes	ACS, ART, KPT, RIL.
Creosote oil (Dead oil): distillate as such (100 percent creosote basis)	Yes	ACS, ART, COP, KPT, RIL.
All other distillate products:		
Carbon black oil	No	ACS.
Crude coal tar solvent	No	KPT.
Priming and refractory oil	No	BTS, KPT.
All other tar distillates	No	GIV.
Tar and tar pitches:		
Tar, road:		
Tar, road	No	ACS, RIL.
Tar for other uses:		
Tar for other uses: crude	No	BTS, IGC.
Tar for other uses: refined	No	ACS, KPT, RIL.
Pitch of tar:		
Pitch of tar: hard (M.P. 161° F and Over)	Yes	ACS, KPT, RIL.
Pitch of tar: medium (M.P. 110° To 160° F)	Yes	ART, COP, KPT, RIL.
Pitch of tar: soft (M.P. 80° To 109° F)	No	ART.
All other:		
All other pitch of tar	No	WPS.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Section 1

Table 5

Coal tar, tar crudes and pitches: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABP	Drummond Co. Inc.	GIV	Givaudan Corp.
ACS	Allied Signal, Inc Engineered Materials Sector	GSS	Gulf States Steel
ALS	Armco, Inc. Eastern Steel Div.	IGC	Indiana Gas & Chemical Corp.
ART	Aristech Chemical Corp.: Clairton Plant Gary Works	ILI	Acme Steel Corp.
BTS	Bethlehem Steel Corp.	INL	Inland Steel Co.
CDT	Carondelet Coke Corp.	KPT	Koppers Co., Inc.
CGU	Citizen Gas And Coke Utility	LTV	LTV Steel Co.
COP	Coopers Creek Chemical Corp.	LYP	Lyondell Petrochemical Co.
DTR	Detroit Coke Corp.	NBC	New Boston Coke Corp.
EKO	Empire Coke Co.	NTS	National Steel Corp., Great Lakes Plant
		RIL	Relly Tar & Chemical Corp.
		SGO	Shenango, Inc.
		TWD	Tonawanda Coke Corp.
		WPS	Wheeling-Pittsburg Steel Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

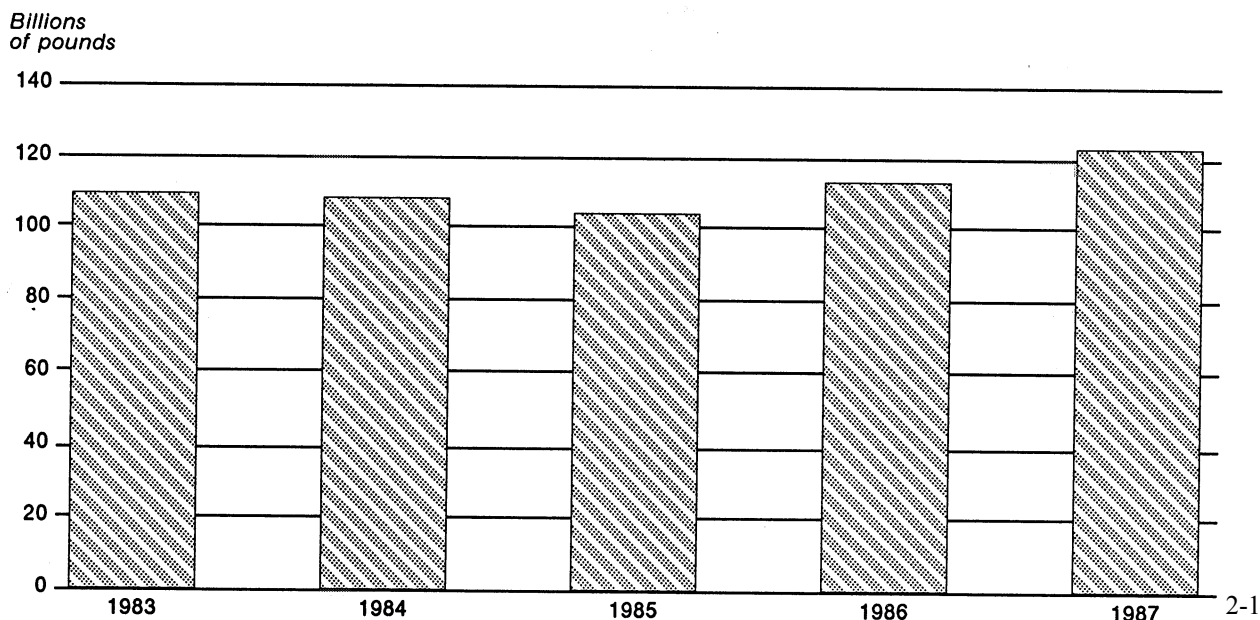
Section 2

Primary Products from Petroleum and Natural Gas for Chemical Conversion

Primary products that are derived from petroleum and natural gas are related to the intermediates and finished products made from such primary materials in much the same way that crude products derived from the distillation of coal tar¹ are related to their intermediates and finished products. Many of the primary products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and mixed xylenes). Considerable duplication exists in the statistics on the production and sales of primary petroleum products because some of these primary chemicals are converted to other primary products derived from petroleum and because data on some production and sales are reported at successive stages in the conversion process. The statistics are sufficiently accurate, however, to indicate trends in the industry. Many of the primary products for which data are included in the statistics may be used either as fuel or as basic materials from which other chemicals are derived. In this report every effort has been made to exclude data on materials that are used as fuel; however, data are included on toluene and mixed xylenes, which are used in blending aviation and motor fuel.

The total production of primary products derived from petroleum and natural gas during 1983-87 is shown in figure 3. Between 1983-87 production increased 12 percent from 109,670 million pounds to 123,119 million pounds.

Figure 3
Primary products from petroleum and natural gas for chemical conversion: U.S. production, 1983-87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

The output of primary products derived from petroleum and natural gas as a group amounted to 123,119 million pounds in 1987. Production in 1986 was 113,545 million pounds. The output of aromatic and naphthenic products from petroleum amounted to 26,762 million pounds in 1987, compared with 24,836 million pounds in 1986. Sales amounted to \$1,946 million in 1987 and \$1,404 million in 1986. In 1987, production of benzene was 11,533 million pounds; production of toluene was 6,970 million pounds; and production of high purity mixed xylenes was 4,936 million pounds (table 6).

Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 96,358 million pounds in 1987, compared with 88,710 million pounds in 1986. Sales of these products were valued at \$5,674 million in 1987, compared with \$4,616 million in 1986. Production of ethylene was 34,951 million pounds in 1987. The output of 1,3-butadiene in 1987 was 2,931 million pounds. Production of propylene in 1987 was 19,019 million pounds (table 6).

Table 7 lists the products reported in this section and indicates the manufacturer of each by code. The codes are identified by company name in table 8.

Data for 1987 primary products from petroleum and natural gas for chemical conversion were supplied by 67 companies or company divisions.

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202-252-1365

¹ Statistics on chemicals from coal tar are given in Section 1 (Tar and Tar Crudes) of this report.

Section 2

Table 6

Primary products from petroleum and natural gas for chemical conversion:
U.S. production and sales, 1987

Primary products from petroleum and natural gas for chemical conversion	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	123,119,361	59,677,198	7,620,039	\$0.13
Aromatics and naphthenes²				
Total	26,761,700	15,985,360	1,946,127	.12
Benzene, all grades, total	11,532,819	(³)	(³)	(³)
High purity (98-100%)	10,587,846	5,677,064	950,177	.17
Other (90-97.9%)	944,973	(³)	(³)	(³)
Toluene, all grades, total	6,969,852	(³)	(³)	(³)
High purity (98-100%)	6,205,803	3,485,479	376,202	.11
Other (90-97.9%) ^{4 5}	764,049	(³)	(³)	(³)
Xylenes, mixed, total	(³)	(³)	(³)	(³)
High purity (98-100%)	4,935,656	2,976,471	319,152	.11
Other (90-97.9%)	(³)	(³)	(³)	(³)
All other aromatics and naphthenes	3,323,373	3,846,346	300,596	.08
Aliphatic hydrocarbons⁶				
Total	96,357,661	43,691,838	5,673,912	.13
C ₂ Hydrocarbons, total	41,685,004	13,278,816	1,716,804	.13
Acetylene ⁷ (For chemical use only)	260,081	117,626	36,136	.31
Ethane	6,474,13	2,085,681	90,006	.04
Ethylene	34,950,792	11,075,509	1,590,662	.14
C ₃ Hydrocarbons, total	30,143,162	18,078,433	1,900,926	.11
Propane	11,123,860	8,208,244	489,569	.06
Propylene ⁸	19,019,302	9,870,189	1,411,357	.14
C ₄ Hydrocarbons, total	14,690,813	6,952,097	1,094,303	.16
Butadiene and butylene fractions	1,240,292	951,042	114,299	.12
1,3-Butadiene, grade for rubber (elastomers)	2,930,658	2,720,719	639,481	.24
n-Butane	2,030,649	829,673	60,909	.07
1-Butene	461,831	291,287	50,066	.17
Isobutane	1,165,274	564,320	53,849	.10
Isobutylene	1,034,889	306,920	53,765	.18
All other C ₄ hydrocarbons ⁹	5,827,220	1,288,136	121,934	.09
C ₅ Hydrocarbons, total	2,434,817	1,005,834	115,988	.12
Isoprene (2-Methyl-1,3-butadiene)	107,140	150,176	25,169	.17
n-Pentane	284,830	(³)	(³)	(³)
Pentenes, mixed	345,342	289,021	20,334	.07
Piperylene (1,3-Pentadiene)	98,650	87,051	14,167	.16
All other C ₅ hydrocarbons ^{10 11}	1,598,855	479,586	56,318	.12
All other aliphatic hydrocarbons, derivatives and mixtures, total	7,403,865	4,376,658	845,891	.19
Alpha olefins, C ₆ -C ₁₀	827,089	524,899	127,669	2-2 .24

See footnotes at end of table.

Table 6—Continued

Primary products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1987

Primary products from petroleum and natural gas for chemical conversion	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Aliphatic hydrocarbons—Continued				
All other aliphatic hydrocarbons, derivatives and mixtures—Continued				
Alpha olefins, C ₁₁ and higher	602,782	(³)	(³)	(³)
Dodecene (Tetrapropylene)	317,552	248,483	46,090	\$.19
n-Heptane	178,497	127,085	20,768	.16
Hexane	852,035	383,310	52,884	.14
Nonene (Tripropylene)	519,663	268,753	53,411	.20
n-Paraffins ¹²	2,298,247	1,621,986	209,604	.13
All other ¹³	1,808,000	1,202,142	335,465	.28

¹ Calculated from rounded figures.² The chemical raw materials designated as aromatics are in some cases identical with those obtained from the distillation of coal tar; however, the statistics given in the table above relate only to such materials as are derived from petroleum and natural gas. Statistics on production and/or sales of benzene, toluene, and xylene from all sources are given in table 1 of the report on "Tar and Tar Crudes."³ Reported data are accepted in confidence and may not be published, or no data were reported.⁴ Includes toluene, solvent grade, 90 percent.⁵ Includes toluene and xylene used as solvents; may include that which is blended in aviation and motor gasolines.⁶ Includes data for alkyl aromatics, crude cresylic acid, cyclopentane, naphthalene, naphthenic acid, carbon black feedstock, distillates, solvents and miscellaneous cyclic hydrocarbons. Also includes production and/or sales data for the other than high purity grades of benzene, toluene, and mixed xylenes.⁷ Production figures on acetylene from calcium carbide for chemical syntheses are collected by the U.S. Bureau of the Census.⁸ Includes data for refinery propylene.⁹ Includes production and/or sales data for 2-butene, mixtures of 1-butene and 2-butene, and mixed C₄ streams.¹⁰ Includes data for mixtures of C₅ hydrocarbons, isopentane, and 2-pentene.¹¹ Includes sales data only for n-pentane.¹² Includes data for the following chain lengths: C₆-C₉, C₉-C₁₅, C₁₀-C₁₄, C₁₀-C₁₆, C₁₂-C₁₈ and others.¹³ Includes production and/or sales data for methane, isoheptanes, isohexane, iso-octane, mixed hexenes, mixed heptenes, mixed octenes, n-octane, di-isobutylene, eicosane, mixtures of C₂ and C₃, C₅-C₆, C₅-C₇, C₆-C₇ hydrocarbons, hydrocarbon derivatives, and other hydrocarbons.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 2

Table 7

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Primary products from petroleum and natural gas for chemical conversion	Separate statistics ¹	Manufacturers' identification codes (according to list in table 8)
Aromatics and naphthenes		
Alkyl aromatics:		
Cyclosols	No	CXI.
All other alkyl aromatics	No	SHC.
Benzene:		
Benzene, high purity (98-100%)	Yes	AMO, ASH, CCP, CNE, CRP, CSD, CSP, DOW, ENJ, GRS, HES, LYP, MOC, PLC, PPR, SHC, SIO, SM, SOC, SOG, SUN, SWR, TOC, TX, UOC, USI.
Benzene, other	Yes	AMO, KHI, KLM, UTP.
Cresylic acid (Less than 75 percent distilling over 215°C)	No	KHI.
Cyclopentane	No	PLC.
Naphthalene	No	CXI, TX.
Naphthenic acid:		
Naphthenic acid, acid number 150-199	No	CPS, HEC, MER.
Naphthenic acid, acid number 200-224	No	MER.
Naphthenic acid, acid number less than 150	No	HEC, SHC.
Toluene:		
Toluene, high purity (98-100%)	Yes	ASH, CNE, CSD, DOW, ENJ, GRS, HCL, HES, KHI, LYP, MNA, MOC, PLC, SHC, SIO, SM, SOG, SUN, SWR, TOC, TX, UOC.
Toluene, other	Yes	PPR, SHC, SOC, SOG, SUN.
Xylenes, mixed:		
Xylenes, high purity (98-100%)	Yes	AMO, ASH, CSD, ENJ, HES, LYP, PLC, PPR, SHC, SOG, SUN, SWR, UOC.
Xylenes, other	No	AMO, MOC, TOC.
All other aromatics and naphthenes:		
Aromatics, C ₈	No	MOC.
Carbon black feedstock	No	ENJ.
All other products from petroleum and natural gas, cyclic	No	AMO, ASH, BAS, BFG, EKX, ELP, ENJ, LYP, SHC, TX, UCC, UPM, VST.
Aliphatic hydrocarbons		
C ₁ Hydrocarbons:		
Methane	No	SHO.
C ₂ Hydrocarbons:		
Acetylene (For chemical use only)	Yes	BOR, RH, UCC.
Ethane	Yes	AMO, CGO, DA, ENJ, LYP, PLC, SHO, USI, UTP.
Ethylene	Yes	AMO, ART, BAS, BFG, CNE, DOW, DUP, EKX, ELP, ENJ, HKO, KHI, LYP, MCB, PLC, PPS, SHC, SM, SNO, SOC, TX, UCC, USI, UTP, VST.
C ₃ Hydrocarbons:		
Hydrocarbons, C ₂ -C ₃ , mixtures	No	CGO, TU.
Propane (Commercial and hd-5)	Yes	AMO, ASH, CCP, CGO, CSD, CSP, DA, ENJ, GRS, KHI, LYP, MOC, PLC, PPS, SHO, SM, SOG, SUN, TCR, TUS, UOC, USI, VLR.

See footnotes at the end of table.

Table 7—Continued

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1987—continued

Primary products from petroleum and natural gas for chemical conversion	Separate statistics ¹	Manufacturers' identification codes (according to list in table 8)
Aliphatic hydrocarbons—Continued		
Propylene	Yes	AMO, ART, ASH, BAS, BFG, CCP, CGO, CNE, CSD, CSP, DA, DOW, DUP, EKX, ELP, ENJ, HKO, KHI, LYP, MCB, MOC, PLC, PPS, SHC, SIO, SM, SOC, SOG, SUN, TCR, TX, UCC, USI, UTP, VLR, VST.
C₄ Hydrocarbons:		
Butadiene and butylene fractions	Yes	BAS, DA, DOW, EKX, ELP, HKO, PLC, SOC, TUS, UCC, USI, UTP, VST.
1,3-Butadiene, grade for rubber (Elastomers)	Yes	AMO, CNE, DOW, ELP, ENJ, LYP, SHC, SM, TPC, TUS.
n-Butane	Yes	AMO, ASH, CSP, DA, KHI, LYP, PLC, SHO, SM, SUN, TUS, USI.
1-Butene	Yes	ENJ, SHC, SOC, TNA, TPC.
2-Butene	No	TPC.
1-Butene and 2-butene, mixed	No	DOW, LYP, SHC, SM, TNA.
Hydrocarbons, C ₄ , fraction	No	ART, KHI, TX.
Hydrocarbons, C ₄ , mixtures	No	LYP, MCB, PPR, PPS, SOG.
Isobutane (2-Methylpropane)	Yes	AMO, CSP, DA, ENJ, KHI, PLC, SHO, SUN, TUS, USI.
Isobutylene (2-Methylpropene)	Yes	AMO, ATR, ENJ, SHC, TPC, TUS.
All other hydrocarbons, C ₄	No	ENJ, SM, TPC, TX, USI.
C₅ Hydrocarbons:		
Hydrocarbons, C ₅ mixtures	No	GYR, HKO, LYP.
Isopentane (2-Methylbutane)	No	PLC, SHO.
Isoprene (2-Methyl-1,3-butadiene)	Yes	DOW, ENJ, LYP, SHO, SOC.
n-Pentane	Yes	ASH, KHI, PLC, SHO.
2-Pentene	No	BFG, DOW.
Pentenes, mixed	Yes	ART, CSP, CXI, PLC, SHO, TUS.
Piperylene (1,3-Pentadiene)	Yes	CXI, DOW, LYP.
All other hydrocarbons, C ₅	No	DA, ENJ, PLC, SHC, TX.
All other aliphatic hydrocarbons, derivatives, and mixtures:		
C₆ Hydrocarbons:		
Hexane	Yes	ASH, ENJ, PLC, SHO, SOG, TX, UOC, VST.
1-Hexene	No	PLC.
Hexenes, mixed	No	ENJ.
Hydrocarbons, C ₅ -C ₆ , mixtures	No	PLC.
Hydrocarbons, C ₅ -C ₇ , mixtures	No	ENJ.
Isohexane	No	PLC.
Neohexane (2,2-Dimethylbutane)	No	PLC.
All other hydrocarbons, C ₆	No	PLC, SHC, SM, TX.
C₇ Hydrocarbons:		
n-Heptane	Yes	ENJ, PLC, SOG, TX, UOC.
Heptenes, mixed	No	ENJ, TX.
Hydrocarbons, C ₆ -C ₇ , mixtures	No	PPR, TX.
Isoheptanes	No	PLC.
All other hydrocarbons, C ₇	No	EKX, PPR.
C₈ Hydrocarbons:		
Di-isobutylene (DI-Isobutene)	No	EKT, TPC.
n-Octane	No	PLC, SOG.
Octenes, mixed	No	ENJ, TX.
2,2,4-Trimethylpentane (Iso-octane)	No	CSP, LYP, PLC.
All other hydrocarbons, C ₈	No	SHC.

See footnotes at the end of table.

Table 7—Continued

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1987—continued

Primary products from petroleum and natural gas for chemical conversion	Separate statistics ¹	Manufacturers' identification codes (according to list in table 8)
Alliphatic hydrocarbons—Continued		
C₉ and above Hydrocarbons (except alpha olefins):		
Dodecene	Yes	ATR, ENJ, SOC, SUN, UOC.
Elcosane	No	HMY.
Nonene (Tripropylene)	Yes	ATR, ENJ, TX, UOC.
Alpha olefins:		
Alpha olefins, C ₆ -C ₁₀	Yes	SHC, SOC, TNA.
Alpha olefins, C ₁₁ and higher	Yes	ELP, SHC, SOC, TNA.
N-Paraffins-Carbon chain length:		
n-Paraffins, C ₁₀ -C ₁₄	No	ENJ, SHC, UOC.
n-Paraffins, C ₁₀ -C ₁₆	No	VST.
n-Paraffins, C ₁₂ -C ₁₈	No	VST.
n-Paraffins, C ₈ -C ₉	No	SOG, UOC.
n-Paraffins, C ₈ -C ₁₆	No	SOG.
n-Paraffins, C ₉ -C ₁₅	No	SHC, TX, UOC.
All other n-paraffins	No	ENJ, SOG, UOC.
Polybutene	No	AMO, SOC.
Hydrocarbon derivatives:		
n-Butyl mercaptan (1-Butanethiol)	No	PAS, PLC.
sec-Butyl mercaptan (2-Butanethiol)	No	HAP, PLC.
tert-Butyl mercaptan (2-Methyl-2-propanethiol)	No	HAP, PAS, PLC.
Di-tert-butyl disulfide	No	PLC.
Diethyl sulfide (Ethyl sulfide)	No	HAP, PAS.
Dimethyl sulfide	No	PAS.
Ethyl mercaptan (Ethanethiol)	No	HAP, PAS, PLC.
Ethylthioethanol	No	HAP.
Isopropyl mercaptan (2-Propanethiol)	No	HAP, PAS, PLC.
Methyl ethyl sulfide	No	CED, HAP, PAS.
Methyl mercaptan (Methanethiol)	No	PAS.
Octyl mercaptans	No	PAS.
n-Propyl mercaptan (1-Propanethiol)	No	PAS, PLC.
Thiophane (Tetrahydrothiophene)	No	HAP.
All other hydrocarbon derivatives	No	PAS, PLC.
All other hydrocarbons, C ₉ and above, including mixtures	No	CXI, NES, PLC, SHC, TNA.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No".

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Table 8

Primary products from petroleum and natural gas for chemical conversion: Directory of manufacturers, alphabetical by code, 1987

Code	Name of company	Code	Name of company
AMO	Amoco Corp.	KLM	Kalama Chemical, Inc.
ASH	Ashland Oil, Inc., Ashland Petroleum Co.	LYP	Lyondell Petrochemical Co.
ART	Aristech Chemical Corp.	MCB	Borg-Warner Corp., Borg-Warner Chemicals
ATR	Atlantic Richfield Co., Arco Chemical Co.	MER	Merichem Co.
BAS	BASF Corp.	MNA	Monsanto Agriculture Co.
BFG	B. F. Goodrich Co.	MOC	Marathon Petroleum Co., Texas Refining Div.
BOR	Borden, Inc., Borden Chemical Div.	NES	Ruetgers Nease Chemical Co.
CCP	Crown Central Petroleum Corp.	PAS	Pennwalt Corp.
CED	Cedar Chemical Co.	PLC	Phillips Petroleum Co.
CGO	Citgo Petroleum Corp.	PPR	Phillips Puerto Rico Core, Inc.
CNE	Cain Chemical, Inc.	RH	Rohm & Haas Co.
CPS	CPS Chemical Co., Inc.	SHC	Shell Oil Co., Shell Chemical Co. Div.
CSD	Fina Oil & Chemical Co., Cosden Chemical Div.	SHO	Shell Oil Co.
CSP	Coastal Refining & Marketing, Inc.	SIO	Standard Oil Co.
CXI	Chemical Exchange Industries, Inc.	SM	Mobil Oil Corp.: Gas Liquids Dept. Mobil Chemical Co., Petrochemicals Div.
DA	Diamond Shamrock Refining & Marketing	SNO	SunOlin Chemical Co.
DOW	Dow Chemical Co.	SOC	Chevron Corp., Chevron Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc. Petrochemicals Dept. Eastman Kodak Co.: Tennessee Eastman Co. Div. Texas Eastman Co. Div.	SOG	Hill Petroleum Company
EKT	Tennessee Eastman Co. Div.	SUN	Sun Company, Inc.
EKX	Texas Eastman Co. Div.	SWR	Southwestern Refining Co., Inc.
ELP	El Paso Products Co.	TCR	Texas City Refining, Inc.
ENJ	Exxon Chemical Americas	TNA	Ethyl Corp.
EPC	P/P Splitter Venture	TOC	Tenneco Oil Co.
GRS	Champlin Petroleum Co.	TPC	Texas Petrochemicals Corp.
GYR	Goodyear Tire & Rubber Co.	TU	Tenn-USS Chemicals Co.
HAP	Helmerich & Payne, Inc. Natural Gas Odorizing, Inc.	TUS	Texaco Butadiene Co.
HCL	Hoechst Celanese Corp. Bayport works	TX	Texaco Chemical Co.
HEC	Hewchem	UCC	Union Carbide Corp.
HES	Amerada Hess Corp. (Hess Oil Virgin Islands Corp)	UOC	Union Oil Co. of California
HKO	Occidental Chemical Corp., Olefins Div.	UPM	UOP, Inc.
HMY	Humphrey Chemical Co.	USI	Quatum Chemical Corp., USI Div.
KHI	Koch Refining Co.	UTP	Union Texas Petroleum
		VLR	Valero Refining Co.
		VST	Vista Chemical Co.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission

Section 3

Cyclic Intermediates

Cyclic intermediates are synthetic organic chemicals derived principally from petroleum and natural gas and from coal-tar crudes produced by destructive distillation (pyrolysis) of coal. Most cyclic intermediates are used in the manufacture of more advanced synthetic organic chemicals and finished products, such as dyes, medicinal chemicals, elastomers (synthetic rubber), pesticides, and plastics and resin materials. Some intermediates, however, are sold as end products without further processing. For example, refined naphthalene may be used as a raw material in the manufacture of 2-naphthol or of other more advanced intermediates, or may be packaged and sold as a moth repellent or as a deodorant. In 1987, about 42 percent of the total output of cyclic intermediates was sold; the rest was consumed chiefly in the producing plants in the manufacture of more advanced intermediates and finished products.

The total annual production of cyclic intermediates during 1983-87 is shown in figure 4. Total production of cyclic intermediates in 1987

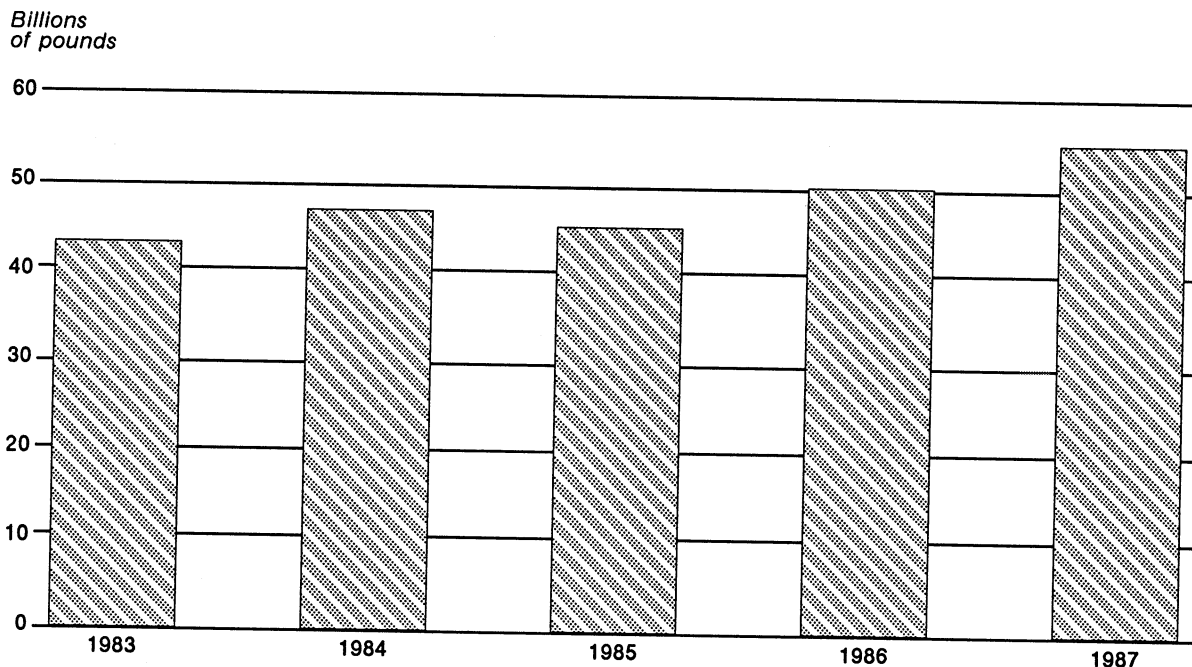
amounted to 55,196 million pounds, an increase of 10 percent compared with production reported to the Commission in 1986. Reported sales of cyclic intermediate chemicals in 1987 were 23,206 pounds, valued at \$7,562 million, compared with 22,333 million pounds, valued at \$7,150 million, in 1986.

Intermediates that were produced in excess of 1 billion pounds in 1987 were ethylbenzene (9,346 million pounds), styrene (8,014 million pounds), terephthalic acid and terephthalic acid dimethyl ester (7,601 million pounds), p-xylene (5,155 million pounds), cumene (4,105 million pounds), phenol (3,841 million pounds), cyclohexane (2,276 million pounds), phthalic anhydride (1,035 million pounds), and bisphenol A (1,000 million pounds). These intermediate chemicals produced in excess of 1 billion pounds accounted for about 75 percent of the total output of cyclic intermediate chemicals produced in 1987.

Table 10 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 11.

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202-252-1356

Figure 4
Cyclic Intermediates: U.S. production, 1983-87



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Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 3

Table 9
Cyclic Intermediates: U.S. production and sales, 1987

Cyclic Intermediates	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	55,196,139	23,205,872	7,562,427	\$0.33
o-Acetoacetotoluidide	2,259	2,009	2,941	1.46
p-[(p-Aminophenyl)azo]benzenesulfonic acid ...	140	(²)	(²)	(²)
Aniline (Aniline oil)	859,037	430,182	127,929	.30
Anilinomethanesulfonic acid and salt	393	(²)	(²)	(²)
Benzoic acid, tech	94,619	(²)	(²)	(²)
o-Chloroaniline	1,221	(²)	(²)	(²)
Chlorobenzene, mono-	246,445	93,530	26,837	.29
Cresols and cresylic acid ³	73,276	66,779	41,447	.62
Cumene	4,104,961	2,523,241	486,481	.19
Cyclohexane	2,276,060	2,157,305	443,774	.21
Cyclohexanone	930,376	91,924	36,455	.40
p-Dichlorobenzene	103,346	83,692	34,965	.42
Dicyclopentadiene (including cyclopentadiene) ..	99,255	85,302	17,470	.20
Ethylbenzene	9,346,119	314,722	66,407	.21
Isocyanic acid derivatives, total	1,568,338	1,363,296	1,046,592	.77
Polymethylene polyphenylisocyanate	508,188	421,670	305,371	.72
Toluene-2,4- and 2,6-diisocyanate (80/20 mixture)	713,008	645,998	526,938	.82
All other isocyanic acid derivatives	347,142	295,628	214,283	.72
4,4'-Isopropylidenediphenol (Bisphenol A)	1,000,351	409,387	199,393	.49
Nonylphenol	539,441	98,190	36,642	.37
Phenol, total	3,841,091	1,533,009	444,627	.29
From cumene	3,132,211	1,381,150	400,387	.29
All other phenol	708,880	151,859	44,240	.29
Phthalic anhydride	1,035,187	454,933	113,240	.25
Salicylic acid, tech	25,131	(²)	(²)	(²)
Styrene	8,014,020	2,175,680	848,886	.39
Terephthalic acid, dimethyl ester ⁴	7,601,418	(²)	(²)	(²)
Tetrahydrofuran	142,903	71,394	59,272	.83
o-Xylene	939,969	807,604	119,032	.15
p-Xylene	5,155,219	3,166,728	556,347	.18
All other cyclic intermediates	7,195,564	7,276,965	2,853,690	.39

¹ Calculated from unrounded figures.

² Reported data were accepted in confidence and may not be published, or no data were reported.

³ Does not include data for coke oven and gas-retort ovens.

⁴ The figure for terephthalic acid, dimethyl ester (DMT) includes both the acid itself and the dimethyl ester without double counting. The acid production figure was multiplied by the factor 1.16 to convert it to equivalent DMT.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 10

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic		
3-Acetamido-N-(2-succinimidoethyl)-N-ethylaniline	No	EKT.
Acetanilide, tech	No	SAL.
Acetic acid, phenyl ester	No	BKM.
Acetoacetanilide	No	BRD, EKT, HCL.
o-Acetoacetanisidide	No	BRD, EKT, HCL.
o-Acetoacetotoluidide	Yes	BRD, EKT, HCL.
2',4'-Acetoacetoxylidide	No	EKT, HCL.
Acetoacet-m-xylidide	No	BRD.
Acetoguanamine	No	DIX.
1'-Acetonaphthone	No	GIV.
Acetophenone, tech	No	S.
p-Acetotoluidide	No	EK.
2-Acetylpyridine	No	RIL.
Adamantane	No	DIX.
Aldadiene	No	SRL.
Alkylbenzenes:	No	
Alkylbenzene straight-chain (except dodecyl and tridecyl)	No	MON, PLC.
Dodecylbenzene (including Tridecylbenzene):		
Dodecylbenzene, straight-chain	No	MON, VST.
Dodecylbenzene, other	No	MON, SOC.
Alkylpyridines, mixed	No	RIL, (2).
Aluminum chlorohydroxyphthalocyanine blue	No	PHC.
3'-Aminoacetanilide	No	CGY.
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	No	HCL.
3'-Amino-p-acetanisidide	No	HCL, SDC.
2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	No	CGY.
1-Aminoanthraquinone and salt	No	SDC.
p-Aminobenzamide	No	NSC.
3'-Aminobenzanilide	No	HCL.
o-Aminobenzenethiol	No	FMT.
p-Aminobenzoic acid, tech	No	NSC, WYK.
2-Amino-6-benzothiazolesulfonic acid	No	VPC.
3-Aminobenzotrifluoride	No	DAZ.
1-Amino-4-bromo-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid and sodium salt	No	VPC.
7-Aminocephalosporanic acid	No	BRS, TRD.
6-Amino-5-chloro-m-toluenesulfonic acid [SO ₃ H=1] (2B Acid)	No	CYH, DUP.
4-Amino-N,N-di(β-hydroxyethyl)aniline sulfate	No	WAY.
5-Amino-4,5'-dihydroxy-3,4'-[(2-methoxy-5-methyl-p-phenylene)bis(azo)]-di-2,7-naphthalenedisulfonic acid, 5'-benzenesulfonate	No	UPJ.
2-Amino-4,6-dihydroxypyrimidine	No	KF.
5-Amino-2,3-dimethylbenzenesulfethanolamide	No	CGY.
3-Amino-9-ethylcarbazole	No	SDC.
4-Amino-5-methoxy-2-methylbenzenesulfonic acid (5-methyl-o-anisidinesulfonic acid)	No	PSG, VPC, (2).
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid	No	VPC.
4-[(4-Amino-5-methoxy-o-tolyl)azo]-4-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate	No	TCH.
2-Amino-2-methylpropyl 8-bromotheophyllinate	No	CHT.
2-Amino-3-methylpyridine	No	RIL.
2-Amino-4-methylpyridine	No	RIL.
2-Amino-5-methylpyridine	No	RIL.
2-Amino-6-methylpyridine	No	RIL.
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	No	CGY.
5 (and 8)-Amino-2-naphthol	No	BUC.
2-(4-Amino-2-nitroanilino)ethanol	No	SOM.
2-Amino-4-nitrophenol	No	SOM.

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See footnotes at end of table.

Section 3

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Cyclic intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 11)
Cyclic—Continued		
2-[(2-Amino-4-nitrophenyl)amino]-2-hydroxymethyl-1,3-propanediol	No	SOM.
2-Amino-5-nitrothiazole	No	PCW.
2-Amino-4-nitrotoluene hydrochloride	No	PCW.
5-Amino-2-[(2-oxo-5-benzimidazolyl)amino]-benzenesulfonic acid	No	BRS, PFZ.
p-Aminophenol	No	MAL.
p-[(p-Aminophenyl)azo]benzenesulfonic acid	Yes	ATL, CGY, VPC.
2-(4-Aminophenylazo)-4-methylphenol	No	VPC.
7-[(4-Aminophenyl)azo]-1,3-naphthalene-disulfonic acid	No	ACY.
2-Aminopyridine	No	RIL.
3-Aminopyridine	No	RIL.
2-Aminothiazole nitrate	No	PCW.
3-Amino-p-toluamide	No	HCL.
4-Amino-m-toluenesulfonic acid [SO ₃ H=1]	No	DUP.
6-Amino-m-toluenesulfonic acid [SO ₃ H=1]	No	CYH, DUP.
Aniline (Aniline oil)	Yes	ART, DUP, FST, MAL, MOB, RUC, USR.
2-Anilinoethanol	No	TCH.
Anilinoethanesulfonic acid and salt	Yes	ACY, ATL, CGY, VPC.
o-Anisidinomethanesulfonic acid	No	CGY, VPC.
Anisole, tech	No	CHF.
Anisoyl chloride	No	SD.
Anthracene, refined	No	TX.
Anthranilic acid (o-Aminobenzoic acid)	No	PSG.
N,N'-(1,5-Anthraquinonylene)dianthranilic acid	No	CGY, SDC.
Benzaldehyde, tech	No	KLM.
Benzanilide	No	EK.
Benzenesulfonic acid	No	UPF.
Benzenesulfonic acid, 2-formyl-, sodium salt	No	(²).
Benzenesulfonyl chloride	No	UPF.
1,2,4-Benzenetricarboxylic acid, 1,2-dianhydride (Trimellitic anhydride)	No	AMO.
Benzhydrol (Diphenylmethanol)	No	PD.
Benzimidazole	No	EK.
1,3-Benzodioxole	No	AMB.
Benzoic acid, 2-[4-(dimethylamino)-benzoyl]	No	(²).
Benzoic acid, methyl ester	No	HCF.
Benzoic acid, tech	Yes	KLM, PFZ, VEL.
2-Benzothiazolethiol, sodium salt	No	BFG, BKM, USR.
1H-Benzotriazole	No	PSG.
2-Benzoxazolethiol	No	EK.
Benzoyl chloride	No	HK, VEL.
Benzylamine	No	HXL, KLM.
2-(Benzylamino)ethanol	No	HXL.
Benzyl dimethylamine	No	PSG.
3-(Benzylethylamino)acetanilide	No	EKT.
2-Benzyl-2'-hydroxy-5,9-dimethyl-6,7-benzomorphan-hydrobromide	No	SD.
1-Benzyl-4-phenylisonipeconitrile	No	SDW.
Benzyltriethylammonium chloride	No	HXL.
Benzyltrimethylammonium hydroxide	No	HXL.
Biphenyl	No	KHI, MON, SOC, TCC.
1,4-Bis(3-aminopropyl)piperazine	No	TX.
2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone	No	(²).
N,N-Bis((4-methylphenyl)sulfonyl)amine, potassium salt	No	EK.
1,2-Bis(tribromophenoxy)ethane	No	GTL.
3-Bromoacetophenone	No	(²).
p-Bromoaniline	No	EK.
Bromobenzaldehyde	No	TNA.
Bromobenzene, mono	No	DAZ, GTL.

See footnotes at end of table.

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
o-Bromobenzoic acid	No	PD.
4-Bromo-3,5-dihydroxybenzamide	No	PCW.
4-Bromo-3,5-dihydroxybenzoic acid	No	PCW.
2-Bromo-4,6-dinitroaniline	No	HCL.
1-Bromo-4-ethoxy-2-methylbenzene	No	(²).
p-Bromofluorobenzene	No	(²).
2-Bromopyridine	No	DAZ.
p-Butoxyphenol	No	ABB.
p-Butylaniline	No	TNA.
p-tert-Butylbenzaldehyde	No	GIV.
n-Butylbenzene	No	PLC.
2-tert-Butyl-p-cresol	No	PSG.
1-Tert-butyl-2,5-dimethoxybenzene	No	EKT.
2-[(1-Butyl-2-methylindol-3-yl)carbonyl]benzoic acid	No	(²).
o-sec-Butylphenol	No	SCN, TNA.
o-tert-Butylphenol	No	TNA.
p-sec-Butylphenol	No	SCN.
p-tert-Butylphenol	No	SCN.
Butylphenols, mixed	Yes	SCN, TNA, (²).
p-tert-Butyltoluene	No	CI.
5-tert-Butyl-m-xylene	No	GIV.
6-tert-Butyl-2,4-xyleneol	No	GAF.
4,4'-Carbonylbis[phthalic anhydride]	No	ACH.
N-Carboxy-N-methylantranilic anhydride	No	(²).
4'-Chloroacetophenone	No	LIL.
o-Chloroaniline	Yes	CWN, DUP, LAK, LMC.
p-Chloroaniline	No	DUP.
Chlorobenzene, mono	Yes	MON, PPG, SCC.
p-Chlorobenzenesulfonic acid	No	UPF.
2-Chloro-1,4-dibutoxybenzene	No	ALL.
1-Chloro-2,5-dibutoxy-4-nitrobenzene	No	ALL.
2-Chloro-1,4-diethoxybenzene	No	ALL.
1-Chloro-2,5-diethoxy-4-nitrobenzene	No	ALL.
4'-Chloro-2',5'-dimethoxyacetoacetanilide	No	HCL.
5-Chloro-2,4-dimethoxyaniline	No	ALL.
2-Chloro-10-[3-(dimethylamino)propyl]phenothiazine	No	SK.
2-Chloro-4,6-dimethylaniline	No	EKT.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	No	SDC.
3-Chlorodiphenylamine	No	SK.
N-(2-Chloroethyl)-N-ethylaniline	No	TCH.
p-[(2-Chloroethyl)methylamino]benzaldehyde	No	VPC.
2-Chloro-4-methylsulfonylaniline	No	EKT.
2-[(Chloromethyl)thiol]benzothiazole	No	BKM.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	No	DUP, MON.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	No	DUP, MON.
2-Chloro-4-nitrobenzoic acid	No	SAL.
2-Chloro-4-nitrobenzoic acid, potassium salt	No	SAL.
α-Chloro-4-nitrotoluene	No	EK.
2-Chloro-4-nitrotoluene	No	DUP, PCW.
2-Chlorophenothiazine	No	SK.
N-(4-Chlorophenyl)-N'-(3,4-dichlorophenyl)urea	No	VPC.
4-Chloro-o-phenylenediamine	No	FMT.
4-Chlorophthalic acid	No	PSG.
3-Chloropropyl-2,5-xylol ether	No	PD.
2-Chloropyridine	No	OMC.
4-Chlororesorcinol	No	PCW.
5-Chlorosalicylic acid	No	PCW.
o-Chlorotoluene	No	HK.
m-Chlorotoluene	No	HK.
p-Chlorotoluene	No	HK.
α-Chlorotoluene (Benzyl chloride)	No	MON.
3-Chloro-p-toluidine [NH ₂ = 1]	No	DUP.

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See footnotes at end of table.

Section 3

Table 10—Continued

Cyclic Intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic Intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid	No	CED.
3-(2-Chloro-4-trifluoromethylphenoxy)toluene	No	CED, (2).
p-Chloro- α, α, α -trifluorotoluene	No	HK.
6-Chloro- α, α, α -trifluoro-m-toluidine	No	PCW.
p-Chloro-o-xylene	No	ICI.
4-Chloro-3,5-xyleneol	No	FER.
Copper, [2,2',2'',2'''-[z9H,31H-phthalocyaninepentyl-pentakis(methylene)]pentakis[1H-isoindole-1,3(2H)-dionato]]	No	(2).
Cresols:	Yes	
m-Cresol	No	MER.
o-Cresol:	No	
o-Cresol, from petroleum	No	GE, MER, NPC, PSG.
p-Cresol	No	MER, PSG.
Cresols, mixed:		
(M,P)-Cresol:		
(m,p)-Cresol, from petroleum	No	MER, NPC.
Cresylic acid, refined:		
Cresylic acid, refined; from petroleum	No	MER, NPC.
Cumene (isopropyl benzene)	Yes	ASH, BTL, GGC, GRS, KHI, SHC, SOC, TX, DUP.
4-(Cyanoacetyl)morpholine	No	
N-Cyano-s-methyl-N-2(4-methyl-5-imidazolyl)-methylthioethylisothiourea	No	SK.
2,5-Cyclohexadiene-1,4-dione, dioxime	No	SDC.
Cyclohexane	Yes	GRS, PLC, PPR, SOC, SUN, TX, UOC.
1,2-Cyclohexanedicarboxylic acid anhydride	No	BCC.
Cyclohexanol	No	ACS, BAS, DUP, MON.
Cyclohexanone	Yes	ACS, BAS, CNP, DUP, MON, UCC.
Cyclohexanone oxime	No	CNP.
Cyclohexene	No	USR.
4-Cyclohexene-1,2-dicarboxylic anhydride	No	DKA.
Cyclohexene oxide	No	USR.
β -(1-Cyclohexenyl)ethylamine	No	HXL.
Cyclohexylamine	No	AIP, HCL.
Cyclohexyl isocyanate	No	MOB.
Cyclooctadiene	No	DUP.
Cyclopentene	No	ALD.
Cyclopropene carboxylic acid, 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethyl-(2-methyl[1,1'-biphenyl]-3-yl) methyl ester	No	NES.
2-Cyclopropylmethylamino-5-chlorobenzophenone	No	PD.
2-(N-Cyclopropylmethyl-N-phthalimidoacetyl)-amino-5-chlorobenzophenone	No	PD.
p-Cymene	No	HPC.
3-Diacetoxyethylaminobenzanilide	No	HCL.
Dialkylbenzene	No	VST.
2,4-Diaminobenzenesulfonic acid [SO ₃ H=1]	No	CGY.
Diaminodiphenylamine sulfonic acid	No	CGY.
2,6-Diaminopyridine	No	RIL.
2,5-Dianilnoterephthalic acid	No	VPC.
1,3-Dibenzylglycerol	No	DIX.
m-Dibromobenzene	No	DAZ.
(1,2-Dibromoethyl)benzene	No	DAZ.
p-Dibutoxybenzene (DBB)	No	ALL.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate salt (DBB Sulfate)	No	ALL.
2,5-Dibutoxy-4-morpholinonitrobenzene	No	ALL.
2,6-Di-sec-butylphenol	No	TNA.

See footnotes at end of table.

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Cyclic Intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 11)
Cyclic—Continued		
2,6-Di-tert-butylphenol	No	TNA.
2,6-Di-tert-4-sec-butylphenol	No	CED.
3,4-Dichloroaniline	No	DUP.
o (and p)-Dichlorobenzene	No	SCC.
m-Dichlorobenzene	No	MON.
o-Dichlorobenzene	No	MON, PPG, SCC, SOI.
p-Dichlorobenzene	Yes	MON, PPG, SCC, SOI.
3,3'-Dichlorobenzidine base and salts	No	CWN, LAK, LMC.
3,4-Dichlorobenzotrifluoride	No	HK, (²).
3,5-Dichlorobenzoyl chloride	No	HK.
4,6-Dichloro-1,3-dihydroxybenzene	No	PCW.
Dichlorodiphenylsilane	No	DCC.
2,6-Dichloro-3-methylaniline	No	SDC.
Dichloromethylphenylsilane	No	DCC.
2,6-Dichloro-4-nitroaniline	No	CWN.
1,2-Dichloro-4-nitrobenzene	No	DUP.
2,4-Dichloro-5-nitrotrifluoromethylbenzene	No	DAZ.
3,4-Dichlorophenyl isocyanate	No	MOB.
p-α-Dichlorotoluene	No	HK.
2,5-Dichloro-p-xylene	No	COC.
Dicyclohexylamine	No	AIP, HCL.
Dicyclohexylamine, nitrate salt	No	OMC.
Dicyclopentadiene (includes Cyclopentadiene)	Yes	DOW, ENJ, LYP, SHC, VEL.
α,α-Diethoxyacetophenone	No	CWN.
p-Diethoxybenzene	No	ALL.
2,5-Diethoxy-4-morpholinonitrobenzene	No	ALL.
p-(Diethylamino) benzaldehyde	No	VPC.
4-(Diethylamino) benzaldehyde, 1,1-diphenylhydrazone	No	EKT.
2[4-(Diethylamino-2-hydroxybenzyl)] benzoic acid	No	(²).
N,N-Diethylaniline	No	BCC, DUP.
2,6-Diethylaniline	No	TNA.
Diethylbenzene	No	DOW, UPM.
N,N-Diethylcyclohexylamine	No	AIP.
3,5-Diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	No	RIL.
N,N-Diethyl-4-methoxymetanilamide	No	PCW.
3,5-Diethyltoluene	No	TNA.
3,5-Diethyltoluene-2,4-diamine	No	TNA.
N,N-Diethyl-m-toluidine	No	DUP.
N,N-Diethyl-p-toluidine	No	RSA.
6,11-Dihydrodibenz(b,e)oxepin-11-one	No	PFZ.
2,3-Dihydro-2,2-dimethyl-7-benzofuranol	No	FMN.
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl[(dibutylamino)-thio]methylcarbamate	No	NES.
2-[2-(2,3-Dihydro-1,3-dioxo-1H-inden-2yl)-(quinolinyl)] 6-methylbenzothiazole-7-sulfonic acid	No	VPC.
2,3-Dihydro-2-[6-methyl-7-sulfo-2-benzothiazolyl]-2-quinolinyl-1,3-dioxo-1H-indene-5-carboxylic acid	No	VPC.
Dihydrophenylglycine danc salt	No	SK.
1,2-Dihydro-2,2,4,7-tetramethylquinoline	No	EKT.
1,4-Dihydroxyanthraquinone	No	EKT.
2,4-Dihydroxybenzaldehyde	No	EK.
2,5-Dihydroxy-p-benzenedisulfonic acid, dipotassium salt	No	(²).
3,4-Dihydroxybenzoic acid, methyl ester	No	PCW.
2,4-Dihydroxybenzophenone	No	ACY.
1,8-Dihydroxy-4,5-dinitroanthraquinone	No	EKT.
N,N-Di(β-hydroxyethyl)-m-chloroaniline	No	MIL.
3,5-Dihydroxy-N-(2-hydroxyethyl)benzamide	No	PCW.
m-Diisopropenylbenzene	No	EKT, HCL.
Diisopropylaniline	No	TNA.
Diisopropylbenzene	No	EKT, GGC.
2,5-Dimethoxybenzaldehyde	No	CWN.

See footnotes at end of table.

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Table 10—Continued

Cyclic Intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Cyclic Intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 11)
Cyclic—Continued		
m-Dimethoxybenzene	No	ACY.
p-Dimethoxybenzene	No	CHF.
3,4-Dimethoxytoluene	No	TNA.
p-(Dimethylamino)benzaldehyde	No	ATL.
m-(Dimethylamino)benzoic acid	No	SDH.
2-[4-(Dimethylamino)benzoyl]benzoic acid	No	EK.
m-Dimethylaminophenol	No	ACY, BCC.
11-[3(Dimethylamino)propyl]-6H-hydroxydibenz (b,e)oxepin	No	PFZ.
4-Dimethylaminopyridine	No	NEP.
N,N-Dimethylaniline	No	DUP.
2,6-Dimethylaniline	No	TNA.
N,N-Dimethylbenzylamine	No	ARS, HXL.
Dimethyl-1,4-cyclohexanedicarboxylate	No	EKT.
N,N-Dimethylcyclohexylamine	No	AIP.
5,5-Dimethylhydantoin	No	BRD.
2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydro- chloride	No	CGY
2,6-Dimethylnaphthalene	No	UPM.
N,N'-Dimethyl-3,4,9,10-perylene-tetracarboxylic acid 3, 4:9,10-diimide	No	VPC.
N,N-Dimethyl-o-toluidine	No	RSA.
N,N-Dimethyl-p-toluidine	No	FST, RSA.
m-Dinitrobenzene	No	DUP.
Dinitrobenzene-nitrobenzene mixture (30/70)	No	SAL.
2,4-Dinitrobenzenesulfonic acid, sodium salt	No	EK.
3,5-Dinitrobenzoyl chloride	No	ALD.
3,5-Dinitrochlorobenzenesulfonic acid, potassium salt	No	LMC.
Dinitro-p-cresol	No	PSG.
2,4-Dinitrophenol, tech	No	SDC.
2,4-Dinitrophenoxyethanol	No	OMC.
3,5-Dinitrosalicylic acid	No	SAL.
3,5-Dinitrosalicylic acid, methyl ester	No	SAL.
p-Dinitrosobenzene	No	LC.
4,4'-Dinitrostilbene-2,2'-disulfonic acid	No	CGY.
2,4-Dinitrotoluene	No	DUP, RUC.
2,4 (and 2,6)-Dinitrotoluene	No	MOB, RUC, (2).
3,5-Dinitro-p-toluenesulfonic acid	No	TX.
3,5-Dinitro-o-toluic acid	No	SAL.
Dinonylhydroxybenzenesulfonic acid	No	(2).
Dinonylphenol	No	GAF.
Di-para-benzoquinone dioxime	No	LC.
2,4-Di-tert-pentylphenol	No	PAS.
1,4-Diphenoxybenzene	No	TNA.
Diphenylamine	No	ART, RUC, USR.
Diphenyldimethoxysilane	No	KF.
Diphenyldisulfide	No	PAH.
1,3-Di-4-piperidylpropane	No	RIL.
2,5-Di-p-toluidinoterephthalic acid	No	VPC.
1,5-Diureidonaphthalene	No	SOI.
Divinylbenzene	No	DOW, HCL.
1,1-Di-3,4-xyleneethane	No	ACH.
Dodecylaniline	No	MON.
Dodecylmethylbenzyl chloride	No	RH.
Dodecylnitrobenzene	No	LMC.
p-Dodecylphenol	No	GAF, MON, SOC.
2-Ethanolpyridine	No	RIL.
5-Ethanoxy-3-trichloromethyl-1,2,4-thiadiazole	No	OMC.
Ethisterone	No	SRL, UPJ.
4-Ethoxy-3-methoxybenzaldehyde	No	CGY.
1-Ethoxy-3-methylbenzene	No	(2).
4-Ethoxy-2-methyl-N-phenylaniline	No	(2).
Ethyl-alpha-cyano-beta-methyl cinnamate	No	PD.

See footnotes at end of table.

Table 10—Continued

Cyclic Intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic Intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
3'-(Ethylamino)acetanilide	No	EKT.
o-Ethylaniline	No	TNA.
N-Ethylaniline, refined	No	BCC, FST.
2-(N-Ethylanilino)ethanol	No	MIL, TCH.
3-(N-Ethylanilino)propionitrile	No	TCH.
a-(N-Ethylanilino)-m-toluenesulfonic acid	No	SDH.
Ethylbenzene	No	AMO, ATR, CSD, DOW, ELP, HCL, KHI, MCB, SC, SOC.
2-(N-Ethyl-N, β -cyanoethyl)-4-acetaminoanisole	No	TCH.
N-Ethyl-N-(2,3-dihydroxypropyl)-m-toluidine	No	EKT.
N-Ethyl-N-(2-hydroxyethyl)-m-toluidine	No	EKT.
N-Ethylmaleimide	No	REG.
6-Ethyl-2-methylaniline	No	TNA.
2-[Ethyl(3-methylphenyl)amino]ethanol	No	FST.
9-Ethyl-3-nitrocarbazole	No	SDC.
N-Ethyl-N-phenylbenzylamine	No	SDH.
3-Ethylpyridine	No	RIL.
5-Ethyl-2,3-pyridinedicarboxylic acid	No	NES.
N-Ethyl-N-(3'-sulfobenzyl)aniline	No	VPC.
N-Ethyl-m-toluidine	No	DUP, FST.
3-(N-Ethyl-m-toluidino)propionitrile	No	TCH.
9-Fluorenone	No	MCK.
o-Fluorobenzoyl chloride	No	OMC.
1-Formylpiperidine	No	RIL.
Furan	No	KKO.
Furfuryl alcohol	No	KKO.
1-(2-Furoyl)piperazine	No	PFZ.
Hexachlorocyclopentadiene	No	VEL.
1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride (Chlorendic anhydride)	No	VEL.
1,1'-Hexamethylenebis-[5-(4-chlorophenyl)biguanide]-diacetate	No	NES.
Hydroquinone, tech	No	EKT, GYR.
p-Hydroxyanisole	No	CHF.
p-Hydroxybenzaldehyde	No	WES.
p-Hydroxybenzenesulfonic acid	No	UPF.
p-Hydroxybenzoic acid	No	LEM.
4-Hydroxy-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	No	PFZ.
4-Hydroxybenzylbenzene	No	TNA.
2-Hydroxycineole	No	(²).
2'-Hydroxy-5,9-dimethyl-6,7-benzomorphan	No	SD.
2,2'-[[4-(2-Hydroxyethylamino)-3-nitrophenyl]imino]-diethanol	No	SOM.
3-[N-(2-Hydroxyethyl)anilino]propionitrile	No	TCH.
N-(2-Hydroxyethyl)-o-chloroaniline	No	EKT.
N- β -Hydroxyethyl-2,4-dihydroxybenzamide	No	PCW.
4-Hydroxymetanilamide	No	CGY.
4-Hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	No	PFZ.
2-Hydroxymethylene-17 α -ethinylandroster-17 β -ol-4-en-3-one	No	SD.
4(5)-Hydroxymethyl-5(4)-methylimidazole hydrochloride	No	SK.
3-Hydroxy-N-(3-N-morpholino- γ -propyl)-2-naphthylmide	No	PCW.
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt	No	SDH.
1-Hydroxy-2-naphthoic acid	No	PCW.
3-Hydroxy-2-naphthoic acid (B.O.N.)	No	PCW.
3-Hydroxy-2-naphthoic acid, diethylenetriamineamide	No	PCW.
3-Hydroxy-2-naphthoic acid, ethanolamide	No	PCW.

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See footnotes at end of table.

Section 3

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic Intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
1-Hydroxynaphthoic acid, methyl ester	No	PCW.
3-Hydroxy-2-naphthoic acid, sodium salt	No	PCW.
Isobutylbenzene	No	PLC, TNA.
Isocyanic acid derivatives:	Yes	
Bitolylene diisocyanate (TODI)	No	CWN, MOB.
Diphenylmethane-4,4'-diisocyanate (MDI)	No	BAS, DOW, MOB, RUC.
Isophorone diisocyanate	No	MOB.
Methylenedicyclohexyl methane 1, 4-diisocyanate	No	MOB.
Polymethylene polyphenylisocyanate	Yes	BAS, MOB, RUC.
Toluene 2,4-diisocyanate	No	MOB.
Toluene 2,4-and 2,6-diisocyanate (80/20 mixture)	Yes	BAS, DOW, MOB, OMC, RUC.
Toluene 2,4-and 2,6-diisocyanate (65/35 mixture)	No	MOB.
p-Toluenesulfonyl isocyanate	No	CWN.
Isonicotinitrile	No	RIL.
Isophthalic acid (Benzene-1,3-dicarboxylic acid)	No	AMO.
Isophthalonitrile	No	DUP, PSG.
Isophthaloyl chloride	No	DUP, TLC.
Isopropylbiphenyl	No	TCC.
5,5'-Isopropylidenebis(2-hydroxy-m-xylene- α , α' -diol)	No	ARK.
4,4'-Isopropylidenediphenol (Bisphenol A)	Yes	ART, DOW, GE, SHC.
4,4'-Isopropylidenediphenol, ethoxylated	No	ICI.
4,4'-Isopropylidenediphenol, propoxylated	No	ICI.
o-Isopropylphenol	No	FMC, PSG.
Isopropylphenol, mixed	No	TNA.
Isothiocyanic acid, phenyl ester	No	EK.
Isatoic anhydride	No	PSG.
2,6-Lutidine	No	RIL.
3,5-Lutidine	No	RIL.
Melamine	No	ACY, MLC.
dl-p-Mentha-1,8-diene (Limonene)	No	ARZ, NCI.
2-Methoxyethylpiperidine	No	RIL.
N-(4-Methoxy-3-nitrophenyl)acetamide	No	SDC.
(p-Methoxyphenyl)acetic acid	No	HEX.
2-(N-Methylanilino)ethanol	No	TCH.
3-(N-Methylanilino)propionitrile	No	TCH.
2-Methylantraquinone	No	ACY.
2-Methylbenzothiazole	No	FMT.
4-Methylbenzotriazole	No	VPC.
o-Methylbenzyl chloride	No	TLC.
N-Methylbenzylamine	No	HXL.
Methyl benzyl ether	No	GRS.
2,2'-Methylenebis(4-methyl-6-nonyl-p-cresol)	No	PSG.
1-Methyl-4-chloropropylpiperazine hydrochloride	No	SK.
Methylcyclohexane	No	PLC.
Methyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboate	No	FMN.
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-o-cresol)	No	CED, CPS.
4,4-Methylenebis(2,6-di-tert-butylphenol)	No	TNA.
4,4'-Methylenebis[N,N-diethylaniline]	No	ACY.
4,4'-Methylenebis[N,N-dimethylaniline] (Methane-base)	No	ACY.
4,4'-Methylenedianiline	No	RUC, USR.
Methylene diphenylamine (polymeric)	No	MOB.
5,5'-Methylenedisalicylic acid	No	KLM.
N-Methyl-2-ethanolpiperidine	No	RIL.
Methyl p-formylbenzoate	No	EKT.
Methylhydroquinone	No	EKT.
2-Methylimidazole	No	HXL.
(2,4-Methyl-5-imidazolyl)methylthioethylamine dihydrochloride	No	SK.
4-Methyl-2-imino-1,3-dithiolane hydrochloride	No	LAK.

See footnotes at end of table.

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Cyclic intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 11)
Cyclic—Continued		
4-Methyl-N-((4-methylphenyl)sulfonyl)benzenesulfonamide	No	EK.
N-Methyl-p-nitroaniline	No	ACY, USR.
4-Methyl-2-nitroanisole	No	PSG.
3-Methyl-2-nitrobenzoic acid	No	SAL.
2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	No	BCC.
4-Methylphthalic acid	No	EK.
2-Methylpiperidine	No	RIL.
α -Methylstyrene	No	ART, GGC, TX.
para-Methylstyrene (Vinyltoluene)	Yes	BTL, DOW, HCL.
Mono-, di-, and triesters of phenyl (2,3,4-trihydroxyphenyl) methanone with 6-diazo-5,6-dihydro-5-oxo-1-naphthalenesulfonic acid	No	WAY.
Myristylbenzyltrimethylammonium chloride $2H_2O$	No	PCW.
1-Naphthaldehyde	No	GNW.
1,5-Naphthalenedisulfonic acid, 2-amino-, monosodium salt	No	(²).
1-Naphthalenesulfonic acid	No	CGY.
2-Naphthalenesulfonic acid	No	ACY.
1-Naphthalenesulfonic acid, 8-(phenylamino)-monosodium salt	No	SDC.
2-Naphthalenesulfonic acid, sodium salt	No	GNW.
Naphthalimide	No	VPC.
1-Naphthol (α -Naphthol)	No	RDA.
Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid	No	CGY.
1-Naphthylamine (α -Naphthylamine)	No	DUP.
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2-naphthylamine)	No	SDC.
Nicotinic acid, 2-(4-isopropyl-4,5-oxo-2-imidazolin-2-yl)-ester	No	NES.
Nicotinonitrile (3-Cyanopyridine)	No	NEP, RIL.
3-Nitro-6-pyrrolidinyl toluene	No	ALL.
Nitrated dodecylbenzene	No	LAK.
3'-Nitroacetanilide	No	EKT.
o-Nitroaniline	No	BUC, DUP, MON.
p-Nitroaniline	No	DUP, MON.
1-Nitroanthraquinone	No	SDC.
p-Nitrobenzamide	No	PD.
Nitrobenzene	No	FST, MOB, RUC.
m-Nitrobenzenesulfonic acid, sodium salt	No	USM.
m-Nitrobenzoic acid	No	SAL, SDH.
o-Nitrobenzoic acid	No	SAL.
p-Nitrobenzoic acid	No	DUP.
m-Nitrobenzoic acid, sodium salt	No	SAL.
2-Nitro-N-benzoylaniline	No	SAL.
5-Nitrodimethylisophthalate	No	SAL.
Nitrodiphenylamine	No	ACY, MON.
5-Nitroisophthalic acid	No	SAL.
3-Nitro-4-methylacetophenone	No	TLI.
4-Nitro-N-methylphthalimide	No	LAK, LMC, SAL.
1-Nitronaphthalene	No	DUP.
p-Nitrophenethyl alcohol	No	PCW.
o-Nitrophenol	No	MON.
p-Nitrophenol	No	DUP, MON.
p-Nitrophenol, sodium salt	No	DUP.
2-(o-Nitrophenylazo)-4,6-di-tert-pentylphenol (OH=1)	No	CGY.
2-Nitro-N'-phenyl-p-phenylenediamine	No	SOM.
5-Nitrosalicylaldehyde	No	EK.
p-Nitrosophenol	No	SDC.
4-Nitrosophenol, sodium salt	No	SDC.
4-Nitro-4'-(5-sulfo-2H-naphtho[1,2-d]triazol-2-yl)-2,2'-stilbenedisulfonic acid	No	HCL.

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See footnotes at end of table.

Section 3

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic Intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
m-Nitrotoluene	No	DUP, FST.
o-Nitrotoluene	No	DUP, FST.
p-Nitrotoluene	No	DUP, FST.
Nitrotoluene mixtures	No	FST.
Nonylphenol	Yes	GAF, KLM, MCB, MON, RH, SCN, TX.
Octylphenol	No	PSG, RH, SCN.
Octylphenoxydiethoxy chloride	No	RH.
3-Oxo-1,2-benzisothiazoline-2-acetic acid, methyl ester, 1,1-dioxide	No	PFZ.
Oxyaluminum benzoate	No	CHT.
4,4'-Oxydianiline	No	DOW, DUP.
Parahydroxyphenylglycine potassium methyl dane salt	No	KAN.
Pentabromoethylbenzene	No	TNA.
1,1,3,3,5-Pentamethylindan	No	GIV.
o-Pentylphenol (o-Amylphenol)	No	PAS, SCN, (2).
p-tert-Pentylphenol	No	PAS.
Permethrin acid chloride	No	CED.
3,4,9,10-Perylenetetracarboxylic-3,4:9,10-dianhydride	No	VPC.
3,4,9,10-Perylenetetracarboxylic-3,4:9,10-dilimide	No	VPC.
1,10-Phenanthroline	No	VNC.
α-Phenethylamine	No	HXL.
2-Phenethylamine	No	HXL.
p-Phenetidine	No	HCL, MNA.
Phenol:	Yes	
Natural:		
From petroleum:		
Phenol, natural, from petroleum, U.S.P.	No	MER.
All other phenol, natural, from petroleum	No	NPC.
Synthetic:		
Phenol, benzylated	No	MIL.
Phenol, styrenated	No	MIL.
Phenol, synthetic, from chlorobenzene by vapor-phase hydrolysis, U.S.P.	No	TX.
Phenol, synthetic, from cumene by oxidation, U.S.P.	Yes	ACS, ART, BTL, DOW, GCC, GE, SHC.
Phenol, synthetic, from toluene by oxidation, U.S.P.	No	KLM.
Phenolsulfonaphthalein, sodium salt	No	EK.
Phenolsulfonic acid	No	SAL.
Phenolsulfonic acid, sodium salt	No	SAL.
Phenoxyacetic acid, sodium salt	No	NCC.
3-Phenoxybenzaldehyde	No	TNA.
3-Phenoxybenzaldehyde acetal	No	TNA.
3-Phenoxybenzaldehyde cyanohydrin	No	TNA.
3-Phenoxybenzenemethanol	No	TNA.
2-(Phenoxyethyl)benzoic acid	No	PFZ.
m-Phenoxytoluene	No	MER.
4-(Phenylazo)diphenylamine	No	EK.
2-Phenylbenzimidazole	No	SAL.
m-Phenylenebismaleimide	No	NES.
m-Phenylenediamine	No	DUP, FST.
o-Phenylenediamine	No	DUP.
p-Phenylenediamine	No	DUP.
Phenyl ether (Diphenyl oxide)	No	DOW, MON.
d(+) α-Phenylethylamine	No	HXL.
N-Phenylglycine	No	EK.
Phenylglycine, potassium salt	No	BCC, KAN.
Phenylglycine, sodium salt	No	BCC, LIL.
Phenylhydroquinone	No	EKT.
2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine)	No	MIL, TCH.

See footnotes at end of table.

Table 10—Continued

Cyclic intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
2,2'—[(Phenyl)imino]diethanol, diacetate ester	No	TCH.
Phenylmercuric carboxylate	No	COS.
o-Phenylphenol	No	DOW.
p-Phenylphenol	No	DOW.
o-Phenylphenol, sodium salt	No	DOW.
N-Phenyl-p-phenylenediamine	No	USR.
1-Phenyl-1,2-propanedione, 2-oxime	No	ORT.
4-Phenylpropylpyridine	No	RIL.
dl-Phenylsuccinic acid	No	PD.
4-Phenylthiomorpholine-1,1-dioxide	No	EKT.
Phenyltriethoxysilane	No	KF.
Phthalic acid	No	EK.
Phthalic anhydride	Yes	BAS, ENJ, KPT, MON, SC, STP, TU.
Phthalimide	No	PSG.
Phthalimidoacetic acid	No	PD.
Phthalocyaninato(2-)copper	No	PHC.
[Phthalocyaninato(2-)]nickel	No	PHC.
[Phthalocyaninetetramethanaminato]copper	No	(²).
Phthalocyaninetetrasulfonyl chloride, copper derivative	No	VPC.
Phthaloyl chloride (Phthalyl chloride)	No	TLC.
Picolines:		
Picoline (3,4-mixture)	No	RIL.
2-Picoline (α -Picoline)	No	RIL.
3-Picoline (β -Picoline)	No	NEP, RIL.
4-Picoline (γ -Picoline)	No	RIL.
3-Picoline-N-oxide	No	RIL.
Picolinic acid	No	NEP.
Picolinonitrile (2-Cyanopyridine)	No	NEP.
2-Picolylamine	No	RIL.
3-Picolylamine	No	RIL.
Picric acid (Trinitrophenol)	No	SDC.
Pipecolic acid	No	RIL.
Piperidine	No	AIP, RIL.
Piperidine sulfate	No	RIL.
Polyethylbenzene (80 percent diethylbenzene)	No	ELP.
3-Propanolpyridine	No	RIL.
Propiophenone	No	HEX, ORT.
1,3,6,8-Pyrenetetrasulfonic acid	No	(²).
Pyridine, refined:		
2° Pyridine, refined	No	NEP, RIL.
Pyridine, refined all other grades	No	CGY, RIL.
Pyridine hydrochloride	No	RSA.
3-Pyridinemethanol	No	RIL.
2 Pyridinethiol-1-oxide, sodium salt	No	OMC.
2 Pyridinethiol-1-oxide, zinc salt	No	OMC.
4-Pyridylacetone	No	RIL.
2-(4-Pyridyl)ethylsulfonic acid	No	RIL.
2-Pyrimidinol	No	CGY.
Pyromellitic dianhydride	No	ACH.
2-Pyrrolidinone (2-Pyrrolidone)	No	GAF.
Pyrvinium pamoate	No	(²).
Quinoline:		
Quinoline-2,3-dicarboxylic acid	No	NES.
Quinoline, other grades	No	ATL.
Quinaldine	No	ACY.
8-Quinolnol	No	SOM.
Quinone dioxime	No	LC.
Resorcinol, dimethyl ether	No	BAS.
Resorcinol, tech.	No	KPT.
β -Resorcylic acid, lead salt	No	KPT.
Salicylaldehyde	No	RDA.

See footnotes at end of table.

Section 3

Table 10—Continued

Cyclic Intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Cyclic Intermediates	Separate statistics ¹	Manufacturers' Identification codes (according to list in table 11)
Cyclic—Continued		
Salicylaldehyde oxime	No	EK.
Salicylanilide	No	PCW.
Salicylic acid, tech	Yes	DOW, KLM, MON, SDH.
Sodium p-sulfophenylmethyl ether	No	SAL.
Sodium trichlorobenzenesulfate	No	UPF.
Styrene (Vinylbenzene)	Yes	AMO, ATR, CSD, DOW, ELP, HCL, MCB, PLC, SC, SHC, SOC.
Sulfaguanidine	No	SAL.
5-Sulfoisophthalic acid, 1,3-dimethyl ester	No	PCW.
5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt	No	DUP.
5-Sulfoisophthalic acid, lithium salt	No	EKT, PCW.
5-Sulfoisophthalic acid, sodium salt	No	EKT, PCW.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenyl sulfone)	No	CRZ.
4-Sulfothalic acid	No	CWN.
5-Sulfosalicylic acid, sodium salt	No	PCW.
Terephthalic acid	No	AMO, HCF.
Terephthalic acid, dimethyl ester	Yes	DUP, EKT, HCF.
Terephthaloyl chloride	No	DUP, TLC.
Terephthaloyldiacetic acid, diethyl ester	No	PCW.
Terphenyl (Phenylbiphenyl) (m-, o-, and p-isomers)	No	MON.
Terpinene-4-ol	No	(²).
1-Tert-butyl-2,5-dimethoxybenzene	No	EKT.
Tetrabromophthalic anhydride	No	TNA.
1,2,4,5-Tetrachloro-3-nitrobenzene	No	MON.
Tetrahydrobenzyl alcohol	No	UCC.
Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone-3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]-2-propenylidene]hydrazine	No	NES.
Tetrahydrofuran	Yes	BAS, DUP, GAF, QKO.
1,2,3,4-Tetrahydronaphthalene	No	RDA.
1,2,4,5-Tetramethylbenzene (Durene)	No	KHI.
p-(1,1,3,3-Tetramethylbutyl)phenol	No	GAF.
1,3,6,8-Tetranitro-9H-carbazole	No	SDC.
Thiodiphenol	No	CRZ.
Thionicotinamide	No	RIL.
Thiophenol	No	ICI.
Toluene-2,3-(and 3,4)-diamine (35/65 mixture)	No	OMC.
Toluene-2,4-diamine (4-m-Tolylendiamine)	No	RUC, (²).
Toluene-2,4-(and 2,6)-diamine (80/20 mixture)	No	MOB, OMC.
Toluene-3,4-diamine	No	(²).
Toluenedimaleimide	No	NES.
p-Toluenesulfonic acid	No	NES, TEN, UPF.
p-Toluenesulfonic acid, aniline salt	No	NES.
p-Toluenesulfonic acid, copper salt	No	NES.
o-Toluenesulfonyl chloride	No	UPF.
m-Toluc acid	No	WTC.
m-Toluc acid, 6-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl-2-yl)-, methyl ester and p-toluc acid, 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl-2-yl)-, methyl ester	No	NES
p-Toluc acid, methyl ester	No	HCF.
m-Toluidine	No	DUP, FST.
o-Toluidine	No	ALD, DUP, FST.
p-Toluidine	No	DUP, FST.
m-Toluidinomethanesulfonic acid	No	ATL.
p-Toluoyl chloride	No	EKT.
2,2'-(m-Tolylimino)diethanol	No	MIL.
1,2,4-Triacetoxybenzene	No	SOM.
Tolyltriazole	No	PGG.
2,4,6-Triamino-5-nitrosopyrimidine	No	SK.
N,N,N-Tribenzylamine	No	HXL.

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See footnotes at end of table.

Table 10—Continued

Cyclic Intermediates for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Cyclic Intermediates</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 11)</i>
Cyclic—Continued		
2,4,6-Tribromophenol	No	GTL.
3,4',5-Tribromosalicylanilide	No	PCW.
1,2,3(and 1,2,4)-Trichlorobenzene	No	PPG, SCC.
1,2,4-Trichlorobenzene	No	SCC.
1,1,1-Trichloro-2,2-diphenylethane	No	CWN.
3-Trichloromethyl-1,2,4-thiadiazole	No	OMC.
1,2,4-Trichloro-5-nitrobenzene	No	PCW.
Trichlorophenylsilane	No	DCC.
α,α,α -Trichlorotoluene (Benzotrichloride)	No	HK, VEL.
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	No	DGC.
Tri(dimethylaminomethyl)phenol	No	PEL.
Trimellitic anhydride, acid chloride	No	(²).
Trimellitic trichloride	No	TLC.
Trimesic acid	No	AMB.
2,4,6-Trimethylaniline (Mesidine)	No	PLC.
1,2,4-Trimethylbenzene (Pseudocumene)	No	KHI.
1,3,5-Trimethylbenzene (Mesitylene)	No	ABB.
1,3,3-Trimethyl- δ^2,α -indolineacetaldehyde	No	VPC.
Trimethylphenylammonium chloride	No	(²).
Triphenylmethane	No	EK.
Triphenylphosphine	No	(²).
Triphenylsulfonium chloride	No	SOM.
α,α',α'' -Tris(dimethylamino)mesitol	No	RH.
Tris(2-methyl-1-aziridinyl)phosphine oxide	No	ARS.
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J-Acid urea)	No	S.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	No	GIV.
Vinylcyclohexene monoxide	No	UCC.
2-Vinylpyridine	No	RIL.
4-Vinylpyridine	No	RIL.
m-Xylene (90-100% of m-xylene isomer)	No	AMO, PLC.
o-Xylene (90-100% of o-xylene isomer)	Yes	ENJ, KHI, LYP, PLC, PPR, TOC.
p-Xylene (90-100% of p-xylene isomer)	Yes	AMO, ENJ, KHI, LYP, PLC, PPX, SOC, STX, TOC.
2,4-Xylenesulfonic acid	No	UPF.
Xylenesulfonic acid, mixed isomers	No	NES.
2,6-Xylenol	No	GE.
Xylenols:		
Xylenol, low boiling point	No	MER.
Xylidines:		
Xylidine, original mixture	No	DUP.
All other cyclic intermediates	No	ACY, ANG, ARA, CGY, DUP, FER, HCF, HCL, HEX, HK, HXL, LC, MCK, MIL, MRT, NES, NOD, OMC, PAH, PCW, PD, PFZ, PSG, RIL, SCH, SDC, SD, SDW, SFS, SOL, SRL, STC, TCH, TNA, UCC, UPJ, VPC, WTC, (²), (²), (²), (²), (²), (²), (²), (²), (²), (²).

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 11

Cyclic intermediates: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	ENJ	Exxon Chemical Americas
ACH	Alico Chemical Corp.	FER	Ferro Corp., Ferro Chemical Div.
ACY	American Cyanamid Co.	FMC	FMC Corp.:
ACS	Allied Signal Inc. Engineered Material Sector	FMN	Agricultural Chemical Group
AIP	Air Products & Chemicals, Inc.	FMT	Fairmount Chemical Co., Inc.
ALD	Aldrich Chemical Co., Inc.	FST	First Chemical Corp.
ALL	Alliance Chemical, Inc.	GE	General Electric Co.
AMB	American Bio-Synthetics Corp.	GGC	Georgia-Gulf Corp.:
AMO	Amoco Corp.		Boundbrook Div.
ARK	Armstrong World Industries, Inc.		Houston Div.
ARS	Arsynco, Inc.		Plaquemine Div.
ART	Aristech Chemical Corp.	GIV	Givaudan Corp
ARZ	Arizona Chemical Co.	GNW	Greenwood Chemical Co.
ASH	Ashland Oil, Inc., Ashland Petroleum Co.	GRS	Champlin Petroleum Co.
ATL	Atlantic Industries, Inc.	GTL	Great Lakes Chemical Corp.
ATR	Atlantic Richfield Co., Arco Chemical Co.	GYR	Goodyear Tire & Rubber Co.
BAS	BASF Corp.	HCF	Cape Industries
BCC	Buffalo Color Corp.	HCL	Hoechst Celanese Corp.:
BFG	B. F. Goodrich Co.		Bayport Works
BKM	Buckman Laboratories, Inc.		Rhode Island Works
BRD	Lonza, Inc.		Sou-Tex Works
BRS	Bristol-Myers Co.		Virginia Chemicals, Inc.
BTL	BTL Specialty Resin Corp.	HEX	Hexagon Laboratories, Inc.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	HK	Occidental Chemical Corp., Specialty Chemical Div.
CED	Cedar Chemical Co.	HPC	Hercules, Inc.
CGY	Ciba-Geigy Corp.	HXL	Hexcel Corp., Hexcel Chemical Products
CI	Firmenich, Inc.	ICI	ICI Americas, Inc., Chemicals Div. Polyurethanes Group.
CHF	Kincaid Enterprises, Inc.	KAN	Kanasco, Ltd
CHT	Chattem, Inc.	KF	Dynamit Nobel Chemicals, Inc.
CNP	DSM Chemicals Augusta, Inc.	KHI	Koch Refining Co.
COC	Columbia Organic Chemical Corp.	KLM	Kalama Chemical, Inc.
COS	Cosan Chemical Corp.	KPT	Koppers Co., Inc.
CPS	CPS Chemical Co., Inc.	LAK	Bofors Nobel, Inc.
CRZ	James River Corp.	LC	Lord Corp., Chemical Products Group
CSD	Fina Oil & Chemicals Co., Cosden Chemical Div.	LEM	Napp Chemicals, Inc.
CWN	Upjohn Co., Fine Chemical	LIL	Eli Lilly & Co.
CXI	Chemical Exchange Industries, Inc.	LMC	Lomac, Inc.
CYH	Cychem, Inc.	LYP	Lyondell Petrochemical Co.
DAZ	Diaz Chemical Corp.	MAL	Mallinckrodt, Inc.
DCC	Dow Corning Corp.	MCB	Borg-Warner Corp., Borg-Warner Chemicals
DGC	Degussa Corp.	MCK	MacKenzie Chemical Works, Inc.
DIX	Dixie Chemical Co., Inc.	MER	Merichem Co.
DKA	Denka Chemical Corp.	MIL	Milliken & Co., Milliken Chemical Co.
DOW	Dow Chemical Co.	MLC	Melamine Chemicals, Inc.
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Petrochemicals Dept.	MOB	Mobay Chemical Corp. Pittsburgh Div.
EK	Eastman Kodak Co.:	MON	Monsanto Co.
EKT	Tennessee Eastman Co. Div.	MNA	Monsanto Agriculture Co.
ELP	El Paso Products Co.	MRT	Morton-Thiokol, Inc., Morton Chemical Div.
		NCC	Niacet, Corp.

Table 11—Continued

Cyclic Intermediates: Directory of manufacturers, alphabetical by code, 1987

Code	Name of company	Code	Name of company
NCI	Union Camp Corp., Terpene & Aromatics Div.	SDC	Sandoz Chemicals Corp. Sterling Drug, Inc.:
NEP	Nepera, Inc.	SDH	SDI Divestiture Corp.
NES	Ruetgers-Nease Chemical Co.	SDW	Sterling Organics Div.
NOD	Nuodex, Inc.	SHC	Shell Oil Co., Shell Chemical Co. Div.
NPC	Northwest Petrochemical Corp.	SK	SmithKline Chemicals
NSC	National Starch & Chemical Corp.	SOC	Chevron Corp., Chevron Chemical Co.
OMC	Olin Corp.	SOI	Specialty Organics, Inc.
ORT	Roehr Chemicals, Inc., Div. of Aceto Corp.	SOM	Southland Corp.
PAH	Parish Chemical Co.	SRL	G. D. Searle & Co.
PAS	Pennwalt Corp.	STP	Stepan Chemical Co.
PCW	Pfister Chemical, Inc.	STX	St. Croix Petrochemical Corp.
PD	Parke-Davis Div. of Warner-Lambert Co.	SUN	Sun Company, Inc.
PEL	Pelron Corp.	TCC	Sybron Chemical, Inc.
PFZ	Pfizer, Inc., & Pfizer Pharmaceuticals, Inc.	TCH	Quantum Chemical Corp., Emery Div.
PHC	Phthalchem, Inc.	TEN	Tennessee Chemical Co.
PLC	Phillips Petroleum Co.	TLC	Twin Lake Chemical, Inc.
PPG	PPG Industries, Inc.	TLI	Teledyne Industries Inc., Teledyne McCormick Selph
PPR	Phillips Puerto Rico Core, Inc.	TNA	Ethyl Corp.
PPX	Phillips Paraxylene, Inc.	TOC	Tenneco Oil Co.
PSG	PMC Specialities Group Inc.	TRD	Squibb Manufacturing, Inc.
QKO	QO Chemicals, Inc.	TU	Tenn-USS Chemicals Co.
RAY	ITT Rayonier, Inc.	TX	Texaco Chemical Co.
RDA	Rhone-Poulenc, Inc.	UCC	Union Carbide Corp.
REG	Regis Chemical Co.	UOC	Union Oil Co., of California
RH	Rohm & Haas Co.	UPF	Jim Walter Resources, Inc., CIC Div.
RIL	Reilly Tar & Chemical Corp.	UPJ	Upjohn Co
RSA	R.S.A. Corp.	UPM	UOP, Inc.
RUC	Rubicon, Inc.	USM	Crown Metro, Inc.
S	Sandoz, Inc.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SAL	Salsbury Laboratories, Inc.	VEL	Velsicol Chemical Corp.
SC	Sterling Chemicals	VNC	Vanderbilt Chemical Corp.
SCC	Standard Chlorine of Delaware, Inc.	VPC	Mobay Chemical Corp., Dyes & Pigments Div.
SCH	The Schering Corp.	VST	Vista Chemical Co.
SCN	Schenectady Chemicals, Inc.	WAY	Olin Hunt Specialty Products, Inc.
SD	Sterling Drug, Inc., Sterling Pharmaceuticals, Inc.	WES	Wesley Industries
		WTC	Witco Chemical Corp.
		WYK	Wyckoff Chemical Co., Inc.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission

Section 4

Dyes

Synthetic dyes are derived in whole or in part from cyclic intermediates. Approximately two-thirds of the dyes consumed in the United States are used by the textile industry to dye natural and synthetic fibers or fabrics; about one-sixth is used for coloring paper; and the rest is used chiefly in the production of organic pigments and in dyeing leather and plastics. Of the several thousand different synthetic dyes that are known, more than one thousand are manufactured by domestic producers, collectively. The large number of dyes results from the many different types of materials to which dyes are applied, the different conditions of service for which dyes are required, and the cost that a particular use can bear. Commercial dyes are formulated products which are sold in a variety of physical forms (e.g.) granular, powders, liquids, and pastes) containing concentrations of colorant ranging from 6 percent (approximately) to 100 percent. In the statistical tables, production and sales quantities are expressed in terms of a standard strength of product (based on dyeing performance) and not in terms of the amount of actual colorant.

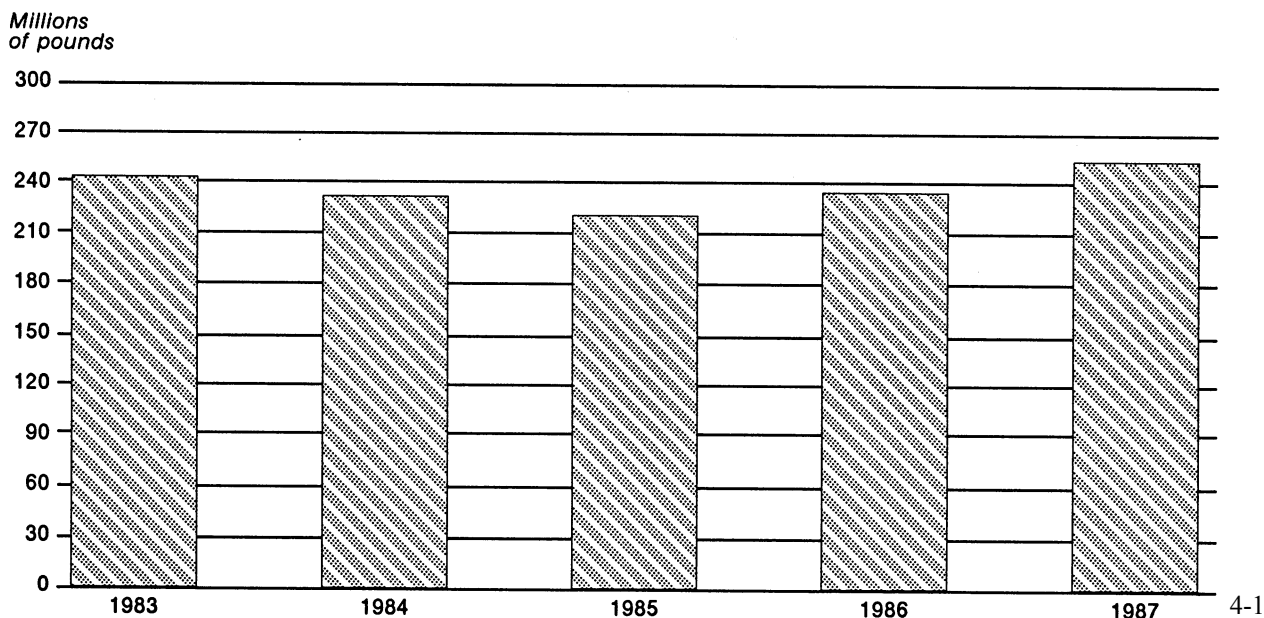
Total domestic production of dyes in 1987 amounted to 255 million pounds, or 8.3 percent more than the 236 million pounds produced in 1986 (table 12). Sales of dyes in 1987 amounted to 230 million pounds, valued at \$677 million, compared with 226 million pounds, valued at \$652 million, in 1986. In terms of quantity, sales of dyes in 1987 was 2 percent higher, and in terms of value 4 percent higher. The average unit value of sales of all dyes in 1987 was \$2.95 per pound, compared with \$2.89 per pound in 1986.

Production of five classes of dyes decreased in 1986, while the remaining five major classes increased their production. Fiber-reactive dyes and fluorescent brightening agents registered significant increases in 1987 while mordant dyes registered a significant decline. Changes in U.S. production of synthetic dyes followed overall changes in U.S. economic activity during 1983-87 (see figure 5).

Table 13 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 14.

Stephen Wanser
202-252-1363

Figure 5
Dyes: U.S. production, 1983-87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 4

Table 12
Dyes: U.S. production and sales, 1987

Dyes	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	255,198	229,763	677,424	\$2.95
Acid dyes				
Total	18,002	16,860	81,713	4.85
Acid yellow dyes, total	3,121	2,579	9,748	3.78
Acid Yellow 17	90	75	534	7.09
Acid Yellow 23	139	118	510	4.33
All other acid yellow dyes	2,892	2,386	8,704	3.65
Acid orange dyes, total	4,994	3,586	8,266	2.31
Acid Orange 7	68	55	151	2.76
Acid Orange 10	153	131	400	3.06
All other acid oranges dyes	4,773	3,400	7,715	2.27
Acid red dyes, total	2,806	3,590	22,956	6.39
Acid Red 1	241	258	700	2.71
Acid Red 137	50	43	342	7.91
Acid Red 182	635	386	2,227	5.77
All other acid red dyes	1,880	2,903	19,687	6.78
Acid violet dyes	77	77	674	8.87
Acid blue dyes total	4,683	5,036	30,431	6.04
Acid Blue 324	1,499	1,681	9,139	5.44
All other acid blue dyes	3,184	3,355	21,292	6.35
Acid green dyes	268	211	1,991	9.44
Acid brown dyes	421	360	1,840	5.11
Acid black dyes	1,632	1,421	5,807	4.09
Basic dyes (classical and modified)				
Total	12,771	11,906	66,549	5.59
Basic yellow dyes, total	3,231	2,926	11,184	3.82
Basic Yellow 11	159	136	754	5.53
Basic yellow dyes, all other, modified	3,072	2,790	10,430	3.74
Basic orange dyes, total	860	758	2,800	3.69
Basic Orange 2	538	474	1,207	2.55
All other basic orange dyes	322	284	1,593	5.61
Basic red dyes, total	1,789	1,554	7,480	4.81
Basic Red 12	246	282	1,497	5.31
Basic Red 15	451	379	1,209	3.19
All other basic red dyes	1,092	893	4,774	5.34

See footnotes at end of table.

Table 12—Continued
 Dyes: U.S. production and sales, 1987

Dyes	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Basic dyes (classical and modified)—Continued				
Basic violet dyes, total	3,441	3,258	12,066	\$3.70
Basic Violet 1	1,469	1,505	3,600	2.39
Basic Violet 3	1,205	1,057	3,548	3.36
All other basic violet dyes	767	696	4,918	7.07
Basic blue dyes	1,957	1,869	11,981	6.41
All other basic dyes	1,493	1,541	21,038	13.65
Direct dyes				
Total	36,856	35,746	84,438	2.36
Direct yellow dyes, total	14,393	13,989	27,660	1.98
Direct Yellow 4	1,369	1,327	2,120	1.60
Direct Yellow 127	1,288	1,130	2,349	2.08
All other direct yellow dyes	11,736	11,532	23,191	2.01
Direct orange dyes, total	1,564	1,397	3,553	2.54
Direct Orange 39	90	59	279	4.70
Direct Orange 102	576	600	1,763	2.94
All other direct oranges dyes	898	738	1,511	2.05
Direct red dyes, total	6,012	5,296	16,822	3.18
Direct Red 236	1,544	1,463	3,259	2.23
Direct Red 254	1,430	1,107	2,137	1.93
All other direct red dyes	3,038	2,726	11,426	4.19
Direct violet and green dyes	267	195	926	4.75
Direct blue dyes, total	7,367	8,301	20,551	2.48
Direct Blue 80	703	323	1,416	4.39
Direct Blue 86	758	783	2,500	3.19
Direct Blue 199	832	894	2,208	2.47
Direct Blue 218	1,594	1,373	4,393	3.20
All other direct blue dyes	3,480	4,928	10,034	2.04
Direct brown dyes	466	421	805	1.91
Direct black dyes, total	6,787	6,147	14,121	2.30
Direct Black 80	535	485	1,376	2.83
All other direct black dyes	6,252	5,662	12,745	2.25
Disperse dyes				
Total	26,262	20,847	80,131	3.84
Disperse yellow dyes	2,849	1,730	6,642	3.84
Disperse orange dyes, total	4,636	3,431	9,112	2.66
Disperse Orange 37	488	261	613	2.34
Disperse Orange 44 and 44:1	404	238	689	2.90
All other disperse orange dyes	3,744	2,932	7,810	2.66

See footnotes at end of table

Section 4

Table 12—Continued

Dyes: U.S. production and sales, 1987

Dyes	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Disperse dyes—Continued				
Disperse red dyes, total	4,997	4,182	23,507	\$5.62
Disperse Red 73	596	415	1,424	3.43
Disperse Red 167 and 167:1	736	637	2,137	3.36
Disperse Red 177	456	423	1,976	4.67
All other disperse red dyes	3,209	2,707	17,970	6.64
Disperse violet dyes	152	198	1,504	7.56
Disperse blue dyes	11,361	9,811	32,344	3.30
Disperse black, brown and green dyes, total	2,267	1,495	7,022	4.70
Disperse Brown 1	645	581	1,756	3.02
All other disperse black, brown, and green dyes	1,622	914	5,266	5.76
Fiber-reactive dyes				
Total	23,253	15,598	87,529	5.61
Fluorescent brightening agents				
Total	65,424	61,353	79,819	1.30
Food, drug, and cosmetic colors				
Total	5,623	6,099	51,881	8.51
Food, drug and cosmetic dyes, total				
	5,327	5,794	45,446	7.84
FD&C Red No. 3	443	366	4,731	12.91
FD&C Yellow No. 5	1,618	1,461	7,057	4.83
FD&C Yellow No. 6	1,153	1,132	5,062	4.47
All other food, drug, and cosmetic, dyes	2,113	2,835	28,596	10.09
Drug and cosmetic dyes, total				
	296	305	6,435	20.68
D&C Red No. 33	7	8	249	35.13
D&C Yellow No. 10	84	71	2,148	30.09
All other drug and cosmetic dyes ²	205	226	4,038	17.21
Mordant dyes				
Total	73	68	295	4.32
Solvent dyes				
Total	9,416	5,990	34,019	5.68
Solvent yellow dyes	1,163	1,011	8,117	8.03
Solvent orange dyes	323	263	2,179	8.29
Solvent red dyes	2,190	1,885	11,508	6.11
Solvent blue dyes	3,286	484	5,271	10.89
All other solvent dyes	2,454	2,347	6,944	3.02

See footnotes at end of table.

Table 12—Continued

Dyes: U.S. production and sales, 1987

Dyes	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Vat dyes				
Total	36,542	36,131	65,447	\$1.81
Vat yellow dyes	12	14	157	11.21
Vat orange dyes	126	108	894	8.28
Vat red dyes	284	286	2,270	7.94
Vat violet dyes	222	297	2,079	7.00
Vat blue dyes	34,884	34,517	53,927	1.56
Vat green dyes	423	352	1,860	5.28
Vat brown dyes	381	455	2,525	5.55
Vat black dyes	210	102	1,735	17.01
All other dyes				
Total ³	20,976	19,165	45,603	2.38

¹ Calculated from unrounded figures.² The data include external drug and cosmetic dyes.³ The data include azoic compositions, azoic coupling components, azoic diazo components (bases and salts), sulfur dyes, and miscellaneous dyes. Statistics for those groups of dyes may not be published separately because publication would disclose information received in confidence.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 4

Table 13

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Acid dyes		
Acid yellow dyes:	Yes	
Acid Yellow 3	No	ACY.
Acid Yellow 17	Yes	ATL, CK, SDH.
Acid Yellow 23	Yes	BAS, CK, LVR, SDH, WJ.
Acid Yellow 34	No	ATL.
Acid Yellow 36	No	ATL, CGY.
Acid Yellow 49	No	ATL, CK.
Acid Yellow 59	No	BAS.
Acid Yellow 65	No	ATL.
Acid Yellow 73	No	SDH.
Acid Yellow 87	No	CK.
Acid Yellow 99	No	CK.
Acid Yellow 119	No	BAS.
Acid Yellow 127	No	CK.
Acid Yellow 129	No	CK.
Acid Yellow 135	No	ICI.
Acid Yellow 151	No	CGY, CK.
Acid Yellow 159	No	CK.
Acid Yellow 198	No	CK.
Acid Yellow 200	No	CK.
Acid Yellow 219	No	CGY, CK, VPC.
Acid Yellow 226	No	BAS.
Acid Yellow 239	No	DGO.
All other acid yellow dyes	No	CK.
Acid orange dyes:	Yes	
Acid Orange 7	Yes	ATL, BAS, CK.
Acid Orange 8	No	ATL, BAS, CK.
Acid Orange 10	Yes	ATL, CGY, CK.
Acid Orange 24	No	CK.
Acid Orange 60	No	CGY, CK.
Acid Orange 64	No	ATL.
Acid Orange 89	No	BAS.
Acid Orange 116	No	CGY, CK.
Acid Orange 128	No	CK.
Acid Orange 152	No	CK.
Acid Orange 156	No	CGY, CK, S.
Acid Orange 161	No	ATL.
All other acid orange dyes	No	BAS, CK.
Acid red dyes:	Yes	
Acid Red 1	Yes	ATL, BAS, CGY, CK, FAB.
Acid Red 4	No	ATL.
Acid Red 14	No	ATL, BAS.
Acid Red 18	No	ATL.
Acid Red 57	No	CK.
Acid Red 73	No	ATL, CK, PSC, S.
Acid Red 85	No	FAB.
Acid Red 87	No	SDH.
Acid Red 88	No	ATL, BAS.
Acid Red 97	No	ATL.
Acid Red 114	No	CGY, CK.
Acid Red 119	No	CK.
Acid Red 137	Yes	ATL, BAS, CK.
Acid Red 151	No	ATL, CK.
Acid Red 182	Yes	CGY, CK, VPC.
Acid Red 186	No	CGY.
Acid Red 226	No	BAS.
Acid Red 266	No	CK, VPC.
Acid Red 296	No	BAS.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Acid dyes—Continued		
Acid red dyes—Continued		
Acid Red 299	No	CK.
Acid Red 337	No	ATL, CK, VPC(E).
Acid Red 364	No	CK.
Acid Red 384	No	CK.
Acid Red 396	No	ICI.
Acid Red 410	No	ATL.
All other acid red dyes	Yes	ATL, BAS, CGY, CK, EKT.
Acid violet dyes:	Yes	
Acid Violet 3	No	ATL, FAB.
Acid Violet 7	No	ATL, FAB.
Acid Violet 12	No	ATL.
Acid Violet 17	No	SDH.
Acid Violet 49	No	SDH.
Acid blue dyes:	Yes	
Acid Blue 9	No	BAS, SDH, WJ.
Acid Blue 15	No	BAS.
Acid Blue 25	No	CGY, VPC.
Acid Blue 27	No	ATL.
Acid Blue 29	No	FAB.
Acid Blue 40	No	CK, VPC.
Acid Blue 41	No	ATL, CK.
Acid Blue 80	No	CGY.
Acid Blue 104	No	ATL.
Acid Blue 113	No	CK.
Acid Blue 118	No	ATL.
Acid Blue 145	No	ATL, CK.
Acid Blue 231	No	CK.
Acid Blue 277	No	CGY.
Acid Blue 283	No	S.
Acid Blue 298	No	CK.
Acid Blue 321	No	ATL.
Acid Blue 324	Yes	CK, S, VPC.
Acid Blue 330	No	ATL.
All other acid blue dyes	No	BAS, CK, SDH.
Acid green dyes:	Yes	
Acid Green 1	No	LVR.
Acid Green 3	No	WJ.
Acid Green 5	No	WJ.
Acid Green 9	No	LVR.
Acid Green 20	No	ATL.
Acid Green 25	No	ATL, CK.
Acid Green 70	No	CGY.
Acid brown dyes:	Yes	
Acid Brown 14	No	CK, LVR.
Acid Brown 19	No	CK.
Acid Brown 50	No	BAS.
Acid Brown 97	No	BAS, FAB.
Acid Brown 147	No	CK.
Acid Brown 159	No	BAS.
Acid Brown 160	No	BAS.
Acid Brown 161	No	BAS.
Acid Brown 163	No	BAS.
Acid Brown 165	No	BAS.
Acid Brown 227	No	BAS.
Acid Brown 239	No	CK.
Acid Brown 264	No	BAS.
All other acid brown dyes	No	BAS, FAB.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Acid dyes—Continued		
Acid black dyes:	Yes	
Acid Black 1	No	ATL, CK.
Acid Black 52	No	ATL, CK, S.
Acid Black 60	No	CK.
Acid Black 63	No	BAS.
Acid Black 107	No	CK.
Acid Black 112	No	CK.
Acid Black 172	No	ICI.
Acid Black 194	No	BAS.
Acid Black 210	No	BAS.
All other acid black dyes	No	CK.
Azoic dyes and components:	No	
Azoic compositions:	No	
Azoic yellow compositions:	No	
Azoic Yellow 1	No	BUC.
Azoic orange composition:	No	
Azoic Orange 3	No	BUC.
Azoic red compositions:	No	
Azoic Red 1	No	BUC.
Azoic Red 2	No	BUC.
Azoic Red 6	No	BUC.
All other azoic red composition	No	BUC.
Azoic violet compositions:	No	
Azoic Violet 1	No	BUC.
All other azoic violet compositions	No	BUC.
Azoic blue compositions:	No	
Azoic Blue 3	No	BUC.
Azoic brown composition:	No	
Azoic Brown 7	No	BUC.
Azoic Brown 9	No	BUC.
All other azoic brown compositions	No	BUC.
Azoic black composition:	No	
Azoic Black 4	No	BUC.
All other azoic black compositions	No	BUC.
Azoic diazo components, bases:	No	
Azoic Diazo Component 5, base	No	ALL.
Azoic Diazo Component 13, base	No	ALL.
Azoic Diazo Component 14, base	No	ALL.
Azoic Diazo Component 32, base	No	ALL.
All other azoic diazo components, base	No	ALL.
Azoic diazo components, salts:	No	
Azoic Diazo Component 1, salt	No	ALL, BUC.
Azoic Diazo Component 3, salt	No	ALL, BUC.
Azoic Diazo Component 5, salt	No	ALL, BUC.
Azoic Diazo Component 6, salt	No	ALL.
Azoic Diazo Component 8, salt	No	ALL, BUC.
Azoic Diazo Component 9, salt	No	ALL, BUC.
Azoic Diazo Component 10, salt	No	ALL, BUC.
Azoic Diazo Component 11, salt	No	ALL.
Azoic Diazo Component 12, salt	No	ALL, BUC.
Azoic Diazo Component 13, salt	No	ALL, BUC.
Azoic Diazo Component 14, salt	No	ALL.
Azoic Diazo Component 20, salt	No	ATL.
Azoic Diazo Component 32, salt	No	ATL.
Azoic Diazo Component 34, salt	No	ALL.
Azoic Diazo Component 35, salt	No	ALL.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Azoic dyes and components—Continued		
Azoic diazo components, salts—Continued		
Azoic Diazo Component 41, salt	No	ALL.
Azoic Diazo Component 42, salt	No	ALL.
Azoic Diazo Component 44, salt	No	ALL.
Azoic Diazo Component 48, salt	No	ATL.
Azoic Diazo Component 49, salt	No	ALL.
All other azoic diazo components salts	No	ALL.
Azoic coupling components:		
Azoic Coupling Component 2	No	ALL.
Azoic Coupling Component 3	No	PCW.
Azoic Coupling Component 4	No	ALL.
Azoic Coupling Component 7	No	PCW.
Azoic Coupling Component 12	No	PCW.
Azoic Coupling Component 14	No	ALL.
Azoic Coupling Component 17	No	ALL.
Azoic Coupling Component 18	No	ALL.
Azoic Coupling Component 20	No	PCW.
Azoic Coupling Component 21	No	PCW.
Azoic Coupling Component 24	No	PCW.
Azoic Coupling Component 34	No	ALL.
Azoic Coupling Component 35	No	PCW.
Azoic Coupling Component 43	No	ALL.
Basic dyes (Classical and modified)		
Basic yellow dyes:		
Basic Yellow 2	No	ACY.
Basic Yellow 11	Yes	ATL, CK, VPC.
Basic Yellow 13	No	ATL.
Basic Yellow 15	No	CK.
Basic Yellow 24	No	BAS.
Basic Yellow 25	No	BAS.
Basic Yellow 28	No	BAS, VPC.
Basic Yellow 29	No	BAS.
Basic Yellow 37	No	ACY.
Basic Yellow 53	No	CK.
Basic Yellow 58	No	VPC.
Basic Yellow 65	No	BAS.
Basic Yellow 79	No	CK.
Basic Yellow 83	No	CK.
Basic Yellow 94	No	S.
Basic Yellow 96	No	BAS.
Basic Yellow 102	No	BAS.
All other basic yellow dyes	No	ACY, (²).
All other basic yellow dyes modified	No	CK.
Basic orange dyes:		
Basic Orange 1	No	ATL, BAS, CK, PSC.
Basic Orange 2	Yes	ACY, ATL, CK, PSC.
Basic Orange 21	No	ATL, VPC.
All other basic orange dyes	No	(²).
Basic red dyes:		
Basic Red 12	Yes	ACY, ATL, VPC.
Basic Red 14	No	BAS, CK.
Basic Red 15	Yes	ATL, BAS, CK.
Basic Red 17	No	CK.
Basic Red 29	No	BAS.
Basic Red 46	No	CK.
Basic Red 49	No	BAS, CK.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Basic dyes (Classical and modified)—Continued		
Basic red dyes—Continued		
Basic Red 51	No	BAS.
Basic Red 54	No	BAS.
Basic Red 73	No	BAS, CK.
Basic Red 104	No	BAS, CK.
Basic Red 111	No	S.
All other basic red dyes	No	(²).
Basic violet dyes:	Yes	
Basic Violet 1	Yes	ACY, BAS, DSC.
Basic Violet 3	Yes	ACY, BAS, CK, DSC.
Basic Violet 4	No	ACY, DSC.
Basic Violet 10	No	ACY, BAS.
Basic Violet 16	No	ATL, BAS, VPC.
Basic Violet 35	No	BAS.
All other basic Violet dyes	No	BAS, (²).
Basic blue dyes:	Yes	
Basic Blue 1	No	ACY, SDH.
Basic Blue 3	No	BAS, CK.
Basic Blue 7	No	DSC.
Basic Blue 21	No	CK.
Basic Blue 41	No	BAS.
Basic Blue 54	No	BAS.
Basic Blue 60	No	BAS.
Basic Blue 77	No	CK.
Basic Blue 94 and 94:1	No	CK.
Basic Blue 140	No	VPC.
All other basic blue dyes	No	BAS, (²).
All other basic blue dyes, modified	No	CK.
Basic green dyes:	No	
Basic Green 1	No	LVR.
Basic Green 4	No	ACY, BAS.
All other basic green dyes	No	(²).
Basic brown dyes:	No	
Basic Brown 1	No	PSC.
Basic Brown 4	No	ACY, ATL, PSC.
All other basic brown dyes	No	BAS.
Basic black dyes:	No	
All other basic black dyes	No	ACY, BAS, (²).
All other basic black dyes, modified	No	BAS, CK.
Direct dyes		
Direct yellow dyes:	Yes	
Direct Yellow 4	Yes	ATL, BAS, CGY, CK, LVR, VPC.
Direct Yellow 5	No	BAS.
Direct Yellow 6	No	CGY, VPC.
Direct Yellow 11	No	BAS, VPC.
Direct Yellow 28	No	CK.
Direct Yellow 34	No	CK.
Direct Yellow 44	No	CK.
Direct Yellow 51	No	S.
Direct Yellow 105	No	CGY, CK.
Direct Yellow 106	No	CK.
Direct Yellow 107	No	CGY, CK.
Direct Yellow 118	No	CK.
Direct Yellow 119	No	VPC.
Direct Yellow 127	Yes	BAS, CGY, CK, VPC.
Direct Yellow 131	No	VPC.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Direct dyes—Continued		
Direct yellow dyes—Continued		
Direct Yellow 132	No	S.
Direct Yellow 133	No	S.
Direct Yellow 137	No	VPC.
Direct Yellow 147	No	BAS, VPC.
Direct Yellow 148	No	S.
Direct Yellow 150	No	S.
All other direct yellow dyes	No	ATL, BAS, CK.
Direct orange dyes:	Yes	
Direct Orange 6	No	ATL.
Direct Orange 15	No	BAS, VPC.
Direct Orange 26	No	CK.
Direct Orange 29	No	CGY.
Direct Orange 34	No	ATL.
Direct Orange 39	Yes	CGY, CK, FAB.
Direct Orange 72	No	CK.
Direct Orange 80	No	ATL.
Direct Orange 102	Yes	ATL, BAS, CGY, VPC.
Direct Orange 118	No	S.
All other direct orange dyes	No	ATL, BAS.
Direct red dyes:	Yes	
Direct Red 2	No	ATL.
Direct Red 4	No	CK.
Direct Red 9	No	CK.
Direct Red 16	No	ATL, CGY.
Direct Red 23	No	ATL.
Direct Red 24	No	ATL, FAB.
Direct Red 26	No	ATL.
Direct Red 28	No	FAB.
Direct Red 72	No	ATL, BAS, CGY, CK.
Direct Red 73	No	ATL.
Direct Red 79	No	CK.
Direct Red 80	No	ATL, CK.
Direct Red 81	No	ATL, CK, LVR, VPC.
Direct Red 83	No	ATL, CK, FAB.
Direct Red 236	Yes	BAS, CGY, CK, VPC.
Direct Red 238	No	VPC.
Direct Red 239	No	S.
Direct Red 254	Yes	BAS, CGY, VPC.
All other direct red dyes	No	ACY, ATL, BAS, CK, VPC.
Direct violet dyes:	No	
Direct Violet 9	No	ATL, CGY.
Direct Violet 66	No	ATL.
Direct blue dyes:	Yes	
Direct Blue 1	No	ATL, LVR.
Direct Blue 2	No	FAB.
Direct Blue 8	No	ATL.
Direct Blue 15	No	S, VPC.
Direct Blue 22	No	CGY.
Direct Blue 25	No	ATL, CK.
Direct Blue 71	No	CK.
Direct Blue 75	No	CK, S.
Direct Blue 80	Yes	ATL, CGY, CK, FAB.
Direct Blue 86	Yes	CGY, CK, S, VPC.
Direct Blue 98	No	ATL, CK, FAB.
Direct Blue 108	No	ATL.
Direct Blue 160	No	CK.
Direct Blue 189	No	CK.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Direct dyes—Continued		
Direct blue dyes—Continued		
Direct Blue 191	No	CK, FAB.
Direct Blue 199	Yes	BAS, CGY, VPC.
Direct Blue 218	Yes	ATL, CGY, CK, FAB, VPC.
Direct Blue 269	No	VPC.
Direct Blue 279	No	VPC.
Direct Blue 281	No	CGY, CK, VPC.
Direct Blue 283	No	ATL.
Direct Blue 285	No	ATL.
Direct Blue 286	No	ATL.
All other direct blue dyes	Yes	ATL, BAS, CK, VPC.
Direct green dyes:	No	
Direct Green 1	No	FAB.
Direct Green 6	No	FAB.
Direct Green 92	No	ATL.
All other direct green dyes	No	FAB.
Direct brown dyes:	Yes	
Direct Brown 31	No	FAB.
Direct Brown 44	No	FAB.
Direct Brown 230	No	ATL.
Direct Brown 231	No	ATL.
Direct Brown 232	No	ATL.
Direct Brown 238	No	ATL.
All other direct brown dyes	No	BAS, CK, FAB, VPC.
Direct black dyes:	Yes	
Direct Black 1	No	LVR.
Direct Black 4	No	FAB.
Direct Black 22	Yes	ATL, CK, FAB.
Direct Black 80	Yes	ATL, CK, FAB.
Direct Black 165	No	ATL.
Direct Black 170	No	ATL.
Direct Black 190	No	FAB.
All other direct black dyes	No	ATL, BAS, CK, FAB, VPC.
Disperse dyes		
Disperse yellow dyes:	Yes	
Disperse Yellow 3	No	CK.
Disperse Yellow 23	No	ATL, CK.
Disperse Yellow 34	No	EKT.
Disperse Yellow 42	No	CGY.
Disperse Yellow 54	No	BAS.
Disperse Yellow 64	No	BAS.
Disperse Yellow 77	No	VPC.
Disperse Yellow 86	No	EKT.
Disperse Yellow 88	No	EKT.
Disperse Yellow 108	No	EKT.
Disperse Yellow 125	No	SDC.
Disperse Yellow 126	No	ICI.
Disperse Yellow 198	No	BAS.
Disperse Yellow 210	No	S.
Disperse Yellow 219	No	S.
Disperse Yellow 238	No	CK.
Disperse Yellow 239	No	CK.
All other disperse yellow dyes	No	BAS, CK, ICI, VPC.
Disperse orange dyes:	No	
Disperse Orange 3	No	ATL, CK.
Disperse Orange 5	No	ATL.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Disperse dyes—Continued		
Disperse orange dyes—Continued		
Disperse Orange 17	No	ATL.
Disperse Orange 25 and 25:1	No	ATL, CK, ICI, VPC.
Disperse Orange 29	No	ATL, CK.
Disperse Orange 30	No	ATL, BUC, CGY, CK, S.
Disperse Orange 37	Yes	ATL, CK, EKT.
Disperse Orange 41	No	CGY, S.
Disperse Orange 44 and 44:1	Yes	ATL, CGY, CK, S, SDC.
Disperse Orange 73	No	ATL, BAS.
Disperse Orange 89	No	CK.
Disperse Orange 94	No	S.
Disperse Orange 136	No	EKT.
Disperse Orange 138	No	EKT.
Disperse Orange 145	No	EKT.
All other disperse orange dyes	No	CGY, CK.
Disperse red dyes:	Yes	
Disperse Red 1	No	ATL, CK, EKT.
Disperse Red 5	No	ATL, CK.
Disperse Red 13	No	ATL.
Disperse Red 17	No	ATL, CK.
Disperse Red 30	No	EKT.
Disperse Red 35	No	EKT.
Disperse Red 40	No	VPC.
Disperse Red 50	No	CK.
Disperse Red 55	No	BAS, VPC.
Disperse Red 60	No	BAS.
Disperse Red 65	No	CK.
Disperse Red 73	Yes	ATL, CK, ICI, S.
Disperse Red 74	No	S.
Disperse Red 88	No	EKT.
Disperse Red 91	No	BAS.
Disperse Red 112	No	HCL.
Disperse Red 117	No	EKT.
Disperse Red 133	Yes	VPC.
Disperse Red 135	No	CK.
Disperse Red 136	No	EKT.
Disperse Red 137	No	EKT.
Disperse Red 145	No	CK.
Disperse Red 153	No	S, SDC.
Disperse Red 159	No	VPC.
Disperse Red 167 and 167:1	Yes	ATL, CGY, CK, S.
Disperse Red 177	Yes	CK, ICI, S, VPC(E).
Disperse Red 179	No	BAS, S.
Disperse Red 195	No	S.
Disperse Red 263	No	BAS.
Disperse Red 274	No	S.
Disperse Red 278	No	ICI.
Disperse Red 305	No	EKT.
Disperse Red 307	No	EKT.
Disperse Red 309	No	EKT.
Disperse Red 311	No	ICI.
Disperse Red 313	No	S.
Disperse Red 316	No	S.
Disperse Red 325	No	CK.
Disperse Red 333	No	S.
Disperse Red 338	No	EKT.
Disperse Red 339	No	EKT.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Disperse dyes—Continued		
Disperse red dyes—Continued		
Disperse Red 340	No	EKT.
Disperse Red 345	No	CK.
All other disperse red dyes	No	BAS CK, EKT, FAB, VPC.
Disperse violet dyes:	Yes	
Disperse Violet 1	No	CK.
Disperse Violet 17	No	CK.
Disperse Violet 28	No	CK.
Disperse Violet 33	No	ICI.
Disperse Violet 36	No	S.
Disperse Violet 60	No	S.
All other disperse violet dyes	No	CGY.
Disperse blue dyes:	Yes	
Disperse Blue 3	No	CK, EKT, FAB.
Disperse Blue 27	No	EKT.
Disperse Blue 56	No	CK, S.
Disperse Blue 60	No	BAS.
Disperse Blue 62	No	EKT.
Disperse Blue 64	No	EKT.
Disperse Blue 72	No	BAS.
Disperse Blue 73	No	S.
Disperse Blue 79	No	BAS, CGY, CK, EKT, HCL, ICI, S.
Disperse Blue 95	No	HCL.
Disperse Blue 102	No	CK, EKT.
Disperse Blue 118	No	EKT.
Disperse Blue 122	No	ICI.
Disperse Blue 148	No	BAS.
Disperse Blue 200	No	ICI.
Disperse Blue 281	No	CGY, S, SDC.
Disperse Blue 284	No	ICI.
Disperse Blue 291	No	S.
Disperse Blue 337	No	EKT.
Disperse Blue 338	No	EKT.
Disperse Blue 359	No	CK.
Disperse Blue 360	No	CK.
All other disperse blue dyes	No	ATL, BAS, BUC, CK, ICI, VPC(E).
Disperse green dyes:	No	
Disperse Green 9	No	ICI.
All other disperse green dyes	No	CK.
Disperse brown dyes:	No	
Disperse Brown 1	Yes	ATL, BUC, CK, ICI, S.
Disperse Brown 18	No	S.
Disperse Brown 22	No	EKT.
Disperse Brown 26	No	CK.
Disperse Brown 27	No	CK.
Disperse black dyes	No	
Disperse Black 9	No	ATL, CGY, EKT.
Disperse Black 33	No	CGY.
All other disperse black dyes	No	BAS, CK.
Fiber-reactive dyes		
Reactive yellow dyes:		
Reactive Yellow 7	No	ICI.
Reactive Yellow 15	No	HCL.
Reactive Yellow 17	No	HCL.
Reactive Yellow 18	No	ICI.
Reactive Yellow 37	No	HCL.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Fiber-reactive dyes—Continued		
Reactive yellow dyes—Continued		
Reactive Yellow 42	No	HCL.
Reactive Yellow 57	No	HCL.
Reactive Yellow 86	No	ICI.
Reactive Yellow 125	No	S.
Reactive Yellow 133	No	ICI.
Reactive Yellow 135	No	ICI.
Reactive Yellow 160	No	HCL.
All other reactive yellow dyes	No	HCL, ICI.
Reactive orange dyes:		
Reactive Orange 1	No	ICI.
Reactive Orange 4	No	ICI.
Reactive Orange 12	No	ICI.
Reactive Orange 13	No	ICI.
Reactive Orange 14	No	ICI.
Reactive Orange 16	No	ATL, CK, HCL.
Reactive Orange 20	No	CK.
Reactive Orange 78	No	HCL.
Reactive Orange 84	No	ICI.
Reactive Orange 86	No	ICI.
All other reactive orange dyes	No	HCL.
Reactive red dyes:		
Reactive Red 2	No	CK, ICI.
Reactive Red 11	No	CK, ICI.
Reactive Red 21	No	HCL.
Reactive Red 29	No	ICI.
Reactive Red 31	No	ICI.
Reactive Red 33	No	ICI.
Reactive Red 35	No	HCL.
Reactive Red 41	No	HCL.
Reactive Red 43	No	CK, ICI.
Reactive Red 49	No	HCL.
Reactive Red 94	No	HCL.
Reactive Red 120	No	BAS, CK, ICI.
Reactive Red 141	No	ICI.
Reactive Red 147	No	S.
Reactive Red 180	No	ATL, HCL.
All other reactive red dyes	No	CK, HCL, ICI.
Reactive violet dyes:		
Reactive Violet 5	No	HCL.
All other reactive violet dyes	No	HCL, ICI.
Reactive blue dyes:		
Reactive Blue 3	No	ICI.
Reactive Blue 4	No	CK, ICI.
Reactive Blue 5	No	ICI.
Reactive Blue 7	No	CGY.
Reactive Blue 13	No	ICI.
Reactive Blue 19	No	HCL.
Reactive Blue 21	No	HCL.
Reactive Blue 38	No	HCL.
Reactive Blue 41	No	S.
Reactive Blue 71	No	ICI.
Reactive Blue 89	No	HCL, ICI.
Reactive Blue 173	No	ICI.
Reactive Blue 174	No	ICI.
Reactive Blue 199	No	ICI.
Reactive Blue 203	No	HCL.
All other reactive blue dyes	No	HCL, ICI.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Fiber reactive dyes—Continued		
Reactive green dyes:	No	
Reactive Green 12	No	S.
Reactive Green 19	No	ICI.
All other reactive green dyes	No	HCL.
Reactive brown dyes:	No	
Reactive Brown 1	No	ICI.
Reactive Brown 17	No	ICI.
Reactive Brown 18	No	HCL.
Reactive black dyes:	No	
Reactive Black 5	No	ATL, CK, HCL, S.
Reactive Black 9	No	ICI.
All other reactive black dyes	No	HCL.
Fluorescent brighteners		
Fluorescent Brightener 22	No	CGY.
Fluorescent Brightener 28	No	CGY, VPC.
Fluorescent Brightener 46	No	CGY.
Fluorescent Brightener 49	No	S.
Fluorescent Brightener 52	No	S.
Fluorescent Brightener 61	No	ACY.
Fluorescent Brightener 71	No	CGY.
Fluorescent Brightener 102	No	CGY.
Fluorescent Brightener 128	No	SDH.
Fluorescent Brightener 134	No	CGY.
Fluorescent Brightener 205	No	VPC.
Fluorescent Brightener 290	No	S.
All other fluorescent brighteners	No	ACY, CGY, S, (?).
Food drug, and cosmetic colors		
Food, drug, and cosmetic dyes:	Yes	
Food, Drug, and Cosmetic Blue 1	No	KON, SDH, WJ.
Food, Drug, and Cosmetic Blue 2	No	KON, SDH, WJ
Food, Drug, and Cosmetic Green 3	No	KON, WJ.
Food, Drug, and Cosmetic Red 3	Yes	SDH, STG, WJ.
Food, Drug, and Cosmetic Red 4	No	CK, WJ.
Food, Drug, and Cosmetic Red 40	No	KON, SDH, STG, WJ.
Food, Drug, and Cosmetic Yellow 5	Yes	CK, MAX, SDH, STG, WJ.
Food, Drug, and Cosmetic Yellow 6	Yes	CK, KON, MAX, SDH, STG, WJ.
Drug and cosmetic dyes	Yes	
Drug and Cosmetic Green 5	No	CK, KON.
Drug and Cosmetic Green 8	No	SDH.
Drug and Cosmetic Orange 4	No	KON.
Drug and Cosmetic Orange 5	No	SNA.
Drug and Cosmetic Orange 17	No	SNA.
Drug and Cosmetic Red 3	No	KON.
Drug and Cosmetic Red 6	No	KON, SDH, SNA.
Drug and Cosmetic Red 7	No	KON, MAX, SDH, SNA.
Drug and Cosmetic Red 9	No	SNA.
Drug and Cosmetic Red 17	No	KON.
Drug and Cosmetic Red 19	No	SNA.
Drug and Cosmetic Red 21	No	SNA.
Drug and Cosmetic Red 22	No	SDH.
Drug and Cosmetic Red 27	Yes	KON, MAX, SDH, SNA.
Drug and Cosmetic Red 28	No	SDH.
Drug and Cosmetic Red 30	No	KON, MAX, SDH, SNA.
Drug and Cosmetic Red 33	Yes	CK, KON, SNA, WJ.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Food, drug, and cosmetic dyes—Continued		
Drug, and cosmetic dyes—Continued		
Drug and Cosmetic Red 34	No	KON, SNA.
Drug and Cosmetic Red 36	No	KON, SDH.
Drug and Cosmetic Yellow 5	No	KON.
Drug and Cosmetic Yellow 6	No	KON.
Drug and Cosmetic Yellow 8	No	SDH.
Drug and Cosmetic Yellow 10	Yes	CK, KON, SDH, WJ.
Drug and cosmetic dyes, external:		
External Drug and Cosmetic Orange 3	No	CK, KON.
External Drug and Cosmetic Yellow 7	No	KON.
Mordant dyes		
Mordant yellow dyes:		
Mordant Yellow 1	No	FAB.
Mordant Yellow 8	No	FAB.
Mordant Yellow 20	No	FAB.
Mordant orange dyes:		
Mordant Orange 1	No	FAB.
Mordant Orange 6	No	FAB.
Mordant red dyes:		
Mordant Red 7	No	FAB.
Mordant Red 9	No	MAX.
Mordant brown dyes:		
Mordant Brown 1	No	ATL, FAB.
Mordant Brown 18	No	FAB.
Mordant Brown 33	No	FAB.
Mordant Brown 70	No	FAB.
Mordant black dyes:		
Mordant Black 9	No	ATL.
Mordant Black 11	No	CGY.
Solvent dyes		
Solvent yellow dyes:		
Solvent Yellow 3	No	PSC.
Solvent Yellow 13	No	BAS, FAB.
Solvent Yellow 14	No	ATL, PSC.
Solvent Yellow 16	No	PSC.
Solvent Yellow 33	No	ACY, CIC, MRT.
Solvent Yellow 40	No	CK.
Solvent Yellow 42	No	ATL, CK.
Solvent Yellow 43	No	DGO, HCL.
Solvent Yellow 44	No	DGO.
Solvent Yellow 56	No	PSC.
Solvent Yellow 72	No	CIC, MRT, PSC.
Solvent Yellow 94	No	SDH.
Solvent Yellow 107	No	MRT.
Solvent Yellow 131	No	DGO.
Solvent Yellow 135	No	(²).
Solvent Yellow 143	No	MRT.
Solvent Yellow 160	No	(²).
Solvent Yellow 161	No	MRT.
Solvent Yellow 163	No	MRT.
All other solvent yellow dyes	No	ATL, CIC, FAB, MIL, MRT, PSC.
Solvent orange dyes:		
Solvent Orange 2	No	PSC.
Solvent Orange 3	No	ATL, PSC.

See footnotes at end of table.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Solvent dyes—Continued		
Solvent orange dyes—Continued		
Solvent Orange 7	No	ATL, PSC.
Solvent Orange 20	No	BAS, FAB.
Solvent Orange 23	No	ATL, CK.
Solvent Orange 25	No	MRT.
Solvent Orange 31	No	PSC.
Solvent Orange 60	No	CIC.
Solvent Orange 74	No	MRT.
Solvent Orange 77	No	MRT.
Solvent Orange 97	No	MRT.
All other solvent orange dyes	No	MIL.
Solvent red dyes:	Yes	
Solvent Red 1	No	PSC.
Solvent Red 22	No	BAS.
Solvent Red 23	No	MRT, PSC.
Solvent Red 24	No	ATL, PSC.
Solvent Red 26	No	PSC.
Solvent Red 27	No	PSC.
Solvent Red 42	No	SDH.
Solvent Red 49	No	ACY, BAS.
Solvent Red 68	No	ATL, CK, MRT.
Solvent Red 74	No	ATL.
Solvent Red 111	No	MRT.
Solvent Red 164	No	MRT.
Solvent Red 165	No	MRT.
Solvent Red 166	No	MRT.
Solvent Red 168	No	MRT.
Solvent Red 169	No	MRT.
Solvent Red 175	No	MRT.
Solvent Red 207	No	MRT.
Solvent Red 208	No	MRT.
Solvent Red 210	No	MRT.
Solvent Red 222	No	CIC.
All other solvent red dyes	No	CIC, MIL, MRT, PSC.
Solvent violet dyes:	No	
Solvent Violet 8	No	DSC.
Solvent Violet 9	No	DSC.
Solvent Violet 13	No	CK.
Solvent Violet 14	No	MRT.
Solvent Violet 38	No	MRT.
All other solvent violet dyes	No	MIL.
Solvent blue dyes:	Yes	
Solvent Blue 3	No	PSG.
Solvent Blue 5	No	DSC.
Solvent Blue 35	No	MRT.
Solvent Blue 36	No	MRT.
Solvent Blue 38	No	TNI.
Solvent Blue 58	No	MRT, VPC.
Solvent Blue 59	No	VPC.
Solvent Blue 98	No	MRT.
Solvent Blue 99	No	MRT.
Solvent Blue 100	No	MRT.
Solvent Blue 102	No	MRT.
Solvent Blue 128	No	MRT.
Solvent Blue 129	No	MRT.
All other solvent blue dyes	No	BAS, CK, MIL.
Solvent green dyes:	No	
Solvent Green 3	No	MRT.

See footnotes at end of table.

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Solvent dyes—Continued		
Solvent brown dyes:	No	
Solvent Brown 12	No	PSC.
Solvent Brown 20	No	ATL.
Solvent Brown 22	No	PSC.
Solvent Brown 52	No	MRT.
Solvent black dyes:	No	
Solvent Black 7	No	OCC, PSC.
Solvent Black 13	No	ATL.
Solvent Black 26	No	ATL.
Solvent Black 46	No	MRT.
Solvent Black 47	No	MRT.
Solvent Black 49	No	MRT.
Sulfur dyes		
Sulfur yellow dyes:	No	
Leuco Sulfur Yellow 22	No	SDC.
All other sulfur yellow dyes	No	SDC.
Sulfur orange dyes:	No	
All other sulfur orange dyes	No	SDC.
Sulfur red dyes:	No	
Leuco Sulfur Red 14	No	SDC.
Sulfur Red 10	No	SDC.
Sulfur blue dyes:	No	
Leuco Sulfur Blue 7	No	SDC.
Leuco Sulfur Blue 11	No	SDC, VPC.
Sulfur green dyes:	No	
Leuco Sulfur Green 3	No	SDC.
Leuco Sulfur Green 16	No	SDC.
Leuco Sulfur Green 34	No	SDC.
Leuco Sulfur Green 35	No	SDC.
Leuco Sulfur Green 36	No	SDC.
Sulfur brown dyes:	No	
Leuco Sulfur Brown 1, 1:1	No	SDC.
Leuco Sulfur Brown 3	No	SDC.
Leuco Sulfur Brown 10	No	SDC.
Leuco Sulfur Brown 37	No	SDC.
Leuco Sulfur Brown 52	No	SDC.
Sulfur black dyes:	No	
Leuco Sulfur Black 1	No	BRR, SDC.
Leuco Sulfur Black 2	No	SDC.
Leuco Sulfur Black 18	No	SDC.
Solubilized Sulfur Black 2	No	SDC.
Sulfur Black 1	No	BRR.
Sulfur Black 11, 11:1	No	SDC.
Vat dyes		
Vat yellow dyes:	Yes	
Vat Yellow 22, 10%	No	VPC(E).
Vat Yellow 51	No	SDC.
Vat orange dyes:	Yes	
Vat Orange 2, 12%	No	BAS.
Vat Orange 7, 11%	No	HCL.
Vat red dyes:	Yes	
Vat Red 1, 13%	No	ACY.
Vat Red 10, 18%	No	BAS.
Vat Red 15, 10%	No	HCL.
Vat Red 32, 20%	No	BAS.
All other vat red dyes	No	HCL, SDC.

Section 4

Table 13—Continued

Dyes for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14)
Vat dyes—Continued		
Vat violet dyes:	No	
Vat Violet 13, 6-1/4%	No	BAS, CGY.
Vat blue dyes:	Yes	
Vat Blue 1, 20%	No	BCC, PSC.
Vat Blue 6, 8-1/3%	No	BAS, BRR.
Vat Blue 16, 16%	No	BAS.
Vat Blue 19	No	BAS.
Vat Blue 29	No	BAS.
Vat Blue 43	No	SDC.
Vat Blue 66	No	BAS.
Vat green dyes:	Yes	
Vat Green 1, 6%	No	BAS.
Vat Green 3, 10%	No	BAS, SDC.
Vat Green 7	No	SDC.
Vat brown dyes:	No	
Vat Brown 57, 12.8%	No	CGY, HCL.
All other vat brown dyes	No	HCL.
Vat black dyes:	No	
Vat Black 16	No	CGY.
Vat Black 25, 12-1/2%	No	BAS, SDC.
Miscellaneous dyes		
All other dyes	Yes	DAN, MIL, MRT.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaire of the U.S. International Trade Commission.

Table 14

Dyes: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACY	American Cyanamid Co.	LVR	C. Lever Co., Inc.
ALL	Alliance Chemical, Inc.	MAX	Max Marx Color Corp.
ATL	Atlantic Industries, Inc.	MIL	Milliken & Co., Milliken Chemical Div.
BAS	BASF Corp.	MRT	Morton-Thiokol, Inc., Morton Chemical Div.
BCC	Buffalo Color Corp.	OCC	Orient Chemical Corp.
BRR	Burriss Chemical Inc., Colors Div.	PCW	Pfister Chemical, Inc.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	PSC	Passaic Color & Chemical Co.
CGY	Ciba-Geigy Corp.	PSG	PMC Specialities Group, Inc.
CIC	Color Chem International Corp.	S	Sandoz, Inc.: Colors & Chemicals Div.
CK	Crompton & Knowles Corp.	SDC	Sandoz Chemical Corp.
DAN	Dan River, Inc., Chemical Products Div.	SDH	Sterling Drug Inc., SDI Divestiture Corp.
DGO	Day-Glo Color Corp.	SNA	Sun Chemical Corp., Pigments Div.
DSC	Dye Specialties, Inc.	STG	McCormick & Co., Inc., McCormick/Strange Flavor Div.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.	TNI	Gillette Co., Chemical Div.
FAB	Fabricolor Manufacturing Corp.	VPC	Mobay Chemical Corp., Dyes & Pigments Div.
HCL	Hoechst Celanese Corp.: Rhode Island Works Sou-Tex Works	WJ	Warner-Jenkinson Co.
ICI	ICI Americas, Inc., Chemical Div.		
KON	H. Kohnstamm & Co., Inc.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaire of the U.S. International Trade Commission.

Section 5

Organic Pigments

Organic pigments are toners and lakes¹ derived in whole or in part from benzenoid chemicals and colors.

Statistics on production and sales of all organic pigments in 1987 are given in table 15. Individual toners and lakes are identified in this report by the names used in the third edition of the *Colour Index*.

Total production of organic pigments in 1987 was 93.9 million pounds, 6.1 percent more than the 88.5 million pounds produced in 1986. Total sales of organic pigments in 1987 amounted to 83.3 million pounds, valued at \$586.3 million, compared with 76.7 million pounds, valued at \$513.1 million, in 1986. In terms of quantity, sales of organic pigments in 1987 were 8.6 percent higher than in 1986; in terms of value, sales in 1987 were 14.2 percent higher than in 1986. Changes in U.S. production of pigment has followed overall changes in U.S. economic activity during 1983-87 (see figure 6).

Production of toners in 1987 amounted to 93.1 million pounds, 6.0 percent more than the 87.8 million pounds reported in 1986. Sales in 1987 were 82.7 million pounds, valued at \$582 million, compared with 76.7 million pounds valued at \$509.1 million, in 1986. In terms of

quantity, sales of toners in 1987 were 8.6 percent higher than in 1986; in terms of value, sales in 1987 were 14.3 percent higher in 1987 than in 1986. The individual toners listed in the report which were produced in the largest quantities in 1987 were Pigment Yellow 12, Pigment Blue 15.3, beta form, Pigment Red 49:1 barium toner, Pigment Red 57:1 calcium toner, Pigment Red 53:1, barium toner, and Pigment Yellow 14.

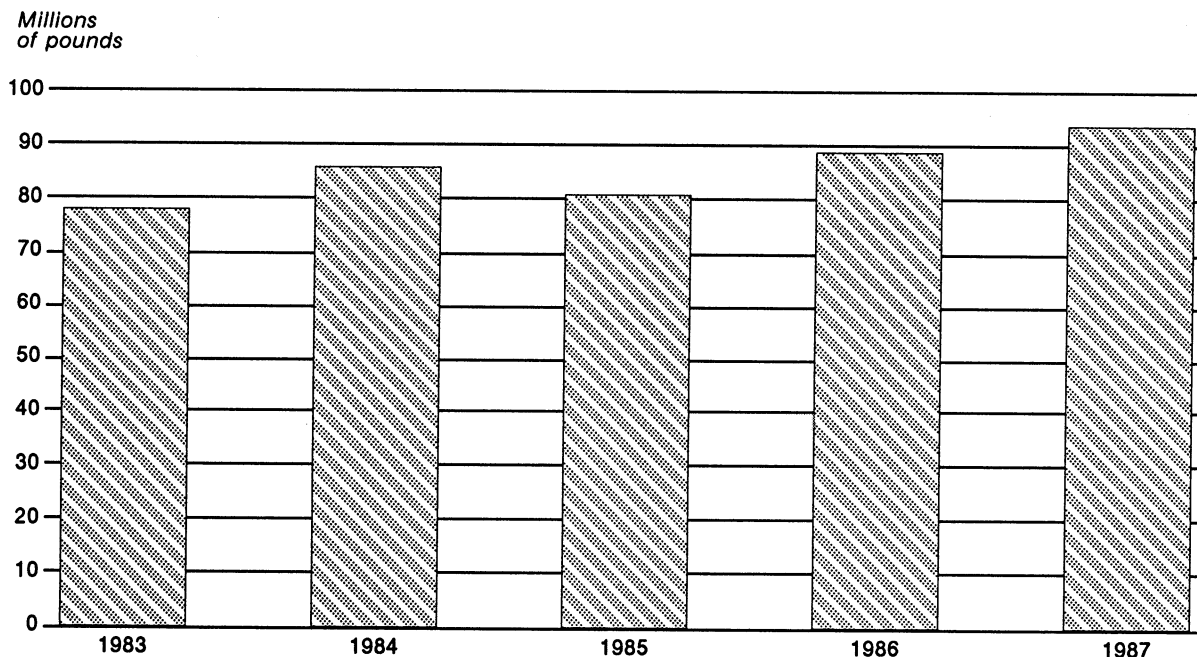
Production of lakes totaled 778,000 pounds in 1987, 12.1 percent higher than the 694,000 pounds reported for 1986. Sales of lakes in 1987 amounted to 571,000 pounds, valued at \$4.2 million. In terms of quantity, sales of lakes in 1987 were 7.3 percent higher than in 1986; in terms of value, sales in 1987 were 5.2 percent higher than in 1986.

Table 16 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 17.

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¹ Toners and lakes are essentially the same in their final form; they differ in the method of preparation. A lake is an organic pigment produced by the interaction of a soluble dye, a precipitant, and an absorptive inorganic substrate. A toner is an insoluble dye produced as a powder; some toners are extended by the inclusion of a solid diluent.

Figure 6
Organic pigments: U.S. production, 1983-87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Section 5

Table 15

Organic pigments: U.S. production and sales, 1987

Organic pigments	Production	Sales Quantity	Value ¹	Average Unit value ²
	1,000 pounds dry basis ³	1,000 pounds dry basis ³	1,000 dollars	Per pound
Grand Total	93,915	83,302	586,254	\$7.04
Toners				
Total	93,137	82,731	582,037	7.04
Yellow toners, total	24,474	20,660	114,230	5.53
Acetoacetarylde yellows:				
Pigment Yellow 1, C.I. 11 680	149	140	949	6.79
Pigment Yellow 3, C.I. 11 710	133	143	836	5.85
Pigment Yellow 65, C.I. 11 740	163	155	1,206	7.80
Pigment Yellow 73, C.I. 11 738	368	448	2,231	4.98
Pigment Yellow 74, C.I. 11 741	670	655	5,090	7.71
Diarylde yellows:				
Pigment Yellow 12, C.I. 21 090	16,173	12,633	63,548	5.03
Pigment Yellow 13, C.I. 21 100	434	425	2,677	6.30
Pigment Yellow 14, C.I. 21 095	4,395	4,131	20,485	4.96
Pigment Yellow 17, C.I. 21 105	573	547	3,762	6.88
Pigment Yellow 83, C.I. 21 108	960	912	8,553	9.38
All other yellow toners	456	471	4,893	10.37
Orange toners, total	2,884	2,700	17,981	6.66
Pigment Orange 5, C.I. 21 075	1,014	887	4,323	4.87
Pigment Orange 13, C.I. 21 110	171	160	1,585	9.93
Pigment Orange 16, C.I. 21 160	727	716	4,957	6.92
Pigment Orange 46, C.I. 15 602	740	714	3,556	4.98
All other orange toners	232	223	3,560	15.92
Red toners, total	33,475	29,872	219,100	7.33
Naphthol reds, total	1,679	1,596	17,103	10.72
Pigment Red 2, C.I. 12 120	43	54	667	12.30
Pigment Red 17, C.I. 12 390	38	14	157	11.07
Pigment Red 22, C.I. 12 315	160	145	1,383	9.52
Pigment Red 23, C.I. 12 355	125	111	1,389	12.46
All other naphthol reds	1,313	1,272	13,507	10.62
Pigment Red 3, C.I. 12 120	855	775	4,774	6.16
Pigment Red 4, C.I. 12 085	282	293	1,519	5.19
Pigment Red 38, C.I. 12 120	177	151	1,697	11.25
Pigment Red 48:1, barium toner, C.I. 15 865	2,249	2,263	13,198	5.83
Pigment Red 48:2, calcium toner, C.I. 15 865	1,715	1,606	9,453	5.89
Pigment Red 48:4, manganese toner, C.I. 15 865	188	218	1,718	7.58
Pigment Red 49:1, barium toner, C.I. 15 630	5,681	3,962	15,133	3.82
Pigment Red 49:2, calcium toner, C.I. 15 630	888	888	4,400	4.96
Pigment Red 52:1, calcium toner, C.I. 15 860	814	786	5,293	6.74
Pigment Red 52.2, manganese toner, C.I. 15 860	252	291	1,725	5.94
Pigment Red 53:1, barium toner, C.I. 15 585	3,778	3,571	14,750	4.13
Pigment Red 57:1, calcium toner, C.I. 15 850	11,870	10,596	52,409	4.95
Pigment Red 81, PMA, C.I. 45 160	427	395	6,125	15.50
All other red toners	2,620	2,481	69,803	5-228.14

See footnotes at end of table.

Table 15—Continued
Organic pigments: U.S. production and sales, 1987

Organic pigments	Production	Sales Quantity	Value ¹	Average Unit value ²
	1,000 pounds dry basis ³	1,000 pounds dry basis ³	1,000 dollars	Per pound
Toners—Continued				
Violet toners, total	3,532	3,521	66,498	\$18.89
Pigment Violet 1, PTA, C.I. 45 170	31	30	539	17.70
Pigment Violet 3, (PMA), C.I. 45 535	467	477	5,148	10.79
Pigment Violet 19, C.I. 73 900	2,161	2,177	44,430	20.41
Pigment Violet 23, C.I. 51 319	484	471	12,600	26.78
All other violet toners	389	366	3,781	10.33
Blue toners, total	26,138	23,125	141,378	6.11
Pigment Blue 1, (PMA), C.I. 42 595	72	74	1,050	14.12
Pigment Blue 15, alpha form, C.I. 74 160	1,281	925	7,612	8.23
Pigment Blue 15:1, alpha form, C.I. 74 160	981	937	10,963	11.70
Pigment Blue 15:2, alpha form, C.I. 74 160	520	598	5,914	9.88
Pigment Blue 15:3, beta form, C.I. 74 160	13,073	11,180	59,069	5.28
All other blue toners	10,211	9,411	56,770	6.03
Green toners, total	2,332	2,535	21,101	8.32
Pigment Green 7, C.I. 74 260	2,180	2,370	18,699	7.89
All other green toners	152	165	2,402	14.61
Brown and black toners,	302	318	1,749	5.50
Lakes				
Total	778	571	4,217	7.39
Pigment Red 83, C.I. 58 000	29	35	437	12.43
Pigment Violet 5:1, C.I. 58 055	69	69	636	9.22
All other lakes	680	467	3,144	6.73

¹ The value of sales for toners is reported on a dry full-strength basis and the value of sales for lakes is reported on a dry form basis. All sales value data exclude the additional cost of processing or packaging in commercial forms other than the dry full-strength or dry form.

² Calculated from unrounded figures.

³ Quantities for toners are reported as dry full-strength toner content, excluding the weight of any dispersing agent, vehicle, or extender. Quantities for lakes are reported as dry lake content, excluding the weight of any dispersing agent or vehicle.

Note.—The C.I. (*Colour Index*) number shown in this report are the identifying number given in the third edition of the *Colour Index*.

The abbreviations PMA and PTA stand for phosphomolybdic and phosphotungstic (including phosphotungstomolybdic) acids, respectively.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 5

Table 16

Organic pigments for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Organic pigments	Separate statistics ¹	Manufacturers' identification codes (according to list in table 17)
Toners		
Yellow toners:		
Acetoacetylide yellows:		
Pigment Yellow 1	No	
Pigment Yellow 2	Yes	HSH, KCW, SNA, VPC.
Pigment Yellow 3	No	KCW.
Pigment Yellow 42	Yes	HCL, HEU, HSH, KCW, SNA, VPC.
Pigment Yellow 60	No	CGY, VPC.
Pigment Yellow 65	Yes	HSH.
Pigment Yellow 73	Yes	HEU, HSH, SNA, VPC.
Pigment Yellow 74	Yes	HCL, HSH, SNA, VPC.
		BAS, HCL, HEU, HSH, KCW, ROM, SDH, SNA, VPC.
Pigment Yellow 97	No	HCL.
Pigment Yellow 98	No	HCL.
All others acetoacetylide yellows	No	HCL, KCW.
Diarylide yellows:		
Pigment Yellow 12	No	
	Yes	AMS, APO, BAS, GLX, HCL, HSH, IDC, IND, POP, ROM, SDH, SNA.
Pigment Yellow 13	Yes	APO, BAS, FAB, GLX, HCL, IDC, IND, SNA.
Pigment Yellow 14	Yes	AMS, BAS, BNS, FAB, GLX, HCL, HSH, IDC, IND, ROM, SNA.
Pigment Yellow 17	Yes	AMS, APO, BAS, CGY, FAB, GLX, HCL, HSH, IDC, IND, ROM, SNA, VPC.
Pigment Yellow 83	Yes	BAS, FAB, GLX, HCL, IDC, IND, ROM, SNA.
Pigment Yellow 124	No	GLX.
Pigment Yellow 126	No	HCL.
Pigment Yellow 152	No	HCL.
Yellow pigments, other:		
(Basic Yellow 2), fugitive	Yes	
Pigment Yellow 110	No	MAX.
Pigment Yellow 139	No	CGY.
All other pigment yellow toners	No	CGY.
		HSH.
Orange toners:		
Pigment Orange 1	Yes	
Pigment Orange 2	No	KCW.
Pigment Orange 5	No	UHL.
Pigment Orange 13	Yes	BAS, CGY, HCL, HSH, SDH, SNA.
Pigment Orange 15	Yes	BAS, HSH, IND, ROM, SNA, VPC.
Pigment Orange 16	No	BNS, CGY.
	Yes	BNS, CGY, FAB, GLX, HSH, IND, MGR, ROM, VPC.
Pigment Orange 34	No	IND, ROM VPC.
Pigment Orange 43	No	HCL, MGR.
Pigment Orange 46	Yes	ALE, AMS, BAS, CMC, SNA UHL.
Pigment Orange 48	No	CGY.
Pigment Orange 49	No	CGY.
All other pigment orange toners	No	GLX.
Red toners:		
Naphthol reds:	Yes	
Pigment Red 2	Yes	GLX, HCL, HSH.
Pigment Red 5	No	CGY, FAB, HSH.
Pigment Red 13	No	KCW.
Pigment Red 14	No	HCL.
Pigment Red 17	Yes	BNS, IND, ROM, SNA, UHL.
Pigment Red 21	No	BNS.
Pigment Red 22	Yes	GLX, HEU, IND, MAX, SNA.
Pigment Red 23	Yes	FAB, GLX, HEU, HSH, KCW, ROM, SNA, UHL.

See footnotes at end of table.

Table 16—Continued

Organic pigments for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Organic pigments	Separate statistics ¹	Manufacturers' identification codes (according to list in table 17)
Toners—Continued		
Red toners—Continued		
Naphthol reds—Continued		
Pigment Red 31	No	GLY, ROM, SDH.
Pigment Red 66	No	CGY.
Pigment Red 112	No	HCL, VPC.
Pigment Red 146	No	HCL.
Pigment Red 147	No	HSH.
Pigment Red 170	No	GLX, HCL.
All other naphthol reds	Yes	BUC, FAB, GLX, IND, ROM, SNA, (2).
Red pigments, other:	No	
Pigment Red 1, (light)	No	HSH.
Pigment Red 3	Yes	BAS, CGY, HSH, KCW, MAX, SNA, UHL.
Pigment Red 4	Yes	ALE, BAS, CGY, HSH, KCW, MAX, SDH, UHL.
Pigment Red 6	No	SDH.
Pigment Red 38	Yes	HCL, HSH, SNA, VPC.
Pigment Red 41	No	UHL, VPC.
Pigment Red 48	No	CGY, HEU.
Pigment Red 48:1, (barium)	Yes	AMS, APO, BAS, CGY, CMC, HEU, HSH, MGR, MAX, SNA, UHL.
Pigment Red 48:2, (calcium)	Yes	AMS, APO, BAS, CGY, HEU, HSH, MGR, MAX, SDH, SNA, UHL, VPC.
Pigment Red 48:3, (strontium)	No	BAS, CGY, HSH.
Pigment Red 48:4, (manganese)	Yes	CGY, HEU, HSH, SNA, VPC.
Pigment Red 49:1, (barium)	Yes	AMS, BAS, BNS, CMC, IDC, MGR, SDH, SNA, UHL.
Pigment Red 49:2, (calcium)	Yes	AMS, BNS, CMC, IDC, MGR, SDH, SNA, UHL.
Pigment Red 52:1, (calcium)	Yes	BAS, HSH, MGR, SNA, UHL.
Pigment Red 52:2, (manganese)	Yes	BAS, CGY, HSH, UHL.
Pigment Red 53:1, (barium)	Yes	ALE, AMS, APO, BAS, CMC, FAB, HSH, IDC, MGR, MAX, SDH, SNA, UHL.
Pigment Red 57	No	BNS.
Pigment Red 57:1, (calcium)	Yes	AMS, APO, BAS, BNS, CGY, CMC, FAB, HEU, HSH, IDC, KCW, MGR, POP, SDH, SNA, UHL.
Pigment Red 63	No	HSH.
Pigment Red 81, (PMA)	Yes	BAS, MGR, MAX, SNA, UHL.
Pigment Red 81, (PTA)	No	BAS, MGR, MAX, UHL.
Pigment Red 88	No	VPC.
Pigment Red 119	No	VPC.
Pigment Red 122	No	SNA, VPC.
Pigment Red 123	No	VPC.
Pigment Red 168	No	VPC.
Pigment Red 169	No	MAX.
Pigment Red 179	No	VPC.
Pigment Red 190	No	VPC.
Pigment Red 200	No	BAS, SNA.
Pigment Red 202	No	CGY, SNA, VPC.
Pigment Red 206	No	CGY.
Pigment Red 207	No	CGY.
Pigment Red 209	No	SNA.
Pigment Red 224	No	VPC.
Pigment Red 245	No	IND.
Pigment Red 63:1, calcium	No	SNA.
All other pigment red toners	No	BAS.

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See footnotes at end of table.

Section 5

Table 16—Continued

Organic pigments for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Organic pigments	Separate statistics ¹	Manufacturers' identification codes (according to list in table 17)
Toners—Continued		
Violet toners:	Yes	
Pigment Violet 1, (fugitive)	No	KCW, UHL.
Pigment Violet 1, (PMA)	No	MGR, MAX, UHL.
Pigment Violet 1, (PTA)	Yes	MGR, MAX, SNA, UHL.
Pigment Violet 3, (fugitive)	No	KCW, MGR, UHL.
Pigment Violet 3, (PMA)	Yes	BAS, MGR, MAX, SDH, UHL.
Pigment Violet 3, (PTA)	No	MGR, MAX, UHL.
Pigment Violet 4, (fugitive)	No	KCW.
Pigment Violet 19	Yes	CGY, SNA, VPC.
Pigment Violet 23	Yes	BUC, HCL, IPP, S, SNA, VPC.
Pigment Violet 27	No	MRX.
Pigment Violet 29	No	VPC.
Pigment Violet 39, (PMA)	No	BAS, (2).
Pigment Violet 42	No	CGY.
All other pigment violet toners	No	BUC.
Blue toners:	Yes	
(Basic Blue 7)	No	KCW.
Pigment Blue 1, (PMA)	Yes	BNS, MGR, MRX, SDH, UHL.
Pigment Blue 2, (PMA)	No	UHL.
Pigment Blue 14, (PMA)	No	BAS, UHL.
Pigment Blue 15, (α form)	Yes	BAS, CGY, HEU, HSH, SDH, SNA, TMS, VPC.
Pigment Blue 15:1, (α form)	Yes	CGY, SNA, VPC.
Pigment Blue 15:2, (α form)	Yes	CGY, HEU, SDH, SNA, UHL, VPC.
Pigment Blue 15:3, (α form)	Yes	AMS, APO, BAS, CGY, CIK, CMC, HEU, IDC, IPP, MGR, POP, ROM, SDH, SNA, VPC.
Pigment Blue 15:4, (β form)	No	CGY, HEU, POP, SNA, VPC.
Pigment Blue 19	No	PSG.
Pigment Blue 25	No	GLX.
Pigment Blue 61	No	BAS.
Pigment Blue 62	No	MRX.
All other pigment blue toners	No	FAB.
Green toners:	Yes	
Pigment Green 1, (PMA)	No	UHL.
Pigment Green 2, (PTA)	No	MAX, UHL.
Pigment Green 4, (fugitive)	No	UHL.
Pigment Green 4, (PMA)	No	UHL.
Pigment Green 7	Yes	ALG, CGY, HEU, MGR, POP, SDH, SNA, VPC.
Pigment Green 8	No	KCW.
Pigment Green 10	No	HEU.
Pigment Green 36	No	SNA, VPC.
All other pigment green toners	No	UHL, (2).
Brown toners:	No	
Pigment Brown 5	No	GLX, VPC.
All other pigment brown toners	No	UHL.
Black toners:	No	
Pigment Black 7	No	HCL, VPC.
All other pigment black toners	No	UHL.
Lakes		
Yellow lakes:	No	
(Acid Yellow 1)	No	KCW.
(Acid Yellow 23)	No	MAX.
Orange lakes:	No	
Pigment Orange 17	No	KCW.

See footnotes at end of table.

Table 16—Continued

Organic pigments for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Organic pigments</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 17)</i>
Lakes—Continued		
Red lakes:	No	
(Acid Red 26)	No	KCW.
(Basic Red 1)	No	BNS.
(Basic Red 81, PMA)	No	LVR.
Pigment Red 60:1	No	HSH, MAX, SNA.
Pigment Red 83	Yes	HSH, MAX, UHL.
Violet lakes:		
(Basic Violet 1)	No	BNS.
(Basic Violet 4)	No	BNS.
(Basic Violet 10)	No	BNS.
(Basic Violet 3, PMA)	No	LVR.
(Basic Violet 5:1)	Yes	HSH, MAX, UHL, VPC.
Blue lakes:	No	
(Basic Blue 1, PTA)	No	LVR.
(Basic Blue 14, (PMA)	No	LVR.
Green lakes:	No	
(Basic Green 1, (PMA)	No	LVR.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 17

Organic pigments: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ALE	Alex Chemical Co.	IDC	Industrial Color, Inc.
ALG	Allegheny Chemical Corp.	IND	Indol Color Co., Inc.
AMS	Ridgway Color Co.	IPP	Spectrachim Corp.
APO	Apollo Colors, Inc.	KCW	Keystone Color Works, Inc.
BAS	BASF Corp., Chemicals Div.	LVR	C. Lever Co., Inc.
BNS	Binney and Smith, Inc.	MGR	Magruder Color Co., Inc.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	MAX	Max Marx Color Corp.
CGY	Ciba-Geigy Corp.	POP	Pope Chemical Corp.
CIK	Flint Ink Corp., Cal/Ink Div.	PSG	PMC Specialties Group, Inc.
CMC	Chromatic Color Corp.	ROM	Roma Color, Inc.
CUS	Customs Pigments Corp.	S	Sandoz Inc. Colors and Chemicals Div.
FAB	Fabricolor Manufacturing Corp.	SDH	Sterling Drug, Inc., SDI Divestiture Corp.
GLX	Galaxie Chemical Corp.	SNA	Sun Chemical Corp., Pigment Div.
HCL	Hoechst Celanese Corp.: Rhode Island Works Sou-Tex Works	UHL	Paul Uhlich & Co., Inc.
HEU	Heubach, Inc.	VPC	Mobay Chemical Corp., Dyes & Pigments Div.
HSH	Harshaw/Filtrol Partnership		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 6

Medicinal Chemicals

Medicinal chemicals include the medicinal and feed grades of all organic chemicals having therapeutic value, whether obtained by chemical synthesis, by fermentation, by extraction from naturally occurring plant or animal substances, or by refining a technical grade product. They include antibiotics and other anti-infective agents, antihistamines, autonomic drugs, cardiovascular agents, central nervous system depressants and stimulants, hormones and synthetic substitutes, vitamins, and other therapeutic agents for human or veterinary use, and for animal feed supplements. Data for the production of these products during 1983-87 are shown in figure 7.

Table 18 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class. The statistics shown are for bulk chemicals only. Finished pharmaceutical preparations and products put up in pills, capsules, tablets, or other measured doses are excluded.¹ The difference between production and sales reflects inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the difference may also include quantities for medicinal grade products used as intermediates; for example, penicillin V used as an intermediate in the manufacture of other antibiotics. All quantities are given in terms of 100 percent content of the pure bulk drug. Table 19 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 20.

Total U.S. production of bulk medicinal chemicals in 1987 amounted to 260.6 million

pounds. Total sales of bulk medicinal chemicals in 1987 amounted to 166.5 million pounds, valued at \$1,534.1 million. Beginning in 1980, methionine and most other amino acids and their salts are reported in the section on Miscellaneous End-Use Chemicals and Chemical Products. Section totals are not, therefore, comparable with years prior to 1980.

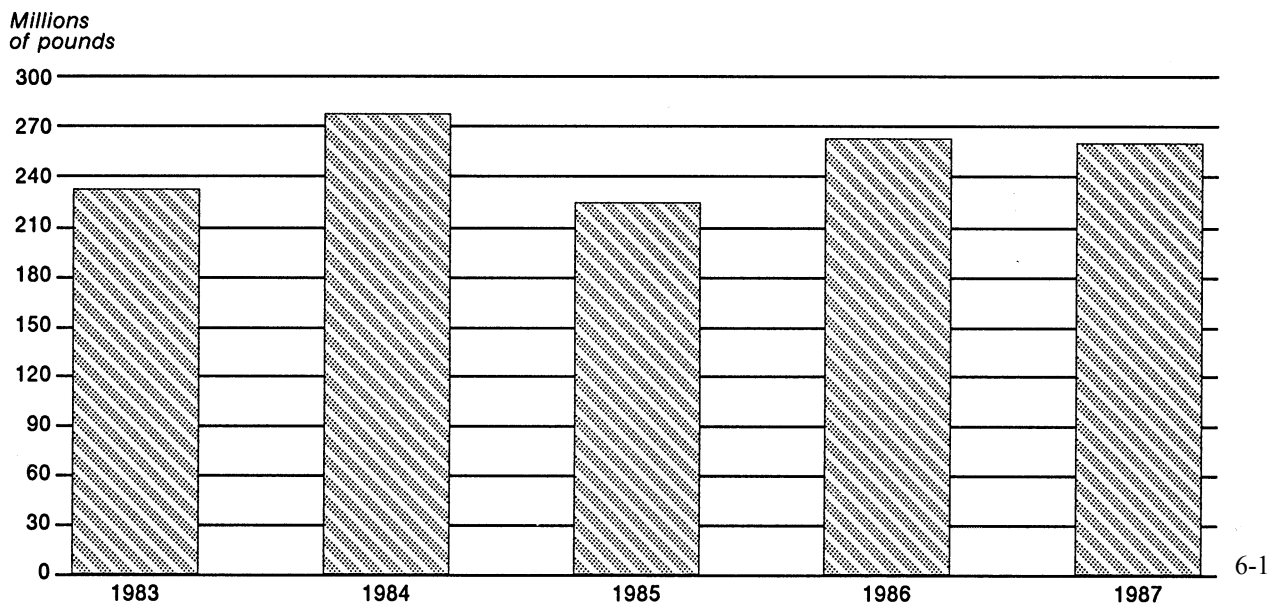
Production of the larger groups of medicinal chemicals in 1987 was as follows (see table 18): Antibiotics, 35.5 million pounds, 20.0 percent lower than in 1986; anti-infective agents other than antibiotics, 21.3 million pounds, 24.7 percent lower than in 1986; central nervous system depressants and stimulants, 71.9 million pounds, 2.7 percent higher than in 1986; gastrointestinal agents and therapeutic nutrients, 64.2 million pounds, 11.4 percent higher than in 1986; and vitamins, 51.3 million pounds, 24.5 percent higher than in 1986.

Production of some of the more important individual products in the table was as follows: Choline chloride, 59.1 million pounds, 15.4 percent more than in 1986; and aspirin, 24.1 million pounds, 21 percent less.

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¹ Complementary statistics on the dollar value of manufacturers' shipments of finished pharmaceutical preparations, except biologicals, are published annually by the U.S. Department of Commerce, Bureau of the Census, in Current Industrial Reports, Series MA-28G. Many pharmaceutical manufacturers that report to the Bureau of the Census are excluded from the U.S. International Trade Commission report because they are not primary producers of medicinal chemicals; that is, they do not themselves produce the bulk drugs which go into their pharmaceutical products, but purchase their drug requirements from domestic or foreign producers.

Figure 7
Medicinal Chemicals: U.S. production, 1983-87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 6

Table 18
Medicinal chemicals: U.S. production and sales, 1987

<i>Medicinal chemicals</i>	<i>Production¹</i>	<i>Sales Quantity</i>	<i>Value</i>	<i>Average Unit value²</i>
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total	260,617	166,501	1,534,126	\$9.21
Acyclic	64,588	62,668	169,196	2.70
Benzenoid ³	136,450	76,080	752,666	9.89
Cyclic nonbenzenoid ⁴	59,579	27,753	612,264	22.06
Antibiotics, total	35,499	11,487	439,035	38.22
Penicillins, total ⁵	10,242	816	25,183	30.86
All other antibiotics, total	25,257	10,671	413,852	38.78
For medicinal use ⁶	5,787	2,448	314,308	128.39
For nonmedicinal uses ⁷	19,470	8,223	99,544	12.11
Antihistamines, total	364	238	33,378	140.24
Antinauseants	49	34	1,259	37.48
All other antihistamines	315	204	32,119	157.47
Anti-infective agents (except antibiotics), total	21,263	8,712	38,215	4.39
Anthelmintics	9,010	4,124	4,448	1.08
All other anti-infective agents (except antibiotics) ⁸	12,253	4,588	33,767	7.36
Autonomic drugs, total	819	631	17,304	27.42
Sympathomimetic (adrenergic) agents	790	625	15,271	24.43
All other autonomic drugs	29	6	2,033	338.83
Central depressants and stimulants, total	71,852	50,785	351,402	6.92
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents, total	62,455	46,171	146,524	3.17
Aspirin	24,089	(⁹)	(⁹)	(⁹)
All other analgesics, antipyretics, and nonhormonal anti-inflammatory agents ¹⁰	38,366	46,171	146,524	3.17
Antidepressants	168	25	2,832	113.28
Antitussives	296	357	48,583	136.09
All other central depressants and stimulants ¹¹	8,933	4,232	153,463	36.26
Dermatological agents	6,636	5,854	13,372	2.28
Expectorants and mucolytic agents	1,031	914	8,092	8.85
Gastrointestinal agents and therapeutic nutrients, total ¹²	64,206	61,288	58,996	.96
Choline chloride, all grades	59,149	57,739	25,794	.44
All other gastrointestinal agents and thera- peutic nutrients	5,057	3,549	33,202	7.66
Vitamins ¹³	51,330	23,593	132,215	5.60
Miscellaneous medicinal chemicals ¹⁴	7,617	2,999	442,117	147.42

¹ The data on production and sales are for bulk medicinal chemicals only. Methionine and most other amino acids and their salts are now reported in the section on Miscellaneous End-Use Chemicals and Chemical Products. Section totals are not, therefore, comparable with years prior to 1980.

² Calculated from rounded figures.

³ Benzenoid, as used in this report, describes any cyclic medicinal chemical whose molecule contains either a 6-membered carbocyclic ring with conjugated double bonds or a 6-membered heterocyclic ring with 1 or 2 hetero atoms and conjugated double bonds, except the pyrimidine ring.

⁴ Includes antibiotics of unknown structure.

⁵ Includes semisynthetic penicillins and all other penicillins.

Footnotes for table 18—Continued

⁶ Includes production and sales of antifungal and antitubercular antibiotics, tetracyclines, and cephalosporins.

⁷ Includes production and sales of tetracyclines.

⁸ Includes production and sales of antiprotozoan agents, sulfonamides, and urinary antiseptics; does not include production of sulfaguanidine used as an intermediate in the production of anti-infective sulfonamides.

⁹ Reported data were accepted in confidence and may not be published, or no data were reported.

¹⁰ Includes sales quantity and value of aspirin; also production and sales of acetaminophen.

¹¹ Includes production and sales of amphetamines; general anesthetics; respiratory and cerebral stimulants; skeletal muscle relaxants; tranquilizers; and anticonvulsants, hypnotics, and sedatives.

¹² Methionine and its salts are reported in the section in Miscellaneous End-Use Chemicals and Chemical Products under amino acids.

¹³ Includes production and sales of vitamin A, vitamin B, vitamin C, vitamin D, vitamin E, and vitamin K.

¹⁴ Includes production and sales of antineoplastic agents, cardiovascular agents, diagnostic agents, hematological agents, renal-acting and edema-reducing agents, and unclassified medicinal chemicals. Also includes production and sales of local anesthetics, smooth muscle relaxants (including theophylline derivatives), and hormones and synthetic substitutes.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 6

Table 19

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Antibiotics:		
Cephalosporins:		
Cefaclor	No	LIL.
Cefamandole	No	LIL.
Cefazolin, sodium	No	LIL.
Cefoxitin	No	MRK.
Cephalexin	No	LIL.
Cephalothin, sodium	No	LIL.
Cephapirin, sodium	No	BRS.
Cephradine	No	TRD, SK.
Penicillins:		
Penicillins, semisynthetic		
Amoxicillin:		
Amoxicillin (trihydrate)	No	BEE, BOC, BRS, KAN.
Amoxicillin (anhydrous)	No	BEE.
Ampicillin:		
Ampicillin (anhydrous)	No	BRS.
Ampicillin (trihydrate)	No	BOC, BRS, KAN.
Other semisynthetic penicillins:		
Ampicillin, sodium	No	BEE, BRS, WYT.
Carbenicillin, sodium	No	BEW.
Cloxacillin, benzathine	No	BEE.
Cloxacillin, sodium	No	BEE, BOC.
Dicloxacillin, sodium	No	BEE, BOC, WYT.
Hetacillin, potassium	No	BRS.
Nafcillin, sodium	No	BEE, BRS, WYT.
Oxacillin, sodium	No	BEE, BOC.
Piperacillin	No	BRS.
Ticarcillin, disodium	No	BEE.
Penicillins (except semisynthetic):		
For medicinal use:		
Penicillin V	No	PFZ.
Penicillin G, benzathine	No	WYT.
Penicillin G, potassium	No	PFZ.
Penicillin V, potassium	No	BRS, LIL.
Penicillin G, procaine (medicinal grade)	No	PFZ, WYT.
For nonmedicinal uses:		
Penicillin G, procaine (animal feed grade)	No	PFZ.
Tetracyclines:		
For medicinal use:		
Chlortetracycline (medicinal grade)	No	ACY.
Minocycline	No	ACY.
Oxytetracycline (medicinal grade)	No	PFZ.
Tetracycline	No	ACY.
For nonmedicinal uses:		
Chlortetracycline (animal feed grade)	No	ACY, PFZ.
Oxytetracycline (animal feed grade)	No	PFZ.
Other antibiotics:		
For medicinal use:		
Antifungal antibiotics:		
Amphotericin B	No	PEN, TRD.
Nystatin (medicinal grade)	No	ACY, TRD.
Tobramycin	No	LIL.
Antitubercular antibiotics:		
Cycloserine	No	LIL.
Dihydrostreptomycin	No	PFZ.
Other antibiotics for medicinal use:		
Apramycin	No	LIL.
Aztreonam	No	TRD.
Bacitracin (medicinal grade)	No	IMC.
Cefonicid	No	SK.

See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

<i>Medicinal chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' Identification codes (according to list in table 20)</i>
Antibiotics—Continued		
Other antibiotics—Continued		
For medicinal use—Continued		
Other antibiotics for medicinal use—Continued		
Cefuroxime	No	LIL
Clindamycin	No	ABB, UPJ.
Erythromycin	No	ABB, UPJ.
Erythromycin estolate	No	LIL.
Erythromycin stearate	No	UPJ.
Gentamycin	No	SCH.
Imipenem	No	MRK.
Kanamycin	No	BRS.
Lincomycin (medicinal grade)	No	UPJ.
Moxalactam	No	LIL.
Neomycin (medicinal grade)	No	UPJ.
Netilmicin	No	SCH.
Novobiocin, sodium	No	UPJ.
Polymyxin B	No	PFZ.
Sisomicin	No	SCH.
Spectinomycin (medicinal grade)	No	UPJ.
Thiostrepton	No	TRD.
Vancomycin	No	ABB, ACY, LIL.
All other antibiotics, for medicinal use	No	RSA.
For nonmedicinal uses:	Yes	
Bacitracin (animal feed grade)	No	IMC.
Cycloheximide	No	UPJ.
Hygromycin B	No	LIL.
Lasalocid	No	HOF.
Lincomycin (animal feed grade)	No	UPJ.
Monesin	No	LIL.
Neomycin (animal feed grade)	No	PFZ, UPJ.
Streptomycin	No	PFZ.
Tylosin	No	LIL.
Antihistamines:	Yes	
Antinauseants:	Yes	
Dimenhydrinate	No	GAN.
Meclizine hydrochloride	No	PFZ.
Metoclopramide hydrochloride	No	LLI.
Trimethobenzamide hydrochloride	No	HOF.
Other antihistamines:	Yes	
Brompheniramine maleate	No	HEX, LLI.
Chlorpheniramine maleate	No	HEX, SK.
Chlorpheniramine tannate	No	HEX.
Cyproheptadine hydrochloride	No	MRK.
Dexbrompheniramine maleate	No	HEX.
Dexchlorpheniramine maleate	No	SCH.
Dimethindene maleate	No	CGY.
Diphenhydramine citrate	No	WYK.
Diphenhydramine hydrochloride	No	PD.
Doxylamine succinate	No	BKC, HOF.
Laradine	No	SCH.
Phenindamine tartrate	No	HOF.
Phenyltoloxamine citrate	No	BRS, GAN, PD.
Pyrilamine maleate	No	HEX.
Pyrilamine tannate	No	HEX.
Terfenadine	No	DOW.
Tripelennamine	No	CGY.
Tripelennamine citrate	No	CGY.
Tripelennamine hydrochloride	No	CGY.
Tripolidine hydrochloride	No	CGY.

See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufactures, 1987

<i>Medicinal chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 20)</i>
Anti-infective agents (except antibiotics):	Yes	
Anthelmintics:	Yes	
Clorsulon	No	MRK.
Diethylcarbamazine citrate	No	SK.
Ivermectin	No	MRK.
Piperazine	No	TX, UCC.
Piperazine dihydrochloride	No	FLM.
Piperazine hexahydrate	No	BRS.
Piperazine hydrochloride	No	DAN, FLM.
Piperazine sulfate	No	FLM.
Pyrantel pamoate	No	PFZ.
Thiabendazole	No	MRK.
Antiprotozoan agents:	Yes	
Arsenic and bismuth compounds:		
Arsanilic acid	No	FLM.
Bismuth subsalicylate	No	NOR.
Nitarsons	No	SAL.
Roxarsone	No	SAL.
Roxarsone, sodium	No	SAL.
Other antiprotozoan agents:		
Aklomide	No	SAL.
Amprolium	No	MRK.
Dinitolmide	No	SAL.
Ethopabate	No	MRK.
Hydroxychloroquine sulfate	No	SDW.
Iodochlorhydroxyquin	No	CGY.
Ipronidazole	No	HOF.
Nitromide	No	SAL.
Sulfonamides		
Mafenide	No	SDW.
Mafenide acetate	No	SDW.
Sulfabenzamide	No	ACY.
Sulfacetamide, sodium	No	SCH.
Sulfadiazine	No	ACY.
Sulfadiazine, silver	No	BOT, LEM.
Sulfadimethoxine	No	HOF.
Sulfamethazine	No	SAL.
Sulfamethazine, sodium	No	SAL.
Sulfamethizole	No	ACY.
Sulfamethoxazole	No	HOF, LEM.
Sulfantran	No	SAL.
Sulfasalazine	No	SAL.
Sulfathiazole, sodium	No	SAL.
Sulfisoxazole	No	HOF.
Sulfisoxazole, acetyl	No	HOF.
Urinary antiseptics:		
Methenamine	No	ARN.
Methenamine hippurate	No	RIK.
Methenamine mandelate	No	ARN, PD.
Other anti-infective agents:	Yes	
Antifungal agents:		
Benzoic acid	No	KLM.
Calcium undecylenate	No	WTL.
Sodium caprylate	No	LEM.
Zinc undecylenate	No	WTL.
All other antifungal agents	No	ARN.
Antileprotic and antitubercular agents:		
Aminosallylic acid	No	HXL.
Sodium aminosallylate	No	HXL.
Sulfoxone, sodium	No	ABB.

See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufactures, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Anti-infective agents (except antibiotics)—Continued		
Other anti-infective agents—Continued		
Antiviral agents:		
Acyclovir	No	BUR.
Azidothymidine	No	BUR.
Rimantidine hydrochloride	No	HOF.
All other antiviral agents	No	(²).
General antiseptics and antibacterial agents:		
Bromchlorenone	No	MHI.
Capreomycin	No	LIL.
Ceftazidime	No	LIL, MRK, SK.
Cetylpyridinium chloride	No	HXL.
Cinoxacin	No	LIL.
m-Cresyl acetate	No	ADC.
8-Hydroxy-5-quinolinesulfonic acid	No	MRK.
Iodoform	No	DPW, MAL.
Ormetoprim	No	HOF.
Oxyquinoline benzoate (benoxiquine)	No	LEM.
Oxyquinoline sulfate	No	LEM.
Pentamidine isethionate	No	MRX.
Povidone - iodine	No	GAF.
Resorcinol	No	KPT, LEM.
Trimethoprim	No	BUR, LEM.
Autonomic drugs:	Yes	
Sympathomimetic agents:		
Dobutamine hydrochloride	No	LIL.
Methoxyphenamine hydrochloride	No	HXL.
Naphazoline hydrochloride	No	CGY.
Phenylephrine bitartrate	No	GAN.
Phenylephrine hydrochloride	No	GAN, SDW.
Phenylpropanolamine bitartrate	No	ARS.
Phenylpropanolamine hydrochloride	No	ARS, GAN, HEX, NEP, ORT.
Propylhexedrine	No	SK.
Pseudoephedrine hydrochloride	No	BUR, GAN.
Pseudoephedrine sulfate	No	GAN.
Terbutaline sulfate	No	CGY, PFZ.
All other sympathomimetic (adrenergic) agents	No	ARN, SCH.
Other autonomic drugs:		
Parasympatholytic quaternary ammonium compounds (except tropane derivatives):		
Glycopyrrolate	No	LLI.
Propantheline bromide	No	SRL.
Tridihexethyl chloride	No	ACY.
Parasympatholytic tertiary amines (except tropane derivatives):		
Oxybutynin chloride	No	ABB.
Oxyphencyclimine hydrochloride	No	PFZ.
Trihexyphenidyl hydrochloride	No	ACY.
Parasympatholytic tropane derivatives:		
Benztropine mesylate	No	MRK, (²).
Parasympathomimetic agents:		
Bethanechol chloride	No	GAN.
Neostigmine bromide	No	HOF.
Neostigmine methylsulfate	No	HOF.
Pyridostigmine bromide	No	HOF.
Sympatholytic agents:		
Timolol maleate	No	MRK.
Central depressants and stimulants:	Yes	
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents:		
Acetaminophen	No	MAL, MON, SWD.

See footnotes at end of table.

Section 6

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufactures, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Central depressants and stimulants—Continued		
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents—Continued		
Aspirin	Yes	DOW, MON, NOR, SD.
Aurothioglucose	No	SCH.
Choline magnesium salicylate	No	LEM.
Diflunisal	No	MRK.
Fenoprofen	No	LIL, WYK.
Fentanyl citrate	No	MRX.
Flunixin	No	SCH.
Ibuprofen	No	TNA.
Indomethacin	No	MRK.
Meclofenamate, sodium	No	PD, WYK.
Meclofenamic acid	No	PD.
Mefenamic acid	No	PD.
Meperidine hydrochloride	No	PEN, SDW.
Methadone hydrochloride	No	MAL.
Morphine sulfate	No	MAL, PEN.
Oxycodone hydrochloride	No	DUP, MAL, PEN.
Pentazocine	No	SD.
Pentazocine hydrochloride	No	SD.
Piroxicam	No	PFZ.
Potassium aminobenzoate	No	GAN.
Potassium salicylate	No	KLM.
Propoxyphene hydrochloride	No	GAN, LIL.
Propoxyphene napsylate	No	GAN, LIL.
Salsalate	No	RIK, WYK.
Sodium aminobenzoate	No	GAN.
Sodium salicylate	No	KLM.
Sulindac	No	MRK.
Anticonvulsants, hypnotics, and sedatives:		
Anticonvulsants (except barbiturates):		
Aminoglutethimide	No	CGY.
Ethosuximide	No	PD.
Ethotoin	No	ABB.
Methsuximide	No	PD.
Phenytoin	No	PD.
Phenytoin, sodium	No	PD.
Valproate, sodium	No	ABB.
Valproic acid	No	ABB.
Anticonvulsants, hypnotics, and sedatives:		
Barbiturates:		
Amobarbital	No	GAN.
Amobarbital, sodium	No	GAN.
Butobarbital	No	GAN.
Butalbital	No	GAN.
Pentobarbital	No	GAN.
Phenobarbital	No	GAN.
Phenobarbital, sodium	No	GAN.
Poly (oxy-1,2-ethanedyl)- α -carboxymethyl, omega (tridecyloxy), potassium salt	No	GAN.
Secobarbital, sodium	No	GAN.
Thiamylal, sodium	No	ABB, PD.
Thiopental, sodium	No	ABB.
Hypnotics and sedatives (except barbiturates):		
Alprazolam	No	UPJ.
Droperidol	No	MRX.
Ethchlorvynol	No	ABB.
Glutethimide	No	GAN.
Methypylon	No	HOF.

See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Central depressants and stimulants—Continued		
Antidepressants:	Yes	
Amitriptyline	No	MRK.
Amitriptyline hydrochloride	No	GAN, MRK.
Doxepin hydrochloride	No	PFZ.
Fluoxetine hydrochloride	No	LIL.
Imipramine hydrochloride	No	CGY.
Maprotiline hydrochloride	No	ABB, AMD, CGY.
Nortriptyline hydrochloride	No	LIL.
Antitussives:	Yes	
Benzonatate	No	CGY.
Caramiphen edisylate	No	SK.
Codeine	No	MAL, PEN.
Dextromethorphan hydrobromide	No	AMD, HOF.
Hydrocodone bitartrate	No	MAL, PEN.
Noscapine	No	PEN.
Thebaine	No	MAL, PEN.
Tranquillizers:	Yes	
Phenothiazine derivatives:		
Chlorpromazine hydrochloride	No	SK.
Fluphenazine hydrochloride	No	TRD.
Perphenazine	No	SCH.
Prochlorperazine hydrochloride	No	SK.
Trifluoperazine	No	SK.
Trifluoperazine hydrochloride	No	SK.
Other tranquilizers:		
Clorazepate dipotassium	No	ABB.
Halazepam	No	SCH.
Haloperidol	No	SRL.
Hydroxyzine hydrochloride	No	PFZ.
Hydroxyzine pamoate	No	LEM.
Prazepam	No	PD.
Thiothixene hydrochloride	No	PFZ.
Other central depressants and stimulants:	Yes	
Amphetamines:		
Amphetamine	No	ARN.
Amphetamine sulfate	No	ARN.
Dextroamphetamine	No	ARN.
Dextroamphetamine sulfate	No	ARN.
Methamphetamine hydrochloride	No	ARN.
All other amphetamines	No	ARN.
General anesthetics:		
Enflurane	No	OH.
Isoflurane	No	OH.
Ketamine hydrochloride	No	BRS, PD.
Respiratory and cerebral stimulants:		
Caffeine (natural and synthetic):		
Caffeine, natural	No	CPR, GNF.
Caffeine, synthetic	No	PFZ.
Other respiratory and cerebral stimulants:		
Benzphetamine hydrochloride	No	UPJ.
Diethylpropion hydrochloride	No	GAN.
Doxapram hydrochloride	No	LLI, WYK.
Methylphenidate hydrochloride	No	CGY.
Pemoline	No	ABB.
Phendimetrazine tartrate	No	GAN.
Phentermine	No	GAN, HEX, SWD.
Phentermine hydrochloride	No	HEX.

See footnotes at end of table.

Section 6

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Central depressants and stimulants—Continued		
Other central depressants and stimulants—Continued		
Skeletal muscle relaxants:		
Chlorphenesin carbamate	No	UPJ.
Cyclobenzaprine hydrochloride	No	MRK.
Methocarbamol	No	HEX, LLI.
Orphenadrine citrate	No	ABB, RIK, WYK.
Succinylcholine chloride	No	ABB.
Tubocurarine	No	ABB, BUR.
Dermatological agents:		
Aluminum phenolsulfonate	No	SAL.
Ammonium phenolsulfonate	No	SAL.
Etretinate	No	HOF.
Padimate A	No	VND.
Padimate O	No	CWN, VND.
Salicylic acid	No	DOW, KLM, MON.
Zinc phenolsulfonate	No	SAL.
Zinc salicylate	No	MAL, RSA.
Expectorants and mucolytic agents:		
Ethylenediamine dihydroiodide	No	AJY, DPW.
Guaifenesin	No	LLI.
Iodinated glycerol	No	(²).
Gastrointestinal agents and therapeutic nutrients:		
Gastrointestinal agents:		
Choline chloride (all grades):		
Choline chloride (animal feed grade)	Yes	CHO, HFT, NUT, TMH.
Choline chloride (medicinal grade)	No	HFT.
Other gastrointestinal agents:		
Betaine hydrochloride	No	HFT.
Calcium polycarbophil	No	DAN, LLI.
All other cholagogues and hydrocholagogues	No	UPJ.
Choline bicarbonate	No	HFT.
Choline bitartrate	No	HFT.
Choline dihydrogen citrate	No	HFT.
Cimetidine	No	SK.
Cimetidine hydrochloride	No	SK.
Colestipol hydrochloride	No	UPJ.
Dextrothyroxine, sodium	No	BOT.
Dihydroxyaluminum aminoacetate	No	CHT.
Diphenoxylate	No	MAL.
Docusate, calcium	No	ACY, MAL.
Docusate, potassium	No	ACY.
Docusate, sodium	No	ACY.
Gemfibrozil	No	PD.
Methscopolamine bromide	No	UPJ.
Nizatidine	No	LIL.
Probucof	No	DOW.
Therapeutic nutrients:		
Calcium gluceptate	No	PFN.
Copper gluconate	No	PFZ.
Magnesium gluconate	No	PFZ.
Manganese gluconate	No	PFZ.
Potassium gluconate	No	PFZ.
Zinc gluconate	No	PFN, PFZ.
Hormones and synthetic substitutes:		
Anabolic agents and androgens:		
Fluoxymesterone	No	UPJ.
Methyltestosterone	No	(²).
Stanozolol	No	SD.
Testosterone	No	(²).
Testosterone cypionate	No	(²).

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See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Hormones and synthetic substitutes—Continued		
Anabolic agents and androgens—Continued		
Testosterone enanthate	No	(²).
Testosterone propionate	No	(²).
Zeranol	No	IMC.
All other anabolic agents and androgens	No	(²).
Corticosteroids:		
Beclomethasone	No	SCH.
Betamethasone	No	SCH.
Betamethasone dipropionate	No	SCH, (²).
Betamethasone sodium phosphate	No	SCH.
Betamethasone valerate	No	SCH, UPJ.
Cortisone acetate	No	MRK, UPJ.
Dexamethasone	No	MRK, (²).
Dexamethasone acetate	No	MRK.
Dexamethasone sodium phosphate	No	MRK, (²).
Diflorasone diacetate	No	UPJ.
Fludrocortisone acetate	No	UPJ.
Fluorometholone	No	UPJ.
Halcinonide	No	TRD.
Hydrocortisone	No	UPJ.
Hydrocortisone acetate	No	UPJ.
Isoflupredone, acetate	No	(²).
Medrysone	No	UPJ.
Methylprednisolone	No	ABB, UPJ.
Prednisolone	No	UPJ.
Prednisolone acetate	No	UPJ.
Prednisone	No	UPJ.
Triamcinolone	No	TRD, (²).
Triamcinolone acetonide	No	TRD, (²).
Triamcinolone diacetate	No	TRD, (²).
All other corticosteroids	No	(²).
Estrogens and progestogens:		
Estrogens:		
Estradiol cypionate	No	UPJ.
Estrogens, conjugated	No	ORG.
Estrogens, esterified	No	ORG.
All other estrogens	No	ORG.
Progestogens:		
Carboprost	No	UPJ.
Dinoprostone	No	UPJ.
Hydroxyprogesterone caproate	No	UPJ.
Medroxyprogesterone acetate	No	(²).
Megestrol acetate	No	UPJ.
Melengestrol acetate	No	UPJ.
Progesterone	No	UPJ.
Synthetic hypoglycemic agents:		
Acetohexamide	No	LIL.
Chlorpropamide	No	PFZ.
Glipizide	No	PFZ.
Tolazamide	No	(²).
Thyroid hormone and antithyroid agents:		
Levothyroxine, sodium	No	BOT.
Methimazole	No	LIL.
Thyroglobulin	No	NEP.
Thyroid	No	ARP.
Other hormones and synthetic substitutes:		
Calcitonin	No	ARP.
Corticotropin	No	ARP, ORG.
Danazol	No	SRL, SD.
Humatrope	No	LIL.

See footnotes at end of table.

Section 6

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 20)
Hormones and synthetic substitutes—Continued		
Other hormones and synthetic substitutes—Continued		
Insulin	No	LIL.
Oxytocin	No	PD.
All other hormones and synthetic substitutes	No	PD.
Local anesthetics:		
Benzocaine	No	MAL, WYK.
Butamben	No	ABB, WYK.
Dibucaine	No	CGY.
Dibucaine hydrochloride	No	CGY.
Lidocaine	No	LEM, WYK.
Lidocaine hydrochloride	No	LEM, WYK.
Pramoxine hydrochloride	No	ABB.
Renal-acting and edema-reducing agents:		
Benzothiadiazine derivatives:		
Benzthiazide	No	PFZ.
Chlorothiazide	No	MRK.
Hydrochlorothiazide	No	ABB, MRK, SK.
Polythiazide	No	PFZ.
Trichlormethiazide	No	SCH.
Other renal-acting and edema-reducing agents:		
Acetazolamide	No	ACY.
Amiloride hydrochloride	No	MRK.
Canrenoate, potassium	No	SRL.
Ethacrynic acid	No	MRK.
Probenecid	No	MRK, SAL.
Spirolactone	No	SRL.
Triamterene	No	GAN, SK.
Smooth muscle relaxants:		
Atracurium besylate	No	BUR.
Flavoxate hydrochloride	No	SK.
Oxtriphylline	No	PD.
Theophylline sodium glycinate	No	CHT.
Vitamins:		
Vitamin A:		
Beta carotene (provitamin A)	No	HOF.
Retinol (vitamin A acid)	No	EK.
Vitamin A acetate (animal feed grade)	No	HOF.
Vitamin A acetate (medicinal grade)	No	HOF.
Vitamin A alcohol	No	EK, HOF.
Vitamin A palmitate (medicinal grade)	No	HOF.
Vitamin A propionate	No	HOF.
All other vitamin A	No	EK.
Vitamin B—Complex:		
Niacin and derivatives:		
Niacin (medicinal grade)	No	RIL.
Niacinamide (medicinal grade)	No	NEP, RIL.
Niacinamide hydroiodide	No	DPW.
Pantothenic acid derivatives:		
Dexpanthenol	No	HOF.
Panthenol	No	HOF.
Other B-complex vitamins:		
Biotin	No	HOF.
Cyanocobalamin (animal feed grade)	No	MRK.
Cyanocobalamin (U.S.P. crystalline)	No	MRK.
Riboflavin (animal feed grade)	No	MRK.
Riboflavin (medicinal grade)	No	HOF.
Thiamine hydrochloride	No	HOF.
Thiamine mononitrate	No	HOF.

See footnotes at end of table.

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturers, 1987

<i>Medicinal chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 20)</i>
Vitamins—Continued		
Vitamin C:		
Ascorbic acid	No	HOF.
Sodium ascorbate	No	HOF.
Vitamin D:		
Calcifediol (Vitamin D ³)	No	UPJ.
Cholecalciferol (vitamin D ³)	No	DUP, VTM.
Ergocalciferol (vitamin D)	No	VTM.
Vitamin E:		
dl- α Tocopheryl acetate (all grades):		
dl- α Tocopheryl acetate (animal feed grade)	No	BAS, HOF.
dl- α Tocopheryl acetate (medicinal grade)	No	BAS, HOF.
Other vitamin E:		
d- α Tocopherol	No	EKT, SCP.
dl- α Tocopherol	No	HOF.
d- α Tocopheryl acetate	No	EKT, SCP.
d- α Tocopheryl acid succinate	No	EKT, SCP.
Vitamin K:		
Menadione sodium bisulfite (anhydrous)	No	ABB.
Miscellaneous medicinal chemicals:	Yes	
Antineoplastic agents:		
Azathioprine	No	BUR.
Carboplatin	No	MRX.
Cisplatin	No	MRX.
Cytarabine	No	PFN, UPJ.
Leuprolide acetate	No	ABB.
Methotrexate	No	BRS.
Procarbazine hydrochloride	No	BRS, HOF.
Streptozocin	No	PFN, UPJ.
Thioguanine (hemihydrate)	No	BUR.
Vincristine sulfate	No	LIL.
All other antineoplastic agents	No	(²).
Cardiovascular agents:		
Antihypertensive agents:		
Captopril	No	TRD.
Diazoxide	No	SCH.
Guanethidine sulfate	No	CGY.
Hydralazine hydrochloride	No	CGY.
Methyldopa	No	MRK.
Metoprolol tartrate	No	CGY.
Minoxidil	No	UPJ.
Nadolol	No	TRD.
Prazosin hydrochloride	No	ABB, PFZ.
Sodium nitroprusside	No	ABB.
Terazosin	No	ABB.
Enalapril maleate	No	MRK.
Vasodilators:		
Flecainide acetate	No	RIK.
Nifedipine	No	PFZ.
Other cardiovascular agents:		
Disopyramide phosphate	No	GAN, SRL.
Lovastatin	No	MRK.
Procainamide hydrochloride	No	PD, WYK.
Tocainide	No	MRK, SDW.
Diagnostic agents:		
Roentgenographic contrast media:		
Diatrizoate, sodium	No	SDW.
Iohexol	No	SD.
Iothalamate, meglumine	No	MAL.

See footnotes at end of table.

Section 6

Table 19—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufactures, 1987

<i>Medicinal chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 20)</i>
Miscellaneous medicinal chemicals—Continued		
Diagnostic agents other—Continued		
Other diagnostic agents:		
Albumin	No	SPR.
Edrophonium chloride	No	MRX.
Glutamyl-p-nitroaniline (liver function test)	No	REG.
Metyrapone	No	CGY.
Xylose (Intestinal malabsorption test)	No	PFN.
All other diagnostic agents, other than roentgenographic contrast media	No	PFZ.
Hematological agents:		
Anticoagulants:		
Ammonium heparin	No	SPR.
Benzalkonium heparin	No	RIK.
Lithium heparin	No	SPR.
Potassium warfarin	No	(²).
Sodium heparin	No	SPR.
Other hematological agents:		
Cellulose, oxidized	No	EKT.
Dextran	No	PHR.
Unclassified medicinal chemicals:		
Allopurinol	No	BUR.
Carbidopa	No	MRK.
Disulfuram	No	ABB.
Etidronate, disodium	No	NOR.
Levodopa	No	MON, SRL.
All other medicinal chemicals	No	ABB, BIB, MRX.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Table 20

Medicinal chemicals: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	LIL	Eli Lilly & Co., U.S. and Puerto Rico
ACY	American Cyanamid Co.	LLI	Lee Laboratories, Inc.
ADC	Anderson Development Co.	MAL	Mallinckrodt, Inc.
AJY	Ajay Chemicals, Inc.	MHI	Morton-Thiokol, Inc., Ventron Div.
AMD	Cyclo Products, Inc.	MON	Monsanto Co.
ARN	Arenol Chemical Corp.	MRK	Merck & Co., Inc.
ARP	Armour Pharmaceutical Co.	MRX	Johnson Matthey, Inc.
ARS	Arsynco, Inc.	NEP	Nepera Inc.
BAS	BASF Corp.	NOR	Norwich Eaton Pharmaceutical, Inc.
BEW	Beecham, Inc.:	NUT	Nutrilus, Inc.
BEE	Beecham Laboratories Div.	OH	Anaquest
BEW	Beecham Western Hemisphere Inc.	ORG	Organics/LaGrange, Inc.
BIB	Beckman Instruments, Inc., Spinco Div.	ORT	Roehr Chemicals, Inc., Div. of Aceto Corp.
BKC	J. T. Baker Chemical Co.	PD	Parke-Davis Div. of Warner-Lambert Co.
BOC	Biocraft Laboratories, Inc.	PEN	CPC International, Inc., Penick Corp.
BOT	Boots Co. (USA), Inc.	PFN	Pfanstiehl Laboratories, Inc.
BRS	Bristol-Myers Co.	PFZ	Pfizer, Inc. & Pfizer Pharmaceuticals, Inc.
BUR	Burroughs Wellcome Co.	PHR	Pharmachem Corp.
CGY	Ciba-Geigy Corp.	REG	Regis Chemical Co.
CHO	Ducon	RIK	Riker Laboratories, Inc. Sub of 3M Co.
CHT	Chattem, Inc.	RIL	Reilly Tar & Chemical Corp.
CWN	Upjohn Co., Fine Chemicals	RSA	R.S.A. Corp.
CPR	Certified Processing Corp.	SAL	Salsbury Laboratories, Inc.
DAN	Dan River, Inc., Chemical Products Div.	SCH	The Schering Corp.
DOW	Dow Chemical Co.	SCP	Henkel Corp.
DPW	Deepwater, Inc.	SD	Sterling Drug, Inc.:
DUP	E. I. duPont de Nemours & Co., Inc. Medical Products Dept.	SDW	Sterling Pharmaceuticals, Inc. Sterling Organics Div.
EK	Eastman Kodak Co.:	SK	SmithKline Chemicals
EKT	Tennessee Eastman Co. Div.	SPR	Scientific Protein Laboratories
FLM	Fleming Laboratories, Inc.	SRL	G.D. Searle & Co.
GAF	GAF Corp., Chemical Group	TMH	Thompson-Hayward Chemical Co.
GAN	Gane's Chemicals, Inc.	TNA	Ethyl Corp.
GNF	General Foods Manufacturing Corp., Maxwell House Coffee Div.	TRD	Squibb Manufacturing, Inc.
HEX	Hexagon Laboratories, Inc.	TX	Texaco Chemical Co.
HFT	Syntex Agribusiness, Inc., Nutrition & Chemical Div.	UCC	Union Carbide Corp.
HOF	Hoffmann-LaRoche, Inc.	UPJ	Upjohn Co.
HXL	Hexcel Corp., Hexcel Chemical Products	VND	Van Dyk, Div. of Mallinckrodt, Inc.
IMC	Pitman-Moore, Inc.,	VTM	Vitamins, Inc.
KAN	Kanasco, LTD	WTL	Pennwalt Corp., Lucidol Div.
KLM	Kalama Chemical, Inc.	WYK	Wyckoff Chemical Co., Inc.
KPT	Koppers Co., Inc.	WYT	Wyeth Laboratories, Inc., Wyeth Laboratories
LEM	Napp Chemicals, Inc.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 7

Flavor and Perfume Materials

Flavor and perfume materials are organic chemicals used to impart flavors and aromas to foods, beverages, cosmetics, and soaps. These aroma chemicals are also utilized to neutralize or mask unpleasant odors in industrial processes and products, as well as in consumer products.

Total domestic production of flavor and perfume materials in 1987 amounted to 126.2 million pounds (see figure 8). Sales of these materials in 1987 amounted to 81.5 million pounds, valued at \$726.3 million, compared with 96.4 million pounds, valued at \$623.4 million, in 1986. U.S. production of flavor and perfume materials in 1987 decreased by 8.7 percent from the level in 1986 while the value of sales increased by 16.5 percent.

Production of cyclic flavor and perfume materials in 1987 amounted to 70.7 million

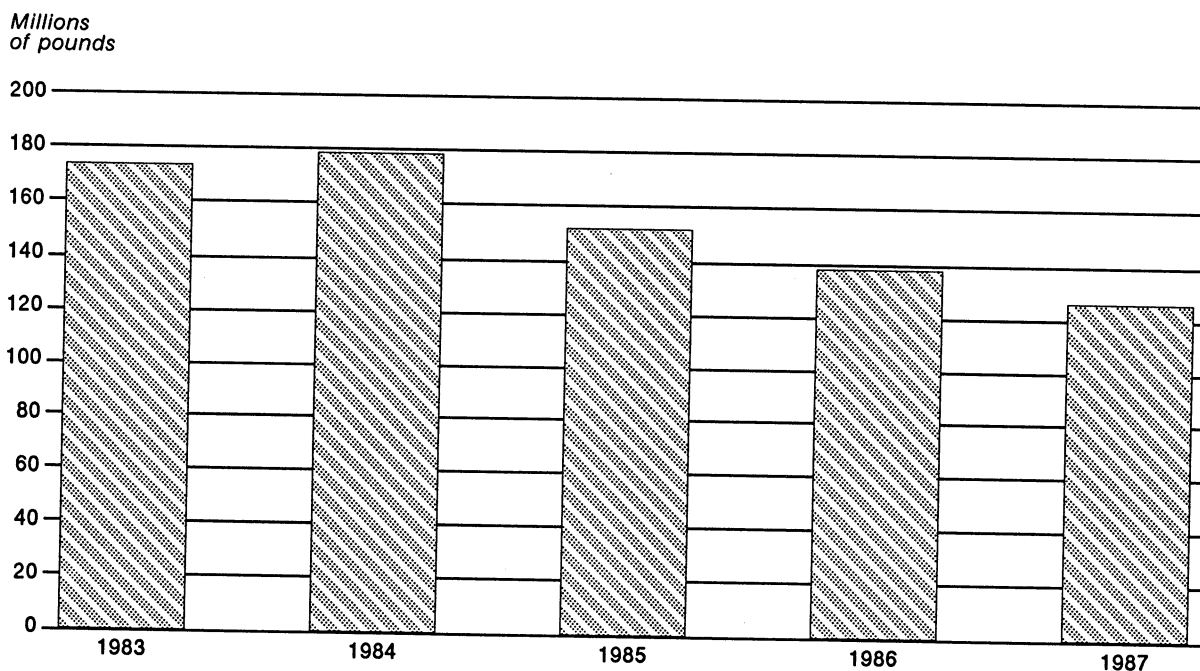
pounds; sales amounted to 56.2 million pounds, valued at \$647.3 million. Individual publishable chemicals in the cyclic group produced in the greatest volume in 1987 were anethole (2.8 million pounds), and eugenol (452 thousand pounds).

U.S. output of acyclic flavor and perfume materials in 1987 amounted to 55.4 million pounds; sales of these materials amounted to 25.2 million pounds, valued at \$79.1 million. Individual publishable acyclic flavor and perfume chemicals produced in the greatest volume in 1987 were citronellol (1.9 million pounds), tetrahydrogeraniol (557 thousand pounds), and hydroxycitronellal (372 thousand pounds).

Table 22 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 23.

Eric Land
202-252-1349

Figure 8
Flavor and perfume materials: U.S. production, 1983-87



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Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 7

Table 21
Flavor and perfume materials: U.S. production and sales, 1987

Flavor and perfume materials	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	126,154	81,464	726,336	\$8.92
Cyclic				
Total	70,740	56,239	647,255	11.51
Benzenoid and Naphthalenoid				
Total	52,328	42,802	587,498	13.73
4-Allyl-2-methoxyphenol (Eugenol)	452	255	916	3.59
Benzyl benzoate	100	(²)	(²)	(²)
Benzyl propionate	49	21	53	2.56
p-Methoxybenzyl alcohol	11	(²)	(²)	(²)
Phenethyl isobutyrate	10	7	42	5.98
2-Phenethyl phenylacetate	33	18	103	5.80
Phenylacetaldehyde, dimethyl acetal	103	115	541	5.70
p-Propenylanisole (Anethole)	2,758	3,615	10,329	2.86
All other benzenoid and naphthalenoid materials	48,812	38,771	575,514	14.84
Terpenoid, Heterocyclic, and Alicyclic				
Total	18,412	13,437	59,757	4.45
β-Caryophyllene	31	(²)	(²)	(²)
Cedryl acetate	186	136	736	5.40
Ionones	140	98	974	9.94
α-Terpineol	3,589	2,843	2,029	.71
Vetivenyl acetate	29	11	558	48.54
All other terpenoid, heterocyclic, and alicyclic materials	14,437	10,349	55,460	4.89
Acyclic				
Total	55,414	25,225	79,081	3.13
Citronellyl acetate	76	66	292	4.46
Citronellyl formate	31	15	159	10.35
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	10	23	117	5.08
3,7-Dimethyloctanol-1 (Tetrahydrogeraniol) ..	557	182	608	3.35
3,7-Dimethyl-6-octen-1-ol (Citronellol)	1,850	1,817	5,432	2.99
Ethyl hexanoate	24	20	85	4.37
Ethyl propionate	332	291	583	2.00
Geranyl acetate	154	134	658	4.92
Geranyl formate	9	11	88	8.21
cis-3-Hexen-1-yl acetate	9	6	180	30.19
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	372	(²)	(²)	(²)
Isopentyl butyrate	101	114	275	2.42
All other acyclic materials	51,889	22,546	70,604	3.13

¹ Calculated from unrounded figures.

² Reported data are accepted in confidence and may not be published, or no data were reported.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 22

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Cyclic		
Benzenoid and naphthalenoid:		
Acetaldehyde, ethyl phenethyl acetal	No	IFF.
Acetaldehyde, phenethyl propyl acetal	No	IFF.
2'-Acetonaphthone (β -Methyl naphthyl ketone)	No	GIV.
1-Acetoxy-2-sec-butyl-1-ethylcyclohexane	No	GIV.
p-Allylanisole	No	SCM, (?).
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	No	CI.
4-Allyl-2-methoxyphenol (Eugenol)	Yes	BDS, CI, ELN, GIV, IFF, UNG.
4-Allyl-2-methoxyphenol acetate (Eugenol acetate)	No	CI, FB.
α -Amyl cinnamic aldehyde	No	FB.
Amyl cinnamic aldehyde dimethyl acetal	No	FB.
Amyl cinnamyl alcohol	No	IFF.
p-Anisaldehyde	No	FB.
Anisyl acetate	No	ELN, GIV.
Aurantol	No	BDS, FB.
Benzaldehyde glyceryl acetal	No	GIV.
Benzophenone	No	CWN, PD.
Benzyl acetate	No	FB, MRF, TCH.
Benzyl benzoate	Yes	HAR, KLM, MRF, TCH.
Benzyl butyrate	No	ELN, FB.
Benzyl cinnamate	No	FB.
Benzyl formate	No	ELN.
Benzyl isobutyrate	No	ELN.
Benzyl isopentyl ether	No	GIV.
Benzyl isovalerate	No	ELN.
Benzyl laurate	No	GIV.
1-(Benzyloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether)	No	GIV.
Benzyl phenylacetate	No	ELN, GIV.
Benzyl propionate	Yes	ELN, FB, IFF.
Benzyl salicylate	No	FB, HAR, TCH.
p-tert-Butyl- α -methylhydrocinnamaldehyde	No	GIV.
N-(3-(p-tert-butylphenyl)-2-methylpropylidene)-anthranilic acid, methyl ester	No	GIV.
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene (Musk tibetene)	No	GIV.
Carvacrol	No	GIV.
Cineole (Eucalyptol)	No	NCI, SCM.
Cinnamaldehyde	No	FB.
Cinnamic aldehyde dimethyl acetal	No	CI.
Cinnamyl acetate	No	ELN, FB.
Cinnamyl alcohol	No	FB, IFF.
Cinnamyl butyrate	No	FB.
Cinnamyl cinnamate	No	FB.
Cinnamyl nitrile	No	IFF.
Cinnamyl propionate	No	ELN.
Coumarin	No	RDA.
Cuminyl acetate	No	IFF.
Cuminyl formate	No	IFF.
2,4-Dibromo-6-nitro-m-cresyl methyl ether	No	GIV.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrol)	No	CI.
β ,4-Dimethyl-3-cyclohexene-1-propanal	No	CI.
γ ,4-Dimethyl-3-cyclohexene-1-propanol	No	CI.
3,7-Dimethyl-1,6-octadien-3-yl formate	No	GIV.
3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate)	No	GIV.
α , α -Dimethylphenethyl acetate	No	IFF.

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See footnotes at end of table.

Section 7

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Cyclic—Continued		
Benzenoid and naphthalenoid—Continued		
Dimethyl phenylethyl carbinol	No	IFF.
p-Ethoxybenzaldehyde	No	GIV.
N-(p-Ethoxycarbonylphenyl)-N'-ethyl-N'-phenylformamide	No	GIV.
2-Ethoxynaphthalene	No	GIV.
Ethyl anthranilate	No	FB.
Ethyl benzoate	No	ELN.
Ethyl cinnamate	No	ELN.
Ethyl- α , β -epoxy- β -methylhydrocinnamate	No	ELN.
2-Ethyl hexyl salicylate	No	FEL, HAR.
Ethyl phenylacetate	No	ELN, GIV.
Ethyl salicylate	No	FB.
Heliotropyl acetate	No	IFF.
Heliotropyl acetone	No	AMB.
Hexahydro-5-methoxy-4,7-methano-1H-indene	No	CI.
cis-3-Hexenyl salicylate	No	BDS, GIV, IFF.
α -Hexylcinnamaldehyde	No	CI.
Hydratropaldehyde	No	GIV.
Hydratropaldehyde, dimethyl acetal	No	GIV, IFF.
Hydrocinnamic acid	No	ELN.
Hydrocoumarin	No	ELN, GIV.
Hydroxycitronellal methyl anthranilate	No	GIV, IFF.
4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin)	No	RDA.
4-Hydroxy-3-methoxybenzaldehyde (Vanillin)	No	RAY, RDA.
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone (Vanillylacetone)	No	GIV.
p-Hydroxy-phenylbutanone	No	GIV.
Isoamyl phenylacetate	No	ELN.
Isobutyl phenylacetate	No	ELN, FB.
Isobutylquinoline	No	IFF.
Isobutyl salicylate	No	FB.
Isohexenyl tetrahydrobenzaldehyde (Myrac aldehyde)	No	IFF.
Isopentyl benzoate	No	GIV.
Isopentyl salicylate	No	FB, HAR.
l-Limonene	No	SCM.
Linalyl anthranilate	No	BDS, FMT.
Linalyl benzoate	No	GIV.
p-Mentha-1,8-diene (Limonene)	No	IFF.
Methyl anthranilate	No	HPC.
o-Methoxycinnamic aldehyde	No	CI.
p-Methoxybenzyl alcohol (Anisyl alcohol)	Yes	ELN, FB, GIV.
2-Methoxynaphthalene	No	GIV.
1-p-Methoxyphenyl penten-1-one-3 (α -Methyl-anisylacetone)	No	GIV.
3-(2-Methoxyphenyl)-2-propenal	No	CI.
2-Methoxy-4-propenylphenol (Isoeugenol)	No	CI.
2-Methoxy-4-propenylphenol, acetate	No	ELN.
2-Methoxy-propylphenol	No	CI.
4'-Methylacetophenone	No	CWN.
p-Methylanisole	No	GIV.
Methyl anthranilate	No	FB, PSG.
β -Methylbenzene propanal	No	CI.
Methyl benzoate	No	KLM, MRF.
α -Methylbenzyl acetate (Styralyl acetate)	No	CI, IFF.
α -Methylcinnamaldehyde	No	CI, FB.
Methyl cinnamate	No	FB.
6-Methylcoumarin	No	GIV.

See footnotes at end of table.

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Cyclic—Continued		
Benzenoid and naphthalenoid—Continued		
1,2-Methylenedioxy-4-propylene benzene (Iso-Safrole)	No	AMB.
p-Methylhydrotropaldehyde	No	GIV.
1-Methyl-isoheptyl-hexahydrobenzaldehyde	No	GIV.
Methyl-N-methylantranilate	No	AMB.
α-Methyl-3,4-methylene dioxyhydrocinnamaldehyde	No	GIV.
Methyl phenylacetate	No	ELN.
3-Methyl-5-phenyl-1-pentanol	No	IFF.
Methyl salicylate	No	KLM, MON.
Octahydro-5-methoxy-4,7-methano-1H-Indene, 2-carboxaldehyde	No	CI.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan (Moskene)	No	GIV.
α-Pentylcinnamaldehyde	No	CI.
Phenethyl acetate	No	FB, IFF.
Phenethyl alcohol	No	FB.
Phenethyl formate	No	ELN, IFF.
Phenethyl isobutyrate	Yes	ELN, GIV, IFF.
Phenethyl isovalerate	No	ELN, FB.
2-Phenethyl phenylacetate	Yes	BDS, ELN, GIV, IFF.
Phenethyl propionate	No	ELN.
Phenethyl salicylate	No	GIV.
2-Phenoxyethyl isobutyrate	No	FB.
Phenylacetaldehyde	No	CI, GIV.
Phenylacetaldehyde, dimethyl acetal	Yes	CI, ELN, GIV.
Phenylacetic acid	No	GIV.
Phenylacetic acid, isopentyl ester	No	GIV.
α-Phenylanisole	No	GIV.
4-Phenyl-3-buten-2-one	No	FB.
Phenylethyl benzoate	No	IFF.
Phenylethyl tiglate	No	FB.
3-Phenyl-1-propanol (Hydrocinnamic alcohol)	No	FB.
3-Phenylpropyl acetate	No	ELN, GIV.
3-Phenylpropyl cinnamate	No	FB.
Piperonal (Heliotropin)	No	AMB.
p-Propenylanisole (Anethole)	Yes	ARZ, FB, HPC, NCI, SCM.
p-Propylanisol (Dihydroanethole)	No	GIV.
n-Propylidene phthalide	No	FB.
Sweeteners, synthetic:		
Aspartame	No	NSW
Cyclohexanesulfamic acid (Cyclamic acid)	No	ABB.
Cyclohexanesulfamic acid, calcium salt (Calcium cyclamate)	No	ABB.
Cyclohexanesulfamic acid, sodium salt (Sodium cyclamate)	No	ABB.
Saccharin (1,2-Benzisothiazolin-3-one,-1,1-dioxide)	No	PSG.
Saccharin, sodium salt	No	PSG.
Tetramethyl octahydro acetophenone	No	IFF.
Tetramethyl octahydro acetyl naphthalene	No	IFF.
p-Tolualdehyde	No	FB, GIV.
p-Tolylacetaldehyde	No	GIV.
p-Tolylacetate	No	ELN.
p-Tolylisobutyrate	No	IFF.
p-Tolyl octanoate	No	IFF.
p-Tolylphenylacetate	No	GIV.
α-(Trichloromethyl)benzyl acetate (Rosetone)	No	ARS.

See footnotes at end of table.

Section 7

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Cyclic—Continued		
Benzenoid and naphthalenoid—Continued		
Trimethyl benzyl dioxane	No	IFF.
Trimethylcyclohexyl salicylate	No	ARS.
All other benzenoid or naphthalenoid chemicals	No	IFF.
Terpenoid, heterocyclic, and alicyclic:		
4-Acetoxyethyl-4-nonene	No	FB.
Acetyl-n-butyl (2,3-Hexanedione)	No	FB.
Acetyl cedrene (Vertoflex)	No	BDS.
Acetyl isovaleryl (5-Methyl-2,3-hexanedione)	No	FB.
N-Acetyl methyl anthranilate	No	AMB.
Acetyl propionyl (2,3-Pentanedione)	No	FB.
Allo-ocimene	No	SCM, (2).
Allyl cyclohexyl propionate	No	GIV.
Amyl cyclohexyl acetate	No	IFF.
Amyris acetate	No	GIV.
β -methyl ionone coeur	No	IFF.
2-tert-Butylcyclohexanol	No	IFF.
2-sec-Butylcyclohexanone	No	GIV.
o-tert-Butylcyclohexyl acetate	No	CI, IFF.
p-tert-Butylcyclohexyl acetate (Verbeniax)	No	CI, IFF.
Cadinene	No	FB.
α -Campholenic aldehyde	No	SCM.
Canrenoate, potassium	No	IFF.
l-Carvone	No	SCM.
β -Caryophyllene	Yes	BDS, FB, GIV.
Caryophyllene oxide	No	GIV.
α -Cedrene epoxide (Andrane)	No	BDS, IFF.
Cedrenol	No	ELN, IFF.
Cedrol	No	ELN.
Cedryl acetate	Yes	BDS, ELN, IFF.
Cedryl formate	No	IFF.
Cyclohexyl salicylate	No	FB.
Cyclopentanone	No	FB.
Dihydro-cyclacet	No	IFF.
p-Cymene	No	SCM.
Dihydronordicyclopentadienyl acetate (Cyclacet)	No	CI.
Dihydronordicyclopentadienyl propionate (Cyclaprop) (Verdyll propionate extra)	No	CI.
Dihydro terpineol	No	SCM.
Dimethyl cyclohexane methanol	No	IFF.
2,6-Dimethylheptan-2-ol	No	GIV.
Ethyl furoate	No	IFF, SCM.
4-Ethyl gualacol	No	STG.
Furfurylidene acetone	No	AMB.
Galaxolide (1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta-q-2-benzopyran)	No	IFF.
Gualacwood acetate	No	ELN, FB.
Gualene	No	FB.
2-Heptylcyclopentanone	No	IFF.
Hexadecanolide	No	IFF.
2-Hexyl-2-cyclopenten-1-one	No	FB.
3-Hydroxy-2-ethyl-4-pyrone (Ethylmaltol)	No	PFZ.
4-(4-Hydroxy-4-methyl pentyl)-3-cyclohexene-10-carboxaldehyde (Lyal)	No	IFF.
3-Hydroxy-2-methyl-4-pyrone (Maltol)	No	PFZ.
4-Hydroxynonanonic acid, γ -lactone (γ -Nonalactone)	No	ELN.
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)	No	ELN.

See footnotes at end of table.

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

<i>Flavor and perfume materials</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 23)</i>
Cyclic—Continued		
Terpenoid, heterocyclic, and alicyclic—Continued		
Ionone (α - and β -)	No	BDS, GIV, NCI.
α -Ionone	No	BDS, FB, GIV, IFF.
Isobornyl acetate	No	SCM.
Isobornyl methyl ether	No	SCM.
Isobornyl propionate	No	ELN.
Isolongifolene epoxide	No	GIV.
Isomenthone	No	GIV.
6-Isopropyldecalone	No	GIV.
Isopulegyl acetate	No	GIV.
p-Mentha-1,3-diene (α -Terpinene)	No	SCM.
p-Mentha-1,4-diene (γ -Terpinene)	No	SCM.
p-Mentha-6,8-dien-2-ol (Carveol)	No	FB.
p-Mentha-6,8-dien-2-one (Carvone, Carvol)	No	FB.
1-p-Mentha-6,8-dien-2-yl acetate (Carvyl acetate) ...	No	FB.
p-Menth-8-en-3-ol (Isopulegol)	No	GIV.
p-Menth-1-en-3-one (Piperitone)	No	GIV.
p-Menth-4-(8)-en-3-one (Pulegone)	No	GIV.
1-1-p-Menthen-6-yl-1-propanone	No	GIV.
d,l-Menthol, synthetic	No	GIV, HAR, NCI.
l-Menthol, synthetic	No	HAR.
Menthyl acetate	No	GIV.
l-Menthyl acetate	No	SCM.
α -Methylcyclohexanemethanol	No	CI.
Methylionone (α - and β -)	No	GIV, IFF, NCI.
γ -Methylionone	No	BDS, FB, GIV, NCI.
6-Methyl- α -ionone	No	BDS, GIV.
Nopol	No	NCI.
Nopyl acetate	No	NCI, SCM.
1-Phenylsal-1,2-propanidione	No	STG.
Plinol	No	SCM.
Plinyl acetate	No	SCM.
Propyl furylacrylate	No	AMB.
Rose oxide	No	FB.
α -Santalyl acetate	No	GIV.
Terpinene-ol	No	SCM.
Terpineol (α - and β -)	No	RBC.
α -Terpineol	Yes	HPC, NCI, SCM.
α -Terpinyl acetate	No	NCI, SCM.
α -Terpinyl propionate	No	ELN.
3,3,5-Trimethyl cyclohexanol (m-Homomenthol)	No	ARS.
Trimethyl cyclohexene carboxaldehyde	No	IFF.
Trimethyl cyclohexenyl butenone	No	IFF.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)- 1,6-heptadien-3-one (Allyl- α -ionone)	No	IFF.
5-(2,2,3-Trimethylcyclopent-3-en-1-yl)- 3-methylpentan-2-ol	No	GIV.
Trimethyl norborane methanol	No	IFF.
α,α -5-Trimethyl-5-vinyl-furfuryl alcohol and tetrahydro-2,2,6-trimethyl-6-vinyl-3-ol	No	GIV.
Vetivenol	No	GIV.
Vetivenyl acetate	Yes	BDS, ELN, FB, GIV, IFF.
All other terpenoid, heterocyclic, or alicyclic flavor and perfume chemicals	No	IFF, SCM.

See footnotes at end of table.

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Acyclic		
Allyl disulfide	No	IFF.
Allyl heptanoate	No	ELN, FB.
Allyl hexanoate	Yes	ELN, FB.
Ammonium isovalerate	No	RSA.
Amyl vinyl carbonyl acetate	No	IFF.
Butanoic acid, 1-cyclohexylethyl ester	No	CI.
Butyl butyryl lactate	No	ELN.
Butyraldehyde diethyl acetal	No	FB.
Citral dimethyl acetal	No	FB, IFF.
Citronellyl acetate	Yes	BDS, ELN, FB, GIV, IFF, NCI, SCM.
Citronellyl butyrate	No	IFF.
Citronellyl formate	Yes	BDS, ELN, GIV, IFF.
Citronellyl isobutyrate	No	ELN.
Citronellyl propionate	No	IFF.
Crude acetate mixture (Linalyl, neryl, geranyl acetates, main components)	No	(²).
Decanal (Capraldehyde)	No	CI.
Decyl acetate	No	GIV.
Diethyl acetal	No	FB.
Diethyl sebacate	No	ELN.
Diethyl succinate	No	ELN, MRF.
Dihexyl fumarate	No	FB.
Dihydrocarvone	No	SCM.
Dihydrolinalool	No	SCM.
Dihydromyrcenol	No	SCM, (²).
Dihydropentamethyl indanone	No	IFF.
Dihydroterpinyl acetate	No	IFF.
1,1-Dimethoxy octane	No	IFF.
4-(1,1-Dimethylethyl)cyclohexanol	No	CI.
2,6-Dimethyl-5-hepten-1-al	No	GIV.
Dimethyl hexanediol	No	(²).
2,5-Dimethyl-3-hexyne-2,5-diol	No	(²).
3,7-Dimethyl-cis-2,6-octadienal (Citral B) (Neral)	No	SCM.
3,7-Dimethyl-trans-2,6-octadienal (Citral A, Geranial)	No	BDS, SCM.
3,7-Dimethyl-2,6-octadienal (Citral A & B)	No	NCI.
3,7-Dimethyl-2,6-octadienenitrile	No	CI.
3,7-Dimethyl-2,6-octadiene oxime	No	CI.
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	No	ELN, GIV, IFF, NCI, SCM.
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	No	ELN, FEL, GIV, IFF, NCI, SCM.
3,7-Dimethyl-1,6-octadien-3-ol (Linalool) (Linalyl alcohol)	No	ELN, IFF, NCI, SCM.
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	Yes	ELN, GIV, IFF, SCM.
3,7-Dimethyl-1,6-octadien-3-ol, acetate (Linalyl acetate)	No	FB, GIV, NCI, SCM.
3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate)	No	GIV.
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate)	No	GIV.
Dimethyloctanal	No	GIV, SCM.
3,7-Dimethyloctanol-1 (Tetrahydrogeraniol)	Yes	GIV, IFF, NCI, SCM.
3,7-Dimethyl-3-octanol	No	FB, SCM.
Dimethyloctanyl acetate	No	GIV, IFF.
3,7-Dimethyl-6-octen-1-al (Citronellal)	No	GIV, SCM.
3,7-Dimethyl-6-octenenitrile	No	CI.
3,7-Dimethyl-6-octen-1-ol (Citronellol)	Yes	ELN, FB, GIV, NCI, SCM.
3,7-Dimethyl-7-octenol 70%, 6-octenol isomer 30%	No	GIV.
Dimethyl succinate	No	FB.

See footnotes at end of table.

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Acyclic—Continued		
Dodecane nitrile	No	IFF.
Ethyl butyrate	No	FB, HPC, NW.
Ethyl caprate	No	FB.
Ethyl formate	No	FB.
Ethyl heptanoate	No	ELN, FEL.
Ethyl hexanoate	Yes	ELN, FB, NW.
Ethyl isovalerate	No	ELN, FB.
Ethyl laurate	No	ELN, FB.
Ethyl-2-methyl butyrate	No	FB, HPC, SCM.
Ethyl-2 methyl pentanoate	No	HPC.
Ethyl myristate	No	ELN.
Ethyl octanoate	No	FB.
Ethyl oxyhydrate	No	FB.
Ethyl propionate	Yes	FB, MRF, NW.
Ethyl trimethyl cyclopentenyl buterol	No	IFF.
Ethyl valerate	No	ELN.
4-Formyl-4-nonene	No	FB.
Geranyl acetate	Yes	BDS, CI, ELN, FB, FEL, GIV, HPC, FF, NCI, NW, SCM.
Geranyl butyrate	No	ELN, GIV.
Geranyl crotonate	No	FB.
Geranyl ethyl ether	No	IFF.
Geranyl formate	Yes	BDS, ELN, GIV.
Geranyl isobutyrate	No	FB, IFF.
Geranyl isovalerate	No	FB.
Geranyl nitrile (Citralva)	No	IFF.
Geranyl propionate	No	FB.
Geranyl tiglate	No	FB.
Heptyl acetate	No	FB.
Heptyl butyrate	No	SCM.
N-Hexanal	No	CI.
2-Hexenal	No	FB, GIV.
2-Hexenol	No	FB.
cis-3-Hexen-1-yl acetate	Yes	BDS, GIV, IFF.
cis-3-Hexenyl butyrate	No	IFF.
cis-3-Hexenyl methyl carbonate	No	IFF.
cis-3-Hexenyl tiglate	No	BDS.
Hexoxyacetaldehyde dimethyl acetal	No	FB.
Hexyl acetate	No	FB.
Hexyl caproate	No	FB.
Hydroxycitronellol	No	SCM.
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	Yes	GIV, IFF, SCM.
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal)	No	GIV.
Isoamyl caproate	No	FB.
Isoamyl caprylate	No	FB.
Isoamyl propionate	No	FB.
Isobutyl acetate	No	GIV.
Isobutyl-2-butenolate	No	AMB.
Isobutyl butyrate	No	FB.
Isononyl acetate	No	IFF.
Isopentyl acetate (Isoamyl acetate)	No	ELN, FB, NW.
Isopentyl butyrate	Yes	FB, GIV, NW.
Isopentyl formate	No	ELN, FB.
Isopentyl isovalerate	No	ELN, FB, HPC.
Lauraldehyde	No	GIV, SCM.
3-Methyl butanol	No	FB.

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See footnotes at end of table.

Table 22—Continued

Flavor and perfume materials for which U.S. production and/or sales were reported identified by manufacturer, 1987

Flavor and perfume materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 23)
Acyclic—Continued		
3-Methyl-2-butenyl acetate	No	IFF.
3-Methyl butyl acetate	No	FB.
3-Methyl butyl butyrate	No	FB.
Methyl butynol	No	(²).
2-Methyldecanal	No	IFF.
2-Methylene undecanal	No	CI.
Methyl isobutyrate	No	HPC.
Methyl isovalerate	No	FB.
Methyl-2-methyl butyrate	No	SCM.
3-Methyl-2-[and 3]nonene nitrile	No	GIV.
Methylol methyl hexyl ketone	No	GIV.
Methyl pentynol	No	(²).
Methyl propionate	No	FB.
Methyl thiobutyrate	No	STG.
2-Methylundecanal	No	CI, GIV.
Myrcenyl acetate	No	IFF.
Myristaldehyde	No	GIV.
Nonanal	No	CI.
1,3-Nonanediol acetate	No	ELN, GIV, IFF.
Ocimene	No	IFF.
Ocimenyl acetate	No	IFF.
Octanal	No	CI.
3-Octanone (Ethyl amyl ketone)	No	GIV.
N-Octyl acetate	No	FB.
Octyl formate	No	FB.
Octyl isobutyrate	No	FB.
Octyl isovalerate	No	GIV.
Pseudo linalyl acetate (Neobergamate)	No	IFF.
Rhodinol	No	GIV, IFF.
Rhodinyl acetate	No	IFF.
Tepyl acetate	No	ELN.
Tetrahydro-allocimerol (50/50 mixture of tetrahydro-linalool and tetrahydro-myrcenol)	No	(²).
Tetralol	No	SCM.
Trimethyl-cyclododeca-trienyl ethanone	No	IFF.
3,5,5-Trimethyl hexanal	No	IFF.
Undecanal	No	CI, GIV.
9-Undecenal	No	GIV.
All other acyclic flavor and perfume materials	No	FB, IFF, (²).

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 23

Flavor and perfume materials: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	NCI	Union Camp Corp., Terpene and Aromatics Div.
AMB	American Bio-Synthetics Corp.	NSW	Nutrasweet Co.
ARS	Arsynco, Inc.	NW	Northwestern Chemical Co.
ARZ	Arizona Chemical Co.	PD	Parke-Davis, Div. of Warner-Lambert Co.
BDS	Biddle Sawyer Corp.	PFZ	Pfizer, Inc.
CI	Firmenich, Inc.	PSG	PMC Specialities Group, Inc.
CWN	Upjohn Co., Fine Chemical Div.	RAY	ITT Rayonier, Inc.
ELN	Elan Chemical Co.	RBC	Artel Chemical Corp.
FB	Fritzsche Dodge & Olcott, Inc.	RSA	RSA Corp.
FEL	Felton International, Inc.	RDA	Rhone-Poulenc, Inc.
FMT	Fairmount Chemical Co., Inc.	SCM	SCM Glidco Organics
GIV	Givaudan Corp.	STG	McCormick & Co., Inc. McCormick-Stange Div.
HAR	Haarmann & Reimer Corp.	TCH	Quantum Chemical Corp., Emery Div.
HPC	Hercules, Inc.	UNG	Ungerer & Co.
IFF	International Flavors & Fragrances, Inc.		
KLM	Kalama Chemical, Inc.		
MON	Monsanto Co.		
MRF	Morflex Chemical Co., Inc.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 8

Plastics and Resin Materials

Plastics and resin materials are high molecular weight polymers which, at some stage in their manufacture, exist in such physical condition that they can be shaped or otherwise processed by the application of heat and pressure. The terms "plastics," "resin," and "polymers," can be (and often are) used interchangeably by the trade. Depending on the chemical composition, manufacturing process, or intended use, the commercial products may contain plasticizers, fillers, extenders, stabilizers, coloring agents, or other additives. There are about 40 to 50 basic plastics and resins which are available commercially. These basic materials are available in literally thousands of individual compounds each with its distinct properties depending on the molecular weight of the resin and the types and amounts of the additives present. Plastics materials may be molded, cast, or extruded into semifinished or finished solid forms. Resin materials may be in the form of solutions, pastes, or emulsions for applications such as protective coatings, adhesives, or paper and textile treatment.

Statistics on U.S. production and sales of synthetic plastics and resin materials for 1987 are given in table 24. U.S. production of plastics and resin materials in 1987 totaled 59,481 million pounds, or 13.4 percent more than the 52,447 million pounds produced in 1986. From 1983-87, the production of plastics and resin materials increased steadily from 44,281 million pounds in 1983 to 59,481 million pounds in 1987, or at an average, annual rate of growth of 7.7 percent (see figure 9). Sales in 1987 totaled 51,170 million pounds, valued at \$26,066 million,

compared with 45,144 million pounds, valued at \$20,355 million, in 1986.

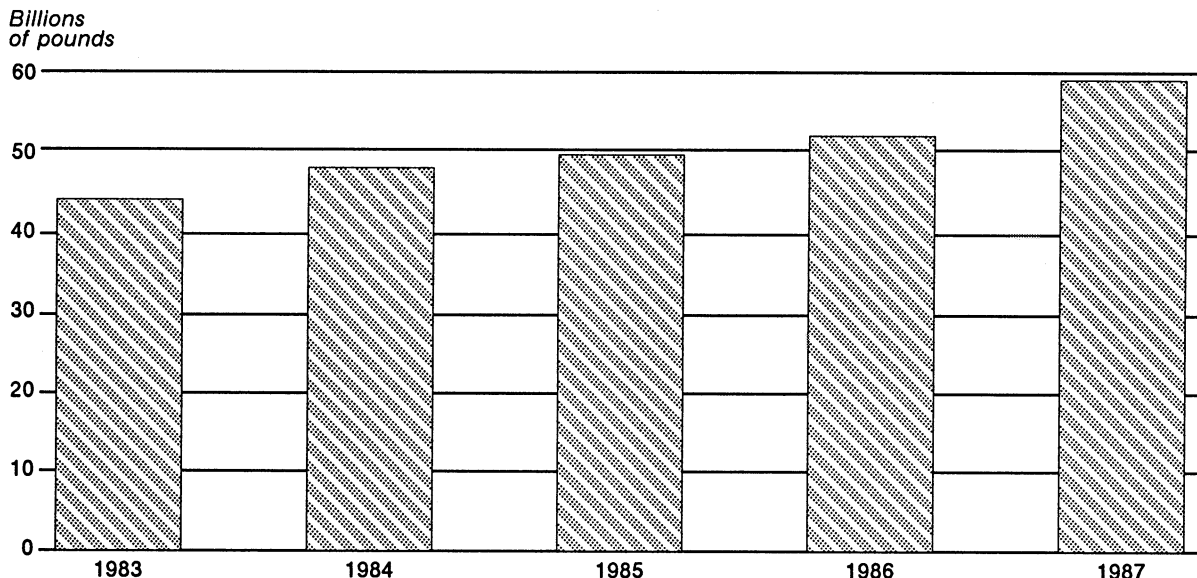
Thermosetting materials are those which harden with a change in composition in the final treatment so that in their final state as finished articles they are substantially infusible and insoluble; that is, they cannot again be softened by heat or solvents. U.S. production of thermosetting materials totaled 8,923 million pounds in 1987, compared with 8,349 million pounds in 1986. Production of the most important products in 1987 included phenolic (1,697 million pounds), amino (urea and melamine) resins (2,214 million pounds), polyester resins, unsaturated (1,344 million pounds), and alkyd resins (752 million pounds).

Thermoplastic materials are those which in their final state as finished articles can be repeatedly softened by heat and hardened by a decrease in temperature. U.S. production of thermoplastic materials totaled 50,558 million pounds in 1987 (or 85.0 percent of the total plastics and resin materials output for 1987), compared with 44,098 million pounds in 1986. Production of the most important products in 1987 included polyethylene (17,899 million pounds), polypropylene (6,977 million pounds), vinyl resins (9,931 million pounds), and styrene type materials (8,283 million pounds). In 1987, production of saturated polyester resins reached 2,634 million pounds (polyethylene terephthalate alone reached 1,898 million pounds). Production of engineering plastics, in the aggregate, amounted to 1,494 million pounds in 1987.

Table 25 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 26.

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202-252-1362

Figure 9
Plastics and resin materials: U.S. production, 1983-87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Section 8

Table 24

Plastics and resin materials: U.S. Production and sales, 1987

Plastics and resin materials	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds dry basis ²	1,000 pounds dry basis ²	1,000 dollars	Per pound
Grand total	59,480,710	51,170,043	26,066,138	\$0.51
Thermosetting resins				
Total	8,922,625	7,180,536	3,763,075	.52
Alkyd resins, total	752,252	502,048	298,862	.60
Phthalic anhydride type	632,788	435,708	245,154	.56
Polybasic acid type	35,486	19,470	16,472	.85
Styrenated-alkyds or copolymer alkyds	17,003	8,322	6,583	.79
Vinyl toluene alkyds	28,129	28,712	21,311	.74
All other alkyd resins	38,846	9,836	9,342	.95
Dicyandiamide resins (an amino resin)	2,534	2,245	2,763	1.23
Epoxy resins: ^{3 4}				
Unmodified	514,598	353,678	391,396	1.11
Advanced	(323,718)	(183,108)	(277,909)	(1.52)
Furfuryl type resins	19,234	19,428	13,667	.70
Glyoxal-formaldehyde resins	20,096	15,616	13,879	.89
Melamine-formaldehyde resins (an amino resin)	250,314	219,134	189,388	.86
Phenolic and other tar acid resins	1,697,074	1,223,894	627,238	.51
Polyester resins, unsaturated ⁵	1,343,796	1,264,720	793,208	.63
Polyether and polyester polyols for urethanes ⁶	1,974,645	1,593,065	830,149	.52
Polyurethane elastomers and plastics products, total	227,482	142,983	214,722	1.50
Elastomers ⁷	75,224	62,357	118,473	1.90
Plastics	152,258	80,626	96,249	1.19
Urea-formaldehyde resins (an amino resin) ..	1,963,759	1,714,932	235,606	.14
All other thermosetting resins ⁸	156,841	128,793	152,197	1.18
Thermoplastic resins				
Total	50,558,085	43,989,507	22,303,063	.51
Acrylic resins, total ⁹	1,547,486	1,124,373	1,319,396	1.17
Butyl acrylate-ethyl acrylate copolymers resins	84,400	72,266	60,075	.83
Homopolymer resins, except PMMA, of acrylic or methacrylic acid esters	107,979	21,591	19,303	.89
Polymethyl methacrylate (PMMA) resins ..	596,588	383,022	395,209	1.03
Thermosetting acrylic resins	81,822	30,842	28,176	.93
All other acrylic resins	676,697	616,652	816,633	1.32
Engineering plastics ¹⁰	1,493,630	1,253,689	1,983,840	1.58
Petroleum hydrocarbons resins	347,758	312,179	151,698	.49
Polyamide resins, total	633,573	570,887	811,432	1.42
Nylon type ^{9 11}	585,376	522,482	769,926	8-2 1.47
Non-nylon type	48,197	48,405	41,506	.86

See footnotes at end of table.

Table 24
Plastics and resin materials: U.S. Production and sales, 1987

Plastics and resin materials	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds dry basis ²	1,000 pounds dry basis ²	1,000 dollars	Per pound
Thermoplastics resins—Continued				
Polyester resins, saturated, total ^{9 12}	2,633,804	1,667,427	1,428,895	\$0.86
Polyethylene terephthalate (PET)	1,897,698	1,205,963	899,438	.75
All other saturated polyesters, including Poly-butylene terephthalate, (PBT) resins	736,106	461,464	529,457	1.15
Polyethylene resins, total	17,899,476	16,972,387	5,805,831	.34
Ethylene-vinyl acetate and other copolymer resins	524,841	463,891	225,803	.49
Specific gravity 0.940 and below ¹³	9,467,960	8,606,631	2,970,976	.35
Specific gravity over 0.940	7,906,675	7,901,865	2,609,052	.33
Polypropylene resins	6,977,334	5,644,015	2,153,717	.38
Polyterpene resins	38,538	38,669	31,321	.81
Rosin modifications, total	317,127	303,761	160,716	.53
Modified rosin (unesterified)	150,111	140,571	51,038	.36
Modified rosin esters	129,743	125,508	86,913	.69
Rosin esters, unmodified (Ester gums)	37,273	37,682	22,765	.60
Styrene plastics materials, total	8,282,766	7,231,415	4,265,655	.59
Acrylonitrile-butadiene-styrene terpolymer (ABS) resins	1,260,608	1,243,086	983,772	.79
Methyl methacrylate-butadiene-styrene (MBS) resins and certain other styrene- type plastics materials	93,330	78,152	82,991	1.06
Polystyrene homopolymers, total	5,596,943	4,689,544	2,353,121	.50
Expandable polystyrene beads	553,198	553,142	332,831	.60
Rubber modified polystyrene	1,866,714	1,818,712	921,865	.51
Straight polystyrene	3,177,031	2,317,690	1,098,425	.47
Styrene-acrylonitrile copolymer (SAN) resins	208,671	109,124	69,806	.64
Styrene latexes, total	733,601	732,739	415,428	.57
Styrene-butadiene latexes	517,280	509,089	287,879	.57
All other styrene latexes	216,321	223,650	127,549	.57
All other styrene plastics materials ¹⁴	389,613	378,770	360,537	.95
Vinyl resins, total ¹⁵	9,930,691	8,580,486	3,594,987	.42
Polyvinyl acetate ¹⁶	704,578	560,343	314,117	.56
Polyvinyl chloride and copolymers	8,337,765	7,225,196	2,799,030	.39
Polyvinylidene chloride resins, latex type ...	20,738	17,762	15,918	.90
Vinyl acetate-acrylate copolymers	436,114	409,040	160,452	.39
All other vinyl and vinylidene resins ¹⁷	431,496	368,145	305,470	.83
All other thermoplastic resins ¹⁸	455,902	290,219	595,575	2.05

¹ Calculated from unrounded figures.

² Dry weight basis unless otherwise specified. Dry weight basis is the total weight of the materials including resin and coloring agents, extenders, fillers, plasticizers, and other additives, but excluding water and other liquid diluents unless they are an integral part of the materials.

³ Includes reactive diluents which are an integral part of the resin. Excludes the weight of hardeners sold in association with the resin as part of a two-component system.

⁴ Data shown for advanced epoxy resins are that part of the unmodified epoxy resins which is further processed; therefore, the total in parentheses are not included in the grand total.

⁵ Polyester resins are unsaturated alkyd resins, later to be copolymerized with a monomer (Such as styrene or methyl methacrylate), and polyallyl resins (such as diallyl phthalate and diglycol carbonate). Data are on an "as sold" basis, including monomer if part of the resin system.

Footnotes for table 24—Continued

⁶ In addition to the polyols, the other principal starting materials used in the production of urethane products are the isocyanic acid derivatives, mainly the 80/20 mixture of toluene-2,4- and 2,6-diisocyanate.

Statistics for the isocyanic acid derivatives are reported in the "Cyclic Intermediates" section of the Synthetic Organic Chemicals report.

⁷ The data on urethane elastomers are believed to be not fully representative of the total urethane market in view of the very large number of urethane elastomer producers. The commission has begun reporting statistics for urethane elastomers in two sections, section VIII, plastics and resin materials, and section X, elastomers (synthetic rubber). Henceforth those polyurethane products classified as "thermoplastic" urethane elastomers will be reported in SOC section X; all other urethane elastomers will remain in SOC section VIII.

⁸ Includes acetone-formaldehyde resins, polybutadiene resins, silicone resins, thiourea resins, and certain other thermosetting resins.

⁹ Does not include production or sales for fiber use.

¹⁰ Engineering plastics: Includes acetal, polycarbonate, polyimide and amide-imide polymers, polyphenylene oxide, polyphenylene sulfide and polysulfone. Engineering plastics are defined in *Whittington's Dictionary of Plastics*, as "All plastics, with or without fillers or reinforcements, which have mechanical, chemical and thermal properties suitable for use in construction, machine components and chemical processing equipment." The above list of plastics (all of which are thermoplastic) was selected from a larger group in this source. Certain other plastics named in *Whittington's Dictionary* as engineering plastics, such as ABS resins, acrylic resins, and nylon resins, are not included in the above list as they are published separately.

¹¹ Statistics for nylon 6 and nylon 6/6 which are used in plastics applications (e.g., molding, etc.) are included here.

¹² Statistics are included here for polyethylene terephthalate used in plastics applications (e.g., molding, etc.) Statistics also are included here for production only when the starting materials are converted directly to a finished product (i.e., "in situ" production); polyester film and tape are examples of such a conversion.

¹³ Combines conventional low density polyethylene (LDPE) resins with linear low density polyethylene (LLDPE) resins, because several of the leading producers of LLDPE still continue to aggregate these data with that of LDPE. See table 2 for a listing of those firms that reported production and/or sales data for LLDPE resins separately to the Commission in 1987.

¹⁴ Includes data for α -methyl styrene polymers, styrene-allyl alcohol copolymer resins, styrene-divinylbenzene copolymer resins, styrene-maleic anhydride copolymers resins and styrene-methyl methacrylate copolymers resins.

¹⁵ Data are on the basis of dry resin content, excluding the weight of plasticizers, extenders, fillers coloring agents, stabilizers, or impact modifiers, unless otherwise noted.

¹⁶ Data for polyvinyl acetate produced and sold in latex form includes the weight of any protective colloids which are used as emulsion stabilizers and form an integral part of the resin system. Production and sales do not include polyvinyl acetate used as a reactive intermediate for polyvinyl alcohol or other vinyl resins.

¹⁷ Includes polyvinyl alcohol, polyvinyl butyral, polyvinyl formal, polyvinylidene chloride (solid type), and other vinyl resins.

¹⁸ Includes cellulose plastics, coumarone-indene resins, fluorocarbon resins, phenoxy resins, polybutylene type resins, polyphenyl aromatic ester resins, and certain other thermoplastic materials.

Note.—Data reported to the U.S. International Trade Commission do not necessarily coincide with that reported to the Society of the Plastics Industry (SPI) because of differences in both the reporting instructions and in the coverage of certain resins.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Table 25

Plastics and resin materials for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Plastics and resin materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 26)
Thermosetting resins		
Acetone-formaldehyde resins	No	ACY, FJI, FLH, GP.
Alkyd resins:		
Acrylate alkyd copolymer resins	No	DRR, FJI, FRE, MNP, OBC, PPG, SW.
Alkoyl phenol	No	(²).
Phthalic anhydride type alkyd resins	Yes	ACO, ACY, ASH, AZS, BAL, BLC, BRU, CCC, CEI, CGL, CJO, CPV, DRC, DSO, DUP, EW, FOC, FRE, GEI, GLD, GRG, GRV, HAN, ICF, IOV, JOB, JSC, KMP, LIC, MCC, MNP, NCP, NTL, OBC, PER, PPG, PRT, QCP, RCI, REL, REZ, SDH, SRY, SW, TNA, UNO, (²), (²).
Polybasic acid type alkyd resins	Yes	ACY, CJO, CPV, DSO, FOC, GEI, GLD, HAN, ICF, IOV, JOB, MCC, NTL, PPG, RCI, REL, SCN, SW, (²).
Styrenated-alkyds, or copolymer alkyds	Yes	BLC, CJO, CPV, DSO, EW, FRE, GEI, GLD, HAN, JOB, MNP, MRT, NTL, REL, RUO, SW.
Vinyl toluene alkyds	Yes	BLC, CGL, CJO, FJI, FRE, GEI, GLD, GRV, JOB, MCC, MNP, PRT, REL, SW.
Alkyd copolymers, all other	Yes	CGL, GEI, MCC, MNP, PPG, SW, (²), (²).
Amino resins:		
Melamine-formaldehyde resins	Yes	ACY, AUX, BOR, CBD, CGL, CPV, DGO, DRC, GP, GRG, HCL, JSC, MNP, MON, PLS, PMC, PPG, PPL, PST, RCI, REL, REZ, SQA, UTC, WPG, WRD.
Thiourea-formaldehyde resins	No	CMP.
Urea-formaldehyde resins	Yes	ACR, ACY, AUX, BOR, CBD, CGL, CMP, CPV, DAN, DSO, GAF, GP, GRV, JSC, MMM, MNP, MON, PKI, PMC, PST, REL, REZ, SAC, SOR, SQA, VAL, WPG.
Dicyandiamide resins	Yes	CMP, CMS, ECC, JSC, S, SNW, STC, WPG.
Epoxy resins:		
Epoxy, resins advanced	Yes	CGL, CGY, CJO, CNI, CPV, DOW, DSO, DUP, EW, GE, GLD, GRG, GRV, HAN, HXL, ICF, MCC, MID, MNP, MRT, OCF, PPG, RCI, REZ, SCN, SMO.
Epoxy, resins unmodified	Yes	AGI, ASH, AZS, CGY, CLU, DOW, PRT, RCI, REZ, SHC, VCC, (²).
Furfuryl type resins	Yes	ACR, CEI, CLU, DRR, HVG, NCP, UNO, WRD.
Glyoxal-formaldehyde resins	Yes	AUX, CMP, HCL, RBI, RTC, SQA, VAL, WPG.
Phenolic and other tar acid resins	Yes	ABS, ACR, ADC, ASH, BME, BOR, BSC, BTL, BUC, CBD, CEI, CLU, CPV, DRR, DSO, EW, GE, GEI, GP, HCL, HER, HKD, HPC, HVG, ICF, IRI, KPT, LII, MCA, MID, MMM, NCI, NCP, NTC, NTL, OCF, PKI, PLS, PPL, PSG, PSL, RAB, RCI, RH, RSN, SPL, SW, UCC, UNO, USR, VSV, WCA, WRD, (²), (²).

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See footnotes at end of table.

Section 8

Table 25—Continued

Plastics and resin materials for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Plastics and resin materials	Separate statistics ¹	Manufacturers' identification codes (according to list in table 26)
Thermosetting resins—Continued		
Polybutadiene resins	No	CCS, CNI, CRS, LC, SCN.
Polyester resins, unsaturated, and allyl resins:	Yes	
Allyl resins	No	FMC, GEI, MCC.
Diallyl isophthalate	No	CMS, FMC, GEI.
Polyester resins, unsaturated	No	ACS, ACY, ADC, APH, ART, ASH, AZS, CGL, CPV, DSO, EW, FJI, FRE, GEI, GLD, GRG, ICF, ICI, IPC, KPT, LII, MCC, MRT, OCF, PPG, PPL, RCI, SIC, SLC, SW.
Polyether and polyester polyols for urethanes	Yes	ACR, ARK, BAS, BMC, BPT, CHC, CJO, CXI, DOW, DSO, FRE, GRG, ICF, ICI, JOB, MCC, MOB, MRT, NCP, NTL, OCF, OMC, PPG, RCI, RUO, TX, UCC, UNO, WM, WTC.
Polyurethane elastomer and plastic products:		
Polyurethane elastomers	Yes	ACY, ADC, ARO, BPT, CAS, CGY, CNI, DCC, DNS, EPI, GLC, GRD, ICF, INP, MRT, PLN, PPG, PRC, QUN, RUO, SBG, SLC, SMO.
Polyurethane resins	Yes	ARO, CGL, DSO, DUP, EW, FRE, GEI, GLD, HXL, HYC, INP, LC, MCC, MID, MMC, OMC, PEL, RBI, RCI, SCN, SIF, SLC, SW.
Silicone resins	No	CJO, DCC, MCC, PEL, SPD.
All other thermosetting resins,	Yes	ACY, BAS, FRE, GLD, MCC, MID, MIL, REL, UCC, WLN, (2).
Thermoplastic resins		
Acrylic resins:	Yes	
Copolymer resins of acrylic and/or methacrylic acid resins:		
Butyl acrylate-ethyl acrylate copolymer resins	Yes	BFG, DRB, DSO, FLH, ICI, RH, UOC, VAL.
Butyl methacrylate-ethyl methacrylate copolymer resins	No	UOC.
2-Ethylhexyl acrylate-methyl acrylate copolymer resins	No	DSO, RH, UOC, VAL.
Lauryl methacrylate-stearyl methacrylate copolymer resins	No	ICI.
Other copolymer resins of acrylic and/or methacrylic acid esters	No	ACO, AZS, BPT, CHP, CPV, DRB, DRC, DSO, GAF, GLD, ICF, ICI, JNS, JSC, KMP, MON, NSC, OBC, PPG, PRA, PYI, RH, SCP, SW, SYT, UCC, VAL, (2).
Homopolymer resins of acrylic and/or methacrylic acid resins:		
Homopolymer resins of acrylic or methacrylic acid esters, except PMMA	Yes	CPV, CYR, GRV, ICF, ICI, PYI, RH, SAR, SW, UOC, (2).
Polymethyl methacrylate (PMMA)	Yes	ART, CTP, CYR, DUP, ICF, ICI, JOB, JSC, MRT, PKL, PTC, RH, SAR, SQA.
Thermosetting acrylate resins	Yes	ACY, CPV, DSO, DUP, FRE, GRV, HAN, ICF, LIC, MID, MNP, PRA, REZ, SM, SW.

See footnotes at end of table.

Table 25—Continued

Plastics and resin materials for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Plastics and resin materials</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 26)</i>
Thermoplastic resins—Continued		
Cellulose plastics and resins:		
Cellulose acetate	No	EKT.
Cellulose acetate butyrate	No	EKT.
Cellulose acetate propionate	No	EKT.
Ethyl cellulose	No	(²).
Coumarone-indene resins	No	CPU, EKX.
Engineering plastics:		
Acetal resins	No	CPU, DUP, HCL, MCC, PRT, RAS, REL.
Polycarbonate resins	No	DOW, GE, GEP, MCC, MOB, SNW.
Polyimides and amide-imide polymers	No	AMO, DUP, EW, GE, GRG, PDI.
Polyphenylene oxide type resins	No	GE, GEP.
Polyphenylene sulfide resins	No	PLC.
Fluorocarbon resins:		
Polytetrafluoroethylene (PTFE)	No	AUS, DUP, ICI.
Polyvinylidene fluoride resin	No	PAS.
All other fluorocarbon resins	No	DUP.
Petroleum hydrocarbon resins	Yes	CFX, CXI, ENJ, GYR, HPC, ICF, LII, NEV, RCI, (²).
Phenoxy resin (other than for coating and adhesives)	No	NEV, UCC.
Polyamide resins:		
Non-nylon type, polyamide resins	Yes	COO, EFH, GP, HCL, HYA, LII, PAC, S, SCP, SQA, TNA, USM.
Nylon type, polyamide resins	Yes	ACS, AGI, BCM, CTR, DGO, DUP, GRG, HCL, MON, NCI, RSN, SCP, USM.
Polybutylene type resins	No	ENJ, SHC.
Polyester resins, saturated:		
Polybutylene terephthalate (PBT)	No	AGI, GE, GEP, HCL, ICF, MOB, USM.
Polyethylene terephthalate (PET)	Yes	AGI, DUP, EK, EKT, GEI, GEP, GYR, HCL, ICI, MOB, USM.
All other polyester resins, saturated	Yes	BPT, COO, CPV, DUP, EKT, GLD, GRG, GYR, ICF, ICI, MNP, PPG, SW.
Polyethylene and copolymers resins:		
Ethylene-acrylic acid resins (EAA)	No	DOW.
Ethylene-vinyl acetate (EVA) copolymer resins	Yes	COO, ENJ, NSC, USI.
Other ethylene copolymer resins	No	EKT, EKX, ENJ, RH, SQA.
Specific gravity 0.940 and below (conventional low density)	Yes	ACS, DOW, DUP, EKX, ELP, ENJ, NWP, SM, SOC, SQA, UCC, (²).
Specific gravity 0.940 and below (linear low density)	Yes	ENJ, NWP, SM.
Specific gravity over 0.940	Yes	ACS, AMO, CNE, DOW, DUP, ENJ, HCL, HIM, NWP, PLC, SLT, SOC, UCC.
Polyphenyl aromatic ester resins	No	HPC.
Polypropylene polymer and copolymer resins	Yes	AMO, ART, CSD, EKX, ELP, ENJ, HIM, MIL, NWP, PLC, SHC, SLT.
Polyterpene resins	Yes	ARZ, CPV, HPC, RCI, SCN.
Rosin modifications:		
Modified rosin (unesterified)	Yes	ARZ, CJO, HPC, NCI, SYL, WVA.
Modified rosin esters	Yes	AZS, EW, FJI, FRP, GP, GRV, HCL, HPC, ICF, LII, MCC, NCI, RCI, SW, SYL, WVA.
Rosin esters, unmodified (ester gums)	Yes	ARZ, CPV, FRP, HPC, NCI, PRT, RCI, SYL.

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See footnotes at end of table.

Table 25—Continued

Plastics and resin materials for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Plastics and resin materials</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 26)</i>
Thermoplastic resins—Continued		
Styrene type plastics materials:		
Acrylonitrile-butadiene-styrene (ABS) terpolymer resins	Yes	DOW, GRD, MCB, MON.
Methyl methacrylate-butadiene styrene (MBS) resins and certain other styrene type plastics materials	Yes	CYR, FER, GYR, ICI, MRT, RH.
Polystyrene:		
Expandable polystyrene beads	Yes	ATR, BAS, HMN, TXS.
Rubber modified polystyrene	Yes	API, CSD, DOW, DPI, HMN, PLR, SM.
Straight polystyrene	Yes	AEP, AMO, API, ATR, CSD, DOW, DPI, GAF, HGC, HMN, HPC, KTP, PLR, SM, SOC, TXS. BFG, DOW, GE, ICI, MCB, MON.
Styrene-acrylonitrile copolymer resins (SAN)	Yes	
Styrene latexes:		
Styrene-butadiene latexes	Yes	DOW, GRD, GYR, PYI, UOC.
All other styrene latexes	Yes	ADC, CCS, CRS, FRS, GNT, GRD, MCC, SPO, UCC, UOC.
Other styrene copolymers:		
α-Methyl styrene polymers	No	AMO, CPV, VAL.
Styrene-allyl alcohol copolymer resins	No	HPC, MON.
Styrene-divinylbenzene copolymer resins	No	DOW, RH.
Styrene-maleic anhydride copolymer resins	No	ATR, MON.
Styrene-methyl methacrylate copolymer resins	No	ADC, FLH, ICI, MCC, RCD.
All other styrene copolymers	No	ARZ, CPV, DSO, DUP, GEP, HPC, JSC, MON, PLC, RCD, VAL.
Vinyl resins:		
Polyvinyl acetate resins	Yes	AIP, CGL, DAN, DSO, FJI, FLH, FLN, GLD, GRD, JOB, JSC, MNP, MON, NCJ, NSC, PYI, RCI, SCO, SQA, UCC, UOC, (2).
Polyvinyl alcohol resins	No	AIP, AZS, DUP, MIL.
Polyvinyl butyral resins	No	MON.
Polyvinyl formal resin	No	EW, GRG, MON.
Vinyl acetate-acrylate copolymers	Yes	ACO, DAN, DSO, FLH, FLN, GLD, KMP, MCC, NCJ, NTC, PPG, RH, SPC, SQA, UCC, UOC.
Polyvinyl chloride and copolymer resins:	Yes	
Polyvinyl chloride homopolymer resins	No	AIP, BFG, CNT, FOR, GGC, HKP, KYS, MIL, SHT, UCC, VST, VYN.
Vinyl chloride-acetate copolymer resins	No	KYS, MCC.
All other polyvinyl chloride copolymer resins	No	BFG, BOR, CNI, HKP, VYN.
Polyvinylidene chloride resins:		
Latex type polyvinylidene chloride resins	Yes	BFG, DOW, GRD, UOC.
Solid type polyvinylidene chloride resins	No	DOW.
All other vinyl resins	Yes	DUP, GLD, NTC, RH, UCC.
All other thermoplastic resins	Yes	DUP, LII, MON, SW, UOC.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 26

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABS	Abex Corp., Friction Products Div.- U.S.	CSD	Fina Oil & Chemical Co., Cosden Chemical Div.
ACR	CPC International, Inc., Acme Resin Corp.	CTP	Continental Polymers, Inc.
ACO	Adco Chemical Co.	CTR	Custom Resins Div. of Bemis Co., Inc.
ACS	Allied Corp., Allied Signal Corp. Engineered Materials Sector.	CYR	CYRO Industries
ACY	American Cyanamid Co.	CXI	Chemical Exchange Industries, Inc.
ADC	Anderson Development Co.	DAN	Dan River, Inc., Chemical Products Div.
AEP	A & E Plastics Corp.	DCC	Dow Corning Corp.
AGI	EMS-American Grilon, Inc.	DNS	Dennis Chemical Co.
AIP	Air Products & Chemicals, Inc.	DOW	Dow Chemical Co.
AMO	Amoco Corp.	DPI	Dart Polymers, Inc. Sub of Dart Container Corp.
APH	Alpha Corporation of Tennessee	DRB	The Derby Co., Inc.
API	American Polymers, Inc.	DRC	Dock Resins Corp.
ARK	Armstrong World Industries, Inc.	DRR	Delta Resins & Refractories
ARO	Arnco	DSO	DeSoto, Inc.
ART	Aristech Chemical Div.	DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Finishes and Fabricated Products Dept.
ARZ	Arizona Chemical Co.		Petrochemicals Dept.
ASH	Ashland Oil, Inc.		Photosystems and Electronics Products Dept.
ATR	Atlantic Richfield Co., Arco Chemical Co.		Polymer Products Dept.
AUX	Auralux Corp.	ECC	Eastern Color & Chemical Co.
BAL	Sherwin-Williams Co., Consumers Div.	EFH	E. F. Houghton & Co.
BAS	BASF Corp.	EK	Eastman Kodak Co.:
BCM	Belding Chemical Industries	EKT	Tennessee Eastman Co. Div.
BFG	B. F. Goodrich Co.	EKX	Texas Eastman Co. Div.
BLC	Ranbar Technology, Inc. Ball Chemical Co.	ELP	El Paso Products Co.
BMC	Brin-Mont Chemicals, Inc.	ENJ	Exxon Chemical Americas
BME	Allied Bendix Corp., Friction Materials Div.	EPI	Ohio Rubber Eagle Pitcher Ind, Orthane Div.
BOR	Borden, Inc., Borden Chemical Div.	EW	Westinghouse Electric Corp., Insulating Materials Div.
BPT	Permuthane Inc.	FER	Ferro Corp., Kell Chemical Div.
BRU	M. A. Bruder & Sons, Inc.	FJI	Cincinnati Varnish Co.
BSC	Cascade Resins, Inc.	FLH	H. B. Fuller Co.
BTL	BTL Specialty Resin Corp.	FLN	Franklin International
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	FMC	FMC Corp.
CAS	CasChem, Inc.	FOC	Handschy Industries, Inc., Farac Varnishes & Chemicals
CBD	Chembond Corp.	FOR	Formosa Plastics Corp. - U.S.A.
CCC	C.N.C. International Inc.	FRE	Freeman Chemical Corp.
CCS	Colorado Chemical Specialties, Inc.	FRP	FRP Co.
CEI	CastChem Inc.	FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.
CFX	Chemfax, Inc.		GAF Corp., Chemical Group
CGL	Cargill, Inc.	GE	General Electric Co.:
CGY	Ciba-Geigy Corp.		Electromaterials Dept.
CHC	Carpenter Chemical Co.		Plastics Business Group.
CHP	C. H. Patrick & Co., Inc.	GEI	Insulating Materials
CJO	C. J. Osborn Chemicals, Inc.	GEP	Plastics Div.
CLU	CL Industries, Inc.	GGC	Georgia-Gulf Corp.,: PVC Compound Div.
CMP	Commercial Products Co., Inc.		Plaquemine Div.
CMS	Cosmic Plastics, Inc.	GLC	General Latex & Chemical Corp.
CNE	Cain Chemical, Inc.	GLD	Glidden Co.
CNI	Conap, Inc.		
CNT	Certaiteed Corp.		
COO	H.B. Fuller		
CPV	Cook Paint & Varnish Co.		
CRS	Colorado Resins, Inc.		

Table 26—Continued

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
GNT	Gencorp Polymers Products	MON	Monsanto Co.
GP	Georgla-Pacific Corp.: Resins Operations	MRT	Morton-Thiokol, Inc., Morton Chemical Co. Div.
GRD	W. R. Grace & Co., Polymers & Chemical Div.	NCI	Union Camp Corp., Chemical Products Div.
GRG	P. D. George Co.	NCJ	National Casein of New Jersey
GRV	Guardman Chemicals, Inc.	NCP	Niles Chemical Paint Co.
GYR	Goodyear Tire & Rubber Co.	NCP	Niles Chemical Paint Co. and Kordell Industries Div.
HAN	Hanna Chemical Coatings Corp.	NEV	Neville Chemical Co.
HCL	Hoechst Celanese Corp.: Bayport Works Engineering Plastics Div. Sou-Tex Works	NSC	National Starch & Chemical Corp.
HER	Heresite Protective Coatings Inc.	NTC	National Casein Co.
HGC	Goodson Polymers, Inc.	NTL	NL Industries, Inc., NL Chemicals Div
HIM	Himont U.S.A., Inc. Occidental Chemical Corp.:	OBC	O'Brien Corp.
HKD	Durez Div.	OCF	Owens-Corning Fiberglas Corp.
HKP	PVC Div.	OMC	Olin Corp.
HMN	Huntsman Chemical Corp.	PAC	Pacific Anchor Chemical Corp.
HPC	Hercules, Inc.	PAS	Pennwalt Corp.
HVG	Ametek, Inc., Haveg Div.	PDI	Phelps Dodge Industries, Inc., Phelps Dodge Magnet Wire Co. Div.
HXL	Hexcel Corp., Hexcel Chemical Products Dexter Corp.:	PEL	Pelron Corp.
HYA	Hysol Aerospace & Industrial Products Div. Dexter Specialty Chemicals Group	PER	Perry & Derrick Co., Inc.
HYC	Hysol Electronic Chemicals Div., Dexter Specialty Chemicals Group	PKI	Perkins Industries, Inc.
ICF	BASF Corp., Inmont Div.	PKL	Plaskolite, Inc.
ICI	ICI Americas, Inc. ICI Chemicals Div. ICI Resins Div.	PLC	Phillips Petroleum Co.
INP	Synair Corp.	PLN	Disogrin Industries Corp.
IOV	Iovite, Inc.	PLR	Polysar, Inc.: Plastic Div.
IPC	Interplastic Corp.	PLS	Plastics Engineering Co.
IRI	Ironides Co.	PMC	Plastics Manufacturing Co.
JNS	S. C. Johnson & Son, Inc.	PPG	PPG Industries, Inc.
JOB	Jones-Blair Co.	PPL	Sterling Engineered Products
JSC	Sybron Chemicals, Inc.	PRA	Para-Chem Southern
KMP	Kelly-Moore Paint Co., Inc.	PRC	Products Research & Chemical Corp.
KPT	Koppers Co., Inc.	PRT	Pratt & Lambert, Inc., Paint Div.
KTP	Kent Polymers, Inc.	PSG	PMC Specialties Group
KYS	Keysor Century Corp.	PSL	Plaslok Corp.
LC	Lord Corp., Chemical Products Group	PST	Perstorp Compounds, Inc.
LIC	Lilly Industrial Coatings, Inc.	PTC	Polycast Technology Corp.
LII	Lawter International, Inc.	PYI	Morton Thiokol, Inc. Morton Chemical Div.
MCA	Masonite Corp., Alpine Resin Div.	QCP	Quaker Chemical Corp.
MCB	Borg-Warner Corp., Borg Warner Chemicals	QUN	K. J. Quinn & Co., Inc.
MCC	McCloskey Corp.: McCloskey Varnish Co. McCloskey Varnish Co. of California McCloskey Varnish Co. of Oregon	RAB	Raytech Corp.
MID	Dexter Corp., Midland Div.	RAS	Surface Coatings, Inc.
MIL	Milliken & Co., Milliken Chemical Co.	RBI	Reeves Brothers, Inc.
MMC	EM Industries, Inc., EM Science Div.	RCD	Richardson Polymer Corp.
MMM	Minnesota Mining & Manufacturing Co.	RCI	Reichhold Chemicals, Inc.
MNP	McWhorter, Inc.	REL	Reliance Universal, Inc., Louisville Resins Operations
MOB	Mobay Chemical Corp., Pittsburgh Div.	REZ	Interez, Inc.
		RH	Rohm & Haas Co.
		RSN	Atochem, Inc., Polymers Div.
		RTC	Mount Vernon Mills, Inc.
		RUO	Ruco Polymer Corp.
		S	Sandoz, Inc., Colors & Chemicals Div. 8-10
		SAC	Southeastern Adhesives Co.
		SAR	Esschem Inc.

Table 26—Continued

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
SBG	Samuel Bingham Co.	SPO	Ameripol Synpol Co. Div. of Uniroyal GoodrichTire Co.
SC	Sterling Chemical, Inc.	SQA	Sequa Chemicals, Inc.
SCN	Schenectady Chemicals, Inc.	SRY	Synray Corp.
SCO	Scholler, Inc.	SW	Sherwin-Williams Co.
SCP	Henkel Corp.	SYL	Sylvachem Corp.
SDH	Sterling Drug, Inc., SDI Divestiture Corp. Div.	SYT	Synthron, Inc.
SHC	Shell Oil Co., Shell Chemical Co. Div.	TNA	Ethyl Corp.
SHT	Shintech, Inc.	TX	Texaco Chemical Co.
SIC	Standard Oil Co., Sillmar Div., Engineered Material Co.	TXS	Texstyrene Plastics, Inc.
SIF	Standard Oil Co., Filon Div., Engineered Material Co.	UCC	Union Carbide Corp.
SLC	Soluol Chem Co., Inc.	UNO	United-Erie, Inc.
SLT	Soltex Polymer Corp.	UOC	Union Oil Co. of California
SM	Mobil Oil Corp.: Mobil Chemical Co.: Chemical Div. Petrochemicals Div. Products Div.	USI	Quantum Chemical Corp., USI Division
SMO	Smooth-On, Inc.	USM	Emhart Corp., Bostik Div.
SOC	Chevron Corp., Chevron Chemical Co.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SOR	MW Manufacturers, Inc., Southern Resin Div.	UTC	Unitex Chemical Corp.
SPC	Insilco Corp., Sinclair Paint Co. Div.	VAL	United Merchants & Manufacturers, Inc., Valchem Div.
SPD	General Electric Co., Silicone Products Dept.	VST	Vista Chemical Co.
SPL	Spaulding Fibre Co., Inc., Industrial Plastics Div.	VSV	Valentine Sugars, Inc., Valite Div.
		VYN	Vygen, Inc.
		WCA	West Coast Adhesives Co.
		WLN	Wilmington Chemical Corp.
		WM	Inolox Chemical Co.
		WPG	West Point-Pepperell, Inc., Griffitex Chemical Co. Sub.
		WRD	Weyerhaeuser Co.
		WVA	Westvaco Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 9

Rubber-Processing Chemicals

Rubber-processing chemicals are organic compounds that are added to natural and synthetic rubber to give them qualities necessary for their conversion into finished rubber goods. In this report, statistics are given for cyclic and acyclic compounds by use—such as accelerators, antioxidants, and vulcanizing agents. Data on production and sales of rubber-processing chemicals in 1987 are given in table 27. Data on production of rubber-processing chemicals during 1983–87 is given in figure 10.

Production of rubber-processing chemicals as a group in 1987 amounted to 382 million pounds, or 18 percent more than the 324 million pounds produced in 1986. Sales of rubber-processing chemicals in 1987 amounted to 289 million pounds, valued at \$359 million, compared with 235 million pounds, valued at \$297 million, in 1986.

Table 28 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 29.

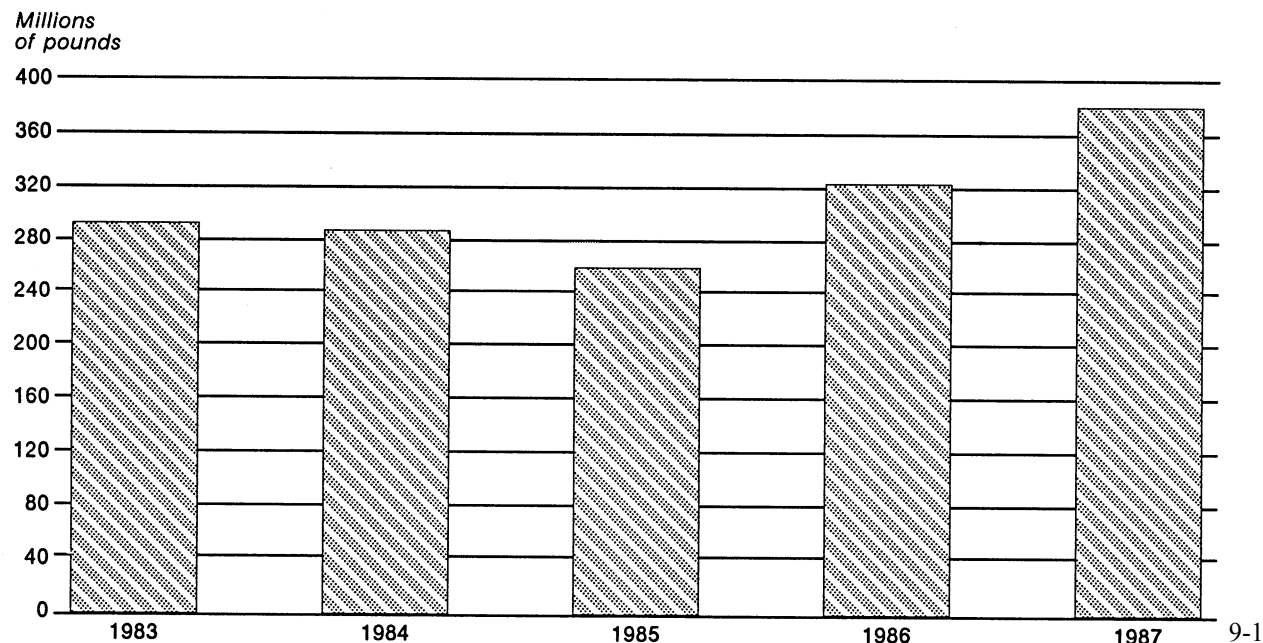
The production of cyclic rubber-processing chemicals in 1987 amounted to 354 million

pounds, or 19 percent more than the 297 million pounds produced in 1986. Sales of cyclic rubber-processing chemicals in 1987 totaled 263 million pounds, valued at \$336 million, compared with 211 million pounds, valued at \$273 million, in 1986. Of the total production of cyclic rubber-processing chemicals in 1987, antioxidants, antiozonants, and stabilizers accounted for 57 percent, and accelerators, activators, and vulcanizing agents for 24 percent. Production of antioxidants, antiozonants, and stabilizers, which amounted to 204 million pounds in 1987, included 123 million pounds of amino compounds and 81 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants, antiozonants, and stabilizers in 1987 amounted to 89 million pounds, valued at \$130 million; sales of phenolic and phosphite antioxidants, antiozonants, and stabilizers were 50 million pounds, valued at \$74 million.

Production of acyclic rubber-processing chemicals in 1987 amounted to 28 million pounds, or 1 percent more than the 27 million pounds produced in 1986. Sales in 1987 totaled 26 million pounds, valued at \$23 million, compared with 25 million pounds, valued at \$23 million, in 1986.

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Figure 10
Rubber-processing chemicals: U.S. production, 1983–87



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 9

Table 27

Rubber-processing chemicals: U.S. production and sales, 1987

Rubber-processing chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand Total	382,014	288,831	358,987	\$1.24
Cyclic				
Total	354,372	262,853	336,204	1.28
Accelerators, activators, and vulcanizing agents total	85,133	61,057	94,583	1.55
Thiazole derivatives, total	80,943	56,997	79,985	1.40
2,2'-Dithiobis[benzothiazole]	11,960	12,518	12,160	.97
All other thiazole derivatives	68,983	44,479	67,825	1.52
All other accelerators, activators, and vulcanizing agents ^{2 3}	4,190	4,060	14,598	3.60
Antioxidants, antiozonants, and stabilizers, total	203,722	139,185	204,658	1.47
Amino compounds, total	123,185	89,384	130,264	1.46
Substituted p-phenylenediamines	78,840	48,668	80,906	1.66
All other amino compounds ⁴	44,345	40,716	49,358	1.21
Phenolic and phosphite compounds, total ⁵	80,537	49,801	74,394	1.49
Polyphenolics	7,172	6,306	22,587	3.58
Phenol, hindered	352	243	534	2.20
All other phenolic and phosphite compounds	73,013	43,252	51,273	1.19
All other cyclic rubber-processing chemicals ⁶	65,517	62,611	36,963	.59
Acyclic				
Total	27,642	25,978	22,783	.88
Accelerators, activators, and vulcanizing agents, total	5,263	(7)	(7)	(7)
All other acyclic rubber-processing chemicals ⁶	22,379	(7)	(7)	(7)

¹ Calculated from unrounded figures.

² Includes aldehyde-amine reaction products, dithiocarbamates, guanidines, and other accelerators, activators, and vulcanizing agents.

³ Data on dithiocarbamates included in this table are for materials used chiefly in the processing of natural and synthetic rubber. Data on dithiocarbamates, which are used chiefly as fungicides, are included in the section on "Pesticides and Related Products."

⁴ Includes aldehyde- and acetone-amine reaction products and other amines.

⁵ Also includes other antioxidants, antiozonants, and stabilizers.

⁶ Includes phosphites, blowing agents, peptizers, and other cyclic rubber-processing chemicals.

⁷ Reported data were accepted in confidence and may not be published, or no data were reported.

⁸ Includes polymerization regulators, shortstops, and other acyclic rubber processing chemicals.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 28

Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Rubber-processing chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 29)</i>
Cyclic		
Accelerators, activators, and vulcanizing agents:	Yes	
Aldehyde-amine reaction products:		
Heptaldehyde-aniline condensate	No	USR.
Tetrahydro-3,5-dimethyl-4H-1,3,5-oxadiazine-4-thione	No	RBC.
Triethyltrimethylenetriamine	No	USR.
All other aldehyde-amine reaction products, cyclic . . .	No	DUP.
Dithiocarbamic acid derivatives:		
Dibenzylidithiocarbamic acid, sodium salt	No	USR.
Dibenzylidithiocarbamic acid, zinc salt	No	USR.
2,4-Dinitrophenyl dimethyldithiocarbamate	No	USR.
Other cyclic dithiocarbamic acid derivatives	No	RBC.
Guanidines:	No	
Dicatechol borate, di-o-tolylguanidine salt	No	VNC.
Thiazole derivatives:	Yes	
1,3-Bis(2-benzothiazolylmercaptomethyl) urea	No	RBC.
N-tert-Butyl-2-benzothiazolesulfenamide	No	BFG, MON, USR.
N-Cyclohexyl-2-benzothiazolesulfenamide	No	MON, USR.
2,5-Dimercapto-1,3,4-thiadiazole	No	VNC.
2,2'-Dithiobis[benzothiazole]	Yes	BFG, MON, USR.
2-Mercaptobenzothiazole	No	MON, USR.
2-Mercaptobenzothiazole, copper salt	No	ACY.
2-Mercaptobenzothiazole, zinc salt	No	USR, VNC.
N-Morpholinyl-2-benzothiazolyl disulfide	No	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide	No	BFG, USR.
N-Oxydiethylenethiocarbamyl-N'-oxydiethylene-sulfenamide	No	BFG.
All other thiazole derivatives, cyclic	No	(²).
All other cyclic accelerators, activators, and vulcanizing agents:	Yes	
Bis(morpholinthiocarbamoyl) disulfide	No	ACY.
Dibenzylamine	No	HXL, USR.
1,3-Dihydro-4(or 5)-methyl-2H-benzimidazole-2-thione	No	VNC.
Dimethylammonium hydrogen isophthalate	No	VNC.
Di-N,N'-pentamethylenethiuram tetrasulfide	No	DUP, VNC.
4,4'-Dithiodimorpholine	No	MON.
2-Imidazolidenethione (1,3-ethylene-2-thiourea)	No	RBC.
2-Mercaptotoluimidazole, zinc salt	No	VNC.
m-Phenylenebismaleimide	No	DUP.
Thiocarbaniide	No	RBC.
All other accelerators, activators, and vulcanizing agents, cyclic	No	DUP, USR.
Antioxidants, antiozonants, and stabilizers:	Yes	
Amino antioxidants, antiozonants, and stabilizers:	Yes	
Aldehyde- and acetone-amine reaction products:	No	
Butyraldehyde-aniline condensate	No	DUP.
Diphenylamine-acetone aldehyde	No	USR.
Diphenylamine-acetone condensate	No	BFG, USR.
Substituted p-phenylenediamines:	Yes	
Alkylaryl-p-phenylenediamines	No	MON.
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	No	MON, UPM.
N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine	No	UPM.
N,N'-Bis(1-methylheptyl)-p-phenylenediamine	No	UPM.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine	No	USR.
Diarylenediamines, mixed	No	GYR.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine	No	UPM, USR.
N,N'-Di-2-naphthyl-p-phenylenediamine	No	BFG.

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See footnotes at end of table.

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Table 28—Continued

Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Rubber-processing chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 29)</i>
Cyclic—Continued		
Antioxidants, antiozonants, and stabilizers—		
Continued	Yes	
Amino antioxidants, antiozonants, and stabilizers—		
Continued	Yes	
Substituted p-phenylenediamines—Continued	Yes	
N,N'-Diphenyl-p-phenylenediamine	No	BFG.
N-Isopropyl-N'-phenyl-p-phenylenediamine	No	USR.
N-(1-Methylheptyl)-N'-phenyl-p-phenylene-diamine	No	UPM.
N-(1-Methylpentyl)-N'-phenyl-p-phenylene-diamine	No	USR.
All other p-phenylenediamines, substituted	No	KPI, USR.
Other amines:	Yes	
p-Anilinophenol	No	BFG.
1,2-Dihydro-6-ethoxy-2,2,4-Trimethylquinoline (Ethoxyquin)	No	MON.
1,2-Dihydro-2,2,4-trimethylquinoline	No	BFG, MON, USR.
Nonyldiphenylamine mixture (Mono-, di-, and tri)	No	USR.
Octyldiphenylamine	No	BFG, USR.
Octyldiphenylamine, alkylated	No	BFG.
p-(p-Toluenesulfonamido)diphenylamine	No	USR.
Phenolic and phosphite antioxidants and stabilizers:	No	
Phosphites:	No	
Alkylaryl phosphites mixed	No	FER, MCB.
Nonylphenyl phosphites, mixed	No	MCB, USR.
Polymeric phosphites	No	MCB.
Polyphenolic phosphites, polyalkylated	No	BFG, MCB.
Triaryl phosphites	No	MCB.
Polyphenolics (Including bisphenols):	Yes	
Bisphenol, hindered	No	DUP, USR.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)	No	MON.
2,5-Di-sec-butyldecylhydroquinone	No	USR.
2,5-Di-(1,1-dimethylpropyl)hydroquinone	No	MON.
2,2'-Methylenebis(6-tert-butyl-p-cresol)	No	ACY, FER.
2,2'-Methylenebis(6-tert-butyl-4-ethylphenol)	No	ACY.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane	No	ICI.
All other phenolic antioxidants and stabilizers:		
Phenol, alkylated	No	ACY, BFG, GYR, NEV, RCI.
Phenol, hindered	Yes	FER, OMC, USR.
Phenol, styrenated, mixtures	No	NEV, USR.
N-Stearoyl-p-aminophenol	No	HXL.
All other phenolic antioxidants	No	USR.
Blowing agents:		
p,p'-Oxybis(benzenesulfonylhydrazide)	No	USR.
5-Phenyltetrazole	No	OMC.
p-Toluenesulfonylhydrazide	No	USR.
p-Toluenesulfonylsemicarbazide	No	USR.
All other acyclic blowing agents	No	OMC.
Peptizers:		
2',2''-Dithiobis(benzanilide)	No	ACY.
All other cyclic rubber-processing chemicals:	Yes	
p-tert-Amylphenol sulfide (Tackifier)	No	PAS.
4-Chloro-2,6-bis(2,4-dihydroxybenzyl)phenol	No	ICI.
N-(Cyclohexylthio)phthalimide	No	MON.
Diphenyl-4,4'-diphenylmethylenedicarbamate	No	USR.
All other rubber-processing chemicals, cyclic	No	ACY, FER, WTC.

See footnotes at end of table.

Table 28—Continued

Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Rubber-processing chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 29)
Acyclic		
Accelerators, activators, and vulcanizing agents:	Yes	
Dithiocarbamic acid derivatives:		
Dialkyldithiocarbamic acid derivative	No	VNC, (2).
Dibutyldithiocarbamic acid, nickel salt	No	DUP, USR, VNC.
Dibutyldithiocarbamic acid, sodium salt	No	DUP, USR, VNC.
Dibutyldithiocarbamic acid, zinc salt	No	VNC.
Diethyldithiocarbamic acid, cadmium salt and bis(diethyldithiocarbamoyl) disulfide, mixture	No	VNC.
Diethyldithiocarbamic acid, selenium salt	No	VNC.
Diethyldithiocarbamic acid, sodium salt	No	EK, VNC.
Diethyldithiocarbamic acid, tellurium salt	No	VNC.
Diethyldithiocarbamic acid, zinc salt	No	VNC.
Dimethyldithiocarbamic acid, bismuth salt	No	VNC.
Dimethyldithiocarbamic acid, copper salt	No	VNC.
Dimethyldithiocarbamic acid, lead salt	No	VNC.
Dimethyldithiocarbamic acid, selenium salt	No	VNC.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide	No	BFG.
Dimethyldithiocarbamic acid, zinc salt	No	VNC.
All other dithiocarbamic acid derivatives, acyclic	No	DUP, (2).
Thiurams:		
Bis(dibutyldithiocarbamoyl) disulfide	No	VNC.
N,N'-Dioctadecyl-N,N'-diisopropyl thiuram disulfide	No	USR.
Xanthates and sulfides:		
DI-n-butylxantho disulfide	No	USR.
Zinc isopropyl xanthate	No	VNC.
All other acyclic accelerators, activators, and vulcanizing agents:	No	
n-Butyraldehyde-butylamine condensate	No	DUP.
Other, accelerators, activators and vulcanizing agents acyclic	No	DUP.
Polymerization regulators:		
n-Decyl mercaptan	No	PLC.
n-Dodecyl mercaptans	No	PAS, PLC.
tert-Nonyl mercaptan	No	PAS, PLC.
n-Octyl mercaptan	No	PLC.
Tetradecyl mercaptan	No	PLC.
All other polymerization regulators, acyclic	No	PLC.
Shortstops:		
Dimethyldithiocarbamic acid, potassium salt	No	USR.
Dimethyldithiocarbamic acid, sodium salt	No	ALC, USR, VCC.
All other acyclic rubber-processing chemicals:		
Waxes and paraffinic products	No	DUP, RCI.
Zinc laurate (Activator, physical property improver, and processing auxiliary)	No	USR.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Section 9

Table 29

Rubber-processing chemicals: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACY	American Cyanamid Co.	MON	Monsanto Co.
ALC	Alco Chemical Corp.	NEV	Neville Chemical Co.
BFG	B. F. Goodrich Co.	OMC	Olin Corp.
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Polymer Products Dept.	PAS	Pennwalt Corp.
EK	Eastman Kodak Co.	PLC	Phillips Petroleum Co.
FER	Ferro Corp., Ferro Chemical Div.	RBC	Artel Chemical Corp.
GYR	Goodyear Tire & Rubber Co.	RCI	Reichhold Chemicals, Inc.
HXL	Hexcel Corp., Hexcel Chemical Products	UPM	UOP, Inc.
ICI	ICI Americas, Inc., Chemicals Div.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
KPI	Kenrich Petrochemicals, Inc.	VCC	Vinings Chemical Co.
MCB	Borg-Warner Corp., Borg Warner Chemicals	VNC	Vanderbilt Chemical Corp.
		WTC	Witco Chemical Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 10

Elastomers

Elastomers (synthetic rubber) are high polymeric materials with properties similar to those of natural rubber. The term "elastomers" as used in this report means substances, whether in bale, crumb, powder, latex, or other crude form, which can be vulcanized or similarly processed into a material that can be stretched to at least twice their original length; and, after having been so stretched and the stress removed, will return with force to approximately their original length. U.S. production and sales of elastomers in 1987 are shown in table 30.

Table 31 lists the products reported in this section and indicates the manufacture(s) of each by code. These codes are identified by company names in table 32.

Total U.S. production¹ of synthetic rubber in 1987 amounted to 4,690 million pounds, an increase of 14.9 percent from that produced in 1986. The production of synthetic rubber increased irregularly from 4,013 million pounds in 1983 to 4,690 million pounds in 1987, or by 16.9 percent. (see figure 11). Total sales of elastomers in 1987 amounted 3,109 million pounds, an increase of 25 percent from that sold in 1986.

Styrene-butadiene rubber (SBR-type rubber) in 1987 continued to be the elastomer produced in the greatest quantity as it has been for more than 35 years. U.S. production of SBR-type rubber, including 21 million pounds of its vinylpyridine sub-type, amounted to 1,850 million pounds in 1987. Solution polymerized

polybutadiene rubber, a stereo type elastomer, was produced domestically in 1987 in the next largest amount—690 million pounds. Other principal types of synthetic elastomers for which U.S. production data are reported separately are ethylene-propylene rubber, production of which was 522 million pounds in 1987; butadiene-acrylonitrile (NBR-type) rubber, production of which was 142 million pounds; silicone (Q) type elastomers, production of which was 186 million pounds and thermoplastic elastomers (a family of products), production of which was 422 million pounds.

Sales of SBR-type rubber, including 10 million pounds of its vinylpyridine sub-type, by U.S. producers in 1987 amounted to 1,003 million pounds. Sales of solution polymerized polybutadiene rubber amounted to 338 million pounds, and those of ethylene-propylene rubber to 442 million pounds. In 1987, sales of NBR-type rubber in 1987 amounted to 97 million pounds, silicone type elastomer sales amounted to 142 million pounds and sales of thermoplastic elastomers amounted to 364 million pounds in 1987.

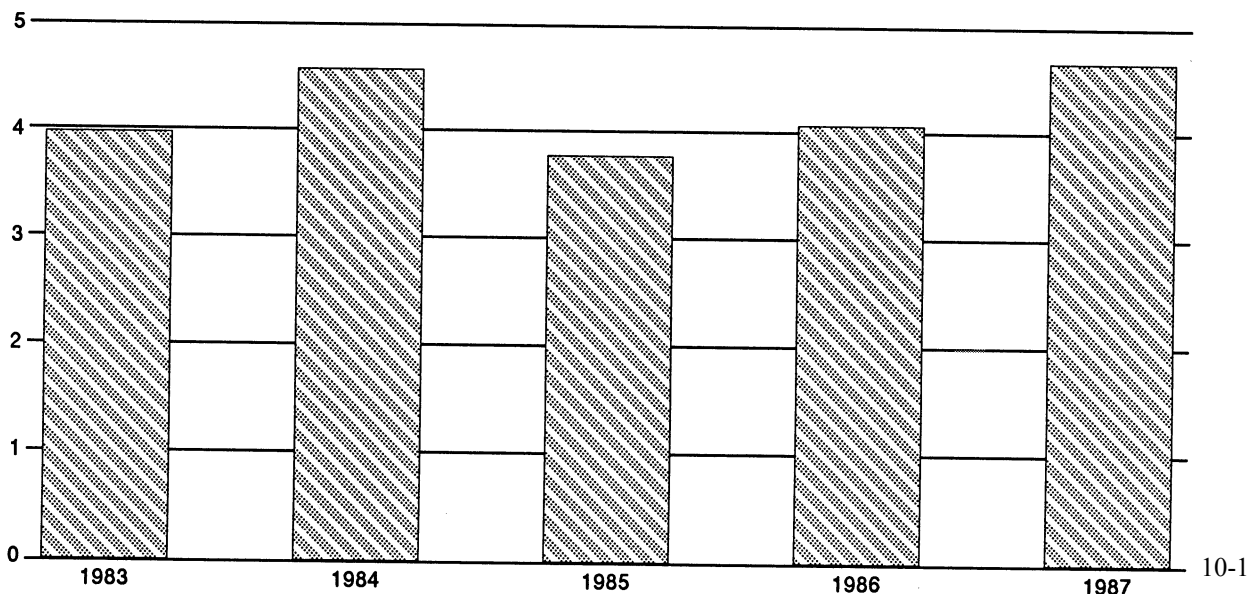
Edward J. Taylor

202-252-1362

¹ Until now urethane type elastomers have been included in the section VIII "Plastics and Resin Materials." The commission has now begun reporting statistics for urethane elastomers in two sections, section VIII, plastics and resin materials, and section X, elastomers (synthetic rubber). Henceforth those polyurethane products classified as "thermoplastic" urethane elastomers will be reported in SOC section X; all other urethane elastomers will remain in SOC section VIII.

Figure 11
Elastomers: U.S. production, 1983-87

Billions
of pounds



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 10

Table 30

Elastomers (synthetic rubber):¹ U.S. production and sales, 1987

Elastomers	Production ²	Sales Quantity ²	Value	Average Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	4,690,358	3,108,761	2,714,048	\$.87
Butadiene-acrylonitrile type (NBR-type)	142,238	96,544	93,666	.97
Ethylene-propylene type (EP-type)	521,673	441,837	317,852	.72
Polybutadiene (solution polymerized) type (BR-type)	689,665	338,399	151,633	.45
Silicone (Q) type elastomers	186,010	142,267	494,283	3.47
Styrene-butadiene type (SBR-type) ⁴	1,828,911	993,158	458,654	.46
Styrene-butadiene-vinylpyridine type	20,936	10,098	11,000	1.09
Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, thermoplastic poly- urethane elastomers, and co-polyesters)	421,997	364,277	401,841	1.10
All other elastomers ⁵	878,928	722,181	785,119	1.09

¹ The term "elastomers" is defined as substances in bale, crumb, powder, latex, and other crude forms which can be vulcanized or similarly processed into materials that can be stretched at 68° F. to at least twice their original length and, after having been stretched and the stress removed, will return with force to approximately their original length.

² Includes oil content of oil-extended elastomers.

³ Calculated from unrounded figures.

⁴ More than four-fifth of SBR elastomer production is the dry type of product.

⁵ Includes butyl, chlorinated natural rubber, chlorinated polyethylene, epichlorohydrin, fluoroelastomers, polyacrylic ester type, polybutadiene type (emulsion), polychloroprene (neoprene) type, polyisoprenes (including cyclorubber), polysulfide, and miscellaneous elastomers.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 31

Elastomers for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Elastomers</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 32)</i>
Cyclic elastomers:		
Cyclized polyisoprene (cyclorubber)	No	WAY.
Epichlorohydrin elastomers (CO, ECO) type	No	DUP, SHC.
Styrene-butadiene (S OR SBR) type:	Yes	
Styrene-butadiene, dry type	No	CPY, FRS, GRD, GYR, SPO.
Styrene-butadiene, latex type	No	BFG, GYR, MMM, PLR, RCI.
Styrene-butadiene-vinylpyridine	Yes	BFG, FRS, GNT, GYR.
Styrene-butadiene type elastomers, other	No	LC.
Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, thermoplastic urethane elastomers, and co-polyesters)	Yes	BFG, DOW, EEP, ENT, FRS, GEP, MON, QUN, SHC, USR.
Cyclic elastomers, all other		
All other cyclic elastomers	No	HPC, TNA.
Acyclic elastomers:		
Butadiene-acrylonitrile (nitrile) (NBR) type	Yes	BFG, CPY, GYR, MMM, USR.
Butyl(isobutylene-isoprene) type	No	ENJ.
Chlorinated rubber, natural and synthetic	No	DOW, HPC.
Ethylene-propylene (EP) type	Yes	CPY, DUP, ENJ, PLR, USR.
Fluorinated elastomers (CFM, FKM, FFKM) type	No	DUP, MMM, NES.
Polyacrylate ester type:		
Polyacrylic (ACM) ester type elastomers	No	ACY, BFG.
Polyalkalene oxide	No	PRC.
Polybutadiene acrylic acid acrylonitrile terpolymer (PBAN)	No	ASY.
Polybutadiene (BR) type:		
Polybutadiene, emulsion-polymerized	No	GYR, SPO.
Polybutadiene, solution-polymerized	Yes	ASY, FRS, GYR, PLC.
Polychloroprene (Neoprene) (CR) type	No	DKA, DUP, LC.
Polyisoprene (IR) type	No	GYR.
Polysulfide (T) type elastomers	No	MRT.
Silicone (Q) type elastomers	No	DCC, DUP, SPD, SWS.
Acyclic elastomers, all other:		
All other acyclic elastomers	No	MRT.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 32

Elastomers (synthetic rubber): Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACY	American Cyanamid Co.	LC	Lord Corp., Chemical Products Group
ASY	American Synthetic Rubber Corp.	MMM	Minnesota Mining and Manufacturing Co.
BFG	B. F. Goodrich Co.	MON	Monsanto Co.
CPY	Copolymer Rubber & Chemical Corp.	MRT	Morton-Thiokol, Inc., Morton Chemical Co. Div
DCC	Dow Corning Corp.	NES	Rutgers-Nease Chemical Co.
DKA	Denka Chemical Corp.	PLC	Phillips Petroleum Co.
DOW	Dow Chemical Co.	PRC	Products Research & Chemical Corp.
DUP	E. I. duPont de Nemours & Co., Inc.: Polymer Products Dept.	QUN	K.J. Quinn & Co., Inc.
EEP	Fluorcarbon Company	RCI	Reichold Chemicals, Inc.
ENJ	Exxon Chemical Americas:	SHC	Shell Oil Co., Shell Chemical Co. Div.
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.	SPD	General Electric Co., Silicone Products Dept.
GEP	General Electric Co., Plastics Div.	SPO	Ameripol Co., Div. of Uniroyal Goodrich Tire Co.
GNT	Gencorp Polymers Products	SWS	Wacker Silicones
GRD	W. R. Grace & Co., Polymers & Chemical Div.	TNA	Ethyl Corp
GYR	Goodyear Tire & Rubber Co.	USR	Uniroyal, Inc., Chemical Group
HPC	Hercules, Inc.	WAY	Olin Hunt Speciality Products, Inc.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 11

Plasticizers

Plasticizers are organic chemicals that are added to synthetic plastics and resin materials to (1) improve workability during fabrication, (2) extend or modify the natural properties of these materials, or (3) develop new improved properties not present in the original material. Table 33 presents statistics on U.S. production and sales of plasticizers in as great a detail as is possible without revealing the operations of individual producers. U.S. production of plasticizers totaled 1,998 million pounds in 1987, an increase of 16.0 percent from the 1,722 million pounds reported for 1986. The trend of production of these products is shown in the graph in figure 12. Sales of plasticizers totaled 1,876 million pounds, valued at \$896 million, in 1987, compared with 1,624 million pounds, valued at \$765 million, in 1986.

Production of cyclic plasticizers in 1987, which consisted chiefly of the esters of phthalic anhydride, phosphoric acid, and trimellitic acid,

amounted to 1,455 million pounds, an increase of 10.9 percent from the 1,312 million pounds reported for 1986. Sales of cyclic plasticizers in 1987 totaled 1,452 million pounds, valued at \$628 million, compared with 1,245 million pounds, valued at \$517 million, in 1986. The most important cyclic plasticizers were the dioctyl phthalates, with production of 343 million pounds, in 1987.

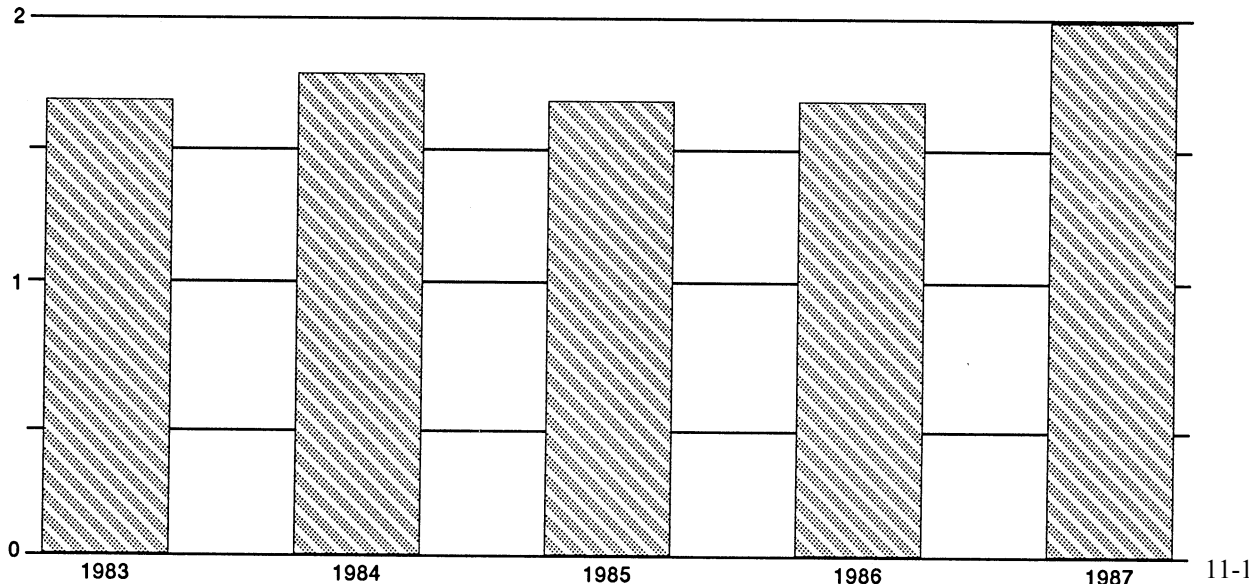
Production of acyclic plasticizers in 1987 totaled 543 million pounds, an increase of 32.5 percent from the 410 million pounds reported for 1986. Sales of acyclic plasticizers totaled 424 million pounds, valued at \$268 million, in 1987, compared with 379 million pounds, valued at \$248 million, in 1986. Epoxidized esters were the most important acyclic plasticizers in 1987 with production of 143 million pounds.

Table 34 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 35.

Jesse Lawrence Johnson
202-252-1351

Figure 12
Plasticizers: U.S. production, 1983-87

Billions
of pounds



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 11

Table 33

Plasticizers: U.S. production and sales, 1987

Plasticizers	Production ¹	Sales Quantity	Value	Average Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	1,998,495	1,875,572	895,666	\$0.48
Benzenoid ³	1,697,652	1,609,728	731,478	.45
Nonbenzenoid	300,843	265,844	164,188	.99
Cyclic				
Total	1,455,074	1,451,905	627,675	.43
Phthalic anhydride esters, total	1,304,994	1,312,504	521,185	.40
Dibutyl phthalate ¹ (including diisobutyl phthalates)	25,167	22,614	10,045	.44
Diethyl phthalate	18,972	14,535	23,773	1.64
Diisodecyl phthalate ⁴	161,510	162,573	58,570	.36
Diisononyl Phthalate	203,612	195,898	69,140	.35
Dimethyl phthalate	12,792	12,743	7,656	.60
Diocetyl phthalates ⁴	343,138	353,863	124,897	.35
DI-tridecyl phthalate	30,954	28,812	15,998	.57
All other phthalic anhydride esters	508,849	521,466	211,106	.40
Trimellitic acid esters	57,366	65,193	45,748	.70
All other cyclic plasticizers ⁵	92,714	74,208	60,742	.82
Acyclic				
Total	543,421	423,667	267,991	.63
Adipic acid esters, total	167,869	95,767	63,464	.66
DI(2-ethylhexyl) adipate	49,006	48,486	24,662	.51
Diisooctyl adipate	(⁶)	922	580	.63
Ditridecyl adipate	6,342	6,156	5,240	.85
All other adipic acid esters	112,521	40,203	32,982	.82
Complex linear polyesters and polymeric plasticizers	83,185	61,708	46,481	.75
Epoxidized esters, total	143,382	135,548	65,505	.48
Epoxidized soya oil esters	120,648	117,864	49,243	.42
All other epoxidized esters	22,734	17,684	16,262	.92
Myristic Acid Esters	2,614	2,499	3,014	1.22
Oleic acid esters, total	11,638	10,958	6,144	.56
Butyl oleate	1,478	1,544	962	.62
Decyl oleate	(⁶)	261	455	1.74
All other oleic acid esters	10,160	9,153	4,727	.52
Dibutyl sebacate	813	869	1,484	1.71
DI(2-ethylhexyl) sebacate	3,127	2,518	3,828	1.52
Stearic acid esters, total	10,405	10,228	12,599	1.23
n-Butyl stearate	338	338	284	.73
All other stearic acid esters	10,067	9,890	12,315	1.25
All other acyclic plasticizers ⁷	120,388	103,572	65,472	.63

¹ Includes data for compounds used principally (but not exclusively) as primary plasticizers. Does not include clearly defined extenders or secondary plasticizers.

² Calculated from unrounded figures.

³ Includes benzenoid products as defined in part 1, schedule 4, of the Tariff Schedules of the United States Annotated.

Footnotes for table 33—Continued

⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (including Synthetic Plastics and Resin Materials), 1987*, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustments, and rounding.

⁵ Includes data for cresyl diphenyl phosphate, dibutyl phenyl phosphate, diphenyl octyl phosphate, tricresyl phosphate, triphenyl phosphate, and other cyclic phosphoric acid esters, glycol dibenzoates, toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

⁶ Reported data were accepted in confidence and may not be published, or no data were reported.

⁷ Includes data for azelaic acid esters, citric and acetylcitric acid esters, myristic acid esters, pelargonic acid esters, ricinoleic and acetylricinoleic acid esters, glyceryl and glycol esters, and other acyclic plasticizers.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 11

Table 34

Plasticizers for which U.S. production and/or sales were reported or estimated, identified by manufacturer, 1987

Plasticizers	Separate statistics ¹	Manufacturers' identification codes (according to list in table 35)
Cyclic	Yes	
N-n-Butyl benzenesulfonamide	No	TNA.
Diethylene glycol dibenzoate	No	KLM, VEL.
Dipropandiol dibenzoate (Dipropylene glycol dibenzoate)	No	KLM, VEL, UTC.
N-ethyl-p-toluenesulfonamide	No	NES.
Glyceryl tribenzoate	No	UTC, VEL.
Phosphoric acid esters:	No	
Isodecyl diphenyl phosphate	No	MON.
Tricresyl phosphate	No	FMC.
Triphenyl phosphate	No	FMC, MON.
All other phosphoric acid esters	No	FMC, MON, SM.
Phthalic anhydride esters:	Yes	
Bis(2-ethylhexyl)terephthalate	No	EKT.
Butyl benzyl phthalate	No	MON.
Butyl 2-ethylhexyl phthalate	No	BAS.
Butyl octyl phthalates	No	ART, RCI.
Cyclohexyl isooctyl phthalates	No	UTC.
Di(2-butoxyethyl) phthalate	No	HAL.
Dibutyl phthalate (Including Diisobutyl phthalate)	Yes	ART, BAS, EKT, HCC, MRF, NOD, UTC, WTH.
Dicyclohexyl phthalate	No	UTC, (2).
Diethylene glycol phthalate	No	CMB.
Diethyl isophthalate	No	(2).
Diethyl phthalate	Yes	EKT, KF, MON, MRF.
Di-(n-heptyl-n-nonyl) phthalate	No	BAS.
Di-(n-heptyl-n-nonyl) undecyl phthalate	No	BAS, ENJ.
Dilsodecyl phthalate	Yes	ART, BAS, ENJ, HCC, MON, NOD, RCI, TEK.
Dilsohexyl phthalate	No	ENJ.
Dilisononyl phthalate	Yes	ART, BAS, ENJ, TEK.
Di(2-methoxyethyl) phthalate	No	EKT.
Dimethyl isophthalate	No	UTC, (2).
Dimethyl phthalate	Yes	EKT, KF, MRF, WTC, UTC, (2).
Dinonyl phthalate	No	ENJ.
Ditridecyl phthalate	Yes	ART, ENJ, HCC, NOD, SM, TEK.
Diundecyl phthalate	No	ART, TEK.
Hexyl n-decyl phthalate	No	VST.
n-Octyl n-decyl phthalate	No	ART, RCI.
Phthalic acid, diallyl ester	No	TNA.
Diocetyl phthalates:	Yes	
Di(2-ethylhexyl) isophthalate	No	MRF.
Di(2-ethylhexyl) phthalate	No	ART, BAS, EKT, ENJ, HCC, RCI, TEK, VST.
Dilsooctyl phthalate	No	ENJ, HAL, NOD, RCI, TEK.
Di-n-octyl phthalate	No	EK.
All other diocetyl phthalates	No	BAS, WTH.
Glycol phthalate esters:		
Butyl phthalyl butyl glycolate	No	(2).
All other phthalic anhydride esters	No	BAS, MON, NOD, TEK, WTC.
Polyethylene glycol dibenzoate	No	VEL.
Tetrahydrofurfuryl oleate	No	WTC.
Toluenesulfonamide o-, p-mixtures	No	UTC.
Trimellitic acid esters:	Yes	
Tri(2-ethylhexyl) trimellitate	No	BAS, HCC, TEK.
Tri-n-hexyl trimellitate	No	(2), (2).
Trilsodecyl trimellitate	No	ENJ, HCC.
Trilisononyl trimellitate	No	ART, TEK.
Trilsooctyl trimellitate	No	ENJ, HAL, NOD, RCI, TEK.
Trimethyl trimellitate	No	FER, (2).

See footnotes at end of table.

Table 34—Continued

Plasticizers for which U.S. production and/or sales were reported or estimated, identified by manufacturer, 1987

Plasticizers	Separate statistics ¹	Manufacturers' identification codes (according to list in table 35)
Cyclic—Continued		
Trimellitic acid esters—Continued		
Tri-n-octyl n-decyl trimellitate	No	HAL, RCI.
Trioctyl trimellitate	No	ART, EKT, RCI, (2).
All other trimellitic acid esters	No	ART, TEK, (2), (2).
All other cyclic plasticizers	Yes	BAS, BOE, NEV, NOD, SBC.
Acyclic	Yes	
Adipic acid esters:		
Butylene glycol adipate	No	HAL.
Di(2-(2-butoxyethoxy)ethyl) adipate	No	HAL, MON, RCI.
Dibutoxyethyl adipate	No	EKT, HAL.
Di(2-ethylhexyl) adipate	No	ART, BAS, CAS, EKT, ENJ, HAL, HCC, MON, NOD, RCI, TEK, WTH.
Di-n-hexyl adipate	No	EKT, MON.
Diisobutyl adipate	No	HAL, HCC, WTC.
Diisodecyl adipate	No	HAL, HCC, MRF, NOD.
Diisononyl adipate	No	ART, ENJ, TEK.
Diisooctyl adipate	Yes	ENJ, HAL, HCC, RCI.
Diisopropyl adipate	No	VND, WTH.
Dimethyl adipate	No	MRF, (2).
Di-n-octyl adipate	No	WM, WTH.
Di-tridecyl adipate	Yes	EMR, HCC, NOD, SM, WM.
Ethylene glycol adipate	No	HAL.
Neopentyl glycol adipate	No	HAL.
n-Octyl n-decyl adipate	No	ART, HCC, RCI.
All others adipic acid esters	Yes	HAL, HCC, MON, WTC.
Azelic acid esters:		
Bis(hydroxypropyl) azelate	No	EMR.
Di(2-ethylhexyl) azelate	No	EMR, HAL, RCI.
Citric and acetylcitric acid esters:		
Tributyl acetylcitrate	No	UTC.
Tributyl citrate	No	(2).
Triethyl acetylcitrate	No	(2).
Triethyl citrate	No	(2).
All other citric and acetylcitric acid esters	No	CCL, (2).
Complex linear polyesters and polymeric plasticizers:		
Adipic acid type complex linear polyesters and polymeric plasticizers	No	EMR, HAL, MRF, TEK, WTC, WTH.
All other complex linear polyesters and polymeric plasticizers	No	ARZ, DIX, EKX, EMR, SM, VND, WTC.
Epoxidized esters:		
Epoxidized linseed oils	No	UCC, VIK, WTC.
Epoxidized pentaerythritol tetraphthalate	No	UCC.
Epoxidized soya oils	Yes	FER, FMC, TEK, UCC, VIK, WTC.
Epoxidized tall oils	No	WTC.
2-Ethylhexyl epoxytallates	No	UCC.
All other epoxidized esters	Yes	REZ, UCC, VIK.
Glyceryl tripropionate	No	EKT.
Glutaric acid esters:		
Neopentyl glycol glutarate	No	HAL.
All other glutaric acid esters	No	HAL.
Myristic acid esters:		
Isopropyl myristate	No	CAS, WM, WTH.
Myristyl ethoxy myristate	No	SCP.
All other myristic acid esters	No	WTH.

See footnotes at end of table.

Section 11

Table 34—Continued

Plasticizers for which U.S. production and/or sales were reported or estimated, identified by manufacturer, 1987

Plasticizers	Separate statistics ¹	Manufacturers' identification codes (according to list in table 35)
Acyclic—Continued		
Octanoic acid esters:	No	
Palmityl octanoate	No	(²).
All other octanoic acid esters	No	(²).
Oleic acid esters:	Yes	
Butyl oleate	Yes	CHL, EMR, HAL, WTC, WTH.
Decyl oleate	Yes	SBC, SCP, VND.
2-Ethylhexyl oleate	No	HAL, (²).
Glyceryl trioleate (Triolein)	No	EMR, WTC.
Isobutyl oleate	No	SBC, WTH.
Isooctyl oleate	No	HAL.
Methyl oleate	No	EMR, TCH, WTC.
Neopentyl glycol dioleate	No	HCC.
Oleyl oleate	No	CAS, SBC.
Propyl oleates:	No	
n-Propyl oleate	No	EMR.
All other oleic acid esters	Yes	HAL.
Palmitic acid esters:	No	
n-Butyl palmitate	No	EKT.
2-Ethylhexyl palmitate	No	VND, WM, WTH.
Isobutyl palmitate	No	WTH.
Isopropyl palmitate	No	WM, WTH.
Pelargonic acid esters:	No	
2-Ethylhexyl pelargonate	No	CAS, SBC.
Glycol pelargonate	No	EMR.
Isodecyl pelargonate	No	EMR.
Triethylene glycol dipelargonate	No	HAL.
All other pelargonic acid esters	No	HCC, HCL, WM.
Phosphoric acid esters:	No	
Tri(2-butoxyethyl) phosphate	No	FMC, MON.
Triethyl phosphate	No	EKT.
Ricinoleic and acetylricinoleic acid esters:	No	
n-Butyl acetylricinoleate	No	CAS.
Butyl ricinoleate	No	CAS.
Ethylene glycol monoricinoleate	No	CAS.
Glyceryl monoricinoleate	No	CAS.
Glyceryl tri(acetylricinoleate)	No	CAS.
Methyl acetylricinoleate	No	CAS.
Methyl ricinoleate	No	CAS.
Propylene glycol monoricinoleate	No	CAS.
Sebacic acid esters:	No	
Dibutoxyethyl sebacate	No	HAL.
Dibutyl sebacate	Yes	HAL, WM, (²).
Di(2-ethylhexyl) sebacate	Yes	HAL, HCC, TEK, (²).
Diisopropyl sebacate	No	SBC, (²).
Dimethyl sebacate	No	EMR, (²), (²).
Propylene glycol sebacate	No	HAL.
Stearic acid esters:	Yes	
n-Butyl stearate	Yes	CHL, EMR, TCH, WM, WTC, WTH.
Diethylene glycol succinate	No	CMB.
2-Ethylhexyl stearate	No	CAS, STC, WM.
Hexadecyl stearate	No	HCL.
Isobutyl stearate	No	EMR, WTH.
Isodecyl stearate	No	WM.
Isopropyl stearate	No	CAS.
Myristyl stearate	No	VND.
2-Octyldecyl-12-stearoyl stearate	No	VND.
Tridecyl stearate	No	HCC, WM.
All other stearic acid esters	No	SBC, WM, WTC.

See footnotes at end of table.

Table 34—Continued

Plasticizers for which U.S. production and/or sales were reported or estimated, identified by manufacturer, 1987

<i>Plasticizers</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 35)</i>
Acyclic—Continued		
Sucrose acetate isobutyrate	No	EKT.
Tetraethylene glycol di(2-ethylhexanoate)	No	HAL, UCC, WM.
Triethylene glycol dicaprylate	No	WM.
Triethylene glycol di(caprylate-caprate)	No	HAL.
Triethylene glycol di(2-ethylbutyrate)	No	HAL, UCC.
Triethylene glycol di(2-ethylhexanoate)	No	EKT, HAL.
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	No	EKX.
All other acyclic plasticizers	Yes	HCC, HPC, WM.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Table 35

Plasticizers: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ART	Aristech Chemical Corp.	KLM	Kalama Chemical, Inc.
ARZ	Arizona Chemical Co.	MON	Monsanto Co.
BAS	BASF Corp.	MRF	Morflex Chemical Co., Inc.
BOE	Boehme Filatex, Inc.	NES	Ruetgers-Nease Chemical Co.
CAS	CasChem, Inc.	NEV	Neville Chemical Co.
CCL	Catawba-Charlab, Inc.	NOD	Nuodex, Inc.
CHL	Chemol Co.	RCI	Reichhold Chemicals, Inc.
CMB	Cambridge Industries Co.	REZ	Interez, Inc.
DIX	Dixie Chemical Co., Inc.	SBC	Scher Chemicals, Inc.
EK	Eastman Kodak Co.:	SCP	Henkel Corp.
EKT	Tennessee Eastman Co. Div.	SM	Mobil Oil Corp., Mobil Chemical Co., Chemical Products Div.
EKX	Texas Eastman Co. Div.	TCH	Quantum Chemical Corp., Emery Div.
EMR	Emery Chemicals Div. of National Distillers & Chemical Corp.	TEK	Teknor Apex Co.
ENJ	Exxon Chemical Americas	TNA	Ethyl Corp.
FER	Ferro Corp.:	UCC	Union Carbide Corp.
	Ferro Chemical Div.	UTC	Unitex Chemical Corp.
	Grant Chemical Div.	VDM	Van De Mark Chemical Co., Inc.
FMC	FMC Corp.	VEL	Vesicol Chemical Corp.
HAL	C. P. Hall Co.	VIK	Viking Chemical Co.
HCC	Hatco Chemical Corp.	VND	Van Dyk Div. of Mallinckrodt, Inc.
HCL	Hoechst Celanese Corp., Sou-Tex Works	VST	Vista Chemical Co.
HPC	Hercules, Inc.	WM	Inolex Chemical Co.
KF	Dynamit Nobel Chemicals, Inc.	WTC	Witco Chemical Corp.
		WTH	Union Camp Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 12

Surface-Active Agents

The surface-active agents included in this report are organic chemicals that reduce the surface tension of water or other solvents and are used chiefly as detergents, dispersing agents, emulsifiers, foaming agents, or wetting agents in either aqueous or nonaqueous systems. Waxes and products used chiefly as plasticizers are excluded. Surface-active agents are produced from natural fats and oils, from silvichemicals such as lignin, rosin, and tall oil, and from chemical intermediates derived from coal tar and petroleum. A major part of the output of the bulk chemicals shown in this report is consumed in the form of packaged soaps and detergents for household and industrial use. The remainder is used in the processing of textiles and leather, in ore flotation and oil-drilling operations, and in the manufacture of agricultural sprays, cosmetics, elastomers, foods, lubricants, paint, pharmaceuticals, and many other products.

The statistics for production and sales of surface-active agents (table 36) are grouped by ionic class and by chemical class and subclass. All quantities are reported in terms of 100-percent organic surface-active ingredients and thus exclude all inorganic salts, water, and other diluents. Sales statistics reflect sales of bulk surface-active agents only; sales of formulated products are excluded. Data for "all other" in each of the categories, which was published in previous editions, can be derived by subtracting from the totals of each category the sum of the enumerated items within that category. Data for the production of surface-active agents during 1983-87 are shown in figure 13.

Total U.S. production of surface-active agents in 1987 amounted to 6,269 million pounds, or 6.3 percent more than the 5,895 million pounds reported for 1986. Sales of bulk surface-active

agents in 1987 amounted to 3,923 million pounds, valued at \$1,713 million, compared with sales in 1986 of 3,567 million pounds, valued at \$1,606 million. In terms of quantity, sales in 1987 were 10.0 percent more than in 1986.

Production of anionic surface-active agents in 1987 amounted to 3,672 million pounds, or 58.6 percent of the total surfactant output reported for 1987. Sales of anionics in 1987 amounted to 1,788 million pounds, valued at \$526 million.

Production of cationic surface-active agents in 1987 amounted to 655 million pounds, 33.0 percent more than the 492 million pounds reported in 1986. Production of nonionic surface-active agents amounted to 1,909 million pounds in 1987, 11.2 percent more than the 1,717 million pounds reported in 1986. Sales of cationic surface-active agents in 1987 increased by 27.3 percent in terms of quantity, and by 13.8 percent in terms of value when compared with sales as reported in 1986. Sales of nonionics in 1987 increased by 12.4 percent in terms of quantity, and by 5.9 percent in terms of value when compared with sales as reported in 1986.

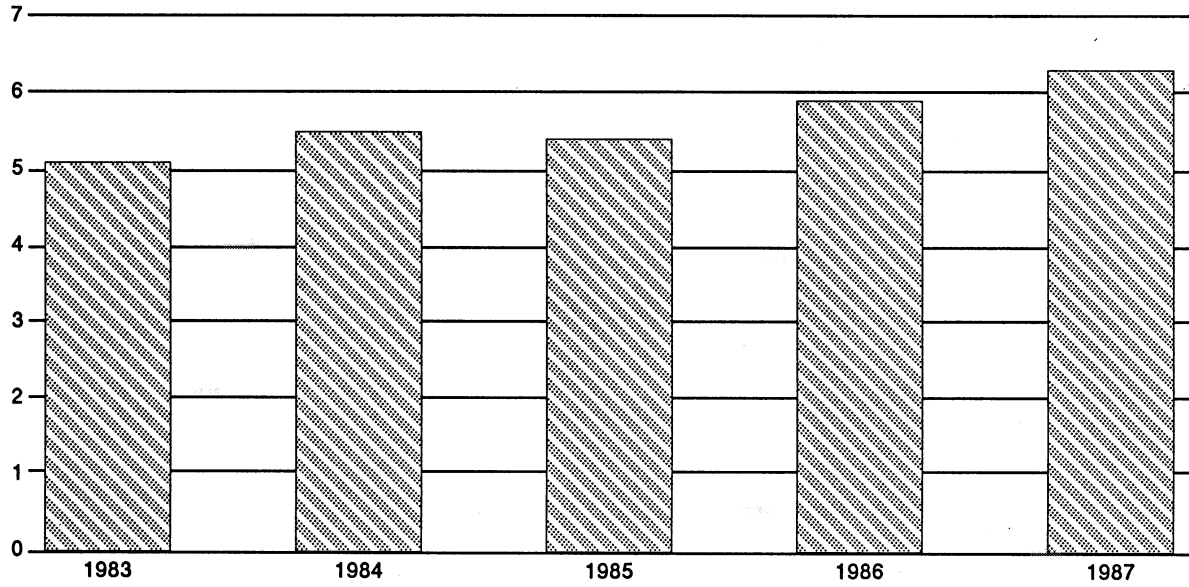
The difference between production and sales reflects inventory changes and captive consumption of surface-active agents by synthetic rubber producers, and by manufacturers of cosmetics, packaged detergents, bar soaps, and other formulated consumer products. In some instances the difference may also reflect quantities of surface-active agents used as chemical intermediates, e.g., nonionic alcohol and alkylphenol ethoxylates, which may be converted to anionic surface-active agents by phosphorylation or sulfation.

Table 37 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 38.

Eric Land
202-252-1349

Figure 13
Surface-active agents: U.S. production, 1983-87

*Millions
of pounds*



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 36

Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ² Quantity	Value	Average Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	6,268,533	3,923,017	1,712,716	\$0.44
Benzenoid ⁴	1,460,055	840,263	386,270	.46
Nonbenzenoid	4,808,478	3,082,754	1,326,446	.43
Amphoteric				
Total	33,129	30,007	28,818	.96
(Carboxymethyl) [3-(coconut oil amido) propyl] dimethylammonium hydroxide, inner salt	5,694	4,938	3,050	.62
N-Dodecyl-3-iminodipropionic acid, disodium salt	194	203	288	1.42
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	240	227	287	1.26
All other amphoteric surface active agents	27,001	24,639	25,193	1.03
Anionic				
Total	3,672,111	1,787,551	525,968	.29
Carboxylic acids (and salts thereof), total ...	861,483	242,017	88,000	.36
Amine salts of fatty, rosin, and tall oil acids, total	3,484	1,927	1,548	.80
Stearic acid, triethanolamine salt	409	81	81	1.00
All other amine salts of fatty, rosin, and tall oil acids	3,075	1,846	1,467	.79
Coconut oil acids, potassium salt	14,636	827	1,274	1.54
Coconut oil acids, sodium salt	129,634	5,736	2,289	.40
Rosin acids, potassium salt	98,898	78,435	20,158	.26
Tall oil acids, potassium salt	11,689	4,286	2,246	.52
Tallow acids, sodium salt	385,520	31,509	8,292	.26
All other carboxylic acids (and salts thereof)	217,622	119,297	52,193	.44
Phosphoric and polyphosphoric acid esters (and salts thereof), total	51,078	39,376	37,208	.94
Alcohols and phenols, alkoxyated and phosphated, total	33,754	28,468	25,477	.89
Decyl alcohol, ethoxylated and phosphated	1,422	1,278	933	.73
Dinonylphenol, ethoxylated and phosphated	1,154	1,138	1,035	.91
Mixed linear alcohols, ethoxylated and phosphated	6,727	5,959	5,721	.96
Nonylphenol, ethoxylated and phosphated	6,392	5,400	4,737	.88
Octylphenol, ethoxylated and phosphated	2,155	1,770	1,562	.88
Phenol, ethoxylated and phosphated	578	575	448	.78
Tridecyl alcohol, ethoxylated and phosphated	2,438	958	825	.86
All other alcohols and phenols, alkoxyated and phosphated	12,888	11,390	10,216	.90
Decyl and octyl phosphate	1,418	1,370	1,150	.84
2-Ethylhexyl phosphate	711	565	543	.96
2-Ethylhexyl phosphate, sodium salt	(⁵)	1,940	1,202	.62
Mixed alkyl phosphate	3,872	2,923	3,231	1.11
All other phosphoric and polyphosphoric acid esters (and salts thereof)	11,323	4,110	5,605	1.36

See footnotes at end of table.

Section 12

Table 36—Continued

Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ² Quantity	Value	Average Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Anionic—Continued				
Sulfonic acids (and salts thereof), total	1,963,385	1,284,575	274,361	\$0.21
Alkylbenzenesulfonates, total	736,873	181,488	103,296	.57
Dodecylbenzenesulfonic acid	351,699	91,155	42,480	.47
Dodecylbenzenesulfonic acid, calcium salt	5,941	3,641	3,968	1.09
Dodecylbenzenesulfonic acid, isopropyla- mine salt	4,378	3,395	2,867	.84
Dodecylbenzenesulfonic acid, (mixed alkyl) amine salt	212	(⁵)	(⁵)	(⁵)
Docecylbenzenesulfonic acid, sodium salt	239,988	70,095	46,213	.66
Dodecylbenzenesulfonic acid, triethano- lamine salt	9,886	10,013	5,925	.59
All other alkylbenzene sulfonates	124,769	3,189	1,843	.58
Benzene-, cumene-, toluene-, and xylene- sulfonates, total	136,858	128,497	27,314	.21
Xylenesulfonic acid, ammonium salt	11,886	12,736	3,096	.24
Xylenesulfonic acid, sodium salt	98,624	95,634	18,646	.19
All other benzene-, cumene-, toluene-, and xylenes sulfonates	26,348	20,127	5,572	.28
Ligninsulfonates and naphthalenesulfonates, total	883,465	882,295	67,905	.08
Ligninsulfonic acid, ammonium salt	7,249	10,904	703	.06
Ligninsulfonic acid, calcium salt	507,194	513,734	23,424	.05
Ligninsulfonic acid, sodium salt	311,833	303,641	28,036	.09
Ligninsulfonic acid, zinc salt	717	740	119	.16
All other ligninsulfonates and naphtha- lene sulfonates	56,472	53,276	15,623	.29
Sulfosuccinamic acid derivatives	3,795	3,714	2,442	.66
Taurine derivatives	5,734	3,467	3,725	1.07
Sulfonic acids having ester or ether link- ages, total	160,436	52,100	48,662	.93
Sulfosuccinic acid esters, total	31,437	26,697	26,162	.98
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt	23,272	19,856	20,487	1.03
Sulfosuccinic acid, diisooctyl ester, sodium salt	(⁵)	135	116	.86
All other sulfosuccinic acid esters	8,165	6,706	5,559	.83
All other sulfonic acids having ester or ether linkages	128,999	25,403	22,500	.89
All other sulfonic acids (and salts thereof)	36,224	33,014	21,017	.64
Sulfuric acid esters (and salts thereof), total ⁶	796,165	221,583	126,399	.57
Acids, amides, and esters, sulfated, total	8,874	5,606	3,788	.68
Butyl oleate, sulfated, sodium salt	1,864	1,617	758	.47
All other acids, amides, and esters, sulfated	7,010	3,989	3,030	.76
Alcohols, sulfated, total	221,105	61,778	52,189	.84
Decyl sulfate, sodium salt	1,102	(⁵)	(⁵)	(⁵)
Dodecyl sulfate, ammonium salt	22,497	10,247	7,341	.72
Dodecyl sulfate, magnesium salt	469	86	110	1.27
Dodecyl sulfate, sodium salt	25,956	24,873	20,399	.82
Dodecyl sulfate, triethanolamine salt	10,056	7,543	5,159	.68
2-Ethylhexyl sulfate sodium salt	2,056	2,005	2,413	1.20
Mixed linear alcohols, sulfated, ammonium salt	52,735	4,171	4,069	.98
Mixed linear alcohols, sulfated, sodium salt	(⁵)	5,925	5,888	.99
All other alcohols, sulfated	106,234	6,928	6,810	.98

See footnotes at end of table.

Table 36—Continued

Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ²	Value	Average
	1,000 pounds	1,000 pounds	1,000 dollars	Unit value ³ Per pound
Anionic—Continued				
Sulfuric acid esters (and salts thereof)— Continued				
Ethers, sulfated, total ⁶	537,856	130,964	54,274	\$0.41
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	9,125	7,879	7,819	.99
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	(⁵)	28,388	16,351	.58
All other ethers, sulfated ⁶	528,731	94,697	30,104	.32
Natural fats and oils, sulfated, total	28,330	23,235	16,148	.70
Castor oil, sulfated, sodium salt	4,726	4,212	2,768	.66
Tall oil, sulfated, sodium salt	989	930	400	.43
Tallow, sulfated, sodium salt	612	493	246	.50
All other natural fats and oils, sulfated	22,003	17,600	12,734	.72
Cationic				
Total	654,692	409,853	357,819	.87
Amine oxides and oxygen-containing amines (except those having amide linkages), total				
	180,413	63,190	47,037	.74
Acyclic, total				
(Coconut oil alkyl)amine, ethoxylated ...	172,615	54,694	38,224	.70
(Hydrogenated tallow alkyl)amine, ethoxylated	3,075	8,173	6,864	.84
(9-Octadecenyl)amine, ethoxylated	761	710	505	.71
Octadecylamine, ethoxylated	1,639	1,602	1,411	.88
(Soybean oil alkyl)amine, ethoxylated ...	695	711	1,015	1.43
(Tallow alkyl)amine, ethoxylated	234	849	1,319	1.55
All other acyclic	7,941	7,823	5,693	.73
All other acyclic	158,270	34,826	21,417	.61
Cyclic (including imidazoline and oxazoline derivatives), total				
1-(2-Hydroxyethyl)-2-nonyl-2- imidazoline	7,798	8,496	8,813	1.04
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline	1,327	1,325	1,693	1.28
1-(2-Hydroxyethyl)-2-nor(tallow alkyl)- 2-imidazoline	272	(⁵)	(⁵)	(⁵)
All other cyclic (including imidazoline and oxazoline derivatives)	1,607	577	1,784	3.09
Amines and amine oxides having amide linkages, total	4,592	6,594	5,336	.81
Amines and amine oxides having amide linkages, total				
	58,839	39,410	26,518	.67
Stearic acid-diethylenetriamine condensate				
	1,328	584	712	1.22
Stearic acid-ethylenediamine condensate, monoethoxylated				
	401	359	233	.65
All other amines and amine oxides having amide linkages				
	57,110	38,467	25,573	.66
Amines, not containing oxygen (and salts thereof), total				
	207,132	99,609	79,616	.80
Amine salts				
	4,106	5,431	4,548	.84
Diamines and polyamines, total				
	92,301	26,685	25,608	.96
N-(Coconut oil alkyl)trimethylene- diamine				
	1,377	1,823	2,881	1.58
N-(9-Octadecenyl)trimethylene- diamine				
	650	(⁵)	(⁵)	(⁵)
N-(Tallow alkyl)trimethylenediamine				
	7,182	(⁵)	(⁵)	(⁵)
All other diamines and polyamines				
	83,092	24,862	22,727	.91

See footnotes at end of table.

Section 12

Table 36—Continued
Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ²	Value	Average
	1,000 pounds	1,000 pounds	1,000 dollars	Unit value ³ Per pound
Cationic—Continued				
Amines, not containing oxygen (and salts thereof)—Continued				
Monoamines, total	110,725	67,493	49,460	\$.73
(Coconut oil alkyl)amine	2,174	991	1,050	.47
(Hydrogenated tallow alkyl)amine	3,319	4,733	3,576	.76
9-Octadecenylamine	12,033	6,146	4,857	.79
Octadecylamine	2,013	1,561	1,517	.97
(Soybean oil alkyl)amine	4,628	3,226	1,506	.47
(Tallow alkyl)amine	8,419	10,312	7,491	.73
All other monoamines	78,139	40,524	29,463	.73
Quaternary ammonium salts, containing oxygen, total	37,209	39,131	37,688	.96
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)-methylammonium chloride	346	346	388	1.12
All other quaternary ammonium salts, containing oxygen	36,863	38,785	37,300	.96
Quaternary ammonium salts, not containing oxygen, total	161,616	159,856	139,781	.87
Acyclic, total	134,848	144,041	124,406	.86
Bis(coconut oil alkyl)dimethylammonium chloride	(⁵)	5,742	5,623	.98
Bis(hydrogenated tallow alkyl)dimethyl- ammonium chloride	75,008	72,926	48,410	.66
Trimethyl(soybean oil alkyl) ammonium chloride	(⁵)	502	1,053	2.10
Trimethyl(tallow alkyl)ammonium chloride	818	2,974	2,622	.88
All other acyclic	59,022	61,897	66,698	1.08
Benzenoid, total ⁴	26,768	15,815	15,375	.97
Benzyl(coconut oil alkyl)dimethyl- ammonium chloride	972	(⁵)	(⁵)	(⁵)
Benzoldimethyl(mixed alkyl)ammonium chloride	6,072	5,511	6,514	1.18
Benzyltrimethylammonium chloride	3,691	(⁵)	(⁵)	(⁵)
All other benzenoid	16,033	10,304	8,861	.86
All other cationic surface-active agents	9,483	8,657	27,179	3.14
Nonionic				
Total	1,908,601	1,695,606	800,111	.47
Carboxylic acid amides, total	178,392	133,722	53,791	.40
Diethanolamine codensates (amine/acid , Ratio = 2/1) total	18,207	16,047	11,202	.70
Coconut oil acids	5,908	5,343	3,660	.68
Coconut oil and tallow acids	6,882	6,580	4,385	.67
Lauric acid	82	65	64	.99
Lauric and myristic acids	314	313	290	.93
Oleic acid	747	715	498	.70
Stearic acid	150	136	93	.69
Tall oil acids	1,426	741	453	.61
Tallow acids	193	(⁵)	(⁵)	(⁵)
All other diethanolamine codensates (amine/acid Ratio = 2/1)	2,505	2,154	1,759	.82
Diethanolamine codensates (other amine/ acid ratios), and other carboxylic acid amides, total	160,185	117,675	42,589	.36
Coconut oil acids (amine/acid Ratio = 1/1)	26,501	20,279	12,171	.60
Coconut oil acid-ethanolamine conden- sate (amine/acid Ratio = 1/1)	3,103	(⁵)	(⁵)	(⁵)
Lauric acid (amine/acid Ratio = 1/1)	3,436	2,264	2,010	.89
Lauric and myristic acids (amine/acid Ratio = 1/1)	1,616	1,686	1,325	.79
Linoleic acid (amine/acid Ratio = 1/1)	396	384	332	.86
Oleic acid (amine/acid Ratio = 1/1)	121	(⁵)	(⁵)	(⁵)

See footnotes at end of table.

Table 36—Continued
 Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ²	Value	Average
	1,000 pounds	1,000 pounds	1,000 dollars	Unit value ³ Per pound
Nonionic—Continued				
Diethanolamine condensates (other amine/ acid ratios), and other carboxylic acid amides—Continued				
Soybean oil acids (amine/acid Ratio = 1/1)	1,097	1,084	1,734	\$1.60
Stearic acid (amine/acid Ratio = 1/1) ...	135	66	48	.73
All other diethanolamine condensates (other amine/acid ratios), and other carboxylic acid amides	123,780	91,912	24,969	.27
Carboxylic acid esters, total	300,194	250,028	183,737	.73
Anhydrosorbitol esters, total	36,174	36,462	26,105	.72
Anhydrosorbitol monolaurate	6,002	5,510	3,864	.70
Anhydrosorbitol mono-oleate	6,645	6,294	5,083	.81
Anhydrosorbitol monostearate	17,865	19,454	12,972	.67
Anhydrosorbitol sesquileate	1,017	919	787	.86
Anhydrosorbitol trioleate	2,081	1,872	1,453	.78
All other anhydrosorbitol esters	2,564	2,413	1,946	.81
Diethylene glycol monolaurate	266	266	143	.54
Diethylene glycol monostearate	70	73	77	1.06
Ethoxylated sorbitol and anhydrosorbitol esters, total	35,217	34,075	26,040	.76
Ethoxylated anhydrosorbitol mono- laurate	6,251	6,022	5,275	.88
Ethoxylated anhydrosorbitol mono- oleate	8,066	8,101	5,049	.62
Ethoxylated anhydrosorbitol mono- stearate	13,543	13,071	9,500	.73
Ethoxylated anhydrosorbitol trioleate	2,362	2,219	1,804	.81
Ethoxylated anhydrosorbitol tristearate	903	828	714	.86
All other ethoxylated sorbitol and anhydrosorbitol esters	4,092	3,834	3,698	.96
Ethylene glycol distearate	3,268	3,312	1,975	.60
Ethylene glycol monostearate	2,203	2,110	1,347	.64
Glycerol esters, total	66,145	64,480	52,222	.81
Glycerol mono-oleate	7,263	6,510	4,992	.77
Glycerol monoricinoleate	53	54	81	1.51
Glycerol monostearate	13,346	12,448	10,117	.81
All other glycerol esters	45,483	45,468	37,032	.81
Natural fats and oils, ethoxylated, total ...	38,451	27,844	20,372	.73
Castor oil, ethoxylated	16,843	13,141	8,646	.66
Hydrogenated castor oil, ethoxylated ...	2,507	1,829	1,289	.70
Lanolin, ethoxylated	1,849	1,558	1,368	.88
All other natural fats and oils, ethoxylated	17,252	11,316	9,069	.80
Polyethylene glycol esters, total	52,077	40,856	29,247	.72
Polyethylene glycol diester of tall oil acids	3,032	(⁵)	(⁵)	(⁵)
Polyethylene glycol dilaurate	843	792	773	.98
Polyethylene glycol dioleate	2,650	989	749	.76
Polyethylene glycol distearate	2,899	2,036	2,133	1.05
Polyethylene glycol monoester of tall oil acids	2,978	2,534	1,555	.61
Polyethylene glycol monolaurate	6,172	5,949	3,846	.65
Polyethylene glycol mono-oleate	4,529	3,952	2,937	.74
Polyethylene glycol monopalmitate	988	784	468	.60
Polyethylene glycol monostearate	8,254	6,171	4,815	.78
Polyethylene glycol sesquilester of tall oil acids	892	728	547	.75
All other polyethylene glycol esters	18,840	16,921	11,424	.68
Polyglycerol esters, total	1,374	1,324	1,990	1.50
Polyglycerol mono-oleate	595	595	748	1.26
All other polyglycerol esters	779	729	1,242	1.70
1,2-Propanediol monostearate	1,768	1,185	1,719	1.45
All other carboxylic acid esters	63,181	38,041	22,500	.59

See footnotes at end of table.

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Section 12

Table 36—Continued

Surface-active agents: U.S. production and sales, 1987

Surface-active agents	Production ¹	Sales ² Quantity	Value	Average Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Nonionic—Continued				
Ethers, total	1,408,092	1,304,210	547,886	\$.42
Benzenoid ethers, total ⁴	501,317	466,760	199,382	.43
Dinonylphenol, ethoxylated	3,589	2,648	2,420	.91
Dodecylphenol, ethoxylated	12,135	10,894	4,972	.46
(Mixed alkyl)phenol-formaldehyde, alkoxylated	10,641	(⁵)	(⁵)	(⁵)
Nonylphenol, ethoxylated	356,607	355,593	124,914	.35
Nonylphenol, ethoxylated and propo- xylated	677	722	573	.79
All other benzenoid ethers	117,668	96,903	66,503	.69
Nonbenzenoid ethers, total	808,659	766,677	294,792	.38
Chemically-defined linear alcohols, ethoxylated, total	25,127	21,547	17,616	.82
Decyl alcohol, ethoxylated	13,472	11,170	6,504	.58
Dodecyl alcohol, ethoxylated	3,266	2,470	2,140	.87
9-Octadecenyl alcohol, ethoxy- lated	1,531	1,060	1,106	1.04
Oleyl alcohol, ethoxylated	1,578	1,486	1,830	1.23
All other chemically-defined linear alcohols, ethoxylated	5,280	5,361	6,036	1.13
Mixed linear alcohols, alkoxylated, total	783,532	745,130	277,176	.43
Mixed linear alcohols, ethoxylated ...	685,132	651,211	246,822	.38
Mixed linear alcohols, ethoxylated and propoxylated	24,248	23,815	15,537	.65
Tallow alcohol, ethoxylated	(⁵)	803	644	.80
All other mixed linear alcohols, alkoxylated	74,152	69,301	14,173	.20
Other ethers and thioethers, total	98,116	70,773	53,712	.76
Mixed alcohols, ethoxylated	2,907	1,910	2,096	1.10
Poly(mixed ethylene, propylene) glycol	12,309	5,124	3,746	.73
Tridecyl alcohol, ethoxylated	8,790	5,644	4,499	.80
All other ethers and thioethers	74,110	58,095	43,371	.75
All other nonionic surface-active agents	21,923	7,646	14,697	1.92

¹ All quantities are given in terms of 100 percent organic surface-active ingredient.² Sales include products sold as bulk surface-active agents only.³ Calculated from unrounded figures.⁴ The term "benzenoid" used in this report, describes any surface-active agent, except lignin derivatives, whose molecular structure includes 1 or more 6-membered carbocyclic or heterocyclic rings with conjugated double bonds (e.g., the benzene ring or the pyridine ring).⁵ Reported data were accepted in confidence and may not be published, or no data were reported.⁶ Includes all other anionic surface-active agents.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 37

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Amphoteric		
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium chloride, disodium salt	No	BRD.
Bis(2-hydroxyethyl)tallowammonium ethanoate	No	MIR.
3-[Caprylamidoethylene-(2-hydroxyethyl)amino]propionic acid	No	MIR.
Caprylamphopropionate	No	MOA.
1-Carboxyethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
1-Carboxyethyl-1-(2-hydroxyethyl)-2-nonyl-2-imiazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt	No	DUP.
Carboxymethyl-3-cocoamidopropyldimethylammonium chloride, sodium salt	No	ENJ.
(Carboxymethyl)[3-(coconut oil amido)propyl]-dimethylammonium hydroxide, inner salt	Yes	AAC, CYL(E), ETC, MIR, MZC, SCP, SHX, WM, WTC, (²).
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	BRD.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	AAC, BRD, MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt	No	MIR.
(Carboxymethyl)-3-laurylamidopropyldimethyl ammonium hydroxide, inner salt	No	MIR, MZC.
Cocoamidoamphoglycinate	No	MOA.
Cocoamidopropyl betaine	No	MOA.
N-Cocoamido-propyl-N,N-dimethylamine oxide	No	MOA.
3-[3-(Cocoamidopropyl)dimethylammonio]-2-hydroxypropane sulfonate	No	MIR.
3-Cocoamidopropyl-2-hydroxy-3-sulfopropyldimethyl ammonium hydroxide, inner salt	No	MZC, SCP, SHX.
Cocoamphocarboxyglycinate	No	MOA.
Cocoamphocarboxypropionate	No	MOA.
Cocoamphopropionate	No	MOA.
N-(Coconut oil alkyl)-β-alanine, partial sodium salt	No	SCP.
N-(Coconut oil alkyl)-β-alanine, sodium salt	No	AAC, DUP.
3-(Coconut oil alkyl)amidoethylene-(2-hydroxyethyl)-aminopropionic acid	No	MIR.
N-(Coconut oil alkyl)aminobutyric acid	No	ARC.
N,N-Di(hydroxyethyl)-N-carboxymethyl tallow ammonium quat, inner salt	No	SHX.
Dimethyloleylammonium ethanoate	No	MIR.
Dodecyl disodium banaline, N-(2-carboxyethyl), sodium salt	No	GAF.

See footnotes at end of table.

Section 12

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Amphoteric—Continued		
N-Dodecyl-3-iminodipropionic acid	No	MOA, SCP.
N-Dodecyl-3-iminodipropionic acid, disodium salt	Yes	AAC, MIR, MOA, SCP.
N-Dodecyl-3-iminodipropionic acid, monosodium salt	No	MIR.
Heptadecylmethylbenzimidazoline sulfonic acid, sodium salt	No	BRD.
1-Hexadecanium-N-carboxymethyl-N-dimethyl, hydroxy salt	No	GAF.
Hexylisonanylamidocarboxylic acid, monoethanolamine salt	No	HCL.
1-Hydroxyethyl-1-(2-hydroxy-3-sodium sulfonatopropyl)-2-capryl-2-imidazolium hydroxide	No	MIR.
1-Hydroxyethyl-1-(2-hydroxy-3-sodium sulfonatopropyl)-2-nor-(coconut oil fatty acids)-2-imidazolium hydroxide	No	MIR.
1-Hydroxyethyl-1-(2-hydroxy-3-sodium sulfonatopropyl)-2-oleyl-2-imidazolium hydroxide	No	MIR.
1-(2-Hydroxyethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(coconut oil fatty acids)-2-imidazolium hydroxide	No	MIR.
Isodecylloxypropyliminopropionic acid, monosodium salt	No	ENJ.
Isonanylamidocaproic acid, triethanolamine salt	No	SHX.
Isostearic amphopropionate	No	MOA.
Lauroamphocarboxyglycinate	No	MOA.
Laurylamidopropyl betaine	No	MOA.
Laurylamphoglycinate	No	MOA.
Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt	No	RH.
(Mixed alkyl)sulfobetaine	No	BRD, MOA, SHX, WM, (²).
Oleic acid-ethylenediamine condensate, propoxylated and sulfated, sodium salt	No	MOA.
Oleyl betaine	No	SCP.
1-(Sodium carboxyethylene)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(tall oil fatty acids)-2-imidazolium hydroxide	No	MIR.
1-(Sodium carboxymethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(coconut oil fatty acids)-2-imidazolium lauryl sulfate	No	MIR.
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	Yes	MIR, MOA, SCP.
Tridecylxypoly(ethyleneoxy)propionic acid, potassium salt	No	MRV.
All other amphoteric surface-active agents	No	SBC.
Anionic		
Carboxylic acids (and salts thereof):		
Amine salts of fatty, rosin, and tall oil acids:		
Coconut oil acids, diethanolamine salt	No	SHX.
Coconut oil acids, ethanolamine salt	No	SBP.
Isostearic acid, mixed isopropanolamines salt	No	(²).
Isostearic acid, triethanolamine salt	No	PCI.
Oleic acid, mixed isopropanolamine salt	No	UTC, (²).
Oleic acid, morpholine salt	No	(²).
Oleic acid, triethanolamine salt	No	CPC, (²).
3-Propanoic acid, coco-amino, sodium salt	No	PCI.
Rosin acids, triethanolamine salt	Yes	CPC.
Stearic acid, N,N,N',N'-tetrakis(2-hydroxyethyl)-ethylenediamine salt	No	ICI.
Stearic acid, triethanolamine salt	Yes	AAC, BRD, PCI, SBP, (²).

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Carboxylic acids (and salts thereof):—Continued		
Amine salts of fatty, rosin, and tall oil acids—Continued		
Tall oil acids, diethanolamine salt (condensate)	No	SHX.
Tall oil acids, triethanolamine salt	No	PNX.
Tallow acids, triethanolamine salt	No	CPC, ENJ, SBP.
All other amine salts of fatty, rosin, and tall oil acids	No	S, WVA, (²).
Carboxylic acids having amide, ester, or ether linkages:		
Butoxyethylene oxyacetic acid, sodium salt	No	MIR.
5(or 6)-Carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, reaction products with castor oil	No	(²).
N-(Coconut oil acyl)sarcosine, sodium salt	No	ENJ, HMP.
N, N-Dimethyl capramide	No	PEL.
Dodecyloxypoly(ethyleneoxy)acetic acid, sodium salt	No	MIR.
N-Lauroylsarcosine, sodium salt	No	HMP.
Maleic acid, monoalkyl ester	No	(²).
Mixed(secondary linear alcohol)polyethylene propionic acid, sodium salt	No	CHP.
Poly(oxy-1,2-ethanediyl), ω -(2-carboxyethoxy)- ω' -hydroxy- α, α' -(iminodi-2,1-ethanediyl)-bis-,N-(tallow alkyl derivs), potassium salt	No	MIR.
Poly(oxy-1,2-ethanediyl)- α -carboxy methyl, ω -(tri-decyloxy), potassium salt	No	PCI.
Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt	No	FTX, HMP, S.
Carboxylic acids with amide, ester or ether linkage, other	No	BRI, S.
Potassium and sodium salts of fatty, rosin, and tall oil acids:		
Animal grease, sodium salt	No	NMC.
5(or 6)Carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, potassium/sodium salts	No	(²).
Castor oil acids, potassium salt	No	CAS.
Castor oil acids, sodium salt	No	LUR.
Citric acid, sodium salts (50%) in sodium phosphates (20%)	No	HCL.
Coconut oil acids, potassium salt	Yes	AGP, CON, ESS, HEW, HIP, HNT, NMC, PG, PNX.
Coconut oil acids, sodium salt	Yes	BSW, CON, CP, ENJ, HEW, LEV, NMC, NPR, PG, (²).
Corn oil acids, potassium salt	No	HNT, NMC.
2-Ethylhexanoic acid, potassium salt	No	UPF.
Gluconic acid, potassium and sodium salts with 20 percent mix of sodium bisulfite-formaldehyde	No	HCL.
Heptanoic acid, potassium salt	No	(²).
Isonanoic acid, sodium salt	No	HCL.
Lauric acid, potassium salt	No	PG.
Mixed vegetable fatty acids, potassium salt	No	EFH, GRL.
Mixed vegetable fatty acids, sodium salt	No	NMC.
Naphthenic acid, potassium salt	No	WBG.
Oleic acid, potassium salt	No	BSW, CPC, HAL, HNT, PG, WBG, (²).
Oleic acid, sodium salt	No	BSW, WBG.
Olive oil acids, sodium salt	No	HNT.
Palm kernel oil acids, potassium salt	No	PG.
Palm kernel oil acids, sodium salt	No	NMC, PG.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Carboxylic acids (and salts thereof)—Continued		
Potassium and sodium salts of fatty, rosin and tall oil acids—Continued		
Palm oil acids, sodium salt	No	BSW, HEW.
Rosin acids, potassium salt	No	ARZ, LEV, PG, WVA, (2).
Rosin acids, sodium salt	No	ARZ, (2).
Stearic acid, ammonium salt	No	BSW.
Stearic acid, potassium salt	No	CON, HEW.
Stearic acid, sodium salt	No	CON, LEV, NOC.
Tall oil acids, mixed potassium/sodium salt	No	WVA.
Tall oil acids, potassium salt	Yes	CCC, CON, DAN, ESS, FER, HIP, PNX, WVA, (2).
Tall oil acids, sodium salt	No	HNT, CON, NMC, WVA, (2).
Tallow acids, potassium salt	No	AGP, PG, PNX.
Tallow acids, sodium salt	Yes	BSW, CON, CP, HEW, LEV, NMC, NPR, PG, (2).
All other potassium and sodium salts of fatty, rosin, and tall oil acids	No	BRI, USR.
Other salts of fatty, rosin and tall oil acids:		
Alkoxy triacryl titanate	No	KPI.
Hexyl(isononyl anide)carboxylic acid, mono- and triethanolamine salts	No	HCL.
Hexyl(isononyl anide)carboxylic acid, di- and triethanolamine salts	No	HCL.
Isostearic acid, isoproxy titanium salt	No	KPI.
Neoalkoxy, trineodecanoyl titanate	No	KPI.
Neoalkoxy, trineodecanoyl zirconate	No	KPI.
Oleic acid, ammonium salt	No	CCC.
Oleic acid, epoxidized, ammonium salt	No	SCP.
All other carboxylic acids	No	WVA.
Phosphoric and polyphosphoric acid esters (and salts thereof):		
Alcohols and phenols, alkoxyated and phosphated:		
Amyl alcohol, ethoxylated and phosphated	No	GAF.
Butyl alcohol, ethoxylated and phosphated	No	FTX, GAF.
Decyl alcohol, ethoxylated and phosphated	Yes	BRI, FTX, GAF, MCP, RPC, TCH.
Decyl alcohol, ethoxylated and phosphated, potassium salt	No	BRI, ETC.
C ₁₂ -C ₁₅ alcohol, ethoxylated, propoxylated and phosphated		GAF.
Decyl alcohol, ethoxylated and polyphosphated	No	GAF.
Dinonylphenol, ethoxylated and phosphated	Yes	CPC, ETC, GAF, MZG, WTC.
Dodecyl alcohol, ethoxylated and phosphated	No	CPC, GAF, MZC, STC, WTC.
Dodecylphenol, ethoxylated and phosphated	No	DEX, GAF.
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated	No	CCC.
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated, sodium salt	No	CCC.
2-Ethylhexanol, ethoxylated and phosphated	No	ETC, HCL, UTC.
2-Ethylhexanol, ethoxylated and phosphated, potassium salt	No	BRI, ETC.
Hexyl alcohol, ethoxylated and phosphated	No	GAF.
Meta, para-cresol, ethoxylated and polyphosphated, neutralized	No	GAF.
Mixed linear alcohols, ethoxylated and phosphated	Yes	CRT, CTL, CYL, ENJ, ETC, FER, FTX, GAF, HCL, HIP, HRT, LUR, MOA, MRV, MZC, OC, RPC, TCH, WTC, (2), (2).

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Phosphoric and polyphosphoric acid esters (and salts thereof)—Continued:		
Alcohols and phenols, alkoxyated and phosphated—Cont.		
Mixed linear alcohols, alkoxyated and phosphated, potassium salt	No	PCI.
Mixed linear alcohols, ethoxyated and phosphated, sodium salt	No	CHP.
Mixed tridecyl alcohol and 2-ethylhexanol, phosphated, potassium salt	No	CHP.
Nonylphenol/diethylenetriamine blend	No	GAF.
Nonylphenol, ethoxyated and phosphated	Yes	CPC, CRT, CTL, CYL, DEX, ESS, ETC, GAF, GDC, HCL, HRT, LUR, MCP, MOA, MZC, OC, OMC, RPC, SCP, TCC, UTC, VKR, WTC.
Nonylphenol, ethoxyated and phosphated, diethanolamine salt	No	OMC, WTC.
Nonylphenol, ethoxyated and phosphated, partial sodium salt	No	GAF.
Nonylphenol, ethoxyated and phosphated sodium salt	No	WTC.
9-Octadecenyl alcohol, ethoxyated and phosphated	No	GAF, HCL.
9-Octadecyl alcohol, ethoxyated and phosphated	No	GAF.
Octylphenol, ethoxyated and phosphated	Yes	MZC, RH, RPC, WTC.
Phenol, ethoxyated and phosphated	Yes	ETC, GAF, MOA, MZC, PEL, WTC.
Polyhydric alcohol, ethoxyated and phosphated	No	CYL, DEX, GAF.
Tridecyl alcohol, ethoxyated and phosphated, polyalkylene polyamine salt	No	(²).
Tridecyl alcohol, ethoxyated and phosphated	Yes	DAN, DEX, ETC, GAF, HIP, MIL, VKR.
Tridecyl alcohol, ethoxyated and phosphated, potassium salt	No	ETC.
All other alcohols and phenols, alkoxyated and phosphated or polyphosphated	No	DEX, SCP.
Alcohols, phosphated or polyphosphated:		
Butyl methyl pyrophosphate ethlenedioxy titanium salt/N,N-dimethylaminoethylmethacrylate salt	No	KPI.
Butyl methyl pyrophosphate isopropoxy titanium salt octyl phosphite adduct	No	KPI.
Butyl phosphate, potassium salt	No	DUP.
Decyl and octyl phosphate	Yes	APC, ENJ, ETC, HCL, MZC.
Decyl polyphosphate, sodium salt	No	CRD.
2-Ethylhexyl phosphate	Yes	APC, BRD, CHP, ETC, FTX, GAF, MCP, OMC, VKR.
2-Ethylhexyl phosphate, potassium salt	No	PCI.
2-Ethylhexyl phosphate, sodium salt	Yes	CHP, DAN, ENJ, PAT, S, SDC.
2-Ethylhexyl polyphosphate, sodium salt	No	DEX.
Hexadecyldiphosphate	No	(²).
Hexadecylmonophosphate	No	(²).
Hexyl phosphate	No	ETC, HCL, ICI.
Hexyl phosphate, potassium salt	No	HCL, ICI.
Isooctyl phosphate	No	BOE, BRI, QCP
Isooctyl phosphate, potassium salt	No	BRI, QCP.
Lauryl alcohol, phosphated	No	HCL.
Methylbutyl pyrophosphate, ethlenedioxy titanium salt	No	KPI.
Mixed alkyl phosphate	Yes	CTL, DUP, ETC, HCL, WTC, (²).
Mixed alkyl phosphate, alkylamine salt	No	(²).
Mixed alkyl phosphate, diethanolamine salt	No	DUP, SCP.
Mixed alkyl phosphate, potassium salt	No	HCL, HYD, QCP.
Mixed alkyl phosphate, sodium salt	No	(²).

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See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Phosphoric and polyphosphoric acid esters (and salts thereof)—Continued		
Alcohols and phenols, alkoxyated and phosphated—Cont.		
Mixed alkyl phosphate, triethanolamine salt	No	(²).
Neoalkoxy tris(dioctyl)phosphato zirconate	No	KPI.
Neoalkoxy tris(dioctyl)pyrophosphato zirconate	No	KPI.
Octyl diphosphate, oxoethylene titanium salt	No	KPI.
Octyl phosphate	No	SCP.
Octyl phosphate, alkylamine salt	No	SCP, (²).
Octyl phosphate, isoproxy titanium salt	No	KPI.
Octyl phosphate, neoalkoxy titanium salt	No	KPI.
Octyl polyphosphate	No	DEX.
Octyl pyrophosphate, ethylenedioxy titanium salt	No	KPI.
Octyl pyrophosphate, ethylenedioxy titanium salt/dimethylaminomethacrylate salt	No	KPI.
Octyl pyrophosphate, isoproxy titanium salt	No	KPI.
Octyl pyrophosphate, neoalkoxy titanium salt	No	KPI.
Octyl pyrophosphate, oxoethylenedioxy titanium salt ..	No	KPI.
Pentaerythritol phosphate	No	MZC.
N-2(C ₆ to C ₇)alkylamido-N-carboxyethyl, N-2-hydroxyethyl, 3-amino-2-hydroxypropyl phosphate, disodium salt	No	MOA.
All other phosphated and polyphosphated alcohols	No	BRI, HRT, OC.
Other phosphoric and polyphosphoric acid esters:		
Blend of fatty and phosphate esters	No	MIL.
Glycerol, ethoxylated and phosphated	No	(²).
Glycerol monoester of mixed fatty acids, phosphated	No	WTC.
Polyoxyalkylate(fatty alcohol), phosphate ester	No	BAS.
Stearyl amine polyphosphoric acid, ethoxylated	No	GDC.
All other phosphoric and polyphosphoric acid esters ..	No	MOA, UTC, WTC.
Sulfonic acids (and salts thereof):		
Alkylbenzenesulfonates:		
Dodecylbenzenesulfonates:		
Dodecylbenzenesulfonic acid	Yes	CTL, ENJ, JLP, LAS, LEV, NLT, PIL, PLX, STP, TEN, VST, WTC, (²).
Dodecylbenzenesulfonic acid, ammonium salt	No	CCC, LEV, (²).
Dodecylbenzenesulfonic acid, calcium salt	Yes	HCL, ICI, RH, STP, TMH, WTC, (²).
Dodecylbenzenesulfonic acid, diethanolamine salt ..	No	PCI.
Dodecylbenzenesulfonic acid, DMAP salt	No	WTC.
Dodecylbenzenesulfonic acid, isopropanolamine salt	No	PIL.
Dodecylbenzenesulfonic acid, isopropylamine salt ..	Yes	CIN, ICI, STP, WTC.
Dodecylbenzenesulfonic acid, isoproxy titanium salt	No	KPI.
Dodecylbenzenesulfonic acid, (mixed alkyl) amine salt	Yes	ECC, FTX, HIP, (²).
Dodecylbenzenesulfonic acid, monoethanolamine salt	No	PCI, RPC.
Dodecylbenzenesulfonic acid, oleyl amine, ethoxylated, salt	No	HCL.
Dodecylbenzenesulfonic acid, potassium salt	No	BRI, GDC, LEV.
Dodecylbenzenesulfonic acid, sodium salt	Yes	AAC, APC, BLA, BOE, BRI, CP, CPC, CRT, CTL, DOW, DUP, ECC, JLP, LEV, NMC, PCI, PG, PIL, PLX, PNX, RPC, STP, TEN, VST, WTC.
Dodecylbenzenesulfonic acid, triethanolamine salt ..	Yes	AAC, BRD, BRI, CCC, CPC, CTL, ESS, FTX, PCI, PIL, STP, WTC.
All other dodecylbenzenesulfonates	No	MRV, OC.

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See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Sulfonic acids (and salts thereof)—Continued		
Alkylbenzenesulfonates—Continued		
Benzenesulfonic acid	No	WTC.
Isopropyl-4-aminobenzenesulfonyl-di(dodecylbenzenesulfonyl) titanate	No	KPI.
Neoalkoxy, dodecylbenzene-sulfonyl titanate	No	KPI.
Pentadecylbenzenesulfonic acid, potassium salt	No	CP.
Tridecylbenzenesulfonic acid	No	PLX.
Tridecylbenzenesulfonic acid, sodium salt	No	BLA, CMT, CPC, NPR, PG.
Benzene-, cumene-, toluene-, and xylenesulfonates:		
Cumenesulfonic acid, ammonium salt	No	NES.
Cumenesulfonic acid, sodium salt	No	NES, STP, WTC.
Toluenesulfonic acid, potassium salt	No	NES.
Toluenesulfonic acid, sodium salt	No	NES, PG, VST.
(Toluene-xylene)sulfonic acid	No	WTC.
Xylenesulfonic acid, ammonium salt	Yes	NES, PG, STP, WTC.
Xylenesulfonic acid, sodium salt	Yes	ICI, NES, PIL, SDC, SHC, STP, WTC.
Ligninsulfonates:		
Ligninsulfonic acid, ammonium salt	Yes	MAR, PSP, RAY, SPA.
Ligninsulfonic acid, calcium salt	Yes	FPC, LKY, MAR, PSP.
Ligninsulfonic acid, chromium salt	No	MAR, PSP, RAY.
Ligninsulfonic acid, iron salt	No	MAR, PSP.
Ligninsulfonic acid, magnesium salt	No	MAR.
Ligninsulfonic acid, manganese salt	No	MAR.
Ligninsulfonic acid, mixed chromium and iron salts	No	PSP.
Ligninsulfonic acid, potassium salt	No	PSP.
Ligninsulfonic acid, sodium salt	Yes	MAR, PSP, RAY, WVA.
Ligninsulfonic acid, zinc salt	Yes	ENJ, MAR, PSP.
Naphthalenesulfonates:		
Butylnaphthalenesulfonic acid, sodium salt	No	UDI.
Butyl-o-phenylphenol sulfonic acid, sodium salt	No	RBC.
Di(C ₆ -C ₈ alkyl)naphthalenesulfonic acid	No	(?).
Dibutylnaphthalenesulfonic acid	No	UDI.
Diisopropylnaphthalenesulfonic acid, sodium salt	No	DUP, UDI.
Isopropylnaphthalenesulfonic acid	No	UDI.
Methylnaphthalenesulfonic acid, sodium salt	No	CPC, UDI.
Methylnonylnaphthalenesulfonic acid, sodium salt	No	UDI.
Naphthalenesulfonic acid, sodium salt, formaldehyde condensate	No	ICI.
All other naphthalenesulfonates	No	HAL.
Sulfonic acids having amide linkages:		
Sulfosuccinamic acid derivatives:		
N-(Coconut oil alkyl)sulfosuccinamic acid, disodium salt	No	SCP.
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt	No	ACY, MOA.
N-Octadecylsulfosuccinamic acid, disodium salt	No	ACY.
Oleamidossulfosuccinamic acid, disodium salt	No	SBC.
N-(Oleoyloxyisopropyl)sulfosuccinamic acid	No	WTC.
All other sulfosuccinamic acid derivatives	No	ACY.
Taurine derivatives:		
N-(Coconut oil acyl)-N-methyltaurine, sodium salt	No	FTX, GAF.
N-Cyclohexyl-N-palmitoyltaurine, sodium salt	No	GAF.
N-Methyl-N-oleoyltaurine, sodium salt	No	CPC, GAF, HCL.
N-Methyl-N-palmitoyltaurine, sodium salt	No	GAF.
N-Methyl-N-(tall oil acyl)taurine, sodium salt	No	CCC, FTX, GAF, WVA.
All other sulfonic acids having amide linkages	No	HCL.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Sulfonic acids (and salts thereof)—Continued		
Sulfonic acids having ester or ether linkages:		
Sulfosuccinamic acid esters:		
Sulfosuccinic acid, bis(dilisobutyl) ester, amidodisodium salt	No	MOA.
Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl)-ester, sodium salt	No	MOA, NSC.
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt	Yes	ACC, ACY, AMU, APX, BRI, CCC, CHP, CRT, ECC, ENJ, FTX, HCL, HDG, MCP, MOA, RH, RPC, WTC.
Sulfosuccinic acid, dihexyl ester, sodium salt	No	AAC, ACY, MOA.
Sulfosuccinic acid, dilisobutyl ester, sodium salt ...	No	FTX.
Sulfosuccinic acid, diisooctyl ester, sodium salt	Yes	ARI, SHX, SOS, WTC.
Sulfosuccinic acid, dioctyl ester, sodium salt	No	MOA.
Sulfosuccinic acid, dipentyl ester, sodium salt	No	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt	No	ACY, MOA, WTC.
Sulfosuccinic acid, (coconut oil alkyl)-iminolopropanol half-ester, sodium salt	No	MOA.
Sulfosuccinic acid, mixed linear alcohol ethoxylate ester, sodium salt	No	AAC.
Sulfosuccinic acid, (lauryl polyethylene glycol ether) ester, disodium salt	No	SHX.
Sulfosuccinic acid, monolaureth ester, disodium salt	No	MIR, MOA.
Sulfosuccinic acid, mono-oleamidopolyethyleneglycol ester, disodium salt	No	SCP.
Sulfosuccinic acid, myristyl ester, disodium monoethanolamine salt	No	WTC.
Sulfosuccinic acid, nonoxynyl-10 ester, disodium salt	No	MOA.
Sulfosuccinic acid, oleamidopolyethyleneglycol, disodium salt	No	MOA.
All other sulfosuccinic acid esters	No	MOA, WTC.
All other sulfonic acids having ester or ether linkages:		
Coconut oil acids, 2-sulfoethyl ester, sodium salt	No	FTX, GAF, HDG, LEV, MZC.
Dodecyldiphenyloxidedisulfonic acid, disodium salt	No	CTL.
Dodecyl sulfoacetate, sodium salt	No	STP.
2-Hydroxy, 3-(lauryl-myristyl) (oxy-1-propane-sulfonic acid), sodium salt	No	PG.
Iso-octylphenol, ethoxylated and sulfonated, sodium salt	No	GAF, RH.
n-Octylphenol, ethoxylated and sulfonated, sodium sodium salt	No	AAC.
Petroleum sulfonic acid, calcium salt	No	WTC.
All other sulfonic acids with ester or ether linkages	No	PG, (2).
Other sulfonic acids:		
Allyl sulfonate, sodium salt	No	ARD.
Diphenylsulfone sulfonic acid, potassium salt	No	UPF.
(Mixed alkane)sulfonic acid	No	(2).
(Mixed alkane)sulfonic acid, sodium salt	No	AAC, DUP, WTC, (2), (2).
Mixed linear olefin sulfonate	No	STP.
n-Octanesulfonic acid, sodium salt	No	(2).

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Sulfonic acids (and salts thereof)—Continued		
Other sulfonic acids—Continued		
Oleyloxyethylamide oxypropanol sulfonic acid	No	S.
Petroleum sulfonic acid, water soluble (acid layer), sodium salt	No	CLU, PIL.
All other sulfonic acids	No	CGY, HAL, SLM, WVA.
Sulfuric acid esters (and salts thereof):		
Acids, amides, and esters, sulfated:		
Carboxylic acid esters (except natural fats and oils), sulfated:		
Esters of sulfated oleic acid:		
Butyl oleate, sulfated, sodium salt	Yes	ARI, HIP, ICI, LUR, MCP, MRV, NSC.
Butyl and propyl oleate, sulfated, sodium salt . . .	No	CRT.
Isopropyl oleate, sulfated, sodium salt	No	DEX.
Methyl oleate, sulfated, sodium salt	No	ICI.
Oleic acid, sulfated	No	ACT.
Oleic acid, sulfated, disodium salt	No	MCP.
Oleic acid, sulfated, sodium salt	No	ACY, CIN.
Propyl oleate, sulfated, sodium salt	No	MRV.
Other carboxylic acid esters:		
Coconut oil acids—ethanolamine salt, sulfated, potassium salt	No	ENJ.
Glycerol monoester of coconut oil acids, sulfated, sodium salt	No	CP.
Mixed alkyl phenol sulfate, ethoxylated, triethanolamine salt	No	MIL.
9-Octadecenyl acetate, sulfated, sodium salt . . .	No	DUP.
Tall oil acids, sulfated, sodium salt	No	ICI.
Alcohols, sulfated:		
Dodecylsulfate salts:		
Dodecyl sulfate, ammonium salt	Yes	AAC, BRD, CYL, LEV, STP, TCH, TNI, ⁽²⁾ .
Dodecyl sulfate, diethanolamine salt	No	BRD, DUP, JRG, TCH.
Dodecyl sulfate, N,N-diethylcyclohexylamine salt . .	No	DUP.
Dodecyl sulfate, isopropanolamine salt	No	JRG.
Dodecyl sulfate, magnesium salt	Yes	AAC, BRD, CYL, PG, STP.
Dodecyl sulfate, potassium salt	No	PG.
Dodecyl sulfate, sodium salt	Yes	AAC, BRD, DUP, STP, TCH, WTC.
Dodecyl sulfate, triethanolamine salt	Yes	AAC, BRD, CYL, STP, TCH, TNI.
Decyl and octyl sulfate, sodium salt	No	TCH.
Decyl sulfate, sodium salt	Yes	ARI, SCP, WTC.
3,9-Diethyl-6-tridecyl sulfate, sodium salt	No	NCC.
2-Ethylhexyl sulfate, sodium salt	Yes	AAC, BRD, NCC, PCI, SCP, TCH, WTC.
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	No	NCC.
Hexadecyl sulfate, sodium salt	No	AAC.
Hexyl sulfate, potassium salt	No	DEX.
Mixed linear alcohols, sulfated, ammonium salt	Yes	AAC, CP, NTL, PG, S, SCP, WTC, ⁽²⁾ .
Mixed linear alcohols, sulfated, diethanolamine salt . . .	No	SCP.
Mixed linear alcohols, sulfated, magnesium salt	No	WTC.
Mixed linear alcohols, sulfated, mixed sodium/cocodiethanolamine salts	No	AAC.
Mixed linear alcohols, sulfated, sodium salt	Yes	AAC, DUP, PG, SCP, WTC.
Mixed linear alcohols, sulfated, triethanolamine salt . . .	No	PG, SCP, WTC.
Octyl sulfate, sodium salt	No	AAC, DUP.

See footnotes at end of table.

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Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Sulfuric acid esters (and salts thereof)—Continued		
Alcohols, sulfated—Continued		
Oleyl sulfate, sodium salt	No	DUP.
Oxalcohol bottoms, sulfated, sodium salt	No	WVA.
Tridecyl sulfate, sodium salt	No	AAC.
All other linear alcohols, sulfated	No	LEV.
Ethers, sulfated:		
Alkylphenols, ethoxylated and sulfated:		
(Mixed alkyl)phenol, ethoxylated and sulfated, sodium salt	No	(²).
1-Naphthol, ethoxylated and sulfated, free acid ...	No	TCH.
Nonylphenol, ethoxylated and sulfated, ammonium salt	No	GAF, OC, RPC, STP.
Nonylphenol, ethoxylated and sulfated, sodium salt	No	GAF.
Octylphenoxypolyethoxyethyl sulfate	No	RH.
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt	No	AAC, MOA, STP.
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	Yes	AAC, CYL, SCP, STP, TCH.
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt	No	PG, (²).
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, magnesium salt	No	PG.
Isobutanol, ethoxylated and sulfated, ammonium salt	No	(²).
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt	No	BRD, JTO, PG, SCP, SHC, STP, VST, WTC, (²) (²).
Mixed linear alcohols, ethoxylated and sulfated, diethanolamine salt	No	SCP.
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	Yes	AAC, BRD, DUP, PG, PIL, SCP, SHC, SHX, STP, TCH, VST, WTC, WVA.
Mixed linear alcohols ethoxylated, sulfated, mixed sodium and cocoamphocarboxyglycinate salts	No	AAC.
Tridecyl alcohol, ethoxylated and sulfated, ammonium salt	No	ARC.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt	No	AAC, BRD.
Natural fats and oils, sulfated:		
Castor oil, sulfated, sodium salt	No	ACT, ACY, ARI, ARL, CRT, DEX, HIP, ICI, LEA, LUR, MRV, S, SCP, SLM, WHW.
Coconut oil, sulfated, sodium salt	No	ACY.
Cod oil, sulfated, sodium salt	No	WHW.
Grease, other than wool, sulfated, sodium salt	No	WHW.
Herring oil, sulfated	No	SLM
Herring oil, sulfated, sodium salt	No	ARI, SLM, WHW.
Lard, sulfated, sodium salt	No	CIN, CRT, WHW.
Mixed fish oils, sulfated, ammonium salt	No	CIN.
Mixed fish oils, sulfated, sodium salt	Yes	CIN, SLM, WHW.
Mixed vegetable oils, sulfated, sodium salt	No	CPC.
Neatsfoot oil, sulfated, sodium salt	No	ARI, WHW.
Peanut oil, sulfated, sodium salt	No	ACY.
Pecan oil, sulfated, sodium salt	No	CRT.
Soybean oil, sulfated, sodium salt	No	ACT, WHW.
Tall oil, sulfated, ammonium salt	No	CIN.
Tall oil, sulfated, sodium salt	Yes	ACT, ARI, CIN, WHW, WVA.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Anionic—Continued		
Sulfuric acid esters (and salts thereof)—Continued		
Natural fats and oils, sulfated—Continued		
Tallow, sulfated, sodium salt	Yes	ACY, ARI, CCC, ECC, LUR, MCP, NSC, SOS, WHW.
All other natural fats and oils, sulfated	No	ARI, WVA.
All other sulfuric acid esters	No	BFP, SLM.
Other anionic surface-active agents:		
Alkylalcohol ethoxylated and carbonated, sodium salt	No	MIL.
Lignin, sodium salt	No	WVA.
Mixed linear alcohols, ethoxylated and carbonated, sodium salt	No	S.
Nonylphenol, ethoxylated and carbonated, sodium salt ..	No	WTC.
Tridecyl alcohol, ethoxylated and carbonated, sodium salt	No	S.
All other anionic surface-active agents	No	DUP, JTO, MOA, S, SLM, WVA.
Cationic		
Amine oxides and oxygen-containing amines except those having amide linkage):		
Acyclic:		
3-(C ₁₂ -C ₁₈ Alkyl)oxy-1-propanamine	No	ENJ.
3-(C ₁₂ -C ₁₈ Alkyl)oxy-1-propanamine	No	ENJ.
N-(C ₁₂ -C ₁₈ Alkyl)oxypropyl trimethylene diamine	No	ENJ.
Bis-hydroxyethyl-cocoamine oxide, phosphated, potassium salt	No	MZC.
Bis-(2-hydroxyethyl)isodecylpropylamine oxide	No	ENJ.
N,N-Bis(2-hydroxyethyl)octadecylamine	No	ARC, SHX.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine	No	ARC, ENJ, HCL, MZC, SHX.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine acetate ..	No	MZC.
tert-Butylbenzylamine	No	HXL.
Cocoamidopropyl dimethyl amine	No	(²).
(Coconut oil alkyl)amine, ethoxylated	Yes	AAC, ARC, ENJ, ETC, HCL, ICI, SHX, SVC, TCH, WTC, (²).
(Coconut oil alkyl)amine, ethoxylated, acetate	No	MZC.
(Coconut oil alkyl amine, propoxylated	No	SHX.
Cocoylamidopropyl dimethylamine oxide	No	SCP.
N,N-Dimethyldodecylamine oxide	No	BRD, MZC, PG, SHX, (²).
N,N-Dimethylhexadecylamine oxide	No	ARC, BRD.
N,N-Dimethyl(mixed alkyl)amine oxide	No	PG, S.
N,N-Dimethyloleylamine oxide	No	SCP.
Dimethyltetradecylamine oxide	No	(²).
Di(pyrrolidonyl)ethylimine	No	PCI.
Ethylenediamine, alkoxyated	No	(²).
Ethylenediamine, ethoxylated	No	KPI.
Ethylenediamine, propoxylated	No	WTC.
Hexyloxypropyl amine	No	DUP, ENJ.
(Hydrogenated tallow alkyl)amine, ethoxylated	Yes	ENJ, ETC, SHX, SVC, WTC.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine	No	(²).
Isodecylpropylamine	No	ENJ.
Isodecylpropylamine, ethoxylated	No	ENJ.
3-(3-Isodecyl)propylaminopropyl amine	No	SHX.
N-Isodecylpropyl trimethylene diamine	No	ENJ.
Isodicyclopropyl amine propoxylated acetate	No	SHX.
Isononyloxypropylamine	No	ENJ.
Isopropoxy-tris(2-ethylenediamino)ethyl titanate	No	KPI.
Isotridecylpropylamine	No	ENJ.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic		
Amine oxides and oxygen-containing amines (except those having amide linkages)—Continued		
Acyclic—Continued		
N-Isotridecyloxypropyl trimethylene diamine	No	ENJ.
3-(Mixed alkoxy)propylamine, ethoxylated oxides	No	SHX.
3-(3-Mixed alkoxy)propylaminopropyl amine	No	SHX.
(Mixed alkyl)amine, ethoxylated	No	ICI, RH, SHX.
Neoalkoxy, tris(m-amino)-phenyl titanate	No	KPI.
Neoalkoxy, tris(m-amino)-phenyl zirconate	No	KPI.
Neoalkoxy, tris(ethylenediamino) zirconate	No	KPI.
(9-Octadecenyl)amine, ethoxylated	Yes	ARC, ETC, GAF, HCL, SHX, TCH, (2).
Octadecylamine, ethoxylated	Yes	ARC, ETC, TCH, WTC.
Octyl/decyl-3-(trimethyleamine)ether	No	JTO.
Octyldimethylamine oxide	No	HNT.
3-Octyloxy and 3-decyloxy-propylamine	No	ARC.
Polyether amine, ethoxylated	No	RH.
Polyethylenepolyamine, alkoxyated	No	BAS.
Polyimine, propoxylated	No	TCH.
(Soybean oil alkyl)amine, ethoxylated	Yes	ARC, ENJ, ETC, GAF, JTO SHX, SVC, (2).
(Tallow alkyl)amine, ethoxylated	Yes	ARC, BAS, DUP, ENJ, ETC, GAF, JTO, S, SHX, SVC, TCH, WTC, (2).
N-(Tallow alkyl)trimethylenediamine, ethoxylated	No	ARC, ENJ, ETC, GAF, JTO.
Tallow ethyl alkylamine, ethoxylated, sulfate	No	ETC, RPC.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	No	HCL, (2).
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine, propoxylated	No	STC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylene diamine	No	MZC
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated	No	ARC, BAS, MZC.
3-(3-Tridecyloxy)propylaminopropyl amine	No	SHX.
Tridecyl-3-(trimethyleamine)ether	No	JTO.
Triethanolamine, ethoxylated	No	MIL, TCH.
Triethanolamine salicylate	No	RSA.
All other acyclic amine oxides and oxygen-containing amines (except those with amide linkages)	No	BAS, BRD, SDH, TCH, WTC.
Cyclic:		
Aniline, ethoxylated	No	MIL.
2,5-Dimethoxyaniline, ethoxylated	No	MIL.
2-Heptadecyl-1,4-hydroxymethyl-4-ethyl-2-oxazoline	No	BRD.
N-Hexadecylmorpholine	No	BRD.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	No	MIR.
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	Yes	BRD, MIR, MOA, MZC, SHX.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline	Yes	BRD, FTX, GAF, MOA, TCH.
1-(2-Hydroxyethyl)-2-nor(soya oil alkyl)-2-imidazoline	No	MIR.
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	Yes	BRD, GAF, HDG, MIR, MOA, (2).
1-(2-Hydroxyethyl)-2-(tall oil alkyl)imidazoline, fatty acid salt	No	(2).
Lignin amine	No	WVA.
Rosin amine, ethoxylated	No	HPC.
m-Toluidine, ethoxylated	No	MIL.
All other cyclic amine oxides and oxygen-containing amines (except those having amide linkages)	No	ARC, (2).

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Amines and amine oxides having amide linkages:		
Carboxylic acid-diamine and polyamine condensates:		
Acetic acid, amides with polyalkylene polyamines, salt	No	(²).
Caprylic acid tetraethylene-pentamine condensate	No	ICI.
Coconut acids, dimethylpropylamine condensate, carboxylated	No	AAC.
Mixed fatty acids-polyalkylenepolyamine condensate	No	JTO, TCH.
Naphthenic acids-polyalkylene polyamine condensate	No	(²).
Naphthenic acids-tall oil fatty acids-polyalkylene polyamine condensate	No	(²).
2-Nor tall oil alkyl-1-tall oil amidoethyl imidazoline	No	SHX.
Oleic acid-diethylenetriamine condensate	No	LUR.
Oleic acid-N,N-dimethyltrimethylenediamine condensate	No	CCW.
Pelargonic acid-tetraethylenepentamine condensate	No	ETC, HCL, ICI, OC.
Stearic acid-diethylenetriamine condensate	Yes	CRT, MZC, OC, S.
Stearic acid-diethylenetriamine condensate, ethyl sulfate	No	GDC.
Stearic acid, N,N-dimethylamino-propylamine condensate	No	MOA.
Stearic acid-ethylenediamine condensate	No	CLD, SOS.
Stearic acid-ethylenediamine condensate, monoethoxylated, ethyl sulfate	No	GDC.
Stearic acid mixed amine condensate	No	HCL.
Stearic acid-tetraethylenepentamine condensate	No	(²).
Tall oil acids/aminoethylpiperazine condensate	No	ENJ.
Tall oil acids-diethylenetriamine condensate	No	WTC, WVA.
Tall oil acids-mixed polyamine condensate	No	WVA.
Tall oil acids-polyalkylenepolyamine condensate	No	FER, WVA, (²).
Tall oil acids-polyalkylenepolyamine condensate salts, with dodecylbenzene sulfonic acid and/or tall oil fatty acids	No	(²).
Tallow fatty acids-aminoethylethanolamine condensates	No	OC.
All other carboxylic acid-diamine and polyamine condensates	No	ARI.
Carboxylic acid-diamine and polyamine condensates, alkoxyated:		
Mixed fatty acids-alkylenediamine condensate, polyethoxylate	No	SHX, WTC.
Stearic acid-ethylenediamine condensate, monoethoxylated	Yes	DEX, ICI, SLC, VKR.
All other carboxylic acid-diamine and polyamine condensates, alkoxyated	No	VKR.
Other amines and amine oxides having amide linkages:		
3-Cocoamido-N,N-dimethylpropylamine oxide	No	MZC.
Cocoamidopropyldimethylamine oxide	No	PAT, SBC.
1-(2-Hydrogenated tallow amidoethyl)-2-nor (hydrogenated tallow)-2-imidazoline	No	SHX.
3-Lauramido-N,N-dimethylpropylamine oxide	No	FTX, SQA.
Laurylamidopropyldimethyl amine	No	WM.
Oleamidopropyldimethyl amine	No	WM.
Palmitylamidopropyldimethyl amine	No	WM.
Stearamidoethyldiethylamine	No	S.
Stearamidoethylethanolamine acetate	No	S.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Amines and amine oxides having amide linkages—Continued		
Other amines and amine oxides having amide linkages—Continued		
Stearic acid, diethanolamine condensate, methyl sulfate	No	DUP.
Stearylamidopropyldimethyl amine	No	WM.
Amines, not containing oxygen (and salts thereof):		
Amine salts:		
(Coconut oil alkyl)amine acetate	No	ENJ.
(Didecyl)amine acetate	No	JTO.
N,N-Dimethyl-N-alkylamine phosphate	No	(²).
(Hydrogenated tallow alkyl)amine acetate	No	ARC.
Octadecylamine acetate	No	ARC, HCL.
(Tallow alkyl)amine acetate	No	ARC, JTO, (²).
N-(Tallow alkyl)trimethylenediamine acetate	No	ARC.
N-(Tallow alkyl)trimethylenediamine oleate	No	ARC.
Diamines and polyamines:		
Imidazoline derivatives:		
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline	No	WTC.
2-Heptadecyl-2-imidazoline	No	CGY.
Polyamine/tall oil Imidazoline	No	WTC.
Stearamidoethyl-2-heptadecyl imidazoline	No	ICI.
N-(Coconut oil alkyl)trimethylenediamine	Yes	ARC, JTO, SHX.
N-(Dimeracidalkyl)trimethylenediamine	No	ENO.
Dimer diamine	No	SCP, SHX.
N-(Docosyl and eicosyl)trimethylenediamine	No	ENO.
N-Dodecyldiethylenetriamine	No	SCO.
Jet amine D-20 (tall oil derivatives)	No	JTO.
N-(Mixed alkyl)polyethylenepolyamine	No	CCW.
N-(9-Octadecenyl)trimethylenediamine	Yes	ARC, JTO, SHX.
Polyalicyclic polyamines and salts and quats	No	(²).
1-Propanamine, 3-(C ₁₂ -C ₁₅ alkoxy derivatives)	No	SHX.
N-(Soybean oil alkyl)trimethylenediamine	No	ENO.
Tall oil alkyl amines, dimers	No	SHX.
3-(Tall oil amino)propyl amine	No	SHX.
N-(Tallow alkyl)dipropylenetriamine	No	ARC, ENJ, JTO, SHX.
N-(Tallow alkyl)trimethylenediamine	Yes	ARC, ENJ, JTO.
N-(Tallow alkyl)-N,N',N'-trimethyl-1,3-propane diamine	No	ARC.
All other diamines and polyamines	No	WTC, (²).
Primary monoamines:		
Alkyldimethylamine oxide	No	HCL.
Arachidylbehenylalkyl amine	No	ENO, WTC.
(Coconut oil alkyl)amine	Yes	ARC, ENO, JTO, SHX.
Dimeracidalkyl amine	No	ENO, WTC.
Dodecylamine	No	ARC, SHX.
(Erucyl alkyl)amine	No	ENO.
Hexadecylamine	No	ARC.
(Hydrogenated tallow alkyl)amine	Yes	ARC, ENJ, ENO, JTO, SHX, WTC.
(Mixed alkyl)amine	No	SHX.
9-Octadecenylamine	Yes	ARC, ENO, JTO, SHX, WTC.
Octadecylamine	Yes	ARC, ENO, SHX, WTC.
Pelargonyl amine	No	JTO.
(Soybean oil alkyl)amine	Yes	ARC, ENO, JTO.
(Tall oil alkyl)amine	No	ARC.
(Tallow alkyl)amine	Yes	ARC, ENJ, ENO, JTO, SHX, WTC.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Amines, not containing oxygen (and salts thereof)—Continued		
Secondary and tertiary monoamines:		
Bis(coconut oil alkyl) amine	No	AMO, ARC, JTO.
Bis(hydrogenated tallow alkyl) amine	No	ARC, ENO, WTC.
1-Decanamine, N,N-didodecyl	No	SHX.
N,N-Dimethyl(behenyl alkyl) amine	No	ENO.
N,N-Dimethylbehenylarachidylamine	No	WTC.
N,N-Dimethyl(coconut oil alkyl) amine	No	ARC, JTO, PG, S, WTC.
N,N-Dimethyldodecylamine	No	ARC, TNA.
N,N-Dimethylerucyl amine	No	ENO.
N,N-Dimethylhexadecylamine	No	ARC.
N,N-Dimethyl(hydrogenated tallow alkyl) amine	No	ARC, CPC, SHX.
N,N-Dimethyl(mixed alkyl) amine	No	BRD.
N,N-Dimethyl-9-octadecenylamine	No	ENO.
N,N-Dimethyloctadecylamine	No	ARC, ENO, WTC.
N,N-Dimethyl(soybean oil alkyl) amine	No	ARC, ENO, JTO, WTC.
N,N-Dimethyltetradecylamine	No	ARC, BRD.
N-Methylbis(coconut oil alkyl) amine	No	ARC.
N-Methylbis(hydrogenated tallow alkyl) amine	No	ARC, ENO, SHX, WTC.
Methyl didecylamine	No	TNA.
N-Methyldioctadecylamine	No	ARC, SHX.
Tri(hydrogenated tallow) amine	No	SHX.
Trisodecylamine	No	SCP.
Trilaurylamine	No	SCP.
Tri(mixed alkyl) amine	No	TNA.
Trioctylamine	No	ARC, SCP.
Tri(tridecyl) amine	No	SHX.
Oxygen-containing quaternary ammonium salts:		
β -Alanine-N-(2-hydroxyethyl)-N-2,1-oxococoyl amino ethyl, sodium salt	No	SHX.
2-(C ₁₃ -C ₁₇ Alkyl)-1-(C ₁₄ -C ₁₈ amidoethyl) (4,5-dihydro-3-methyl)imidazolium methyl sulfate	No	DOW, SVC.
(2-Aminoethyl) ethyl(hydrogenated tallow alkyl) (2-hydroxyethyl) ammonium ethyl sulfate	No	LUR.
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)-ammonium chloride	No	(²).
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tallow alkyl)-2-imidazoline	No	(²).
Benzyl(polyoxyethylene-cocoamine) ammonium chloride with benzyl(polyoxyethylene, tallow amine)		
Benzyl(polyoxyethylene, octadecylamine) ammonium chloride with benzyl(polyoxyethylene, tallow amine) ammonium chloride	No	S.
Benzyl(tallow alkyl)bis(2-hydroxyethyl) ammonium chloride	No	DUP.
Bis(N-amidopropyl)-N,N-dimethyl-N-ethylammonium ethyl sulfate, dimer acid	No	SBC.
Bis(N,N'-ethyl(stearic/arachidic/behenic)amide)-cyanoethyl ethylammonium ethosulfate	No	PCI.
Bis(2-hydroxyethyl, ethoxylated)-methyl-(9-octadecenyl)-ammonium chloride	No	ARC, SHX
Bis(2-hydroxyethyl, ethoxylated)-methyloctadecylammonium chloride	No	ARC.
Bis-2-hydroxyethyl-(hydrogenated tallow)-ethyl sulfate	No	ICI.
Bis(2-hydroxyethyl)-methyl-(tallow alkyl) ammonium chloride	No	ARC, MZC.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Oxygen-containing quaternary ammonium salts—Continued		
Bis-2-hydroxyethyl-octyl-methyl-p-toluene sulfonate	No	HXL.
1,3-Bis(stearylidimethylammonium chloride)-2-propanol	No	MZC.
(Coconut oil alkyl) amine, ethoxylated, diethosulfate	No	ETC.
(Coconut oil alkyl)-bis-(2-hydroxyethyl, ethoxylated)-methylammonium chloride	Yes	ENJ, GAF, JTO, SHX.
Coconut oil fatty acid polyoxyethylene	No	S.
Dimethyldodecylethylammonium ether sulfate	No	PCI.
Distearyldimethylammonium methosulfate	No	HXL.
Ethanaminium, 2-hydroxy-N,N-bis(2-hydroxyethyl)-N-methyl-, salt with silicic acid	No	TCH.
Ethoxylated(hydrogenated tallow amine), methyl ammonium chloride	No	ENJ.
Ethoxylated, quaternized(C ₁₂ -C ₁₈ alkyl)-oxypropyl-trimethylene diamine	No	ENJ.
Ethoxylated, quaternized reaction product of formaldehyde and tallow diamine	No	ENJ.
Ethoxylated tallow amine, potassium propionate derivative	No	SVC.
Ethoxylated tallow amine propionate, methyl sulfate, potassium salt	No	SVC.
N-Ethyl-N,N-bis(polyoxyethylene)tallow ammonium ethyl sulfate	No	SHX.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolium ethyl sulfate	No	ICI, SHX.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate	No	BRD, ICI, PCH.
Ethyl(polyoxyethylene, cocoamine)ethylsulfate	No	S.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate	No	ICI.
α-Glyconamidopropyl dimethyl-2-hydroxyethyl ammonium ammonium chloride	No	VND.
(Hydrogenated tallow alkyl)amine, ethoxylated, diethosulfate	No	ETC.
(2-Hydroxyethyl) dimethyl(3-stearamidopropyl)-ammonium dihydrogen phosphate	No	ACY.
(2-Hydroxyethyl) dimethyl(3-stearamidopropyl)-ammonium nitrate	No	ACY.
Hydroxyethyl-2-undecyl-2,3-Imidazoline	No	MOA.
N-2-Hydroxypropyl-N-methyl-N,N-bis(tallow amido ethyl)-ammonium ethyl sulfate	No	SHX.
Imidazolium, 1-(carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-nor(cocoalkyl), hydroxide, monosodium salts	No	SHX.
Imidazolium, 1-(carboxymethyl)-2-heptyl-1-(2-hydroxyethyl), hydroxide, sodium salt	No	SHX.
Isostearamidopropyl dimethylamino glycolate	No	SBC.
Isostearylamidopropyl dimethylethylammonium ethyl sulfate	No	MZC.
(3-Lauramidopropyl) trimethylammonium methyl sulfate	No	ACY.
Methyl, bis-(2-hydroxyethyl) hydrogenated tallow alkylammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) isodecyloxypropyl-ammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) isotridecyloxypropyl-ammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl)-(soya alkyl) ammonium chloride	No	ENJ.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Oxygen-containing quaternary ammonium salts—Continued		
Methyldioleylethoxyammonium methyl sulfate	No	SHX.
Methylditallowimidazolium methosulfate	No	SVC.
1-Methyl-2-(8-heptadecenyl)-1-(9-octadecenyl) amido ethyl	No	SHX.
1-Methyl(hydrogenated tallow alkyl)diethylamine condensate polyethoxylated, methyl sulfate	No	SVC.
1-Methyl-2-nor-tallow-1-2-tallow amidoethyl-imidazolium methyl sulfate	No	SHX.
N-Methyl-N-polyoxyethylene-N,N-bis(hydrogenated allow amidoethyl) ammonium	No	SHX.
N-Methyl-N-polyoxyethylene-N,N-bis(tallow amidoethyl)	No	SHX.
Methyltallowdiethylenetriamine condensate, polyethoxylated, methyl sulfate	No	SVC.
Methyltallowdiethylenetriamine condensate, polypropoxylated, methyl sulfate	No	SVC.
Mixed alkyl imidazoline derivative, ethoxylated	No	MOA.
Mixed (coco and soya fatty acids), reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	No	ENJ.
Mixed fatty acid amide with diethylene triamine/ethyl sulfate	No	EFH.
N-Octadecyl-N,N-di(2-hydroxyethyl)-N-methylammonium chloride	No	SHX.
Polyethyleneimine methyl ammonium sulfate	No	HCL.
Polypropoxydiethylmethyl ammonium chloride	No	WTC.
1-Propanaminium, N-ethyl-N,N-dimethyl-3-(1-oxooctadecyl)amino-, ethyl sulfate	No	SBC.
Soya fatty acids, reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	No	ENJ.
Soya fatty acids, reaction products with chloromethane and diethylenetriamine, propoxylated, quaternized	No	ENJ.
Stearamidopropylidimethylceterylammonium tosylate and propylene glycol	No	VND.
Stearylamidopropylidimethylmyristyl acetate ammonium chloride	No	VND.
(Tallow alkyl)amine, ethoxylated, diethosulfate	No	ETC.
(Tallow alkyl)-bis-(2-hydroxyethyl)methylammonium chloride	No	JTO.
Tallow amine, ethoxylated, quaternary ammonium salt	No	DUP, VND.
Trimethyl-p-methylbenzylammonium chloride	No	PCI.
All other oxygen-containing quaternary ammonium salts (except those having amide linkages)	No	HYD, SBC, SHX, TCH, WTC, (²).
All other oxygen containing quaternary ammonium salts	No	BRD, HYD.
Quaternary ammonium salts, not containing oxygen:		
Acyclic:		
Bis(coconut oil alkyl)dimethylammonium chloride	Yes	ARC, ENJ, JTO, SHX.
Bis(coconut oil alkyl)dimethylammonium nitrate	No	ARC.
Bis(hydrogenated tallow alkyl)dimethylammonium chloride	Yes	ARC, ENO, SHX, WTC.
Bis(hydrogenated tallow alkyl)dimethylammonium methyl sulfate	No	ARC, SHX.
Bis(tallow alkyl)dimethyl ammonium chloride	No	SHX.
Cocodimethylethylammonium ethyl sulfate	No	MZC, SHX.
N-(Coconut oil alkyl)aminobutyric acid, sodium salt	No	ARC, BRD, JTO, SHX.
Didecyldimethylammonium chloride	No	HNT.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Quaternary ammonium salts, not containing oxygen—		
Continued		
Acyclic—Continued		
Dimethyl(C ₁₂ -C ₁₈)ammonium chloride (mixed straight and branched chains)	No	SHX.
Dimethyldioctadecylammonium chloride	No	ARC, SHX.
Dimethyl(soya alkyl)ammonium ethyl sulfate	No	SVC.
N,N-Dioctyl-N,N-dimethylammonium chloride	No	BRD, HNT.
Di-tallow-amidoammonium sulfate	No	CRD.
Dodecyltrimethylammonium chloride	No	ARC, SHX.
Ethylidimethyl(mixed alkyl)ammonium ethyl sulfate	No	DEX, JOR.
Ethylhexadecyldimethylammonium bromide	No	HXL.
Hexadecyltrimethylammonium bromide	No	HXL.
Hexadecyltrimethylammonium chloride	No	ARC, BRD, SHX.
Hexane-1,6-bis(tributylammonium bromide)	No	HXL
(Hydrogenated tallow alkyl)trimethylammonium chloride	No	SHX.
Hydroxypropylammonium cyanoacetate	No	(²).
Lauryl pyridinium chloride	No	WTC.
Methyl-1-tallow-amidoethyl-2-tallow-imidazolium-methyl sulfate	No	CRD.
Methyltri(C ₈ -C ₁₀)ammonium chloride	No	SHX.
Methyl(tri-hydrogenated tallow alkyl) ammonium chloride	No	WTC.
Methyltrioctylammonium chloride	No	SCP.
(Mixed alkyl)ammonium chloride	No	MIL.
(Mixed linear alkyl)dimethylammonium methyl sulfate	No	HCL.
Mixture of N-octyl, N-decyl, N,N-dimethyl ammonium chloride and benzyl, dimethyl, (mixed alkyl)ammonium chloride	No	BRD.
Octyl-decyl-dimethyl ammonium chloride	No	HNT.
N-Octyl, N-decyl, N,N-dimethyl ammonium chloride	No	BRD.
N,N,N',N',N'-Pentamethyl-N-(tallow alkyl)-trimethylene-bis(ammonium chloride)	Yes	ARC, SHX.
(Stearic acid)-ethylenediamine methylammonium sulfate	No	HCL.
Stearyl pyridinium chloride	No	WTC.
Tallow alkyl-propylenediamine methylammonium sulfate	No	HCL.
Tetrabutylammonium bromide	No	HXL.
Tetradecyl-4-ethyl pyridinium chloride	No	HXL.
Tetraethylammonium bromide	No	EK.
Tetraheptylammonium bromide	No	EK.
Tetramethylammonium bromide	No	RSA.
Tetramethylammonium chloride	No	RSA.
Tributylmethylammonium chloride	No	TNA.
Trihydrogenated tallow ammonium chloride	No	ENO.
Trimethyl(mixed alkyl)ammonium chloride	No	WTC.
Trimethyloctadecylammonium chloride	No	ARC, SVC.
Trimethyl(soybean oil alkyl)ammonium chloride	Yes	ARC, JTO, SHX.
Trimethyl(tallow alkyl)ammonium chloride	Yes	ARC, ENO, JTO, SHX, WTC.
Trimethyltetradecylammonium bromide	No	HXL.
All other acyclic quaternary ammonium salts, not containing oxygen	No	PCI, (²).
Cyclic:		
Benzyl(alkylpyridinium)chloride	No	(²).
Benzyl(coconut oil alkyl)dimethylammonium chloride	Yes	ENO, GDC, HRT, TCC, WTC.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Cationic—Continued		
Quaternary ammonium salts, not containing oxygen—		
Continued		
Cyclic—Continued		
Benzyl-di(hydrogenated tallow alkyl)-methylammonium chloride	No	ARC.
Benzyl-dimethyl-erucylammonium chloride	No	ENO.
Benzyl-dimethyl(hydrogenated tallow alkyl)ammonium chloride	No	WTC.
Benzyl-dimethyl(mixed alkyl)ammonium chloride	Yes	AAC, BKM, BRD, CRD, HNT, MZC, SDH, SHX, (²).
Benzyl-dimethyloctadecenylammonium chloride	No	MZC.
Benzyl-dimethyloctadecylammonium chloride	No	MZC, SHX, TNI.
Benzyl-dimethyl(tallow alkyl)ammonium chloride	No	BOE, ENO, WTC.
Benzyl-hexadecyldimethylammonium chloride	No	BKM.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride	No	ARC, ENO, SHX.
Benzyl-methyl-bis(hydrogenated tallow)ammonium chloride	No	ENO, WTC.
Benzylpicolinium chloride	No	LUR.
1-Benzylpyridinium chloride	No	BRD.
Benzyltriethylammonium chloride	No	RSA.
Benzyltrimethylammonium chloride	Yes	CRT, HIP, PAH, RSA, SHX, TCC.
Butylpicolinium bromide	No	HXL.
2,4-Dichlorobenzyl-dimethyl(mixed alkyl)ammonium chloride	No	(²).
1-Dodecylpyridinium chloride	No	CCL, DAN.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride	No	HNT.
(Mixed alkyl) dibenzyltrimethyl-1,3-propane diammonium chloride	No	GDC.
1-Phenethyl-2-picolinium bromide	No	HXL.
Phenethylpyridinium bromide	No	HXL.
All other cyclic quaternary ammonium salts not containing oxygen	No	GDC, ICI, (²).
All other cationic surface-active agents	No	BRI, CGY, DRC, DUP, JTO, MIR, MOA, RPC, TCH, WM, WTC.
Nonionic		
Carboxylic acid amides:		
Diethanolamine condensates (Amine/acid ratio = 2/1):		
Capric acid (Ratio = 2/1)	No	SCP, TCH.
Castor oil acids (Ratio = 2/1)	No	CYL(E), FTX, NSC.
Coconut oil acids (Ratio = 2/1)	Yes	ARD, BRD, BRI, CCC, CCL, CON, CTL, CYL, ECC, EFH, FTX, GAF, GDC, HNT, HRT, LEA, LUR, MCP, MOA, MRV, MZC, PNX, RPC, SBC, SCP, SHX, STP, TCH, VAL, WTC.
Coconut oil and tallow acids (Ratio = 2/1)	Yes	BRD, CRT, CTL, ENJ, ESS, MOA, MZC, SBC, UNN.
Lard oil acids	No	FER.
Lauric acid (Ratio = 2/1)	Yes	CRD, MOA, MZC, SHX.
Lauric and myristic acids (Ratio = 2/1)	Yes	CRD, MOA, MZC, SBC, STP.
Linoleic acid (Ratio = 2/1)	No	MOA.
Mixed carboxylic acids	No	FER, RPC, SOS.
Mixed fatty acids neutralized	No	CPC.
Oleic acid (Ratio = 2/1)	Yes	CTL, CYL(E), EFH, FTX, GAF, MOA, MZC, STP.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid amides—Continued		
Diethanolamine condensates (Amine/acid ratio = 2/1)—		
Continued		
Palmitic and stearic acids (Ratio = 2/1)	No	RPC.
Pelargonic acid (Ratio = 2/1)	No	TCH.
Soybean oil acids (Ratio = 2/1)	No	MZC.
Stearic acid (Ratio = 2/1)	Yes	CYL(E), EFH, OC, VAL.
Tall oil acids (Ratio = 2/1)	Yes	BRI, ECC, HCL, MOA, MZC, PNK, SBC, WVA.
Tallow acids (Ratio = 2/1)	Yes	CYL(E), EFH, ICI, MOA.
All other diethanolamine condensates (Ratio = 2/1) ...	No	FTX, MOA.
Diethanolamine condensates (Other amine/acid ratios):		
Capric acid (Ratio = 1/1)	No	MOA.
Coconut acids, modified	No	ETC.
Coconut oil acids (Ratio = 1/1)	Yes	BRD, CTL, CYL(E), ETC, FTX, GAF, HNT, HRT, HTN, JRG, MIR, MOA, MZC, OC, PIL, QCP, SBC, SCP, SHX, STP, TCC, WTC, (2).
Lard oil acids (Ratio = 1/1)	No	QCP.
Lauric acid (Ratio = 1/1)	Yes	CYL(E), GAF, MOA, SBC, TCH, TNI, WTC.
Lauric and myristic acids (Ratio = 1/1)	Yes	BRD, CYL(E), HTN, MOA, SBC.
Linoleic acid (Ratio = 1/1)	Yes	ARD, CYL(E), MOA, MZC, SBC, VND.
Mixed carboxylic acids (Ratio = 1/1)	No	SOS, WTC.
Mixed fatty acids (Ratio = 1/1)	No	WTC.
Myristic acid (Ratio = 1/1)	No	MOA.
Oleic acid (Ratio = 1/1)	Yes	ETC, SBC, TMH.
Palmitic and stearic acids (Ratio = 1/1)	No	BRD, BRI.
Palm kernel oil acids (Ratio = 1/1)	No	TMH.
Rapeseed acids (Ratio = 1/1)	No	EFH.
Soybean oil acids (Ratio = 1/1)	Yes	MOA, MZC, SBC.
Stearic acid (Ratio = 1/1)	Yes	CHP, ECC, ENJ, HIP, MRV.
Tall oil acids (Ratio = 1/1)	No	CHP, WTC, WVA.
Tallow acids (Ratio = 1/1)	No	MOA, QCP.
All other diethanolamine condensates	No	BRD, MOA.
All other carboxylic acid amides:		
Coconut oil acids	No	HTN, MOA, PAT, STP.
Coconut oil acids (Ratio = 1/1)	Yes	AAC, FTX, MOA, MZC, PG, SCP, SOS.
Coconut oil acids (Ratio = 2/1)	Yes	ENJ, MOA, STP.
Coconut oil acids—dimethylaminopropylamine condensate (Ratio = 1/1)	No	JRG.
Coconut oil acids—ethanolamine condensate, ethoxylated	No	BRD, STP.
Coconut oil dimethanolamine—propylamine	No	GAF.
Diethanolamine—stearic acid (Ratio = 1/2)	No	VND.
Dimethylethanolamine—stearic acid (Ratio = 1/1)	No	VND.
Dioleic acid (Ratio = 1/2)	No	CLD.
Glycol amide stearate (Ratio = 1/1)	No	VND.
Hydrogenated tallow acids (Ratio = 2/1)	No	ARC.
Hydrogenated tallow acids, aminoethylethanolamide, acetate salt	No	PCI.
Hydrogenated tallow glycerides diethylenetriamine condensate	No	HRT.
Isonanoic acid mono and triethanolamine salt	No	HCL.
Isostearic acid, aminoethylethanolamide, acetate salt	No	PCI.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid amides—Continued		
All other carboxylic acid amines—Continued		
Lauric acid	No	CYL(E), HTN, MOA.
Lauric acid-ethanolamine condensate, ethoxylated	No	MZC.
Lauric and myristic acids	No	GAF, MOA, TMH, VND.
Mink amidopropyl dimethyl amine (Ratio = 1/1)	No	VND.
Mixed fatty acids, diethanolamine condensate	No	WTC.
Myristic acid	No	UCC.
Oleic acid-ethanolamine condensate, ethoxylated	No	SHX.
Stearic acid (Ratio = 1/1)	No	GAF, MOA, VND.
Stearic acid (Ratio = 2/1)	No	CYL(E), ECC.
Stearic acid aminoethanolamine (Ratio = 1.0/1.65)	No	CHP.
Stearic acid-aminoethylethanolamine (Ratio = 1.75/1.0)	No	SBC.
Stearic acid-N-aminoethylethanolamine condensate	No	APC, BOE.
Stearic acid diethanolamine (Ratio = 1.0/11.6)	No	CHP.
Stearic acid-ethylenediamine condensate (Ratio = 1/2)	No	TCH.
Stearic acid monoethanolamine condensate	No	WTC.
Tall oil acids-dimethylamine condensate (Ratio = 1/1)	No	BKM.
Tall oil fatty acids (Ratio = 1/2)	No	EFH.
Tall oil fatty acids (Ratio = 2.7/1)	No	EFH.
Tall oil fatty acids (Ratio = 1.5/1)	No	EFH.
Tall oil fatty acids-triethanolamine condensate	No	(²).
Tallow acids (Ratio = 1.00/1.65)	No	PAT.
Tallow, N-3-(dimethylamino)propyl (Ratio = 1/3)	No	PAT.
All other carboxylic acid amides	No	ARC, CGY, EFH, SBC, SCP, ROB.
Carboxylic acid esters:		
Anhydrosorbitol esters:		
Anhydrosorbitol dioleate	No	ICI.
Anhydrosorbitol monoester of tall oil acids	No	HDG, MZC.
Anhydrosorbitol monolaurate	Yes	BRD, ICI, MZC, TCH.
Anhydrosorbitol mono-oleate	Yes	BRD, HDG, ICI, MZC, TCH.
Anhydrosorbitol monopalmitate	No	ICI, TCH.
Anhydrosorbitol monostearate	Yes	BRD, HDG, ICI, MZC, TCH.
Anhydrosorbitol sesquileate	Yes	BRD, HDG, TCH.
Anhydrosorbitol sesquisteate	No	TCH.
Anhydrosorbitol triester of tall oil acids	No	ICI, MZC.
Anhydrosorbitol trioleate	Yes	BRD, ICI, TCH.
Anhydrosorbitol tristearate	No	ICI.
All other anhydrosorbitol esters	No	BRD.
Diethylene glycol esters:		
Diethylene glycol distearate	No	BRD.
Diethylene glycol monoester of coconut oil acids	No	BRD.
Diethylene glycol monoester of tall oil acids	No	BKM.
Diethylene glycol monoester of tallow acids	No	ENJ.
Diethylene glycol monolaurate	Yes	ECC, HDG, MZC.
Diethylene glycol mono-oleate	No	CTL, QCP.
Diethylene glycol monostearate	Yes	CYL(E), ECC, HDG, STP.
Diethylene glycol sesquilester of tall oil acids	No	ECC.
Diethylene glycol sesquillaurate	No	BRD.
Diethylene glycol terephthalate	No	UPF.
Ethoxylated anhydrosorbitol esters:		
Ethoxylated anhydrosorbitol monolaurate	Yes	ETC, HDG, ICI, MZC, SVC, TCH.
Ethoxylated anhydrosorbitol mono-oleate	Yes	BRD, ETC, HDG, ICI, MZC, SVC, TCH.
Ethoxylated anhydrosorbitol monopalmitate	No	ICI.
Ethoxylated anhydrosorbitol monostearate	Yes	BRD, HDG, ICI, MZC, TCH.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid esters—Continued		
Ethoxylated anhydrosorbitol esters—Continued		
Ethoxylated anhydrosorbitol triester of tall oil acids . . .	No	ICI.
Ethoxylated anhydrosorbitol trioleate	Yes	ETC, HDG, ICI, MZC, TCH.
Ethoxylated anhydrosorbitol tristearate	Yes	BRD, ICI, MZC.
All other ethoxylated anhydrosorbitol esters	No	BRD.
Ethoxylated sorbitol esters:		
Ethoxylated sorbitol beeswax ester	No	ICI.
Ethoxylated sorbitol hexaester of tall oil acids	No	MZC, TCH.
Ethoxylated sorbitol hexaoleate	No	ICI, TCH.
Ethoxylated sorbitol lanolin ester	No	ICI.
Ethoxylated sorbitol mono-oleate	No	CPC, ICI.
Ethoxylated sorbitol monostearate	No	TCH.
Ethoxylated sorbitol oleate, acetylated	No	ICI.
Ethoxylated sorbitol pentalaurate	No	ICI, MZC.
Ethoxylated sorbitol tetraester of lauric and oleic acids	No	ICI.
Ethoxylated sorbitol tetraester of tall oil acids	No	AAC.
Ethoxylated sorbitol tetraoleate	No	ICI.
Ethoxylated sorbitol tetrastearate	No	ICI.
Ethylene glycol esters:		
Ethylene glycol distearate	Yes	CYL(E), EMR, ENJ, HDG, MZC, STP, WM, WTC.
Ethylene glycol monostearate	Yes	BRD, CYL, HDG, MZC, STP, VND, WM, WTC.
Glycerol esters:		
Complex glycerol esters:		
Glycerol diacetyltartrate monostearate	No	EKT.
Glycerol mono- and diesters of mixed fatty acids . .	No	ICI.
Glycerol monoester of mixed fatty acids, acetylated	No	EKT.
Glycerol monoester of mixed fatty acids, succinylated	No	EKT.
Glycerol mono-oleate, ethoxylated	No	SCP.
All other complex glycerol esters	No	BRD.
Glycerol esters of chemically defined acids:		
Glycerol dilaurate	No	CAS, VND.
Glycerol dioleate	No	STP, WTC.
Glycerol monolaurate	No	BRD.
Glycerol mono-oleate	Yes	BRD, EFH, EMR, HAL, HDG, MZC, STP, TCH, WTC.
Glycerol monoricinoleate	Yes	BRD, HDG, MZC.
Glycerol monostearate	Yes	BRD, CCC, CHL, CRT, CYL, EMR, HAL, HDG, HRT, LUR, MZC, SOS, SQA, STP, SVA, TCH, VND, WM, WTC, (2).
Glycerol trioctanoate/decanoate	No	WM.
Glycerol trioleate	No	SVC.
Glycerol esters of mixed acids:		
Glycerol diester of coconut oil acids	No	WM.
Glycerol mono-, di-, and triesters of hydrogenated tallow acids	No	WPG.
Glycerol monoester of C ₈ -C ₁₀ acids	No	SVC.
Glycerol monoester of coconut oil acids	No	BRD, TCH
Glycerol monoester of cottonseed oil acids	No	EKT.
Glycerol monoester of hydrogenated cottonseed oil acids	No	EKT, WM.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid esters—Continued		
Glycerol esters—Continued		
Glycerol esters of mixed acids—Continued		
Glycerol monoester of hydrogenated lard acids	No	EKT.
Glycerol monoester of hydrogenated soybean oil acids	No	BFP, EKT.
Glycerol monoester of lard acids	No	EKT, TCH.
Glycerol monoester of palm oil acids	No	EKT.
Glycerol monoester of safflower oil acids	No	EKT.
Glycerol monoester of tall oil acids	No	EFH, FER.
Glycerol monoester of tallow acids	No	CPC, EKT.
Glycerol sesquilester of tall oil acids	No	PCI.
Glycerol triester of mixed fatty acids	No	SVC.
Mixed ester of resin and rosin acids	No	WVA.
All other glycerol esters of mixed acids	No	BFP.
Natural fats and oils, ethoxylated:		
Castor oil, ethoxylated	Yes	CAS, ETC, GAF, GLY, HCL, HTN, ICI, MIL, S, SVC, TCH, TMH, (2).
Coconut oil, ethoxylated	No	ETC, HCL.
Hydrogenated castor oil, ethoxylated	Yes	ETC, GAF, HCL, ICI, MIL, TCH.
Lanolin, ethoxylated	Yes	AAC, CRD, HCL, HDG, TCH, VCC.
Mixed fatty acids, alkyl ether, ethoxylated	No	(²).
Mixed tall oil and castor oil acids, ethoxylated	No	GAF.
Mixed tall oil and rosin acids, ethoxylated	No	HCL.
Oleic acid, ethoxylated and propoxylated	No	MIL.
Tall oil acids, ethoxylated	No	GAF, HCL.
Tall oil acids, ethoxylated and propoxylated	No	(²).
Tall oil, refined, ethoxylated	No	TCH, (²).
All other natural fats and oils, ethoxylated	No	GAF, MIL.
Polyethylene glycol esters:		
Polyethylene glycol esters of chemically-defined acids:		
Polyethylene glycol dilaurate	Yes	BRD, EFH, ETC, HDG, MZC, STP, TCH, WM.
Polyethylene glycol dioleate	Yes	BRD, CCC, CLD, EFH, ETC, HAL, MIL, SOS, STP, TCH.
Polyethylene glycol distearate	Yes	BRD, CHP, MZC, QCP, SBC, STP, TCH.
Polyethylene glycol hydroxyacetate	No	CCA.
Polyethylene glycol monocaprylate	No	ECC.
Polyethylene glycol monoisostearate	No	ETC.
Polyethylene glycol monolaurate	Yes	BRD, CCA, CGY, ECC, EFH, ETC, GAF, HAL, ICI, MZC, STP, SVC, TCH.
Polyethylene glycol mono-monomerate	No	ETC.
Polyethylene glycol mono-oleate	Yes	APC, ARC, BOE, BRD, CCA, CCC, CLD, CRT, ECC, EFH, ETC, GAF, GDC, HAL, HCL, HDG, MRT, MRV, MZC, SHX, STP, SVC, TCH, WTC.
Polyethylene glycol mono-oleate, ethoxylated	No	ICI.
Polyethylene glycol monopalmitate	Yes	BRD, ETC, HCL, ICI, SHX.
Polyethylene glycol monopelargonate, methoxylated	No	TCH.
Polyethylene glycol monopelargonate	No	ETC, SOS, TCH.
Polyethylene glycol monoricinoleate	No	ECC, S.
Polyethylene glycol monostearate	Yes	APC, ARC, BRD, CCC, CPC, CRT, CYL, DEX, EFH, ETC, GAF, GDC, HCL, HDG, HRT, ICI, MZC, OC, SLC, SOS, STP, SVC, TCH, VND.

See footnotes at end of table.

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Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid esters—Continued		
Polyethylene glycol esters—Continued		
Polyethylene glycol esters of chemically-defined acids—Continued		
Polyethylene glycol sesquinoleate	No	ETC, SOS, TCH.
Polyethylene glycol terephthalate	No	BOE, PCI.
All other polyethylene glycol esters of chemically-defined acids	No	BAS.
Polyethylene glycol esters of mixed acids:		
Polyethylene glycol diester of coconut oil and oleic acids	No	EFH.
Polyethylene glycol diester of mixed linear acid/oleic acid	No	PCI.
Polyethylene glycol diester of tall oil acids	Yes	CCC, EFH, ETC, MZC, PAT, QCP.
Polyethylene glycol ester of mixed fatty acids	No	SHX, SOS, (2).
Polyethylene glycol monoester of coconut oil acids	No	ICI, WM.
Polyethylene glycol monoester of soybean oil acids	No	BRD, ETC.
Polyethylene glycol monoester of tall oil acids	Yes	ARC, BKM, ETC, FER, GAF, MZC.
Polyethylene glycol sesquilester of coconut oil acids	No	ENJ, LUR, MRT, MZC, PAT.
Polyethylene glycol sesquilester of tall oil acids	Yes	ICI, LUR, QCP, SLM, WTC.
Polyethylene glycol sesquilester of tallow acids	No	PAT, RPC, SHX, TCH.
Polyglycerol esters:		
Hexaglycerol	No	SVC.
Mixed oleic, lauric, stearic, and palmitic hexaglycerol esters	No	SVC.
Polyglycerol decaoleate	No	TCH.
Polyglycerol distearate	No	BRD, MZC.
Polyglycerol mono-oleate	Yes	HDG, MZC, WTC.
Polyglycerol monostearate	No	BRD, SVC.
All other polyglycerol esters,	No	BRD.
Propanediol esters:		
1,2-Propanediol dioctanoate/decanoate	No	SVC, WM.
1,2-Propanediol dipelargonate	No	WM.
1,2-Propanediol di-2-ethylhexanoate	No	WM.
1,2-Propanediol monolaurate	No	SBC.
1,2-Propanediol mono-oleate	No	EFH, TCH.
1,2-Propanediol monostearate	Yes	BRD, EKT, HAL, MZC, SBC, TCH, WM.
Other carboxylic acid esters:		
Benzocaine, propoxylated	No	UCC.
Caprylic amphopropionate	No	MOA.
Di-isobutylene maleate	No	RH.
Ethoxylated 1,3-butylene glycol stearate	No	HCL
Ethoxylated castor oil, ditridecylmaleate	No	UPF.
Ethoxylated glycerol mono- and diesters of hydrogenated tallow acids	No	SVC.
Ethoxylated glycerol and propylene glycol esters of coco fatty acids	No	SVC.
Ethoxylated nonylphenol esters of coconut oil acids	No	MZC.
Ethoxylated nonylphenol laurate	No	TCC.
Ethoxylated 1,2-propanediol monostearate	No	ICI.
Ethoxylated and propoxylated glycerol mono- and diesters of tallow acids	No	SVC.
Linoleic acid dimers, alkoxyated	No	(2).
Maleic anhydride-dilsobutylene copolymer, sodium salt	No	CPS.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Carboxylic acid esters—Continued		
Other carboxylic acid esters—Continued		
Maleic anhydride, polypropylene glycol copolymer	No	PCI.
Methylglucoside, ethoxylated	No	UCC.
Methylglucoside laurate	No	HDG.
Methylglucoside, propoxylated	No	UCC.
Methylglucoside sesquistearate	No	UCC.
Mixed alkyl stearate	No	SOS.
Mixed di- and triethylene glycol monoesters of tall oil acids	No	WVA.
Nonylphenol ethoxylate, oleate	No	EFH.
Pentaerythritol distearate	No	ARC, GAF, VAL.
Pentaerythritol stearate	No	SCP.
Polyalkylene glycol oleate	No	SOS.
Polycarboxylic acid, alkylate	No	(²).
Polycarboxylic acid, alkylphenoxyalkoxylate	No	(²).
Polypropylene glycol dioleate	No	CLD.
Propylene glycol esters of hydrogenated palm oil	No	PG, VND.
All other carboxylic acid esters	No	ARI, CAS, CHP, GAF, HDG, ROB, SYL.
Ethers:		
Benzenoid ethers:		
Dinonylphenol, ethoxylated	Yes	CPC, ETC, GAF, HTN MZC, RH, S, TCH.
Dodecylphenol, ethoxylated	Yes	GAF, MON, TMH.
Epichlorohydrin bisphenol A, ethoxylated	No	(²).
Furfuryl alcohol, ethoxylated	No	SVC.
Iso-octylphenol, ethoxylated	No	AAC, BAS, GAF, MZC, RH, TMH.
(Mixed alkyl)phenol, alkoxyated	No	(²).
(Mixed alkyl)phenol epichlorohydrin-formaldehyde, alkoxyated	No	BAS, CPC, (²).
(Mixed alkyl)phenol, ethoxylated	No	MIL, NLT.
(Mixed alkyl)phenol, ethoxylated, butyl ether	No	RH.
(Mixed alkyl)phenol-formaldehyde, alkoxyated	Yes	ENJ, ETC, GAF, HCL, WTC, (²).
(Mixed alkyl)phenol-formaldehyde, methoxyated	No	HCL.
(Mixed alkyl)phenoxy poly(ethyleneoxy) ethyl chloride	No	OMC.
Naphthalenesulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone	No	PCI.
Naphthalenesulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone, ammonium salt	No	PCI.
Naphthalenesulfonic acid, polymer with formaldehyde, sodium salt	No	PCI.
Nonylphenol, ethoxylated	Yes	ARC, BAS, CPC, ETC, GAF, HCL, HDG, HTN, ICI, JTO, MIL, MOA, MON, MZC, RH, S, SHX, STP, TCH, TMH, TX, UCC, WTC, (²), (²).
Nonylphenol, ethoxylated, phosphate esters	No	OMC.
Nonylphenol, ethoxylated and propoxylated	Yes	GAF, HTN, RH, TMH, (²).
Nonylphenol, ethoxylated with mixed fatty acids	No	SOS.
Nonylphenol-formaldehyde, alkoxyated	No	WTC, (²).
Nonylphenol oleate, ethoxylated	No	SOS.
n-Octylphenol, ethoxylated	No	AAC, DUD, GAF, JTO, TCH.
Octylphenol, ethoxylated and benzylated	No	GAF.
tert-Octylphenol-formaldehyde, ethoxylated	No	SDW.
Phenol, ethoxylated	No	GAF, HCL, ICI, MIL.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Ethers—Continued		
Benzenoid ethers—Continued		
Phenol-formaldehyde resin (with lignite)	No	PSP.
Phenol, propoxylated	No	RH.
Phenylstyrene, ethoxylated	No	HCL.
Soya sterols, ethoxylated	No	SCP.
Tridecylphenol, ethoxylated	No	CPC.
All other benzenoid ethers	No	BAS, GAF, (2).
Nonbenzenoid ethers:		
Chemically-defined linear alcohols, alkoxyated:		
2-Butanol, ethoxylated and propoxylated	No	(2).
Butyl alcohol, propoxylated	No	WTC.
Decyl alcohol, ethoxylated	Yes	BAS, CPC, ENJ, GAF, HCL, ICI, MIL, S, TCH.
Decyl alcohol, ethoxylated and propoxylated	No	GAF.
Decyloxypoly(ethyleneoxy)ethyl chloride	No	GAF.
Dodecyl alcohol, ethoxylated	Yes	AAC, CPC, ICI, MIL, (2).
Glycerol, ethoxylated	No	SVC.
Hexadecyl alcohol, ethoxylated	No	ICI, MZC, TCH.
N-Hexyl alcohol, ethoxylated	No	GAF.
Isodecyl alcohol, alkoxyated	No	S, (2).
Isostearyl alcohol, ethoxylated	No	SHX.
Methyl alcohol, alkoxyated	No	(2).
Mixed stearic/palmitic alcohol, ethoxylated	No	GAF.
Myristyl alcohol, propoxylated	No	WTC.
9-Octadecenyl alcohol, ethoxylated	Yes	AAC, GAF, ICI, S, TCH.
Octadecyl alcohol, ethoxylated	No	CPC, GAF, HCL, ICI, UCC.
Oleyl alcohol, ethoxylated	Yes	CRD, ETC, HCL, HTN, MZC, SHX.
Pelargonic alcohol, ethoxylated	No	GAF.
Stearyl alcohol, propoxylated	No	SVC, WTC.
All other chemically defined linear alcohols, alkoxyated	No	BAS, GAF, HDG.
Coconut oil alcohol, ethoxylated	No	BRD, GAF, HCL, MZC, TX.
Decyl and octyl alcohols, ethoxylated	No	GAF.
Developmental alcohol, ethoxylated	No	SHC.
Lanolin alcohol, propoxylated	No	UCC
Mixed linear alcohols, alkoxyated	No	WTC, (2).
Mixed linear alcohols, ethoxylated	Yes	AAC, BAS, DUP, ETC, GAF, HCL, HDG, ICI, MIL, RH, S, SHC, TCH, TMH, TNA, TX, UCC, VST, WTC.
Mixed linear alcohols, ethoxylated, benzyl ether	No	(2).
Mixed linear alcohols, ethoxylated and propoxylated	Yes	BAS, DUP, ETC, GAF, MIL, OMC, S, STP, SVC, TCH, UCC, (2).
Mixed linear alkylpoly(ethyleneoxy)ethyl chloride	No	GAF.
Stearyl alcohol and ethoxylated ceteryl alcohol	No	ETC.
Tallow alcohol, ethoxylated	Yes	GAF, HCL, MZC, SHX, TX.
Wool wax alcohols, ethoxylated	No	CRD.
All other nonbenzenoid ethers	No	BRD, RH, (2).
Other ethers and thioethers:		
Bis-cumylphenyl-oxoethylene titanate	No	KPI.
Butanediol, ethoxylated	No	ETC.
1,3-Butylene glycol, ethoxylated	No	HCL.
Butynediol, ethoxylated	No	GAF.
tert-Dodecyl mercaptan, ethoxylated	No	AAC, GAF.
2-Ethylhexanol, ethoxylated	No	ETC.
Glycerine, ethoxylated	No	(2).
Isodecyl alcohol, ethoxylated	No	ETC.

See footnotes at end of table.

Table 37—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 38)
Nonionic—Continued		
Ethers—Continued		
Other ethers and thioethers—Continued		
Isodecyl alcohol, ethoxylated and propoxylated	No	ETC.
Lignin, ethoxylated	No	WVA.
Mixed alcohols, ethoxylated	Yes	AAC, MIL, RH, SHX, TCH, UCC, WM, (2).
Poly(epichlorhydrin)	No	(2).
Polyether diols	No	WTC.
Polyether triols	No	WTC.
Poly(mixed ethylene, propylene) glycol	Yes	AAC, GAF, MIL, S, UCC, WTC, (2), (2).
Poly(mixed ethylene/propylene glycol) capped with alkyl oxirone	No	(2).
Poly(oxy-1,2-ethanedyl), α -phenylmethyl- ω -hydroxy, C ₁₂ -C ₁₅ alkyl ethers	No	PCI.
Poly(oxy-1,2-ethanedyl), α -phenylmethyl- ω -hydroxy, (ethoxylated nonylphenol) alkyl ether	No	PCI.
Polypropylene glycol, ethoxylated	No	BAS, ETC, GAF, HCL, HDG, MZC, TCH, WTC, (2).
3-Propanonitrate methylphenyl ether	No	PCI.
Propoxylated corn starch	No	VAL.
Rosin alcohol, ethoxylated	No	MZC.
Thiodiglycol, ethoxylated	No	AAC.
Tridecyl alcohol, ethoxylated	Yes	CPC, DUP, ETC, GAF, HCL, HTN, ICI, MIL, MZC, OMC, S, TCH, TMH, WTC, (2).
Tridecyl alcohol, propoxylated and ethoxylated	No	ETC, TX.
Trimethylnonyl alcohol, ethoxylated	No	UCC.
Trimethylolpropane, alkoxyated	No	BAS, GAF, WTC.
All other ethers and thioethers	No	GAF, HCL, OMC, RH, TX, (2).
Other nonionic surface-active agents:		
Cumyl phenolate, isopropoxy titanium salt	No	KPI.
Formaldehyde, dicyandiamide, ethylene sulfate polymers	No	PCI.
(Mixed alkyl)phenol alkylenediaminealkanolamine formaldehyde	No	(2).
Mixed fatty acid-ethoxylated nonylphenol ester	No	RPC.
Octyl phosphate, ethoxylated	No	DUP.
Tetra-(2,2-diallyloxymethylene)-1-butoxy titanium, bis-(ditridecyl) phosphite	No	KPI.
Tetra-isopropoxy titanium (bis-dioctyl) phosphite	No	KPI.
Tetra-octyloxy titanium (bis-tridecyl) phosphite	No	KPI.
Tri(castor oil alkyl)phosphate	No	BRD.
All other nonionic surface-active agents	No	BRI, CGY, CLU, DUP, GAF, MIL, PG, WM, (2), (2).

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 38

Surface-active agents: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
AAC	Alcolac, Inc.	HAL	C. P. Hall Co.
ACT	Southland Corp., Chemical Div.	HCL	Hoechst Celanese Corp., Sou-Tex Works
ACY	American Cyanamid Co.	HDG	Hodag Chemical Corp.
AMU	American Emulsion	HEW	Hewitt Soap Co., Inc.
APO	Apollo Chemicals Corp.	HIP	High Point Chemical Corp.
ARC	Akzo Chemie America, Armak Chemicals	HMP	W. R. Grace & Co., Hampshire Chemicals Div.
ARD	Ardmore Chemical Co. Inc.	HNT	Huntington Laboratories, Inc.
ARI	Atlas Refinery, Inc.	HPC	Hercules, Inc.
ARL	Arol Chemical Products Co.	HRT	Hart Products Corp.
ARZ	Arizona Chemical Co.	HTN	Heterene Chemical Co.
BAS	BASF Corp.	HXL	Hexcel Corp., Hexcel Chemical Products
BFP	Breddo Corp.	HYD	Hydrolabs Inc.
BKM	Buckman Laboratories, Inc.	ICI	ICI Americas, Inc., Chemicals Div.
BLA	Astor Products, Inc., Blue Arrow Div.	JLP	J. L. Prescott Co.
BRD	Lonza, Inc.	JRG	Andrew Jergens Co.
BRI	Burlington Industries, Inc.	JTO	Jetco Chemicals, Inc.
BSW	Original Bradford Soap Works, Inc.	KPI	Kenrich Petrochemicals, Inc.
BOE	Boehme Filatex, Inc.	LAS	Los Angeles Soap Co.
CAS	CasChem, Inc.	LEA	Leatex Chemical Co.
CCA	Interstab Chemicals, Inc.	LEV	Lever Brothers Co.
CCC	C.N.C. International, Inc.	LKY	Lake States Div. of Rhinelander Paper Co.
CCL	Catawba-Charlab, Inc.	LUR	Laurel Products Corp.
CCW	Morton-Thiokol, Inc., Carstab Div.	MAR	Reed Lignin, Inc.
CGY	Ciba-Gelgy Corp.	MCP	Moretex Chemical Products, Inc.
CHL	Chemol Co.	MIL	Milliken & Co., Milliken Chemical Div.
CHP	C. H. Patrick & Co., Inc.	MIR	Miranol Chemical Co., Inc.
CIN	Stockhausen, Inc.	MOA	Mona Industries, Inc.
CLD	Colloids, Inc.	MON	Monsanto Co.
CLU	CL Industries, Inc.	MRT	Morton-Thiokol, Inc., Morton Chemical Co. Div
CMT	Chemithon Corp.	MRV	Marlowe-Van Loan Corp.
CON	Concord Chemicals Co., Inc.	MZC	Mazer Chemicals, Inc.
CP	Colgate-Palmolive Co.	NCC	Niacet Corp.
CPC	Grant Industries, Inc.	NES	Ruetgers-Nease Chemical Co.
CPS	CPS Chemical Co., Inc.	NLT	NL Treating Chemicals.
CRD	Croda, Inc.	NMC	National Milling & Chemical Co.
CRT	Chemos Corp.	NOC	Norac Co., Inc., Mathe Div.
CTL	Continental Chemical Co.	NPR	Safeway Stores, Inc.
DAN	Dan River, Inc., Chemical Products Div.	NSC	National Starch & Chemical Corp.
DEX	Dexter Chemical Corp.	OC	Omega Chemicals, Inc.
DOW	Dow Chemical Co.	OMC	Olin Corp.
DRC	Dock Resins Corp.	PAH	Parish Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals & Pigments Dept.	PAT	PatChem
ECC	Eastern Color & Chemical Co.	PCH	Prochem
EFH	E. F. Houghton & Co.	PCI	Piedmont Chemical Industries, Inc.
EK	Eastman Kodak Co.:	PEL	Pelron Corp.
EKT	Tennessee Eastman Co. Div.	PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.
EMR	Emery Chemicals Div. of National Distillers & Chemical Corp.	PIL	Pilot Chemical Co.
ENJ	Exxon Chemical Americas	PLX	Desoto, Inc.
ENO	Enenco, Inc.	PNX	Murphy-Phoenix Co.
ESS	Essential Industries, Inc.	PSP	Georgia-Pacific Corp., Bellingham Div.
ETC	Ethox Chemicals, Inc.	QCP	Quaker Chemical Corp.
FER	Ferro Corp., Keil Chemical Div.	RAY	ITT Rayonier, Inc.
FPC	Flambeau Paper Corp.	RBC	Artel Chemical Corp.
FTX	Finetex, Inc.	RH	Rohm & Haas Co.
GAF	GAF Corp., Chemical Group		
GDC	Gresco, Inc.		
GRL	Calgon Vestal Laboratories, Inc.		

Table 38

Surface-active agents: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ROB	Robeco Chemicals, Inc.	TX	Texaco Chemical Co.
RPC	Hi-Tek Polymers, Inc., Lyndal Div.	UCC	Union Carbide Corp.
RSA	R.S.A. Corp.	UDI	Desoto, Inc.
S	Sandoz, Inc., ColSherex Chemical Co., Inc.	UNN	United Aniline Co.
SLC	Soluol Chemical Co., Inc.	UPF	Jim Walter Resources, Inc., CIC Div.
SLM	Salem Oil & Grease Co.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SOS	SSC Industries, Inc.	UTC	Unitex Chemical Corp.
SPA	Scott Paper Co.	VAL	United Merchants & Manufacturers, Inc. Valchem Div.
SQA	Sequa Chemicals, Inc.	VKR	Virkler Co.
STP	Stepan Chemical Co.	VND	Van Dyk, Div. of Mallinckrodt, Inc.
SVC	Capital City Products Co., Armstrong Chemical Plant	VST	Vista Chemical Inc.
SYL	Sylvachem Corp.	WBG	White & Bagley Co.
TCC	Sybron Chemicals, Inc.	WHW	Whittemore-Wright Co., Inc.
TCH	Quantum Chemical Corp., Emery Div.	WM	Inolox Chemical Co.
TEN	Tennessee Chemical Co.	WPG	West Point-Pepperell, Inc., Griffitex Chemical Co. Sub.
TMH	Thompson Hayward Chemical Co.	WTC	Witco Chemical Corp.
TNA	Ethyl Corp.	WVA	Westvaco Corp.
TNI	Gillette Co., Chemical Div.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 13

Pesticides and Related Products

Pesticides and related products include fungicides, herbicides, insecticides, rodenticides, and related products such as plant growth regulators, seed disinfectants, soil conditioners, soil fumigants, and synergists. The data are given in terms of 100 percent active materials; they exclude such materials as diluents, emulsifiers, and wetting agents.

U.S. production of pesticides and related products in 1987 amounted to 1,040 million pounds, 12 percent less than the 1,180 million pounds reported for 1986 (table 39). Sales in 1987 were 911 million pounds, a decline of 3 percent, as compared with 940 million pounds reported in 1986; the value of sales was \$4,171 million in 1987, compared with \$4,234 million in 1986—a decline of 2 percent. Data for production of pesticides and related products during 1983–87 are shown in figure 14.

The output of cyclic pesticides and related products amounted to 647 million pounds in 1987, 25 percent less than the 862 million pounds produced in 1986. Sales in 1987 were 593 million pounds, valued at \$2,828 million, compared with 692 million pounds, valued at \$2,964 million, in 1986.

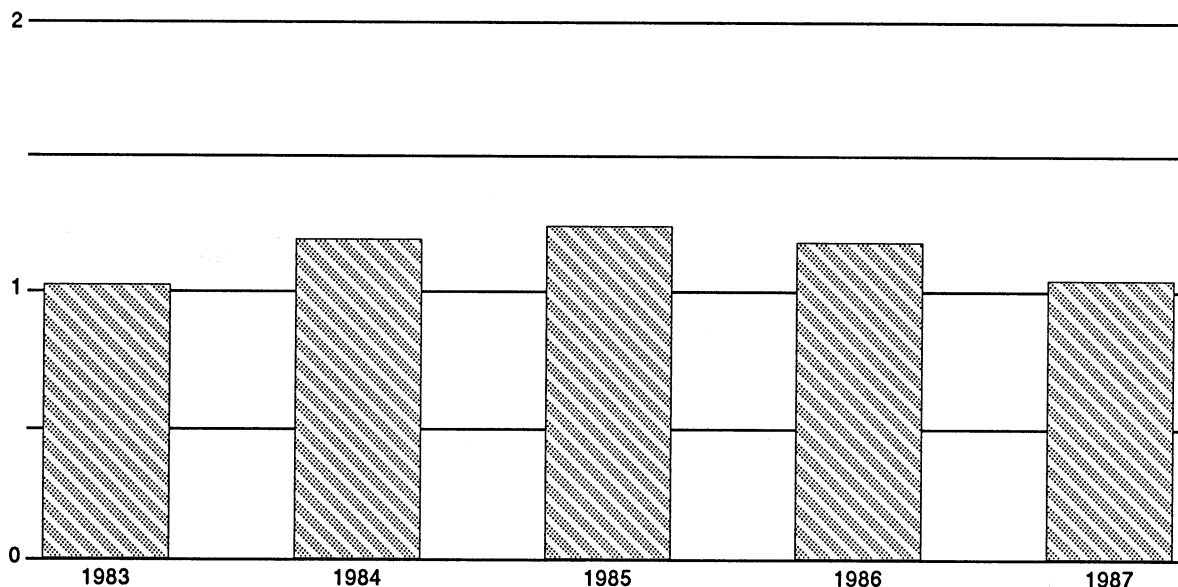
Production of acyclic pesticides and related products in 1987 amounted to 392 million pounds, compared with 318 million pounds reported for 1986. Sales in 1986 were 318 million pounds, compared with 248 million pounds reported for 1986; the value of sales were \$1,342 million in 1987, compared with \$1,270 million in 1986.

Table 40 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 41.

Stephen Wanser
202-252-1363

Figure 14
Pesticides and related products: U.S. production, 1983–87

*Billions
of pounds*



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 39

Pesticides and related products: U.S. production and sales, 1987

<i>Pesticides and related products</i>	<i>Production</i>	<i>Sales Quantity</i>	<i>Value</i>	<i>Average Unit value¹</i>
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total	1,039,537	910,595	4,170,583	\$4.58
Cyclic				
Total	647,516	592,839	2,828,226	4.77
Fungicides, total	83,405	73,558	262,063	3.56
Naphthenic acid, copper salt	3,684	1,814	1,748	.96
All other cyclic fungicides ²	79,721	71,744	260,315	3.63
Herbicides and plant growth regulators, total	449,639	417,898	1,837,179	4.40
3',4'-Dichloropropionanilide (Propanil)	14,266	(³)	(³)	(³)
All other cyclic herbicides ⁴	435,373	417,898	1,837,179	4.40
Insecticides and rodenticides, total	114,472	101,383	728,984	7.19
Chlorinated insecticides	8,061	5,132	35,827	6.98
Organophosphorus insecticides ⁵	49,102	46,013	281,188	6.11
All other cyclic insecticides and rodenticides ⁶	57,309	50,238	411,969	8.20
Acyclic				
Total	392,021	317,756	1,342,357	4.22
Fungicides ⁷	21,205	19,807	43,923	2.22
Herbicides and plant growth regulators ⁸	106,417	101,455	690,700	6.81
Insecticides, rodenticides, soil conditioners, and fumigants, total	264,399	196,494	607,734	3.09
Organophosphorus insecticides ⁹	85,975	47,384	257,261	5.43
Trichloronitromethane (chloropicrin)	17,603	9,265	7,748	.84
All other acyclic insecticides, rodenticides, soil conditioners, and fumigants ¹⁰	160,821	139,845	342,725	2.45

¹ Calculated from unrounded figures.

² Includes benomyl, captan, captan, chlorothalonil, DMTT, folpet, pipron, PMA, and others.

³ Reported data were accepted in confidence and may not be published, or no data were reported.

⁴ Includes alachlor, atrazine, benfen, bensulide, 2,4-D and other 2,4-D esters and salts, dicamba, dinitrophenol compounds, diuron, DNBP, isopropyl phenylcarbamates (IPC and CIPC), maleic hydrazide, molinate, NPA, picloram, triazines, trifluralin, uracils, plant growth regulators, and others.

⁵ Includes diazinon, methyl parathion, and other phosphorothioates and phosphorodithioates.

⁶ Includes carbaryl, chlorinated insecticides (chlordan, heptachlor, and others), insect attractants, DEET and other insect repellents, small amounts of rodenticides, and others.

⁷ Includes dithiocarbamates.

⁸ Includes butylate, dalapon, EPTC, methanearsonic acid salts, thiocarbamates, and organophosphorus herbicides, and others.

⁹ Includes acephate, disulfoton, ethion, malathion, phorate, and other organophosphorus insecticides.

¹⁰ Includes aldicarb, methomyl, methyl bromide, soil conditioners and fumigants, small quantities of rodenticides, and others.

Note.—Does not include data for the insect fumigant, p-dichlorobenzene, nor the fungicide, o-phenylphenol. These data are included in the section on "Cyclic Intermediates." It also does not include data for the fungicides, dimethyldithiocarbamic acid, sodium salt and dimethyldithiocarbamic acid, zinc salt (i.e., ziram). These data are included in the section on "Rubber-Processing Chemicals." The data for ethylene dibromide, a fumigant, are included in the "Miscellaneous End-Use Chemicals and Chemical Products" section.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 40

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Pesticides and related products</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 41)</i>
Cyclic		
Fungicides:		
2-Bromo-4'-hydroxyacetophenone	Yes	
1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butan-2-one	No	BKM.
α -(2-Chlorophenyl)- α -(4-chlorophenyl)-5-pyrimidinemethanol	No	CHG.
α -(2-Chlorophenyl)- α -(4-fluorophenyl)-5-pyrimidinemethanol	No	LIL.
2,4-Dichloro-6-(o-chloroanilino)-s-triazine	No	LIL.
1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)	No	CHG.
Diphenylmercuricdocecenyl succinate	No	CHF.
Hexahydro-1,3,5-triethyl-s-triazine	No	TRO.
Hexahydro-1,3,5-tri(2-hydroxyethyl)-s-triazine	No	VNC.
2-Mercaptobenzothiazole, sodium salt	No	(²).
Methyl-1-(butylcarbarnoyl)-2-benzimidazolecarbamate (Benomyl)	No	NOD, (²).
2,2'-Methylenebis(4-chlorophenol) (Dichlorophene)	No	DUP, GTL.
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Pipron)	No	GIV.
Naphthenic acid, copper salt	No	LIL, USR.
2-n-Octyl-4-isothiazolin-3-one	Yes	CCA, MCI, NOD, TRO.
Pentachlorophenol, sodium salt	No	FER, RH.
Phenylmercuric acetate (PMA)	No	FRO.
Phenylmercuric ammonium acetate	No	COS.
Phenylmercuric oleate	No	COS, TRO.
8-Quinolol, copper salt	No	COS, TRO.
8-Quinolol, sulfate salt	No	COS, TRO.
2,4,5,6-Tetrachloroisophthalonitrile	No	NOD, SOM.
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (DMTT)	No	SOM.
2-(Thiocyanomethylthio)benzothiazole	No	SDS, SOC.
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan)	No	BKM, MRK, VCC.
N-Trichloromethylthiophthalimide (Folpet)	No	BKM.
1,3,5-Tri(2-isopropanol)-s-triazine	No	ICI, VNC.
All other cyclic fungicides	No	ICI.
Herbicides and plant growth regulators:		
3-Amino-2,5-dichlorobenzoic acid, ammonium salt (2,5-Dichloro-3-aminobenzoic acid, ammonium salt)	No	EFH.
4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5-(4H)-one	No	NOD.
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	No	RDA.
2,4-Bis(isopropylamino)-6-(methylthio)-s-triazine (Prometryn)	No	CHG, DUP.
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)	No	DOW.
3-tert-Butyl-5-chloro-6-methyluracil	No	CGY.
N-Butyl-N-ethyl- α , α , α -trifluoro-2,6-dinitro-p-toluidine (Benefin)	No	DUP.
2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)	No	LIL, (²).
2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine)	No	CGY.
2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)acetanilide (Butachlor)	No	CGY.
2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor)	No	MNA.
2-Chloro-N-ethoxymethyl-N-(2-ethyl-6-methylphenyl)-acetamide (Acctochlor)	No	MNA.

See footnotes at end of table.

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 41)</i>
Cyclic—Continued		
Herbicides and plant growth regulators—Continued		
2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene (Oxyfluorfen)	No	RH.
2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (Atrazine)	No	CGY, DUP.
2-[4-Chloro-6-(ethylamino)-2-triazin-2-ylamino]-2-methylpropionitrile (cyanazine)	No	DUP.
2-Chloro-N-isopropylacetanilide (Propachlor)	No	MNA.
2-Chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-aminocarbonyl]benzenesulfonamide	No	DUP.
2-(4-Chloro-2-methylphenoxy)propionic acid, dimethylamine salt	No	RIV.
2-(2-Chlorophenyl)methyl-4,4-dimethyl-3-isoxazolinone	No	DAZ, FMN.
3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1H,3H)-dione	No	DUP.
3,5-Dibromo-4-hydroxybenzoxynitrile (Bromoxynil)	No	RDA.
3,6-Dichloro-2-anisic acid (Dicamba)	No	ZOC.
2,6-Dichlorobenzonitrile	No	USR.
2-(2,4-Dichlorophenoxy)propionic acid dimethylamine salt	No	RIV.
2-(2,4-Dichlorophenoxy)propionic acid, isooctyl ester	No	RIV.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	No	DUP.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	No	DUP.
1-[(2,4-Dichlorophenyl)4-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole	No	ICI.
3',4'-Dichloropropanilide (Propanil)	Yes	CED, CYT, RH.
S-(O,O-Diisopropyl phosphorodithioate) ester of N-(α -mercaptoethyl)benzenesulfonamide (Bensulide)	No	ICI.
1,1'-Dimethyl-4,4'-bipyridinium dichloride	No	(²).
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)	No	CWN.
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	No	SDS.
N-(1,1-Dimethyl-2-propynyl)-3,5-dichlorobenzamide (Pronamide)	No	RH.
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	No	SDS.
N-[5-1,1-Dimethyl-1,3,4-thiadiazol-2-yl]-N,N-dimethylurea (Tebuthiuron)	No	LIL.
Dinitrobutylphenol (DNBP)	No	CED.
Dinitrobutylphenol, triethanolamine salt	No	CED.
2,6-Dinitro-N,N-dipropyl cumidine	No	LIL.
3,5-Dinitro-N,N-dipropylsulfanilamide	No	(²), (²).
2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s-triazine (Ametryne)	No	CGY.
S-Ethyl cyclohexylethylthiocarbamate	No	ICI.
S-Ethyl-hexahydro-1H-azepine-1-carbothioate (Molinate)	No	ICI.
N-[3-(1-Ethyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (Flexidor)	No	LIL.
N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	No	ACY.
3-Isopropyl-1H-2,1,3-benzothiadiazin-4(3H)-one 2,2-dioxide	No	BAS.
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)	No	PPG.
Isopropyl N-phenylcarbamate (IPC)	No	PPG.
2-(2-Methyl-4-chlorophenoxy)propionic acid, diethanolamine salt	No	RIV.
2-(2-Methyl-4-chlorophenoxy)propionic acid, isooctyl ester	No	RIV.
1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)	No	ADC, DUP.
Methyl 5-(2',4'-dichlorophenoxy)-2-nitrobenzoate	No	RDA.

See footnotes at end of table.

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Pesticides and related products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 41)
Cyclic—Continued		
Herbicides and plant growth regulators—Continued:		
Methyl 2-[[[(4,6-dimethyl-2-pyrimidinyl) amino]-carbonyl] amino]sulfonyl]benzoate	No	DUP.
1-Methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]4(1H)-pyridone (Fluridone)	No	LIL.
N-1-Naphthylphthalamic acid (NPA)	No	USR.
7-Oxabicyclo-[2.2.1]-heptane-2,3-dicarboxylic acid, disodium salt (Endothal)	No	PAS.
Phenoxyacetic acid derivatives:		
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt	No	RIV.
4-Chloro-2-methylphenoxyacetic acid, isooctyl ester	No	RIV.
2,4-Dichlorophenoxyacetic acid, esters and salts:		
2,4-Dichlorophenoxyacetic acid, dimethylamine salt	No	PBI, RIV.
2,4-Dichlorophenoxyacetic acid, isopropyl ester	No	AMV.
All other 2,4-dichlorophenoxyacetic acid, esters and salts	No	RDA.
Phenoxyacetic acid derivatives, all other	No	RDA.
Plant growth regulators:		
N-[(Acetylamino)methyl]-2-chloro-N-(2,6-diethylphenyl)acetamide	No	MNA.
2-Chloro-N-(2,6-dinitro-4-(trifluoromethyl)phenyl)-N-ethyl-6-fluorobenzenemethanamine	No	CGY.
β -(4-Chlorophenyl)methyl- α -(1,1-dimethylethyl)-1,2,4-triazole-1-ethanol	No	(²).
2-Chloro-6-(trichloromethyl)pyridine	No	DOW.
α -Cyclopropyl- α -(p-methoxyphenyl)-5-pyrimidine methanol (Ancymidol)	No	LIL.
1,2-Dihydro-3,6-pyridazinone (Maleic hydrazide) (MH)	No	DRX, USR.
1,1-Dimethylpiperidinium chloride	No	BAS.
N-[2,4-dimethyl-5-[[trifluoromethyl]sulfonyl]-amino]phenyl]acetamide, diethanolamine salt	No	MMM.
Gibberellic acid	No	ABB.
Sodium 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate	No	RH.
α, α, α -Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin)	No	LIL.
α, α, α -Trifluoro-2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-p-toluidine (Ethylfluralin)	No	LIL.
All other cyclic herbicides	No	FRI, SOC, ZOC, (²).
Insect attractants and repellents:		
N,N-Diethyltoluamide (DEET)	No	HCL, MRF, TNA.
Insecticides:		
Bacillus thuringiensis	No	ABB, ZOC.
Bis(pentachloro-2,4-dicyclopentadien-1-yl)	No	HK.
2,3,4,5- δ^2 -Butenylene-tetrahydrofurfural	No	PLC.
2-(p-tert-Butylphenoxy)cyclohexyl-2-propynyl sulfite	No	ACY, USR.
Cyano(4-fluoro-3-phenoxyphenyl)methyl-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate	No	FMN, (²).
Cyano-3-phenoxybenzyl-cis, trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate	No	(²).
Cyano(3-phenoxyphenyl)methyl-4-chloro- α -(1-methyl-ethyl)benzeneacetate	No	DUP.
Cypermethrin	No	CED, FMN.
O,O-Diethyl O-(2-diethylamino-6-methyl-4-pyrimidinyl)phosphorothioate	No	(²).

See footnotes at end of table.

Section 13

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Pesticides and related products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 41)
Cyclic—Continued		
Insecticides—Continued		
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl[(dibutylamino)-thio]methylcarbamate	No	FMN.
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate	No	FMN.
2,3-Dihydroxy-2,2-dimethyl-7-benzofuranyl	No	DAZ.
2,2-Dimethyl-1,3-benzodioxol-4-yl N-methylcarbamate	No	FNS.
Di-n-propylisochomeronate	No	MGK.
Distinnaxane, hexakis(2-methyl-2-phenylpropyl)	No	DUP.
Methyl 3-(2,2-dichloroethenyl)-2,2-dimethyl-3-cyano-3-phenoxyphenylcyclopropanecarboxylate	No	FMN.
1-Naphthyl-N-methylcarbamate (Carbaryl)	No	RDA.
3-(Phenoxyphenyl)methyl-clis, trans-3-(2,2-dichloroethenyl)-2,2-dimethyl cyclopropanecarboxylate	No	CED, FMN, (2).
Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone [3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrozone	No	ACY, (2).
Tricyclohexyltin hydroxide	No	DOW, (2), (2).
Chlorinated insecticides:		
2-Chloro-N-[[[4-(trifluoromethoxy)phenyl]amino]-carbonyl]benzamide	No	CHG.
Ethyl 4,4'-dichlorobenzilate (Chlorobenzilate)	No	CGY.
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor)	No	VEL.
Octachlorohexahydro-4,7-methanoindene (Chlordan)	No	VEL.
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor)	No	CHF.
All other chlorinated insecticides, cyclic	No	DUP.
Organophosphorus insecticides:		
O-(2,4-Dichlorophenyl) O-ethyl S-propylphosphorodithioate	No	CHG.
2-(Diethoxyphosphinylimino)-4-methyl-1,3-dithiolane	No	ACY.
O-(2-(Diethylamino)-6-methyl(4-pyrimidinyl)O,O-dimethyl phosphorothioate	No	(2).
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl)phosphorothioate (Diazinon)	No	CGY.
O,O-Diethyl O-[4-(methylsulfinyl)phenyl]phosphorothioate	No	CHG.
O,O-Diethyl O-(p-nitrophenyl)phosphorothioate (Parathion)	No	MNA.
O,O-Diethyl O-3,5,6-trichloro-2-pyridylphosphorothioate	No	DOW.
O,O-Dimethyl O-[4-(methylthio)-m-tolyl]phosphorothioate (Fenthion)	No	CHG.
O,O-Dimethyl O-(p-nitrophenyl)phosphorothioate (Methyl parathion)	No	DUP, MNA.
O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(3H)-yl)methyl]phosphorodithioate (Azinphos-methyl)	No	CHG, DUP.
O-Ethyl O-[4-(methylthio)phenyl] S-propylphosphorodithioate	No	CHG.
O-Ethyl O-(p-nitrophenyl)phenylphosphonothioate (EPN)	No	DUP.
N-(Mercaptomethyl)phthalimide S-(O,O-dimethylphosphorodithioate)	No	ICI.
O,O'-(Thiodi-4,1-phenylene)bis(O,O-dimethylphosphorothioate) (Temphos)	No	ICI.
All other cyclic insecticides	Yes	FMN, RDA, ZOC, (2), (2).

See footnotes at end of table.

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Pesticides and related products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 41)
Cyclic—Continued		
Rodenticides:		
3-(<i>a</i> -Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	No	MOT.
3-[3-(4'-Bromo[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one	No	LIL, (2).
2-Diphenylacetyl-1,3-indandione and sodium salt	No	MOT.
2-Isovaleryl-1,3-indandione	No	MOT.
2-Pivaloyl-1,3-indandione (Pindone)	No	MOT.
All other rodenticides, cyclic	No	RBC.
All other cyclic pesticides:		
Benzyl-2-chloro-4-(trifluoromethyl)-5-thiazole-carboxylate	No	MNA.
α -[2-(2- <i>n</i> -Butoxyethoxy)ethoxy]-4,5-methylene-dioxy-2-propyltoluene (Piperonyl butoxide)	No	ALP, TNA.
N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3-dicarboximide	No	MGK.
1-Methyl-3,5,7-triaza-1-triaza-1-azonia tricyclodecane chloride	No	BKM.
Acyclic		
Fungicides:		
Bis-1,4-bromoacetoxy-2-butene	No	VIN.
Bis(tributyltin) oxide	No	(2).
Chloromethoxypropylmercuric acetate	No	TRO.
1,2-Dibromo-2,4-dicyanobutane	No	MRK.
Disodium cyanodithioimidocarbonate	No	BKM.
<i>n</i> -Dodecylguanidine acetate (Dodine)	No	ACY.
Dodecylguanidine hydrochloride	No	MRK.
Methylenebis(thiocyanate)	No	MRK, VIN.
Poly[oxyethylene (dimethylimino)ethylene-(dimethylimino)ethylene dichloride]	No	BKM.
Tributyltin chloride	No	(2).
Dithiocarbamic acid fungicides:		
Dimethyldithiocarbamic acid, potassium salt	No	ALC, BKM.
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	No	ALC, VCC.
Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions	No	DUP.
Ethylene bis(dithiocarbamic acid), zinc and manganese salts	No	RH.
Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)	No	DUP.
Hydroxymethyl(methyl)dithiocarbamic acid, potassium salt	No	BKM.
<i>N</i> -Methyldithiocarbamic acid, potassium salt	No	BKM.
Herbicides and plant growth regulators:		
2,2-Dichloropropionic acid, sodium salt (Dalapon)	No	DOW.
Dimethylarsinic acid (Cacodylic acid)	No	VIN.
<i>S</i> -Ethyl diisobutylthiocarbamate (Butylate)	No	ICI, PPG.
<i>S</i> -Ethyl dipropylthiocarbamate (EPTC)	No	ICI, PPG.
Methanearsonic acid, disodium salt (DSMA)	No	VIN.
Methanearsonic acid, dodecyl- and octyl-ammonium salts	No	VIN.
Methanearsonic acid, monosodium salt (MSMA)	No	SDS, VIN.
Methylthiosulfonic acid, <i>S</i> -(2-hydroxypropyl) ester	No	BKM.
<i>N</i> -(Phosphonomethyl)glycine, isopropylamine salt	No	MNA.
<i>S</i> -Propyl butylethylthiocarbamate (Pebulate)	No	ICI.
<i>S</i> -Propyl dipropylthiocarbamate (Vernolate)	No	ICI.
Thiocyanic acid, methylene ester	No	BKM.
<i>S,S,S</i> -Tributyl phosphorotrithioate	No	CHG.

See footnotes at end of table.

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Pesticides and related products</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 41)</i>
Acyclic—Continued		
Herbicides and plant growth regulators—Continued		
Tributyl phosphorotrithioite (Merphos)	No	RDA.
S-(1,2,3-Trichloroallyl) diisopropylthiocarbamate (Triallate)	No	MNA.
Plant growth regulators:		
6-Benzyladenine (BAP)	No	ABB.
2-(Chloroethyl)phosphonic acid	No	RDA.
N-(Phosphonomethyl)glycine, sodium sesqui salt	No	MNA.
All other acyclic herbicides	No	DUP VIN.
Insecticides:		
Ethyl 3,7,11-trimethyldodeca-2,4-dienoate	No	DOW, ZOC, (2).
Isopropyl-11-methoxy-3,7,11-trimethyldodeca-2,4-dienoate	No	(2).
Methyl N',N'-dimethyl-N-(methylcarbamoyl)oxy-1-thiooxamidate	No	DUP.
S-Methyl-N-(methylcarbamoyl)oxythioacetimidate (Methomyl)	No	DUP, RDA.
2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb)	No	RDA.
Organophosphorus insecticides:		
S-1,2-Bis(ethoxycarbonyl)ethyl O,O-dimethyl phosphorodithioate (Malathion)	No	ACY.
2-Carbomethoxy-1-propen-2-yl dimethyl phosphate	No	AMV, DUP.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled)	No	AMV.
O,O-Diethyl S-[2-(ethylthio)ethyl]phosphorodithioate (Disulfoton)	No	CHG.
O,O-Diethyl S-[(ethylthio)methyl]phosphorodithioate (Phorate)	No	ACY.
O,S-Dimethylacetylphosphoramidothioate (Acephate)	No	SOC.
O,O-Dimethyl-O-2,2-dichlorovinyl phosphate (DDVP)	No	AMV.
S-[[[(1,1-Dimethylethyl)thio]methyl] O,O-diethylphosphorodithioate (Turbufos)	No	ACY.
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide	No	DUP.
O,S-Dimethyl phosphoramidothioate	No	CHG.
O,O,O',O'-Tetraethyl S,S'-methylene-bisphosphorodithioate (Ethion)	No	FMN.
Rodenticides:		
2-Hydroxyethyl n-octyl sulfide	No	PLC.
Sodium fluoroacetate	No	RBC, TUL.
All other rodenticides, acyclic	No	RBC.
Soil conditioners:		
Polyacrylonitrile, hydrolyzed, sodium salt	No	ACY.
Soil fumigants:		
1,2-Dibromo-3-chloropropane (DBCP)	No	DOW.
O-Ethyl S,S-dipropyl phosphorodithioate	No	RDA.
Methyl bromide (Bromomethane)	No	GTL.
N-Methyldithiocarbamic acid, sodium salt (Metham)	No	BKM, ICI.
Methyl isothiocyanate and 1,3-dichloropropene	No	MRT.
Trichloronitromethane (Chloropicrin)	Yes	LCP, NLO, TNA.

See footnotes at end of table.

Table 40—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

<i>Pesticides and related products</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 41)</i>
Acyclic—Continued		
All other acyclic pesticides:		
3-Alkoxy-2-hydroxypropyl trimethyl ammonium chloride	No	(²).
Ammonium oxydiethylenebis (alkyl dimethyl chloride)		
Alkyl-40% C ₁₂ , 50% C ₁₄ , 10% C ₁₆	No	BKM.
Bromoacetic acid	No	VIN.
N-Cocoalkyl-1,3-propylenediamine acetate	No	(²).
2-[(Hydroxymethyl)amino]-2-methylpropanol	No	TRO.
2-(Hydroxymethyl)ethanol	No	TRO.
3-Iodo-2-propynyl butylcarbamate	No	TRO.
All other pesticides and related products, acyclic	No	CWN, DUP, USR, ZOC, (²).

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 41

Pesticides and related products: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	ICI	ICI Americas
ACY	American Cyanamid Co.	LCP	LCP Chemicals-Maine
ADC	Anderson Development Co.	LIL	Eli Lilly & Co.
ALC	Alco Chemical Corp.	MCI	Mooney Chemical, Inc.
ALP	Alpha Laboratories, Inc.	MGK	McLaughlin Gormley King Co.
AMV	Amvac Chemical Corp.	MMM	Minnesota Mining & Manufacturing Co.
BAS	BASF	MNA	Monsanto Agriculture Co.
BKM	Buckman Laboratories, Inc.	MOT	Motomco, Ltd.
CCA	Interstab Chemicals, Inc.	MRF	Morflex Chemical Co., Inc.
CED	Cedar Chemical Co.	MRK	Merck & Co., Inc.
CGY	Ciba-Gelgy Corp.	MRT	Morton-Thiokol, Inc., Morton Chemical Co. Div.
CHF	Kincaid Enterprises, Inc.	NLO	Niklor Chemical Co., Inc.
CHG	Mobay Chemical Crop., Agricultural Chemicals Div.	NOD	Nuodex, Inc.
COS	Cosan Chemical Corp.	PAS	Pennwalt Corp.
CWN	Upjohn Co., Fine Chemicals	PBI	PBI-Gordon Corp.
CYT	Cumberland International Corp.	PLC	Phillips Petroleum Co.
DAZ	Diaz Chemical Corp.	PPG	PPG Industries, Inc.
DOW	Dow Chemical Co.	RBC	Artel Chemical Corp.
DRX	Drexel Chemical Co.	RDA	Rhone-Poulenc, Inc.
DUP	E. I. duPont de Nemours & Co., Inc. Agricultural Products	RH	Rohm & Haas Co.
EFH	E. F. Houghton & Co.	RIV	Riverdale Chemical Co.
FER	Ferro Corp., Ferro Chemical Div.	SDS	Fermenta Plant Protection
FMN	FMC Corp., Agricultural Chemical Group	SOC	Chevron Corp., Chevron Chemical Co.
FRI	Farmland Industries, Inc.	SOM	Southland Corp.
FRO	Vulcan Materials Co., Chemicals Div.	TNA	Ethyl Corp.
FSN	Nor-Am Chemical Co.	TRO	Troy Chemical Corp.
GIV	Givaudan Corp.	TUL	Tull Chemical Co., Inc.
GTL	Great Lakes Chemical Corp.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
HCL	Hoechst Celanese Corp., Virginia Chemicals, Inc.	VCC	Vinings Chemical Co.
HK	Occidental Chemical Corp., Speciality Chemical Div.	VEL	Velsicol Chemical Corp.
		VIN	Vineland Chemical Co., Inc.
		VNC	Vanderbilt Chemical Corp.
		ZOC	Sandoz Crop Protection

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A. Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 14

Miscellaneous End-Use
Chemicals and Chemical
Products

This section incorporates those end-use groups which are not readily classifiable within the prior sections of this report. Both cyclic and acyclic chemicals fall within this section. Production and sales of the end-use chemicals contained within this section continue to follow a general increase since 1983.

In 1986, the production of miscellaneous end-use chemicals exceeded 25,223 million pounds, an increase of 9.5 percent from the more than 23,033 million pounds of production reported for 1986. Production of these chemicals remained nearly level but steadily increasing throughout 1983-87 (figure 15). Sales in 1987 totaled 21,010 million pounds, valued at \$7,355 million (table 42). The sales quantity

increased 27 percent from that of 1986 with the value of sales decreasing by 16 percent. Polymers for fibers and urea collectively accounted for 72 percent of the 1987 production of these miscellaneous end-use chemicals. Urea accounted for 55 percent of the 1987 sales quantity of these chemicals.

Production of end-use chemicals used in the auto and motor fuels market indicated continued upward trends.

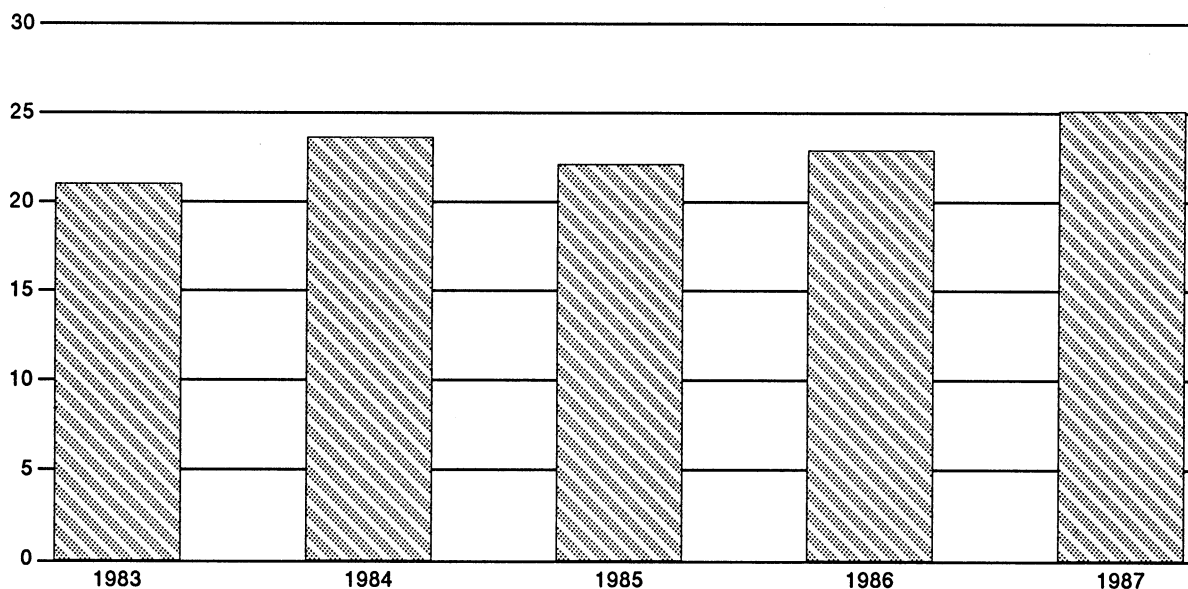
In 1987, the production of lubricating oil and grease additives totaled 724 million pounds, an increase of 11 percent, compared with 1986. Production of fuel additives for 1987 totaled 3,878 million pounds, an increase of 6 percent from the previous year.

Table 43 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 44.

David G. Michels
202-252-1352

Figure 15
Miscellaneous End-Use Chemicals and Chemical Products: U.S. production, 1983-87

Millions
of pounds



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 42

Miscellaneous end-use chemicals and chemical products: U.S. production and sales, 1987

Miscellaneous end-use chemicals and chemical product	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	25,223,101	21,010,441	7,355,123	\$0.35
Amino acids and their salts	162,637	(²)	(²)	(²)
Chelating agents, nitriloacids and salts, total ..	255,336	209,488	127,794	.61
(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt	14,513	14,184	8,943	.63
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt	743	647	1,701	2.63
(Ethylenedinitrilo)tetraacetic acid, diammonium salt	2,657	1,572	949	.60
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate	717	694	777	1.12
(Ethylenedinitrilo)tetraacetic acid, disodium salt	1,470	1,531	2,872	1.88
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt	1,834	1,733	2,200	1.27
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	82,740	51,604	32,262	.63
(N-Hydroxyethylethylenedinitrilo) triacetic acid, trisodium salt	11,358	4,201	2,801	.67
Nitrilo-tris-methylene triphosphonic acid	2,637	2,758	2,234	.81
All other chelating agents, nitriloacids and salts	136,667	130,564	73,055	.56
Chemical indicators	8	7	459	64.53
Chemical reagents and fine chemicals	1,742	1,681	37,961	22.58
Enzymes:				
Bacterial amylase	(²)	(²)	19,070	(²)
Pectinase	(²)	(²)	1,521	(²)
Proteases, total	(²)	(²)	32,247	(²)
Rennin	(²)	(²)	16,606	(²)
All other proteases	(²)	(²)	15,641	(²)
Flotation reagents	18,515	(²)	(²)	(²)
Fuel additives, total ³	3,877,510	(²)	(²)	(²)
Methyl-t-butyl ether ⁴	3,514,416	(²)	(²)	(²)
All other fuel additives	363,094	(²)	(²)	(²)
Lubricating oil and grease additives, total	724,110	(²)	(²)	(²)
Oil soluble petroleum sulfonate, calcium salt	274,680	249,849	154,017	.62
Nonylphenol, barium salt	8,148	(²)	(²)	(²)
All other lubricating oil and grease additives	441,282	(²)	(²)	(²)
Paint driers, naphthenic acid salts, total ⁵ ..	7,731	(²)	(²)	(²)
Cobalt naphthenate	3,167	2,715	6,846	2.52
All other paint driers, naphthenic acid salts	4,564	(²)	(²)	(²)
Photographic chemicals	16,027	7,762	47,347	6.10
Polymers for fibers, total	6,558,683	3,360,072	3,947,881	1.17
Nylon 6 and 6/6 ⁴	2,222,185	1,538,153	2,474,266	1.61
Polyacrylonitrile and acrylonitrile copolymers ⁶	564,122	455,980	384,101	.84
Polyethylene terephthalate ⁷	2,014,931	1,228,409	999,186	.81
All other polymers for fibers	1,757,445	137,530	90,328	.66

See footnotes at end of table.

Table 42—Continued

Miscellaneous end-use chemicals and chemical products: U.S. production and sales, 1987

Miscellaneous end-use chemicals and chemical product	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Polymers, water soluble, total	573,047	476,392	545,201	\$1.14
Cellulose esters and ethers:				
Hydroxethylcellulose	52,614	56,072	120,172	2.14
Sodium carboxymethylcellulose	47,040	49,485	61,169	1.24
Polyacrylamide	52,219	39,793	44,446	1.12
Polyacrylic acid salts, total	172,898	130,188	112,874	.87
Sodium ammonium polyacrylate and copolymers	63,570	40,576	23,025	.57
All other polyacrylic acid salts	109,328	89,612	89,849	1.00
All other water soluble polymers	248,276	200,854	206,540	1.03
Poly- α -olefins	126,254	102,072	89,836	.88
Tanning materials synthetic	35,803	24,425	16,268	.67
Textile chemicals, other than surface-active agents, total	61,780	59,708	34,714	.58
Urea polymers with formaldehyde and methanol	466	549	307	.56
All other textile chemicals, other than surface-active agents	61,314	59,159	34,407	.58
Urea in compounds or mixtures, total	11,530,120	11,629,565	563,796	.05
In feed compounds	321,611	326,171	19,043	.06
In liquid fertilizer	1,939,381	1,843,764	115,607	.06
In plastics	669,875	762,240	36,761	.05
In solid fertilizer	8,599,253	8,697,390	392,385	.05
All other miscellaneous end-use chemicals and chemical products ⁸	1,273,798	4,886,705	1,730,165	.32

¹ Calculated from unrounded figures.² Reported data were accepted in confidence and may not be published, or no data were reported.³ Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given with the section on "Plasticizers."⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (Including Synthetic Plastics and Resins Materials, 1987)*, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustment, and rounding.⁵ Quantities are given on the basis of solid naphthenate.⁶ Statistics exclude production and sales of copper naphthenate. Statistics for copper naphthenate are given in the section on "Pesticides and Related Products."⁷ Data for polyethylene terephthalate for fibers was misreported in 1986. The corrected production figure is 1,967,462 thousand pounds.⁸ Includes all other items listed in table 43 which are not individually publishable as groups.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 43

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Amino acids and their salts:	Yes	
Aspartic acid	No	ESX, PFZ.
N,N-Bis(2,2-acetamido)glycine	No	PIC.
N,N-Dimethylglycine	No	MCK.
N,N-Dimethylglycine hydrochloride	No	MCK.
Glutamic acid hydrochloride	No	LEM.
Glycine (Aminoacetic acid), non-medical	No	CHT, HMP.
Methionine and its salts:		
Methionine (animal feed grade)	No	DGC.
Methionine, hydroxy analogue, calcium salt	No	MNA.
Phenylalanine	No	NSW.
Potassium glutamate	No	LEM.
Protein hydrosylates	No	BRS.
Sarcosine	No	HMP.
All other amino acids and salts, cyclic	No	AJI.
Biological stains:		
Biological stains	No	ALD, EK.
Chelating agents, nitriloacids and salts	Yes	
N-alkylamine bismethylenephosphonic acid	No	DUP.
N-alkylaminobismethylene phosphonic acid salts	No	(²).
Aminotrimethyl phosphonic acid	No	DOW, SCP.
(Diethylenetriamine)pentamethylenephosphonic acid	No	CCL, MYO.
(Diethylenetriamine)pentamethylenephosphonic acid, sodium salt	No	MYO, OMC.
(Diethylenetrinitrilo) pentaacetic acid	No	CGY, HMP.
(Diethylenetrinitrilo) pentaacetic acid, monosodium hydrogen ferric salt	No	CGY.
(Diethylenetrinitrilo) pentaacetic acid, pentasodium salt	Yes	CGY, DOW, HMP.
N,N-Dihydroxyethylglycine, sodium salt	No	HMP.
Ethanoldiglycine, disodium salt	No	HMP.
(Ethylenedinitrilo) tetraacetic acid		
(Ethylenediaminetetraacetic acid) (EDTA)	No	CGY, HMP.
(Ethylenedinitrilo) tetraacetic acid, calcium disodium salt	Yes	CGY, DAN, DOW.
(Ethylenedinitrilo) tetraacetic acid, diammonium salt	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo) tetraacetic acid, disodium copper salt, dihydrate	Yes	CGY, DOW, HMP, PLC.
(Ethylenedinitrilo) tetraacetic acid, disodium salt	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo) tetraacetic acid, disodium zinc salt, dihydrate	No	CGY, DOW, HMP.
(Ethylenedinitrilo) tetraacetic acid, manganese salt	No	DOW, HMP, CGY
(Ethylenedinitrilo) tetraacetic acid, monosodium iron salt	No	DOW.
(Ethylenedinitrilo) tetraacetic acid, tetraammonium salt	No	CGY, DOW.
(Ethylenedinitrilo) tetraacetic acid, tetrapotassium salt	No	HMP, (²).
(Ethylenedinitrilo) tetraacetic acid, tetrasodium salt	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo) tetraacetic acid, trisodium salt	No	CGY, TX.
Glucoheptonic acid, β -isomer, sodium salt	No	BLZ.
Glucoheptonic acid, sodium salt	No	BLZ, PFN.
Hexamethylenediaminetetra(methylenephosphonic acid), potassium salt	No	OMC.
Hydroxyethane-1-diphosphonic acid	No	BKM, MYO.
(N-Hydroxyethylethylenedinitrilo) triacetic acid, iron salt	No	CGY, DOW, HMP.
(N-Hydroxyethylethylenedinitrilo) triacetic acid, trisodium salt	Yes	CGY, DOW, HMP.

See footnotes at end of table.

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Chelating agents, nitriloacids and salts—Continued		
Hydroxyethylidene diphosphonic acid, potassium salt	No	(²).
Hydroxyethylidene diphosphonic acid, sodium salt	No	MYO, (²).
Nitriloacetic acid, zinc salt	No	HMP.
Nitrilotriacetic acid	No	HMP, MON.
Nitrilotriacetic acid, trisodium salt	No	HMP.
Nitrilo-tris-methylene triphosphonic acid	Yes	BKM, OMC, MYO, (²).
Nitrilo-tris-methylene triphosphonic acid, potassium salt	No	(²).
Nitrilo-tris-methylene triphosphonic acid, sodium salt	No	MYO, OMC, (²).
2-Phosphonobutane-1,2,4-tricarboxylic acid, sodium salt	No	(²).
Polyamine polymethane phosphonic acid	No	SCP, (²), (²).
Polyamine polymethane phosphonic acid, magnesium salt	No	RPC.
All other chelating agents, nitriloacids and salts	No	BKM, CCL, CGY, HMP, OMC (²).
Chemical indicators:	Yes	
Chemical indicators	Yes	ALD, EK, GFS.
Chemical reagents and fine chemicals:	Yes	
Chemical reagents and fine chemicals	Yes	ABB, ALD, EK, ESA, GFS, HEX, HMY, PAH, PFN, PIC, PLB, REG, RSA, UPJ, UPM, (²).
Enzymes:	No	
Hydrolytic enzymes:		
Amylases:		
Bacterial amylase	Yes	GBF, GNR, MLS, NBI, PMP.
Glucoamylase	No	GBF, MLS, NBI.
Maltase	No	PFZ, TX.
All other amylases	No	GBF, TX.
Proteases:	Yes	
Papain	No	GBF, PFZ.
Pepsin	No	CHH.
Protease (bacterial)	No	PMP.
Rennin	Yes	CHH, MLS, PFZ.
All other proteases	No	GBF, GNR, MLS, SPR.
Other hydrolytic enzymes:		
Cholesterol esterase	No	BCK.
Glucose isomerase	No	MLS.
Hydrolytic enzyme mixtures	No	JFR.
Lipase	No	CHH, GNR.
Pectinase	Yes	GBF, GNR, MLS.
All other hydrolytic enzymes	No	GNR, MLS, PMP, (²).
Non-hydrolytic enzymes:		
Cholesterol oxidase	No	BCK, UPJ.
Glucose oxidase	No	BCK.
Glucose-6-phosphate dehydrogenase	No	BCK.
Glycerol kinase	No	BCK.
Uricase	No	BCK.
Flotation reagents:	Yes	
Allyl n-butyl trithiocarbonate	No	PLC.
Phosphorodithioates, used as flotation reagents:		
Dicresylphosphorodithiolic acid	No	ACY.
Dicresylphosphorodithiolic acid, ammonium salt	No	ACY.
Dicresylphosphorodithiolic acid, sodium salt	No	KCU.
All other phosphorodithioates used as flotation reagents	No	ELC.
Rosin amines	No	HPC.
Thiocarbamide (Diphenylthiourea)	No	ACY.
Xanthates and sulfides, used as flotation reagents:	No	
Sodium n-butylxanthate	No	USR.
Xanthates and sulfides	No	PLC.
All other flotation reagents	No	DOW, PLC, SHX.

See footnotes at end of table.

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Fuel additives:	Yes	
Diesel fuel additives:	No	
Hexyl nitrate	No	DUP, TNA.
All other diesel fuel additives acyclic	No	TNA.
All other diesel fuel additives cyclic	No	PAH.
Fuel oil additives:		
Adipic acid-diethylenetriamine-epichlorohydrin polymer	No	(²).
N-sec-Butyl-N-phenylphenylenediamine	No	UPM.
Methyl-t-amyl ether	No	CXI.
N,N-Dimethyl-1,3-propanediamine polymer with epichlorohydrin, sulfate	No	(²).
N,N'-Disallylidene-1,2-propanediamine	No	DUP, FER, SM, TNA.
Formaldehyde polymer with ethylenediamine and nonyl phenol derivatives	No	(²).
Imidazoline from tall oil fatty acids and diethylenetriamine	No	(²).
Mixed aryl diimides	No	SM.
Phenyl acid phosphate	No	HDG.
Polybutylether carbamate	No	SOC.
Poly(dimethylimino(2-hydroxytrimethylene)chloride)	No	(²).
Polyethylenepolyamine polymer with 1,4-dihydroxy-2-butyne	No	(²).
Rust preventing additives	No	ALX.
Tetrahydropyrimidine from tall oil fatty acids and propylenediamine	No	(²).
All other fuel oil additives, acyclic	No	DUP, SM, UPM.
All other fuel oil additives, cyclic	No	DUP, PAH.
Gasoline additives:		
N,N'-Di-sec-butyl-p-phenylenediamine	No	DUP, TNA, UPM.
N,N'-Diisopropyl-p-phenylenediamine	No	DUP, TNA.
Ethylene dibromide	No	GTL, TNA.
4,4'-Di-sec-butylamino diphenyl methane	No	UPM.
Methyl-t-butyl ether	Yes	ATR, ENJ, LYP, TPC, TUS, VLR.
Methylcyclopentadienylmanganese tricarbonyl	No	TNA, TX.
Tetraethyl lead	No	DUP, (²).
Tetra(methyl-ethyl)lead, (Tel-tml,reacted)	Yes	DUP.
Tetramethyl lead	No	SHC.
All other gasoline additives, acyclic	No	BRD.
Lubricating oil and grease additives:	Yes	
Chlorosulfurized and sulfurized compounds:	No	
Chlorosulfurized sperm oil	No	ELC.
Sulfurized lard oil	No	CCW, WBG.
Sulfurized sperm oil substitutes	No	CCW, ELC.
Hydrocarbon carboxylic acid derivatives	No	EMR, QCP, (²), (²).
Hydrocarbon phosphorous acid, barium salt	No	(²).
Hydrocarbon phosphoryl derivatives	No	(²).
Oil-soluble petroleum sulfonates:		
Oil-soluble petroleum sulfonate, ammonium salt	No	NLT.
Oil-soluble petroleum sulfonate, barium salt	No	TNA, WTC, (²).
Oil-soluble petroleum sulfonate, calcium salt	Yes	SOC, TNA, TX, WTC, (²).
Oil-soluble petroleum sulfonate, magnesium salt	No	WTC, (²).
Oil-soluble petroleum sulfonate, sodium salt	No	PAR.
All other oil-soluble petroleum sulfonates	No	DAN, DUP, MON, SOC, TNA, WTC.
Phenol salts:	No	
Alkyl phenols	No	(²).
Dodecylphenol, sulfurized, calcium salt	No	SOC.
Nonylphenol, barium salt	Yes	CCA, FER, WTC.
Phenol, salts, all other	No	TNA.

See footnotes at end of table.

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Lubricating oil and grease additives—Continued		
Phosphorodithioates (Dithiophosphates):	No	
Alkene thiophosphonate	No	TX.
Alkyl imidazoline	No	QCP.
Alkyl succinic anhydride	No	SM, TNA.
Alkyl terephthalamate	No	SOC.
Bornyl phenylamine	No	SOC.
Di-2-ethylhexylphosphorodithioic acid	No	ELC.
Di-N-propylphosphorodithioic acid	No	ELC.
Zinc dialkyldithiophosphate	No	ELC, SOC, TNA, (2).
Zinc dialkylphenol dithiophosphate	No	SOC.
Zinc dibutyl phosphorodithioate	No	ELC.
Zinc dilsodecyl phosphorodithioate	No	ELC.
Zinc hydrocarbon dithiophosphate	No	(2).
All other phosphorodithioates used as lubricating oil and grease additives	No	TX, (2).
Succinimides:	No	
Alkenyl succinimide	No	SOC, TNA, TX, (2).
Dodeceny-acetic succinimide	No	SM.
Sulfur compounds:	No	
Aliphatic hydrocarbon sulfides	No	ELC, FER, (2).
Di-tertiary nonylpolysulfide	No	PAS.
Trisobutylene polysulfide	No	TX.
All other sulfur compounds	No	FER, QCP, TNA (2).
All other lubricating oil and grease additives:	No	
Di-2-ethylhexylphosphorodithioic acid	No	ELC.
Diisopropyl hydrogen phosphite	No	ALW.
Dimer acid esters and polyesters	No	EMR.
Dodeceny succinic acid, benzotriazole salt	No	SM.
Dodecylphenyl- α -naphthylamine	No	SM.
Dodecylphenyl- α -naphthylamine, dioctyl diphenyl-amine co-polymer	No	SM.
Fatty acid polyamine condensate	No	SOC.
Mixed polyesters	No	HCC.
Pentaerythritol esters	No	HCC.
1,3,4-Thiadiazole, 2,5-bis(dialkyldithio) derivatives	No	ELC.
Very high weight (1000) hydrocarbons	No	(2).
All other lubricating oil and grease additives, acyclic	No	DUP, ELC, QCP, SM, TNA, (2).
All other lubricating oil and grease additives, cyclic	No	CGY, ENJ, SM, TNA, (2).
Paint driers, naphthenic acid salts:	Yes	
Barium naphthenate	No	QCP.
Cadmium naphthenate	No	CCA, VNC.
Calcium naphthenate	No	CCA, MCI, NOD, TRO.
Chromium naphthenate	No	MCI.
Cobalt naphthenate	Yes	CCA, MCI, NOD, SHP, TRO.
Copper naphthenate	No	NOD.
Iron naphthenate	Yes	CCA, MCI, NOD.
Lead naphthenate	No	CCA, MCI, NOD, SHP, TRO.
Lithium naphthenate	No	CCA.
Manganese naphthenate	No	CCA, MCI, NOD, SHP.
Naphthenate driers, mixed salts	No	MCI.
Rare earths naphthenate	No	CCA, NOD.
Strontium naphthenate	No	CCA.
Vanadyl naphthenate	No	SHP.
Zinc naphthenate	No	CCA, MCI, NOD, SHP, TRO.
All other paint dryers, naphthenic acid salts	No	SHP, NOP.

See footnotes at end of table.

Section 14

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Photographic chemicals:	Yes	
N-2-(4-Amino-n-ethyl-m-toluidino)ethyl methane sulfonamide	No	WAY.
Aryl alkyl polyether alcohol	No	DIX.
5-Chlorobenzotriazole	No	FMT.
3-Chloro-4-diethylaminobenzenediazonium chloride (p-Diazo-2-chloro-N,N-diethylaniline zinc chloride) ..	No	ESA.
Chlorohydroquinone	No	ESA.
4-Diazo-2,5-diehoxymorpholinobenzene	No	ALL.
2,5-Diehoxy-4-morpholinobenzenediazonium chloride ...	No	ALL, ESA.
p-Diehoxyaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline zinc chloride)	No	ALL, ESA, FMT.
p-Dimethylaminobenzenediazonium chloride] (p-Diazo-N,N-dimethylaniline zinc chloride)	No	ALL, ESA.
p-Diphenylaminediazonium sulfate	No	ALL.
p-(N-Ethylbenzimidob)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylaniline)-zinc chloride	No	ESA.
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride (p-Diazo-N-hydroxyethyl-aniline zinc chloride)	No	ALL, ESA.
(N-Ethyl-N-(2-hydroxyethyl)-3-methyldehydrogen sulfate)p-phenylenediamine	No	(²).
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	No	WAY.
Hydroquinone (Hydroquinol)	No	EKT.
p-[(2-Hydroxyethyl)methylamino]benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline)-zinc chloride	No	ESA.
4-Hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidone	No	(²).
2-Hydroxynaphthoic ethylamide	No	FMT.
4-Methoxy-1-naphthol	No	(²).
p-Methylaminophenol sulfate (Metol)	No	EK.
5-Methyl-1,7-diehoxy-1,3,4-triazaindolizine	No	FMT.
4,4-Methylidene-bis-1(p-sulfophenyl)3-methyl-pyrazolone	No	FMT.
3-methyl-N-[2(methyl sulfonamido ethyl)-N-ethyl-p-phenylenediamine]sesquisulfate monohydrate	No	(²).
4-methyl-1-phenyl-3-pyrazolidenone	No	CWN.
p-Morpholinyl-2,5-dibutoxybenzene diazonium chloride	No	ALL
6-Nitrobenzimidazole	No	FMT.
5-Nitrobenzimidazole nitrate	No	EK.
1-Phenyl-3-pyrazolidone	No	CWN.
Poly(vinyl-O-sulfobenzal)	No	DUP.
4-N-(1-Pyrroldyl)-m-toluenediazonium chloride	No	ALL, ESA.
All other photographic chemicals	No	ALL, DUP, ESA, FMT, WAY, (²), (²).
Polymers for fibers:	No	
Cellulose acetate	No	CEL, EKT, MIL.
Copolyurethane urea	No	DUP.
Linear saturated polyester	No	EKT.
Nylon 6 and 6/6:	Yes	
Nylon 6 (Polymer for fiber, only)	No	ACS, SKP, (²).
Nylon 6/6	No	DUP, MON, SKP.
Polyacrylonitrile and acrylonitrile copolymers	Yes	ACY, BKM, DUP, MON.
Polyethylene terephthalate	Yes	CEL, DUP, EKT, FRF, GYR.
Poly-m-phenylene isophthalamide	No	DUP.
Poly-p-phenylene terephthalamide	No	DUP.
All other polymers for fibers	No	HCL, (²).

See footnotes at end of table.

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Polymers, water soluble:	No	
Acrylamide polymers and co-polymers:	No	
Acrylamide-2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	No	ENJ, (2).
Acrylamide-acrylic acid copolymer	No	CHP.
Acrylamide-acrylic acid copolymer potassium salt	No	(2).
Acrylamide-acrylic acid copolymer, sodium salt	No	BKM, (2).
Acrylamide N-dimethylaminomethylacrylamide copolymer	No	BKM.
Acrylamide-trimethylamino ethyl acrylate chloride	No	(2).
Acrylamide-trimethylamino ethyl methacrylate chloride	No	(2).
Adipic acid-crosslinked polyacrylamide	No	BKM, ENJ, HCL, (2).
Polyacrylamide	Yes	ACY, DOW, ENJ, MRK, SQA, (2).
All other polyacrylamide copolymers	No	HCL, (2).
Cellulose esters and ethers:	Yes	
Cationic cellulosic ether	No	UCC.
Hydroxyethylcellulose	Yes	AQU, DOW, UCC, (2).
Methylcellulose	No	DOW.
Sodium carboxymethylcellulose (100%)	Yes	AQU, CBC, LCS, MAK, (2).
All other cellulose ethers and esters	No	S, (2).
Dimethylamine epichlorohydrin ethylenediamine copolymer	No	CPS, (2).
Ethyl acrylate methacrylic acid copolymer	No	ALC.
Hydroxypropyl guar gum	No	RPC.
Poly(acrylic acid) ethyl ester	No	DUP.
Poly(acrylic acid, methyl ester/ethylene/ 1,1-dichlorosuccinic acid, methylene-) with ethyl acrylate	No	DUP.
Polyacrylic acid salts:	Yes	
Ammonium polyacrylate	No	ENJ, RH, (2), (2).
Polyacrylate methacrylate copolymers	No	BFG, RH, (2).
Sodium ammonium polyacrylate and copolymers	Yes	ALC, BAS, BFG, RH, (2), (2).
Sodium polyacrylate	No	BKM, DOW, ENJ, SYT, (2), (2).
All other polyacrylic acid salts	No	ACY, MYO, S, (2), (2).
Polyacrylonitrile, hydrolyzed	No	BKM, DIX, RH.
Polyacrylonitrile, starch hydrolized polymer	No	GPC.
Polyamines	No	ENJ, (2).
Polydextrose	No	PFZ.
Poly(diallyldimethylammonium) chloride	No	CPS, MRK, (2).
Polymethacrylic acid, sodium salt	No	ALC, CPS.
Poly(1,1'-(methylimino)bis(3-chloro-2-propanol)-tetramethylethylenediamine	No	BKM.
Sodium carboxymethyl amylose	No	CCL.
Sodium carboxymethyl starch	No	(2).
Vinyl acetate maleic copolymer, sodium salt	No	(2).
1-Vinyl-2-pyrrolidinone, polymers	No	CCL, DAN, GAF, (2).
Xanthan gum	No	PFZ.
All other polymers, water soluble	No	BKM, EFH, RH, RPC, SYT, (2), (2), (2), (2).
Poly- α -olefins:	Yes	
Poly- α -olefins	No	CO, SM, SOC.
Poly- α -olefins, sulfurized	No	SM.
Rare sugars:	No	
l-Arabinose	No	PFN.
D-Galactose	No	PFN.
D-Maltose	No	PFN.
Silicone greases:	No	
Silicone greases	No	DCC, SPD, SWS.

See footnotes at end of table.

Table 43—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1987

Miscellaneous end-use chemicals and chemical products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 44)
Tanning materials, synthetic:	Yes	
1-naphthalene sulfonic acid, formaldehyde condensate and salt	No	RH.
2-naphthalenesulfonic acid, formaldehyde condensate and salt	No	GRD.
1-phenol-2-sulfonic acid, formaldehyde condensate	No	BAS, RH.
Polyoxyalkylated cyclic amines	No	MIL.
Tanning materials synthetic, all other	No	BAS.
Textile chemicals, other than surface-active agents:	Yes	
N,N-bis-(2-Hydroxyethyl)octadecanamide	No	CCC.
N,N-Dibenzylhydroxylamine	No	CCC.
Dicyanodiamide formaldehyde ammonium chloride polymer	No	CCC, CRT, DAN.
Diethylenetriamine, triethylphosphate, urea polymer, stearate	No	CCC.
Dimethyloldihydroxyethylene urea	No	ACY, CCC, CHP, DAN.
Formaldehyde polymer with carbamate esters	No	SYT.
Hydrogenated tallow fatty acid aminoethylethanolamine condensation products	No	CCC.
Lauryl alkyl dimethylamine acetate	No	(²).
Lauryl alkyl dimethylamine phosphate	No	(²).
Melamine formaldehyde copolymer	No	ENT.
Melamine formaldehyde methanol polymer	No	ACY, CCC, CRT.
Melamine formaldehyde triethanolamine mixed fatty alcohols polymer	No	RPC.
Melamine stearyl alcohol polymer	No	SYT.
Propoxylated starches	No	SYT.
2,2',4,4'-tetrahydroxybenzophenone	No	BAS.
Urea, 2-(2-aminoethyl)aminoethanol polymer, stearate ..	No	CCC.
Urea polymers with formaldehyde and methanol	Yes	ACY, BAS, CCC, CRT, SYT.
Urea, polymer with tetrakis(hydroxymethyl)phosphonium sulfate	No	CHP.
All other textile chemicals, other than surface active agents	No	BAS, CCC, DAN, ENJ, GAF, JSC, PAT, RPC, S.
Urea, by end-use markets:	No	
Urea, primary solution (Report on 100% urea-content basis)	Yes	APD, ARM, BNP, BOR, CAC, CFI, CHN, CNC, FRI, GCC, HKY, MSC, OMC, SMP, SOC, SOH, TER, TRI, TVA, UOC, WLC, WYC, (²).
Urea in compounds or mixtures (100% Basis):	Yes	
Urea in feed compounds (100% Basis)	Yes	APD, BNP, CAC, SOH, TER, TRI, WYC.
Urea in liquid fertilizer (100% Basis)	Yes	ARM, BNP, CFI, CHN, CNC, FRI, HKY, MSC, SMP, SOC, SOH, TER, TRI, TVA, UOC, (²).
Urea in plastics (100% Basis)	Yes	BOR, OMC, SOH, TRI.
Urea in solid fertilizer (100% Basis)	Yes	APD, CAC, CFI, CNC, FRI, GCC, MSC, OMC, SOH, TER, TRI, TVA, UOC, WLC, WYC.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 44

Miscellaneous end-use chemicals and chemical products: Directory of manufacturers, alphabetical by code, 1987

Code	Name of company	Code	Name of company
ABB	Abbott Laboratories	EMR	Emery Chemicals Div. of National Distillers & Chemical Corp.
ACS	Allied Signal, Inc. Engineered Materials Sector	ENJ	Exxon Chemical Americas
ACY	American Cyanamid Co.	ESA	East Shore Chemical Co.
AJI	Ajinomoto USA, Inc.	ESX	Essex Chemical Corp., Essex Industrial Chemicals, Inc.
ALC	Alco Chemical Corp.	FER	Ferro Corp.: Ferro Chemical Div. Keil Chemical Div.
ALD	Aldrich Chemical Co., Inc.	FMT	Fairmount Chemical Co., Inc.
ALL	Alliance Chemical, Inc.	FRF	Firestone Tire & Rubber Co., Firestone Fibers & Textiles Co.
ALW	Albright & Wilson, Inc.	FRI	Farmland Industries, Inc.
ALX	Alox Corp.	GAF	GAF Corp., Chemical Group.
APD	Atlas Powder Co. Sub. of Tyler Corp.	GBF	Gist-Brocades U.S.A Inc.
AQU	Aqualon	GCC	W. R. Grace & Co., Agricultural Chemicals Group.
ARM	LaRoche Industries Inc.	GFS	G. Frederick Smith Chemical Co.
ATR	Atlantic Richfield Co., Arco Chemical Co.	GNR	Genencor, Inc.
BAS	BASF Corp.	GPC	Grain Processing Corp.
BCK	Beckman Instruments, Inc.	GRD	W. R. Grace & Co., Polymers & Chemical Div.
BFG	B. F. Goodrich Co.	GTL	Great Lakes Chemical Corp.
BKM	Buckman Laboratories, Inc.	GYR	Goodyear Tire & Rubber Co.
BLZ	Belzak Corp.	HCC	Hatco Chemical Corp.
BOR	Borden, Inc., Borden Chemical Div.	HCL	Hoechst Celanese Corp.: Hoechst Celanese Fibers. Sou-Tex Works.
BNP	Bison Nitrogen Products Co.	HDG	Hodag Chemical Corp.
BRD	Lonza, Inc.	HEX	Hexagon Laboratories, Inc.
BRS	Bristol-Myers Co.	HKY	Hawkeye Chemical Co.
CAC	Cominco Fertilizers Inc.	HMP	W. R. Grace & Co., Hampshire Chemical Div.
CBC	Carbose Corp.	HMY	Humphrey Chemical Co.
CCA	Interstab Chemicals, Inc.	HPC	Hercules, Inc.
CCC	C.N.C. International, Inc.	HXL	Hexcel Corp., Hexcel Chemical Products.
CCL	Catawba-Charlab, Inc.	JFR	George A. Jeffreys & Co., Inc.
CCW	Morton-Thiokol, Inc., Carstab Div.	JSC	Sybron Chemicals, Inc.
CED	Cedar Chemical Co.	KCU	Kennecott Minerals Co., Utah Copper Div.
CFI	CF Industries, Inc.	LCS	Louisiana Chemical Polymers, Inc.
CGY	Ciba-Geigy Corp.	LEM	Napp Chemicals, Inc.
CHH	CHR. Hansen's Laboratory, Inc.	LYP	Lyondell Petrochemical Co.
CHN	Wil-Gro Fertilizer, Inc.	MAK	MAK Chemical Corp.
CHP	C. H. Patrick & Co., Inc.	MCI	Mooney Chemicals, Inc.
CHT	Chatterm, Inc.	MCK	MacKenzie Chemical Works, Inc.
CNC	Columbia Nitrogen Corp.	MIL	Milliken & Co., Milliken Chemical Co.
CO	Conoco Specialty Products, Inc.	MLS	Miles Laboratories, Inc., Biotechnology Group.
CPS	CPS Chemical Co., Inc.	MNA	Monsanto Agricultural Co.
CRT	Chemos Corp.	MON	Monsanto Co.
CRZ	James River Corp.	MRK	Merck & Co., Inc.
CWN	Upjohn Co., Fine Chemicals	MSC	Mississippi Chemical Corp.
CXI	Chemical Exchange Industries, Inc.	MYO	Mayo Chemical Co.
DAN	Dan River, Inc., Chemical Products Div.	NBI	Novo Biochemical Industries, Inc.
DCC	Dow Corning Corp.	NOD	Nuodex, Inc.
DGC	Degussa Corp.	NSW	NutraSweet Co.
DIX	Dixie Chemical Co., Inc.		
DOW	Dow Chemical Co.		
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Textile Fibers Dept. Photosystems and Electronics Dept.		
EFH	E.F. Houghton Co.		
EK	Eastman Kodak Co.:		
EKT	Tennessee Eastman Co. Div.		
ELC	Elco Corp. Sub. of Detrex Chemical Industries, Inc.		

Table 44—Continued

Miscellaneous end-use chemicals and chemical products: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
NTL	NL Industries, Inc.	SOH	Standard Oil Chemical Co.
OMC	Olin Corp.	SPD	General Electric Co., Silicone Products Dept.
PAH	Parish Chemical Co.	SPR	Scientific Protein Laboratories
PAR	Pennzoil Co., Penreco Div.	SQA	Segua Chemicals, Inc.
PAT	Pat-Chem Inc.	SWS	Wacker Silicone
PAS	Pennwalt Corp.	SYT	Synthron, Inc.
PFN	Pfanstiehl Laboratories, Inc.	TER	Terra International, Inc.
PFZ	Pfizer, Inc.	TNA	Ethyl Corp.
PIC	Pierce Chemical Co.	TPC	Texas Petrochemical Corp.
PLB	Pharmacia P-L Biochemicals, Inc.	TRI	Triad Chemical
PLC	Phillips Petroleum Co.	TRO	Troy Chemical Corp.
PMP	PMP Fermentation Products, Inc.	TUS	Texaco Butadiene Co.
QCP	Quaker Chemical Corp.	TVA	Tennessee Valley Authority
REG	Regis Chemical Co.	TX	Texaco Chemical Co.
RH	Rohm & Haas Co.	UCC	Union Carbide Corp.
RPC	HI-TEK Polymers, Inc., Lyndal Div.	UOC	Union Oil Co. of California
RSA	R.S.A. Corp.	UPJ	Upjohn Co.
S	Sandoz, Inc., Colors & Chemicals Div.	UPM	U.O.P. Inc.
SCP	Henkel Corp.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SHC	Shell Oil Co., Shell Chemical Co.	VLR	Valero Refining Company
SHP	Shepherd Chemical Co.	VNC	Vanderbilt Chemical Corp.
SHX	Sherex Chemical Co., Inc.	WAY	Olin Hunt Specialty Products, Inc.
SKP	Shakespeare Co., Monofilament Div.	WBG	White & Bagley Co.
SM	Mobil Oil Corp., Mobil Chemical Co., Chemical Products Div.	WLC	Freeport-McMoran Resource Partners
SMP	J. R. Simplot Co.	WTC	Witco Chemical Corp.
SOC	Chevron Corp., Chevron Chemical Co.	WYC	Wycon Chemical Co.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 15

Miscellaneous Cyclic and Acyclic Chemicals

The term "miscellaneous chemicals" as it is used here comprises those synthetic organic products that are not included in the use groups covered by sections I-XIV of this report. They include products that are employed in a great variety of applications. The number of chemicals used extensively for only one purpose is not large. Among the products covered in this section are those used for refrigerants, aerosols, solvents, catalysts, additives in plastics and food products, and, especially, a wide range of acyclic chemical intermediates.

Figure 16 shows the trend of production of miscellaneous chemicals during 1983-87, and shows there has been a steady rate of increase since 1984. However, the 1987 production of 98.0 billion pounds did not surpass the all-time peak of 98.8 billion pounds produced in 1979.

U.S. production of miscellaneous cyclic and acyclic chemicals in 1987 amounted to 98.0 billion pounds, an increase of 2.5 percent compared with production in 1986 (Table 45). Production of miscellaneous cyclic chemicals comprised only 2.9 percent of this section's total production.

Because most of the production of miscellaneous chemicals is used internally by their producers to make more advanced intermediates and other chemical products, their sales are much smaller than their production. In 1987, sales of miscellaneous chemicals were 40.3 billion pounds, valued at \$12.0 billion, compared with 37.9 billion pounds, valued at \$10.8 billion, in 1986. The increase in sales quantity in 1987 was 6.3 percent. Moreover, with increases in prices which compensated for their fall in 1986 when total value of sales declined 3.3 percent though sales quantity increased 4.1 percent, the value of sales in 1987 was 11.3 percent greater than in 1986. Oxygenated hydrocarbons accounted for 62 percent of the production of all acyclic miscellaneous chemicals.

Production of oxygenated hydrocarbons, which include organic acids, alcohols (the largest group), ketones, esters, ethers, aldehydes, epoxides, and other chemicals, increased from 55.6 billion pounds in 1986 to 58.9 billion pounds in 1987, or by 5.9 percent.

Slightly larger in volume than the alcohols in miscellaneous acyclic chemicals is the halogenated hydrocarbons group, the largest production of halogenated hydrocarbons was almost 26 billion pounds in 1987, about 1 billion pounds less than in 1986. Production of chlorinated hydrocarbons, by far the largest segment of this group, was 24.7 billion pounds in 1987, compared with

25.7 billion pounds in 1986. The small overall decrease in this group in 1986-87 hides larger changes in many of its constituent chemicals: There was decreased production of methyl chloride (down 38.3 percent), methylene chloride (down 9 percent), and ethylene dichloride (down 5.7 percent); somewhat balanced by increased production of chloroform (up 9.3 percent), perchloroethylene (up 14 percent), and 1,1,1-trichloroethane (up 6.5 percent). (One year earlier, this situation was almost reversed; the latter two chemicals were the major "down" chemicals and methylene chloride and ethylene dichloride had increased by 940 million pounds). Fluorinated hydrocarbons production was 1.16 billion pounds in 1987, up 1.9 percent compared with production in 1986. Production of brominated chemicals, on the other hand, was less than half of what it had been in 1986-10.4 versus 21.1 million pounds.

The second largest individual group of miscellaneous acyclic chemicals is monohydric alcohols (with double the production of polyhydric alcohols), production of which was 15.3 billion pounds in 1987, an increase of 13.5 percent over 1986, which followed an increase of similar magnitude the year before. Compared with 1986, the increase of 512 million pounds of "mixtures of C11 and lower alcohols" in 1987 outweighed less spectacular increases in production of most of the other alcohols.

Virtually in a tie for third place among miscellaneous acyclic chemicals, each with production close to 9 billion pounds in 1987, are nitrogenous compounds, acids and anhydrides, and aldehydes. Led by increases in acetic and acrylic acids, production of acids and anhydrides was 10.6 percent greater than in 1986. Production of aldehydes was 5.9 percent greater than in 1986, led by an increase for butyraldehyde of nearly 20 percent. Production of nitrogenous chemicals was 3.5 percent greater than in 1986. Almost all identified groups of nitrogenous chemicals grew more than 10 percent in 1987 but production of the large "all other" group dropped by 32 percent.

There were a few other large increases in 1987 of major chemicals; namely, the increase of 30.4 percent in production of propylene glycol to 747 million pounds, and increases of about 12 percent for methyl ethyl ketone and butyl acetate. The apparent doubling of production of acyclic peroxides, to 96 million pounds, is overstated since some of the peroxides has been grouped in the "all other" category in earlier years.

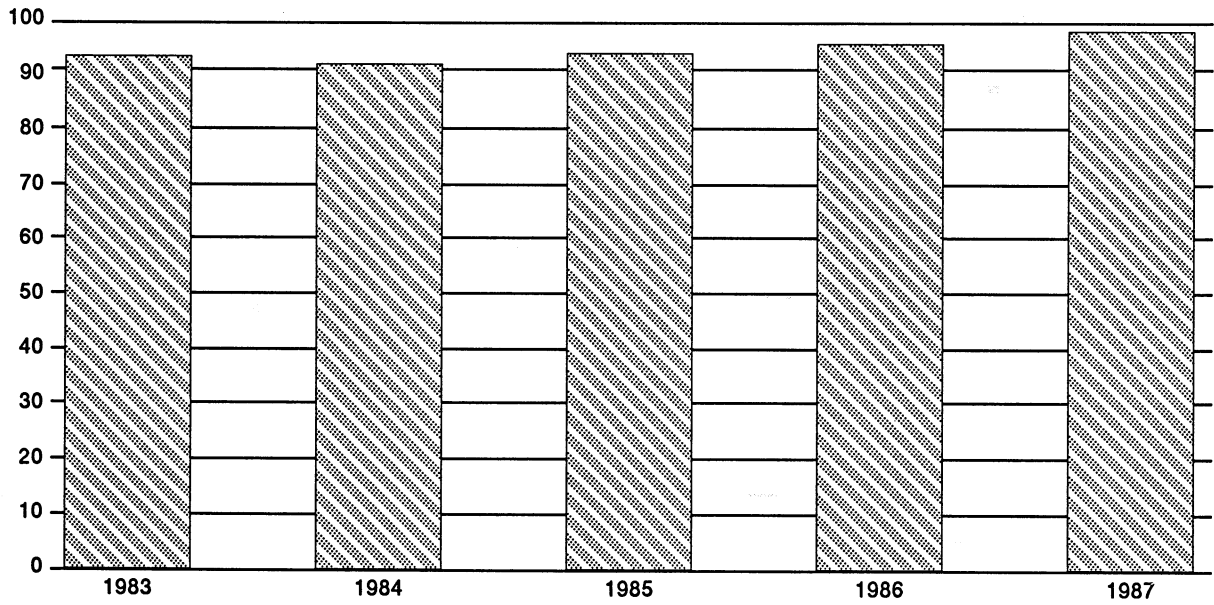
Table 46 lists the products in this section individually identified by manufacturer(s) codes. Table 47 lists those codes alphabetically and identifies the manufacturer by name.

Aimison Jonnard
202-252-1350

Section 15

Figure 16
Miscellaneous cyclic and acyclic chemicals: U.S. production, 1983-87

Millions
of gallons



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 45

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	98,040,259	40,317,300	12,032,151	\$0.30
Cyclic				
Total	2,887,467	1,305,231	1,397,386	1.07
Benzolic acid esters, total	1,465	(²)	(²)	(²)
Butyl benzoate	1,146	1,391	783	.56
All other	319	(²)	(²)	(²)
Benzolic acid salts:				
Potassium benzoate	4,808	4,210	3,479	.83
Sodium benzoate	20,060	16,841	10,744	.64
Benzoyl peroxide	8,602	8,677	21,573	2.49
tert-Butyl peroxybenzoate	4,157	4,165	7,313	1.76
Caprolactam	1,156,336	276,871	170,252	.62
Hexamethylenetetramine, tech. grade	86,808	(²)	(²)	(²)
Lactones	69,964	14,103	14,312	1.01
Maleic anhydride	382,289	312,548	133,570	.43
Pinene and derivatives, total	337,298	48,273	18,569	.38
Pinene, sulfate	156,294	(²)	(²)	(²)
Pine oil, natural sulfate	5,285	6,044	2,036	.34
All other	175,719	42,229	16,533	.39
Succinic anhydride derivatives	18,697	16,984	14,855	.87
Tall oil salts (Linoleic-rosin acid salts)	2,934	(²)	(²)	(²)
All other	794,049	601,168	1,001,936	1.67
Acyclic				
Total	95,152,792	39,012,069	10,634,765	.27
Nitrogenous compounds				
Total	8,789,514	3,218,896	1,403,203	.44
Amides, total				
	296,529	137,872	116,400	.84
N,N'-Ethylenebis-oleamide	(²)	2,583	2,423	.94
N,N'-Ethylenebis-stearamide	51,845	33,149	21,037	.63
Oleamide (Octadecene amide)	(²)	4,996	5,586	1.12
Stearamide (Octadecane amide)	889	(²)	(²)	(²)
All other	243,795	97,144	87,354	.90
Amines, total³				
	1,740,451	527,566	360,148	.68
Butylamines, total	15,806	25,843	19,857	.77
Di-n-butylamine	3,250	5,046	3,423	.68
All other	12,556	20,797	16,434	.79
Ethylenediamine	78,775	66,680	46,348	.70
Isopropylamine, mono-	(²)	47,391	17,164	.36
Methylamines, total	155,731	(²)	(²)	(²)
Dimethylamine	73,935	62,758	21,600	.34
Methylamine, mono-	51,997	(²)	(²)	(²)
Trimethylamine	29,799	27,912	9,164	.33
All other	1,490,139	296,982	246,015	.83
Dimethylaminoethyl methacrylate-methyl chloride, quaternary salt	(²)	4,912	6,916	1.41

See footnotes at end of table.

Section 15

Table 45—Continued

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Acyclic—Continued				
Nitrogenous compounds—Continued				
Ethanolamines, total	626,774	547,810	135,422	\$0.25
2,2'-Aminodlethanol (Diethanolamine)	194,406	183,584	44,424	.24
2-Aminoethanol (Monoethanolamine)	231,835	163,344	38,571	.24
2,2',2''-Nitrilotriethanol (Triethanolamine)	200,533	200,882	52,427	.26
Methyl diethanolamine (2,2'-(Methylimino) diethanol)	18,632	15,307	13,821	.90
Nitriles, total	5,053,994	1,764,648	513,562	.29
Acetonitrile	27,760	(²)	(²)	(²)
Acrylonitrile	2,451,829	1,453,973	421,140	.29
2-Methylacetonitrile (Acetone cyanohydrin) .	1,163,879	(²)	(²)	(²)
All other	1,410,526	310,675	92,422	.30
All other	1,053,134	220,781	256,934	1.16
Acids, acyl halides and anhydrides				
Total	9,295,102	2,691,447	908,051	.34
Acetic acid, synthetic, 100% ⁴	3,245,948	1,102,599	140,337	.13
Acrylic acid ⁴	1,100,894	204,500	75,257	.37
Dimer acid (C ₃₆ dibasic acid)	31,481	24,752	12,088	.49
Fatty acids, hydrogenated	287,790	233,458	65,912	.28
Pivaloyl chloride	1,631	(²)	(²)	(²)
Propionic acid	(²)	83,388	18,535	.22
All other	4,627,358	1,042,750	595,922	.57
Salts of organic acids				
Total	448,429	327,453	233,345	.71
Acetic acid salts, total	54,949	22,405	15,343	.68
Sodium acetate	47,182	(²)	(²)	(²)
Zinc acetate	448	416	798	1.92
All other	7,319	21,989	14,545	.66
Calcium neodecanoate	104	99	103	1.03
2-Ethylhexanoic acid (α -Ethylcaproic acid) salts, total	16,117	12,392	18,300	1.48
Barium 2-ethylhexanoate	110	48	55	1.15
Cadmium 2-ethylhexanoate	891	298	262	.88
Calcium 2-ethylhexanoate	2,514	2,450	2,496	1.02
Cobalt 2-ethylhexanoate	5,040	3,917	7,904	2.02
Lead 2-ethylhexanoate	846	864	722	.84
Manganese 2-ethylhexanoate	957	968	914	.94
Zinc 2-ethylhexanoate	1,461	719	708	.98
Zirconium 2-ethylhexanoate	4,298	3,128	5,239	1.67
Oleic acid salts, total	237	(²)	(²)	(²)
Oxalic acid salts:				
Ammonium oxalate	(²)	42	119	2.82
Potassium oxalate	33	31	79	2.53

See footnotes at end of table.

Table 45—Continued

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Acyclic—Continued				
Salts of organic acids—Continued				
Propionic acid salts, total	29,616	32,751	13,084	\$0.40
Calcium propionate	26,527	29,612	11,661	.39
Sodium propionate	3,089	3,139	1,423	.45
Stearic acid salts, total ⁵	139,895	128,853	76,627	.59
Aluminum tristearate	1,835	1,734	2,325	1.34
Barium stearate	1,672	1,190	919	.77
Cadmium stearate	197	119	274	2.30
Calcium stearate	77,172	76,497	36,057	.47
Magnesium stearate	25,604	17,561	12,626	.47
Zinc stearate	33,415	31,752	24,426	.72
All other	207,478	130,880	109,690	.84
Aldehydes				
Total	8,929,774	2,110,428	213,018	.10
Butyraldehyde	1,758,934	(²)	(²)	(²)
Formaldehyde (37% by weight)	5,733,238	1,691,080	107,114	.06
Propionaldehyde	(²)	10,869	2,400	.22
All other	1,437,602	408,479	103,504	.25
Ketones				
Total	2,807,716	2,165,222	447,568	.21
Acetone, total	1,845,586	(²)	(²)	(²)
From cumene	1,360,155	1,182,797	175,923	.15
All other	485,431	(²)	(²)	(²)
Methyl ethyl ketone (2-Butanone)	671,859	549,374	123,887	.23
4-Methyl-2-pentanone (Methyl isobutyl ketone)	151,241	155,490	51,201	.33
All other	139,030	277,561	96,557	.35
Alcohols, monohydric, unsubstituted				
Total	15,322,198	7,189,725	1,220,022	.17
Alcohols, C ₁₁ or lower, unmixed, total	13,821,457	6,473,181	885,147	.14
Butyl alcohols, total	2,731,359	814,124	164,029	.20
n-Butyl alcohol (n-Propylcarbinol) ⁴	1,154,867	583,726	127,594	.22
Isobutyl alcohol (Isopropylcarbinol) ⁴	165,806	147,684	25,074	.17
All other	1,410,686	82,714	11,361	.14
Ethyl alcohol, synthetic ⁴ ⁶	573,687	714,202	168,832	.24
2-Ethyl-1-hexanol	662,153	228,342	60,681	.27
Isopropyl alcohol ⁹	1,370,877	1,107,330	188,412	.17
Methanol, synthetic ⁹	7,536,766	3,182,754	150,069	.05
Propyl alcohol (Propanol)	186,190	107,641	33,187	.31
All other	760,425	318,788	119,937	.38

See footnotes at end of table.

Section 15

Table 45—Continued

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Acyclic—Continued				
Alcohols, C ₁₂ and higher, unmixed, total	172,562	63,056	35,619	\$0.56
Stearyl alcohol	(²)	6,361	3,711	.58
All other	172,562	56,695	31,908	.56
Mixtures of alcohols, total	1,328,179	653,488	299,256	.46
Containing C ₁₁ or lower only	620,230	193,702	88,319	.46
Containing C ₁₂ through C ₁₈	600,589	413,835	197,443	.48
Other mixtures	107,360	45,951	13,494	.29
Esters of monohydric alcohols				
Total	4,992,098	3,184,468	1,026,267	.32
Allyl methacrylate	1,268	1,238	1,679	1.36
n-Butyl acetate	201,853	168,868	48,919	.29
Isobutyl acetate	88,247	70,095	17,802	.25
Butyl acrylate	515,059	236,392	104,571	.44
Di-2-ethylhexyl maleate	3,076	(²)	(²)	(²)
Dilauryl-3,3'-thiodipropionate	2,508	2,429	3,877	1.60
Diocetyl maleate	2,721	(²)	(²)	(²)
Distearyl-3,3'-thiodipropionate	2,664	2,553	4,154	1.63
2-Ethoxyethyl acetate	84,863	85,251	31,137	.37
Ethyl acetate (100% basis)	214,003	162,370	34,097	.21
Ethyl acrylate	324,368	144,982	54,358	.37
Fatty acid esters, not included with plasticizers or surface-active agents, total	11,727	8,783	5,602	.64
Myristyl myristate	(²)	440	679	1.54
Tridecyl stearate	(²)	469	411	.88
All other	11,727	7,874	4,512	.57
Isopropyl acetate	40,237	36,527	13,409	.37
Methyl methacrylate ⁴	1,028,789	(²)	(²)	(²)
Phosphorus acid esters, not elsewhere specified	144,125	88,715	96,315	1.09
Propyl acetate	70,540	63,954	25,372	.40
Vinyl acetate	1,813,313	1,641,242	326,265	.20
All other	442,737	471,069	258,710	.55
Polyhydric alcohols ⁷				
Total	7,097,429	5,041,909	1,189,384	.24
1,4-Butanediol	402,105	112,031	69,490	.62
Ethylene glycol ⁴	5,183,229	3,778,031	669,635	.18
Pentaerythritol ⁴	(²)	130,416	63,287	.49
Propylene glycol	747,209	663,740	182,214	.27
All other	764,886	357,691	204,758	.57
Polyhydric alcohol esters, total	235,140	244,276	162,013	.66
2-Butoxyethyl acetate	(²)	16,487	9,827	.60
All other	235,140	227,789	152,186	.67

See footnotes at end of table.

Table 45—Continued

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Acyclic—Continued				
Polyhydric alcohol ethers				
Total	1,919,618	1,661,341	582,497	\$0.35
2-Butoxyethanol (Ethylene glycol monobutyl ether)	406,082	370,043	98,904	.27
2-(2-Butoxyethoxy)ethanol (Diethylene glycol mono-butyl ether)	85,219	76,964	29,887	.39
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	(²)	10,128	3,416	.34
Diethylene glycol	435,986	393,808	63,562	.16
Dipropylene glycol	71,192	(²)	(²)	(²)
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol mono-ethyl ether)	29,551	27,491	10,491	.38
2-Methoxyethanol (Ethylene glycol monomethyl ether)	71,888	41,220	13,545	.33
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether) ...	36,170	58,230	20,601	.35
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether) ...	34,946	17,068	4,368	.26
Polyethylene glycol	120,288	114,867	65,509	.57
Tetraethylene glycol	21,741	20,577	6,985	.34
Triethylene glycol	118,056	115,078	32,963	.29
All other	488,499	415,867	232,266	.56
Brominated, chlorinated, and fluorinated hydrocarbons				
Total	25,866,572	9,077,592	2,120,319	.23
Brominated (including bromochlorinated) hydrocarbons				
	10,396	9,156	13,705	1.50
Chlorinated hydrocarbons, total				
	24,694,479	8,110,665	1,357,953	.17
Carbon tetrachloride	672,151	717,822	102,068	.14
Chlorinated paraffins (C ₁₀ -C ₃₀):				
35%-64% chlorine	76,615	78,444	28,831	.37
65% or more chlorine	19,537	22,973	8,966	.39
Chloroform ⁴	461,819	446,377	53,535	.12
Chloromethane (Methyl chloride)	373,258	(²)	(²)	(²)
Dichloromethane (Methylene chloride) ⁴	516,132	473,111	83,122	.18
Ethyl chloride (Chloroethane) ⁴	154,505	(²)	(²)	(²)
Ethylene dichloride (1,2-Dichloroethane) ..	12,196,585	1,296,930	103,816	.08
Tetrachloroethylene (Perchloroethylene) ...	473,410	574,354	96,782	.17
1,1,1-Trichloroethane (Methyl chloroform) .	694,296	584,535	186,267	.32
Vinyl chloride, monomer (Chloroethylene) .	8,401,595	3,458,777	598,725	.17
All other	654,576	457,342	95,841	.21
Fluorinated (including other fluorohalogenated) hydrocarbons, total				
	1,161,697	957,771	748,661	.78
Chlorodifluoromethane (F22)	274,903	197,016	189,629	.96
Dichlorodifluoromethane (F12)	334,885	332,673	219,445	.66
Trichlorofluoromethane (F11)	197,769	197,551	85,255	.43
All other	354,140	230,531	254,332	1.10

See footnotes at end of table.

Section 15

Table 45—Continued

Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1987

Miscellaneous cyclic and acyclic chemicals	Production	Sales Quantity	Value	Average Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Acyclic—Continued				
All other miscellaneous acyclic chemicals				
Total	9,274,471	1,936,803	1,106,149	\$0.57
Acyclic peroxides, total	96,311	56,106	84,384	1.50
tert-Butyl peroxyphthalate	3,106	3,090	8,391	2.72
2-Butanone peroxide (MEK peroxide)	13,509	14,175	24,191	1.71
DI-tert-butyl peroxide	2,694	2,517	3,616	1.44
All other	77,002	36,324	48,186	1.33
Expoxides, ethers, and acetals, total	7,673,001	1,512,518	474,860	.31
Ethylene oxide ⁴	4,785,307	670,810	135,125	.20
Glycidyl ethers, total	7,692	7,389	11,373	1.54
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	778	634	1,073	1.69
All other	6,914	6,755	10,300	1.52
All other	2,880,002	834,319	328,362	.41
Fats and oils, chemically modified	45,429	42,294	18,318	.43
Hydrocarbons	26,077	16,158	12,896	.80
Organo-aluminum compounds	124,883	36,921	63,135	1.71
Organo-silicon compounds, total ⁶	295,703	120,365	275,834	.29
Chloropropyltrimethoxysilane	2,311	(²)	(²)	(²)
Silicone fluids	141,902	85,100	166,285	1.95
All other	151,490	35,265	109,549	3.11
Organo-tin compounds	(²)	27,174	77,626	2.86
Phosgene (Carbonyl chloride)	842,843	(²)	(²)	(²)
Sodium methoxide (Sodium methylate)	5,107	5,467	5,731	1.05
All other	165,117	119,800	93,365	.78
Mixtures not specifically itemized				
Total	174,731	162,509	22,929	.14

¹ Calculated from unrounded figures.² Reported data are accepted in confidence and may not be published, or no data were reported.³ Statistics exclude production and sales of fatty amines. Statistics on fatty amines are included in the section "Surface-Active Agents."⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (Including Synthetic Plastics and Resin Materials)*, 1987, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustments, and rounding.⁵ Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included in the section "Surface-Active Agents."⁶ Synthetic ethyl alcohol is conventionally defined as that portion made from ethylene. Bureau of Alcohol, Tobacco, and Firearms statistics for calendar year 1987 show that 138 million proof gallons of ethyl alcohol were made from ethylene whereas 663 million proof gallons were made mostly from grain, molasses, cellulose, and other "natural" raw materials. Most of the latter material was blended with gasoline for fuel use.⁷ Some polyols which are used as intermediates for urethanes have been included in the section "Plastics and Resin Materials."⁸ Statistics exclude production and sales of silicone resins (see Plastics and Resin Materials section), silicone elastomers (see Elastomers section), and silicone greases (see Miscellaneous End-Use Chemicals and Chemical Products section).

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 46

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Cyclic		
6-Acetoxy-2,4-dimethyl-1,3-dioxane	No	GIV.
Alkylphenol formaldehyde condensate, alkoxyated	No	(²).
1-(2-Aminoethyl)piperazine	No	UCC.
1-(2-Aminoethyl)piperazine, technical	No	DOW.
1-(3-Aminopropyl)morpholine	No	TX.
Benzenephosphinic acid	No	FER.
Benzene phosphonous dichloride	No	FER.
Benzoic acid esters:	Yes	
Benzoic acid, isodecyl ester	No	VEL
2-Butoxyethyl benzoate	No	(²).
Butyl benzoate	Yes	MRF, PCI, TCC, UTC.
2-Ethylhexyl benzoate	No	TCC
Lauryl benzoate	No	APC.
Sucrose benzoate	No	VEL.
Benzoic acid salts:	Yes	
Ammonium benzoate	No	WTK.
Barium benzoate	No	FER, WTC.
Cadmium benzoate	No	VNC, WTC.
Potassium benzoate	Yes	KLM, PFZ, SOL.
Sodium benzoate, U.S.P.	Yes	HCP, JRC, KLM, PFZ, SOL.
Sodium benzoate, tech	No	PFZ.
Benzothiazole	No	RCI.
Benzotriazole, substituted	No	CGY, (²).
Benzoyl peroxide	Yes	AZT, CAD, NOC, PLC, WTC, WTL.
Benzyl alcohol	No	KLM.
Benzyl chloroformate	No	ESX, VCM.
Bis(p-chlorobenzoyl)peroxide	No	CAD.
1,2-Bis(3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl)hydrazine	No	ASL
Bis(2,4-dichlorobenzoyl) peroxide	No	CAD.
Bis(α, α -dimethylbenzyl)peroxide	No	WTL.
2,2-Bis(ferrocenyl)propane	No	(²).
Bis(hydroxymethyl)oleyl oxazoline	No	ANG.
2,2-Bis(4-hydroxyphenyl)4-methylpentane	No	ASL.
Bis(triphenylsilyl)chromate	No	(²).
Boron fluoride-phenol complex	No	ACS.
β -Bromo- β -nitrostyrene	No	GIV.
4-tert-Butylcyclohexyl peroxydicarbonate	No	CAD.
tert-Butylhydroquinone	No	EKT.
Butyl and isopropyl phthalimides	No	RPC.
2(and 3)-tert-Butyl-4-methoxyphenol (BHA)	No	EKT, UPM.
Butyl morpholine	No	TX.
tert-Butyl peroxybenzoate	Yes	AZT, FRE, WTC, WTL.
p-tert-Butylphenyl glycidyl ether	No	WLN.
tert-Butylphenyl glycidyl ether	No	REZ
Camphene	No	SCM.
Campholenic aldehyde	No	VIK.
Caprolactam (2-Oxohexamethyleneimine)	Yes	ACS, BAS, CNP.
Caprolactam magnesium bromide	No	(²).
Cellulose acetate hexahydrophthalate	No	(²).
Cellulose acetate phthalate	No	EK.
1-(3-Chloroallyl)-3,5,7-triazo-1-azoniaadamantane chloride	No	DOW.
Chlorothiaxanthone	No	PSG.
Cresolsulfonic acid, formaldehyde condensate	No	HCL.
Cresyl glycidyl ether	No	REZ, WLN.
Cumene hydroperoxide	No	BTL, FRE.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Cyclic—Continued		
α -Cumyl peroxyneodecanoate	No	WTC, WTL.
Cyanuric acid	No	MON.
Cyclic silizane	No	SCM.
Cyclohexane dimethanol diglycidyl ether	No	WLN.
Cyclohexanethiol	No	PAS.
2-Cyclohexene-1-octanoic acid, 5 (and 6)-carboxy-4-hexyl, C ₂₁ H ₃₆ O ₄	No	WVA.
1,4-Cyclohexylenedimethanol	No	EKT.
Cyclohexyl methacrylate	No	CPS.
N-Cyclohexyl pyrrolidone	No	GAF.
Cyclopropane	No	DOW.
Decabromodiphenyl ether (DBDP)	No	GTL, TNA.
Decahydronaphthalene (Decalin)	No	DUP.
Diamino cyclohexane	No	CXI.
4,4-Diaminodiphenyl ether	No	MAL.
1,8-Diazabicyclo (5.4.0)undecane	No	AIP.
1,4-Diazobicyclo (2.2.2)octane	No	(²).
Diazodinitrophenol	No	HPC.
2,5-Di(benzoyl peroxy)-2,5-dimethylhexane	No	AZT, WTL.
Dibutoxy acetophenone	No	CWN.
Di-t-butyl diperoxyphthalate	No	WTL.
2,5-Di-tert-butylhydroquinone	No	EKT.
1,1-Di(t-butyl peroxy) cyclohexane	No	WTL.
1,1-Di(t-butyl peroxy)-3,3,5-trimethyl cyclohexane	No	WTL.
2,4-Di-t-butyl phenyl 3,5-di-t-butyl hydroxybenzoate	No	FER.
1,3-Dichloro-5,5-dimethylhydantoin	No	BRD.
Dicumyl peroxide	No	FRE.
Dicyclohexylammonium nitrite	No	SHC.
Dicyclopentadienyl chromium	No	(²).
Diethoxyphenyl acetophenone (Chromocene)	No	CWN.
N,N'-Diethyl-N,N'-diphenylurea	No	VCM.
Di(2-ethylhexyl)chlorendate	No	VEL.
o,o-Diethyl-o-phenyl phosphorothioate	No	ICI.
1,5-Diethyl-2-thio-4,6-pyrimidinedione	No	TNI.
2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)	No	PLC.
2,4-Dihydroxybenzophenone	No	BAS.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone	No	BAS.
Dihydroxydimethyl benzophenone	No	CWN.
3,5-Dihydroxy-3,5-dimethyl-1,2-peroxycyclopentane	No	WTL.
2,3-Dihydroxynaphthalene-6-sulfonic acid, sodium salt	No	CCC.
Diiodomethyl-p-tolyl sulphone	No	ABB.
Diisopropylbenzene hydroperoxide	No	HPC.
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	No	ASL.
4,4-Dimethyl oxazolidene	No	EFH.
4,4-Dimethyl oxazoline	No	ANG.
Dimethyl piperazine	No	TX.
Dimorpholine diethyl ether	No	TX.
Di-tert-octyl hydroquinone	No	EKT.
Dioxane (1,4-Diethylene oxide)	No	FER.
1,3-Dioxolane	No	FER.
Di-para-xylene	No	WCC.
1,2-Diphenoxyethane	No	ASL.
Diphenyl-2-ethylhexyl phosphite	No	WTC.
Diphenylisodecyl phosphite	No	WTC.
Diphenylisooctyl phosphite	No	WTC.
Dipropylene glycol salicylate	No	SBC.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Cyclic—Continued		
2,6-Di-tert-butyl-p-cresol (BHT):		
2,6-Di-tert-butyl-p-cresol, (BHT), food grade	No	USR.
2,6-Di-tert-butyl-p-cresol, (BHT), technical grade	No	USR.
4-(Dodecyloxy)-2-hydroxybenzophenone	No	EKT.
Dodecyl pyridinium chloride	No	TLC.
6-Ethoxy-1,2-dihydro-2,2,4-trimethyl quinoline	No	MNA, MON.
5-Ethyl-1-aza-3,7-dioxabicyclo[3.3.0]octane	No	ANG.
Ethyl-2-cyano-3,3-diphenyl acrylate	No	BAS.
Ethyl cyclohexylamine	No	AIP.
2-Ethylhexyl-2-cyano-3,3-diphenyl acrylate	No	BAS.
Ethyl hydroxymethyl oleyl oxazoline	No	ANG.
Ethylidene norbornene	No	UCC.
4-Ethylmorpholine	No	TX.
N-Ethyl pyrrolidone	No	GAF.
Furan derivatives:		
2-Furaldehyde (Furfural)	No	HPC, QKO.
Tetrahydrofurfuryl alcohol	No	QKO.
Furan derivatives, all other	No	BRD.
Glyceryl p-aminobenzoate	No	VND.
Hexabromocyclodecane	No	TNA.
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	No	ANG.
Hexamethylenetetramine, tech	Yes	BOR, HMP, PLS, WCL.
Hydrindantin	No	PIC.
Hydroquinone, di(β -hydroxyethyl) ether	No	EKT.
p-Hydroxybenzoic acid, butyl ester	No	KLM.
p-Hydroxybenzoic acid, ethyl ester	No	KLM.
p-Hydroxybenzoic acid, methyl ester	No	KLM, LEM.
p-Hydroxybenzoic acid, propyl ester	No	KLM, LEM.
N-(Hydroxyethyl)piperazine	No	TCH, UCC.
2-Hydroxy-4-methoxybenzophenone	No	BRD, VND.
2-Hydroxy-4-methoxybenzophenone-5-sulfonic acid	No	BAS.
Hydroxymethyl-5,5-hydantoin	No	BRD.
2-Hydroxy-4-N-octoxybenzophenone	No	BAS.
α -D-p-Hydroxyphenylglycine methyl ester K	No	BOC.
4-Hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy	No	EK.
1,2,3-Indantrione monohydrate (Ninhydrin)	No	PIC.
Lactones:		
Butyrolactone	No	BAS, GAF.
Caprolactone	No	UCC.
Diketene	No	EKT.
Glucono- δ -lactone	No	PFZ.
Lanolin acid	No	UCC.
Lanolin acid, isopropyl ester	No	UCC.
Lanolin alcohol acetate	No	UCC.
Lanolin, hydroxylated	No	UCC.
Lanolin oil	No	UCC.
Lanolin wax	No	UCC.
Maleic anhydride	Yes	AMO, ART, ASH, DKA, MON.
Methoxyethyl morpholine	No	TX.
4-Methoxyphenol	No	ASL, EKT.
Methylaziridine	No	ARS.
Methylbenzene sulfonate	No	EK.
Methyl-p-benzoquinone	No	EK.
2-Methylcyclohexylamine	No	AIP.
2,2'-Methylenebis(3,4,6-trichlorophenol) (Hexachlorophene)	No	VEL, ZOC.
4-Methylmorpholine	No	TX.
4-Methylphthalic anhydride	No	ICI.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Cyclic—Continued		
1-Methyl-2-pyrrolidone, monomer	No	BAS, GAF.
Morpholine	No	AIP, DOW, TX.
Morpholine salt of p-toluene sulfonic acid	No	AMB.
N-Nitrosophenylhydroxylamine salt	No	MAL.
Nonylphenol glycidyl ether	No	WLN.
Octabromodiphenyl oxide	No	TNA.
Octadecyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl)-propionate	No	CGY, TNA.
Oxalyl bis(benzylidene hydrazide)	No	EKT.
Pentaerythritol tribenzoate	No	VEL.
Phenethyl bromide	No	WCC.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	No	TCH, UCC.
Phenyl acid phosphate	No	ALW.
Phenyldiisodecyl phosphite	No	WTC.
Phenyglycidyl ether	No	REZ.
α-D-Phenyglycine methyl ester K	No	BOC.
1-Phenyl-2-hydroxy-2-methyl-propanone-l	No	CWN.
p-Phenylphenoxyethylene glycol	No	UCC.
Phenylxylyl ethane	No	HCC, TCC.
Phthalic acid, lead salt (dibasic)	No	ALI.
Picramic acid, sodium salt	No	SDC.
Pinene and derivatives:	Yes	
Pinane	No	NCI, SCM.
Pinane hydroperoxide	No	SCM.
2-Pinanol (cis and trans)	No	SCM.
α-Pinene	No	ARZ.
β-Pinene	Yes	ARZ, NCI.
α-Pinene epoxide	No	SCM.
α-Pinene oxide	No	VIK.
Pinene, sulfate	Yes	ARZ, HPC, NCI, SCM.
Pinene, wood	No	HPC.
Pine oil, natural sulfate	Yes	ARZ, NCI, SCM.
Pine oil, synthetic	No	ARZ, SCM.
Polyglycols-toluene diisocyanate reaction product	No	(²).
Propylene glycol dibenzoate	No	VEL.
Propyl gallate	No	EKT.
2,4(1H,3H)Pyrimidinedione	No	SCM.
p-Quinone	No	EKT.
Resorcinol diglycidyl ether	No	WLN.
Resorcinol monobenzoate	No	EKT.
Rosin acid salts:		
Sodium/potassium rosin acid salts	No	GP.
Salicylic acid, ammonium salt	No	WTK.
Salicylic acid, lead salt	No	SHP.
Salicylic acid, magnesium salt	No	KLM, WTK.
Stannous octyl phthalate	No	(²).
Styrene oxide	No	UCC.
Succinic anhydride	No	BCC, MIL.
Succinic anhydride derivatives:	Yes	
Dodecylsuccinic anhydride	No	BCC, DIX, HMY.
Dodecylsuccinic anhydride	No	HMY, MIL.
n-Hexadecylsuccinic anhydride	No	DIX, HMY.
Hexenylsuccinic anhydride	No	HMY.
Iso-Hexadecyl succinic anhydride	No	HMY.
Iso-Octadecyl succinic anhydride	No	DIX, HMY.
Nonenylsuccinic anhydride	No	HMY.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Cyclic—Continued		
Succinic anhydride derivatives—Continued		
Octenyl succinic anhydride	No	HMY, MIL.
All other succinic anhydride derivatives	No	HMY.
Tall oil acyl chloride	No	CCC.
Tall oil, chemically modified	No	EFH, FOC, WVA, (2), (2).
Tall oil fatty acids, polymerized	No	WVA.
Tall oil salts (Linoleic-rosin acid salts):	Yes	
Cadmium tallate	No	WTC.
Calcium manganese tallate	No	MCI, SHP.
Calcium tallate	No	CCA.
Cobalt manganese tallate	No	MCI, SHP.
Cobalt tallate	No	MCI, SHP.
Lead tallate	No	MCI.
Manganese tallate	No	MCI, SHP.
Zinc tallate	No	MCI.
All other tall oil salts (Linoleic-rosin acid salts)	No	CCA, CIN, GAF, SHP, (2).
Tannic acid, N.F.	No	MAL.
Terpene hydrocarbons, monocyclic (Solvenol)	No	NCI, SCM, WTK.
Tetrabromobisphenol A	No	GTL, TNA, (2).
1,2,3,4-Tetrahydronaphthalene (Tetralln)	No	DUP.
Tetrahydrothiophene	No	PAS.
Tetrahydrothiophene-1,1-dioxide (Sulfolane)	No	PLC.
Tetraphenyltin chloride	No	ALW.
Thiophene	No	PAS.
Tributyltin benzoate	No	COS.
3,4,4'-Trichlorocarbanilide	No	MON.
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric acid)	No	MON, OMC.
Tri(2,4-ditertiarybutylphenyl)phosphite	No	WTC.
Tri(methoxymethyl) tri(stearoxymethyl) melamine	No	WPG.
Trimethyl-1-cyclohexane	No	ENJ.
3,3,5-Trimethylcyclohexanol (m-Homomenthol)	No	ARS.
3,5,5-Trimethyl-2-cyclohexene-1-one (Isophorone)	No	UCC.
s-Trioxane	No	ALW.
Triphenyl phosphite	No	WTC.
Triphenyltin hydroxide	No	(2).
1-Vinyl-2-pyrrolidinone - other copolymers	No	GAF.
1-Vinyl-2-pyrrolidinone-maleic anhydride copolymer	No	GAF.
1-Vinyl-2-pyrrolidinone-methylacrylic acid, dimethylamine ethyl ester, copolymer	No	GAF.
1-Vinyl-2-pyrrolidinone, monomer	No	GAF.
1-Vinyl-2-pyrrolidinone-vinyl acetate copolymer	No	GAF.
All other cyclic chemicals	No	ALW, BAS, CED, COC, CWN, EK, EKT, FTX, HCL, HK, HMY, HXL, ORT, PAC, PCI, PD, PIC, PLC, RBC, REG, REM, RH, RSA, S, SHP, TNA TX, UCC, VIK, WTC, WTL, (2), (2), (2), (2).
Acyclic		
Nitrogenous compounds:		
Acetaldehyde dimethylhydrazone	No	DIX.
Acetamidoethanol (N-Acetyl-ethanolamine)	No	SBC.
Adipic acid-diethylene triamine condensate	No	EFH.
Alkyl C ₁₂ -C ₁₄ amine hydrochloride	No	COS.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Nitrogenous compounds—Continued		
Amides:	Yes	
Acetamide	No	WTK.
Acrylamide monomer	No	ACY (2).
Acrylamide polymer with N,N-Diethyl-N-methyl-2 (1-oxo-2-propenyloxy)ethaniminium sulfate	No	(2).
Amides, C ₁₄₋₁₈ , N-[2-(C ₁₃ -C ₁₇ -alkyl-4, 5-dihydro-1-h'-imidazol-yl) ethyl	No	SHX.
Amido amine salts as curing agents	No	PAC, REZ, (2).
1,1'-Azobisformamide	No	FMT, USR.
Behenamamide	No	WTC.
Bis[2-(octadecylamido)ethyl]-N-(2-cyanoethyl)-N-ethyl ammonium ethyl sulfate	No	SBC.
Coconut oil amide	No	ARC, CAD.
2,2-Dibromo-3-nitrilopropionamide	No	DOW.
N,N-Diethyldodecanamide	No	EK.
N,N-Dimethylacetamide	No	DUP, MON.
N,N-Dimethylacetoacetamide	No	BRD, EKT.
Dimethylaminopropyl methacrylamide	No	TX.
Dimethyl caprylamide capramide	No	HAL.
N,N-Dimethylformamide	No	AIP, DUP, HAL.
Erucamide	No	ARC, SYP, WTC.
Erucamide-stearamide mix	No	WTC.
N,N'-Ethylenebis-oleamide (Oleic acid-ethylenediamine condensate (Amine/acid ratio = 1/2))	Yes	BRD, CCW, DOW, WTC.
N,N'-Ethylenebis(stearamide)	Yes	BRD, CCW, WTC.
Fatty acid amide mixtures	No	GAF.
Formaldehyde adduct condensation	No	COS.
Methacrylamide	No	DUP.
Monomethylacetoacetamide	No	EKT.
Oleamide (Octadecene amide)	Yes	ARC, SYP, WTC.
Oleoylpalmitamide	No	HXL, WTC.
Oxamide	No	HML, (2).
Stearamide (Octadecane amide)	Yes	ARC, SYP, WTC.
Stearyl erucamide	No	HXL, WTC.
Stearyl stearamide	No	WTC.
Tallow amide, hydrogenated	No	ARC.
Triethylene diamide	No	CAD.
All other amides	No	ARC, ARS, COC, RBC, WTC.
Amines:	Yes	
t-Alkylamines, primary, mixed	No	RH.
Allylamines	No	HCL, SHC.
Bis-hexamethylenetriamine amine	No	MON.
Butylamines:	Yes	
n-Butylamine, mono	No	AIP, HCL, PAS.
sec-Butylamine, mono	No	FER, PAS.
tert-Butylamine, mono	No	MON.
Di-n-butylamine	Yes	AIP, HCL, PAS.
Diisobutylamine	No	AIP, HCL.
Tri-n-butylamine	No	AIP, PAS.
n-Butylethylamine	No	AIP, DOW.
Di-tert-butylethyldiamine	No	HCL.
Diethylenetriamine	No	UCC.
Diisopropylamine	No	AIP, HCL, PAS, UCC.
Dimethylamine sulfate	No	ALW.
Dimethylaminopropylamine	No	AIP, TX.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Nitrogenous compounds—Continued		
Amines—Continued		
N,N-Dimethylbutylamine	No	HCL.
Ethylamines:		
Diethylamine	No	AIP, HCL, PAS, UCC.
Ethylamine, mono	No	AIP, HCL, PAS, UCC.
Triethylamine	No	AIP, HCL, PAS, UCC.
Ethylenediamine	Yes	DOW, TX, UCC.
(2-Ethylhexyl)amine, mono	No	HCL, PAS.
N-Ethyl-2-methylallylamine	No	HCL.
Fatty amines	No	NCI.
1,6-Hexanediamine (Hexamethylenediamine)	No	DUP, MON.
n-Hexylamine	No	PAS.
Isopropylamine, mono	Yes	AIP, HCL, PAS, UCC.
Methylamines:		
Dimethylamine	Yes	AIP, DUP, GAF, IMC, UCC.
Methylamine, mono	Yes	AIP, DUP, GAF, IMC.
Trimethyl amine	Yes	AIP, DUP, IMC.
tert-Octylamine	No	RH.
n-Octylamine, mono	No	HCL.
Pentaethylenhexamine	No	DOW, UCC.
Pentylamines (Amylamines):		
Dipentylamine	No	HCL, PAS.
Pentylamine, mono	No	PAS.
Tripentylamine	No	PAS.
Poly(oxypropylene) diamine	No	TX.
Propylamines:		
Dipropylamine	No	AIP, HCL, PAS.
Propylamine, mono	No	AIP, PAS.
Tripropylamine	No	AIP, PAS.
Tetraethylenepentamine	No	DOW, UCC.
N,N,N',N'-Tetramethyl-1,3-butanediamine	No	MON, UCC.
Tetramethylethylenediamine	No	BKM.
Triethylenediamine	No	TX.
Triethylenepentamine	No	CXI.
Triethylenetetramine	No	CXI, DOW, UCC.
All other amines	No	EK, MON, PAC, VEL, (2).
2-Aminoethanol hydrochloride	No	OMC, (2).
2-Aminoethanol (Monoethanol amine) sulfite	No	EVN.
Aminoethoxyethanol	No	TX.
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	No	DOW, UCC.
2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate)	No	EVN.
2-Amino-2-ethyl-1,3-propanediol	No	ANG.
Aminoguanidine hydrochloride	No	REM.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris(hydroxymethyl)aminomethane)	No	ANG, WTK.
2-Amino-2-methyl-1,3-propanediol	No	ANG.
2-Amino-2-methyl-1-propanol	No	ANG.
2-Amino-2-methyl-1-propanol hydrochloride	No	CCC.
Bis(dimethylaminoethyl) ether	No	TX.
tert-Butylaminoethyl methacrylate	No	AAC, CPS.
tert-Butyldiethanolamine	No	PAS, UCC.
tert-Butyl ethanolamine	No	UCC.
tert-Butyl urea	No	ADC, PAS.
2-Chloro-N,N-dimethylethylamine (Dimethylamino ethyl chloride) hydrochloride	No	SOM.
Choline	No	RH.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Nitrogenous compounds—Continued		
Diallyldimethyl ammonium chloride	No	(²).
Di-amine derivatives of dimer acids	No	TX.
2-Dibutylaminoethanol	No	PAS.
Dibutylaminomethanol	No	(²).
1,3-Dibutyl-3-thiourea	No	RBC.
2-Diethylaminoethanol (N,N-Diethylethanolamine)	No	PAS, UCC.
2-(2-Diethylaminoethoxy)ethanol	No	PAS, UCC.
Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt	No	CPS.
2-Diethylaminoethyl methacrylate	No	AAC, CPS, DUP.
Diethylglycolamine (DEGA)	No	AIP, GAF.
Diethylhydroxylamine	No	PAS.
1,3-Diethyl-2-thiourea	No	PAS, RBC.
2-Diisopropylaminoethanol (N,N-Diisopropylethanolamine)	No	PAS, UCC.
2-Diisopropylaminoethyl methacrylate	No	DUP.
Diisopropylammonium nitrite	No	RBC.
2-Dimethylaminoethanethiol hydrochloride	No	EVN.
2-Dimethylaminoethanol (N,N-Dimethylethanolamine)	No	PAS, PEL, TX, UCC, (²).
Dimethylaminoethylacrylate, methyl chloride, quaternary salt	No	AAC, CPS.
Dimethylaminoethyl methacrylate	No	AAC, CPS.
Dimethylaminomethylmethacrylate, dimethyl sulfate, quaternary salt	No	AAC, CPS.
Dimethylaminoethylmethacrylate, methyl chloride, quaternary salt	Yes	AAC, CPS, UCC.
2-Dimethylamino-2-methyl-1-propanol hydrochloride	No	WPG.
1-(Dimethylamino)-2-propanol	No	ANG, PAS, PEL.
Dimethylaminopropylamine, propoxylated	No	TX.
Dimethyl diisocyanate	No	MOB.
2,5-Dithiobiurea	No	FMT, GAF.
Ethanolamines:	Yes	
Diethanolamine (2,2'-Aminodlethanol)	Yes	CNE, DOW, ICI, OMC, TX, UCC.
Monoethanolamine (2-Aminoethanol)	Yes	CNE, DOW, ICI, OMC, TX, UCC.
Triethanolamine (2,2',2"-Nitrilotriethanol)	Yes	CNE, DOW, ICI, OMC, TX, UCC.
2-Ethylaminoethanol (Ethylmonoethanolamine)	No	PAS.
N,N-Ethylenebis(12-hydroxystearamide)	No	CAS.
1,1-Ethylenediurea	No	EK.
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	No	SDW.
2-Ethyl-2-nitro-1,3-propanediol	No	ANG.
Hexamethylenediamine adipate (Nylon salt)	No	DUP, MON.
Hexamethylene-1,6-diisocyanate (HDI)	No	MOB.
Hexamethylene- α ,6-diisocyanate, biurets (HDI biurets)	No	MOB.
Hexamethylene-1,6-diisocyanate trimers (HDI trimers)	No	MOB.
Hexylamine ethoxylate	No	CXI.
N-(2-Hydroxyethyl)-12-hydroxystearamide	No	CAS.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris-(hydroxymethyl)nitromethane)	No	ANG.
Iminodiacetic acid	No	HMP.
Isopropanolamines:		
Diisopropanolamine	No	DOW.
Monoisopropanolamine	No	DOW.
Triisopropanolamine	No	DOW.
2-Isopropylaminoethanol	No	PAS, UCC.
Ketimine, tetrafunctional	No	PAC, SM.
3-Methoxypropylamine	No	TX.
2-Methylaminoethanol (N-Methylethanolamine)	No	PAS, UCC.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Nitrogenous compounds—Continued		
Methyl hydrazine	No	OMC.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)	Yes	DOW, PAS, TX, UCC.
Methyl isocyanate	No	RDA.
2-Methyl-2-nitro-1-propanol	No	ANG.
Mixed higher glycolamines (MHGA)	No	AIP.
Nitrated lard oil	No	SM.
Nitriles:	Yes	
Acetonitrile	Yes	BKC, DUP, SOH, (2).
Acrylonitrile, monomer	Yes	ACY, DUP, MON, SC, SOH.
Adiponitrile	No	DUP, MON.
Aminodimethyl butyronitrile	No	KF.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyronitrile)	No	DUP.
n-Butyronitrile	No	EKX.
Coconitrile	No	ARC.
Crotonitrile	No	RBC.
Cyanoacetic acid (Malonic nitrile)	No	KF.
1-(2-Cyanoethyl)ethyl urea	No	GAF.
Dicyandiamide (Cyanoguanidine)	No	FER.
Dicyanoethyldiethylene triamine	No	HXL.
3-Ethoxypropionitrile	No	DIX.
Ethyl cyanoacetate	No	KF.
Isobutyronitrile	No	EKX.
3-Methoxypropionitrile	No	(2).
Methyl cyanoacetate	No	KF.
Methylisobutyl ketone aminonitrile	No	HMP.
2-Methylactonitrile (Acetone cyanohydrin)	Yes	CYR, DUP, RH, SOH.
Nitrilotriacetone nitrile	No	HMP.
Oleonitrile (Octadecene nitrile)	No	ARC.
Pentenenitrile	No	DUP.
Propionitrile	No	MON.
Stearonitrile (Octadecane nitrile)	No	ARC.
Tallow nitrile	No	ARC, SHX.
3,3'-Thiodipropionitrile	No	EVN.
Trichloroacetone nitrile	No	OMC.
Vinylacetone nitrile	No	RBC.
All other nitriles	No	ARC, COC, DUP, EK, EKT, HXL, NES, (2).
Nitroethane	No	ANG.
Nitromethane	No	ANG.
1-Nitropropane	No	ANG.
2-Nitropropane	No	ANG.
Octadecyl diisocyanate	No	MOB
N-n-Octyl glucamine	No	(2)
Polyvinyl octadecyl carbamate	No	ESA.
Semicarbazide hydrochloride	No	OMC.
Stearylamidopropyl dimethylamine lactate	No	WM.
Tetraethyl ammonium bromide	No	RSA.
Thiosemicarbazide	No	FMT.
Triethylenetetramine, propoxylated	No	HXL.
Trimethylamine hydrochloride	No	(2).
All other nitrogenous compounds, acyclic	No	ADC, COC, EK, HCL, NES, OMC, PAH, PIC, RBC, RSA, SOM, UCC, (2), (2), (2).
Acids, acid anhydrides, and acyl halides:	Yes	
Acetic acid, synthetic (100%)	Yes	AIP, EKT, HCL, MON, NWP, RDA, SC, UCC.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Acids, acid anhydrides, and acyl halides—Continued		
Acetic anhydride, 100%:		
Acetic anhydride from acetaldehyde, 100%	No	EKT.
Acetic anhydride from acetic acid, other than recovered, by the vapor-phase process, 100% . .	No	HCL, UCC.
Acetic anhydride from acetic acid, recovered, by vapor-phase process	No	HCL, PFZ.
Acetyl chloride	No	WCC.
Acrylic acid	Yes	BAS, HCL, RH, UCC.
Adipic acid	No	DUP, MON.
Azelaic acid	No	EMR.
2,2-bis(Hydroxy-methyl)-propionic acid	No	IMC.
Bromoacetic acid	No	WCC.
Bromobutyric acid	No	EKT.
2-Bromohexanoic acid	No	EKT.
tert-Butylperoxy maleic acid	No	WTC, WTL.
Butyric acid	No	EKT, HCL, PEN.
Butyric anhydride	No	EKT.
Butyryl chloride	No	WCC.
Castor oil fatty acids, dehydrated	No	CAS.
Chloroacetic acid, mono	No	PFZ.
Citric acid	No	MLS, PFZ.
Crotonic acid (2-Butenoic acid)	No	EKT.
Decanoyl chloride	No	WCC, WTL.
2,2-dichloroacetyl chloride	No	RDA.
Dimer acid (C ₃₆ Aliphatic dibasic acid)	Yes	EMR, SYL, WTC.
Dimethylpropionic acid (Neopentanoic acid)	No	PCI.
Di-n-propyl phosphorodithioic acid	No	ICI.
Dithiodiglycolic acid	No	EVN.
Dithiodipropionic acid	No	EVN.
Dodecanedioic acid	No	DUP.
1,2-Ethanedisulfonic acid	No	SK.
2-Ethylbutyric acid (Diethylacetic acid)	No	PCI.
2-Ethylhexanoic acid (α -Ethylcaproic acid)	No	EKT, PCI, UCC.
2-Ethylhexanoyl chloride	No	PPG, WTC, WTL.
Fatty acids, hydrogenated	Yes	BRD, CAS, DRL, SHX, SYP, WTC.
Fatty acids, non-hydrogenated	No	DRL, WTC.
Fatty acids, partially hydrogenated	No	SYP, WTC.
Formic acid, 90%	No	HCL.
Fumaric acid	No	DKA, MON, PFZ.
Gluconic acid, technical	No	PFZ, PMP.
Glutaric acid	No	EK.
Glutaric anhydride	No	UCC.
Glycolic acid (Hydroxyacetic acid)	No	DUP.
Heptafluorobutyric anhydride	No	PIC.
Heptanoic acid	No	ENJ, HCL.
Isoascorbic acid (Erythorbic acid)	No	PFZ.
Isobutyric acid	No	EKX.
Isobutyric anhydride	No	EKT.
Isobutyryl chloride	No	SYL.
Isononanoyl chloride	No	HCL.
Itaconic acid (Methylenesuccinic acid)	No	PFZ.
Lactic acid, edible, 100%	No	MON.
Lauroyl chloride	No	WTL.
Malic acid	No	DKA.
Mercaptoacetic acid (Thioglycolic acid)	No	EVN.
3-Mercaptoproplonic acid	No	EVN, WTC.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Acids, acid anhydrides, and acyl halides—Continued		
Mercaptosuccinic acid (Thiomalic acid)	No	EVN.
Methacrylic acid	No	DUP, RH.
Methanesulfonic acid	No	PAS.
Methanesulfonyl chloride	No	PAS.
Neo-C ₉ -C ₁₂ acids	No	ENJ.
Neodecanoic acid	No	ENJ.
Neodecanoyl chloride	No	PPG, WTC.
Neoheptanoyl chloride	No	WTC.
Nonanoic acid (Pelargonic acid)	No	EMR, HCL.
Nonanoyl chloride	No	WCC.
Octanoyl chloride	No	WCC.
Oleic acid	No	BRD, DRL, WTC.
Oxidized Fischer Tropsch wax	No	SQA.
Palmitoyl chloride	No	HCL.
Perfluoropropionic anhydride	No	PIC.
Pivaloyl chloride	Yes	PPG, TLC, WCC, WTC.
Polyacrylic acid	No	BFG, BKM, RH.
Propionic acid	Yes	EKT, HCL, UCC.
Propionic anhydride	No	EKT.
Propionyl chloride	No	WCC.
Sebacic acid	No	WTH.
Sebacoyl chloride	No	ALD, EK.
Sorbic acid (2,4-Hexadienoic acid)	No	MON.
3,3'-Thiodipropionic acid	No	EVN.
Thiodisuccinic acid	No	EVN.
Thiolactic acid	No	EVN.
Trifluoroacetic acid	No	HOC.
Trifluoroacetic anhydride	No	HOC.
Trimerdibasic acids	No	WTC.
Valeric acid	No	UCC.
Valeroyl chloride	No	WCC.
All other acids, acid anhydrides, and acyl halides	No	EK, ENJ, HMY, NES, PG, UCC, WTL.
Salts of organic acids:	Yes	
Acetic acid salts:	Yes	
Aluminum acetate	No	NCC.
Ammonium acetate	No	BKC, WTK.
Calcium acetate	No	HFT, NCC.
Chromium acetate	No	SHP.
Cobalt acetate	No	SHP.
Cobalt manganese acetate	No	SHP.
Copper acetate	No	BKC.
Hydrazine acetate	No	FMT.
Lead acetate	No	BKC.
Lead subacetate	No	BKC.
Magnesium acetate	No	BKC, SHP.
Manganese acetate	No	SHP.
Nickel acetate	No	SHP.
Potassium acetate	No	BKC, HCP, JRC, NCC.
Sodium acetate	Yes	ATL, BKC, BRI, DAN, HCP, JRC, MAL, NCC, UCC, (2).
Sodium diacetate	No	HCP, JRC, NCC.
Zinc acetate	Yes	BKC, DIX, SHP, WTK.
Zirconium acetate	No	TZC.
All other acetic acid salts	No	RSA.
Adipic acid, ammonium salt	No	ACS.
Adipic acid, sodium salt	No	RSA.
Adipic dihydrazide	No	FMT.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Salts of organic acids—Continued		
Sodium di-2-ethylhexyl sulfosuccinate	No	WPG.
Sodium formaldehyde bisulfite	No	EK.
Sodium-N-methyl-N-oleyl taurate	No	WPG.
Stearic acid salts:	Yes	
Aluminum stearates:		
Aluminum distearate	Yes	MAL, NOC, NOD, SYP.
Aluminum monostearate	No	MAL, NOD, SYP.
Aluminum tristearate	Yes	MAL, NOC, NOD, SYP, WTC, (2).
Ammonium stearate	No	WPG.
Barium stearate	Yes	ALI, NOC, NOD, SYP, VNC, WTC.
Cadmium stearate	Yes	SYP, VNC, WTC.
Calcium stearate	Yes	FER, MAL, NOC, NOD, SQA, SYP, WTC.
Cobalt stearate	No	MCI, SHP.
Lead stearate	No	ALI.
Lead stearate, dibasic	No	ALI.
Lithium stearate	No	NOC, WTC.
Magnesium stearate	Yes	ALI, MAL, NOD, SYP, WTC.
Potassium stearate	No	WTC.
Sodium stearate	No	WTC.
Strontium stearate	No	WTC.
Zinc stearate	Yes	CCC, MAL, NOC, NOD, PLS, SYP, WTC.
Tartaric acid salts:		
Potassium sodium tartrate	No	PFZ.
All other salts of organic acids	No	EK, EKX, FER, PFN, TCH.
Aldehydes:	Yes	
Acetaldehyde	No	EKX, HCL, UCC.
Acrolein (Acrylaldehyde)	No	UCC.
Butyraldehyde	Yes	BAS, EKX, HCL, UCC.
Crotonaldehyde	No	EKT.
2-Ethylhexanal (α -Ethylcaproaldehyde)	No	EKX, UCC.
Formaldehyde (37% HCHO by weight)	Yes	BOR, CBD, DUP, GAF, GP, HCL, HPC, IMC, MON, PKI, RCI, WCL, UCC.
Glutaraldehyde	No	UCC.
Glyoxal	No	ACY.
Isobutyraldehyde	No	BAS, EKX, HCL, TU, UCC.
Isopentaldehyde, mixed isomers	No	UCC.
Propionaldehyde	Yes	EKX, HCL, UCC.
Succinaldehyde-sodium bisulfite complex	No	EK.
Valeraldehyde (Pentanal)	No	UCC.
All other aldehydes, acyclic	No	UCC.
Ketones:	Yes	
Acetone:		
Acetone from cumene	Yes	ACS, ART, BTL, GGC, SHC.
Acetone from isopropyl alcohol	No	GE, SHC, UCC.
Acetone, crude	No	ATR.
5-Chloro-2-pentanone	No	SDW.
1-Chloropinacolone	No	CHG.
Chloro-2-propanone (Chloroacetone)	No	MRK.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)	No	EKX.
2-Heptanone (Methyl amyl ketone)	No	EKT.
3-Heptanone (Ethyl butyl ketone)	No	UCC.
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	No	HCL, SHC, UCC.
Isovalerone (Diisobutyl ketone)	No	EKT, UCC.
Methyl ethyl ketone	Yes	ATR, ENJ, HCL, LYP, SHC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)	No	EKT.
Methylhexyl ketone	No	UPM.
Methyl isobutyl ketone (4-Methyl-2-pentanone)	Yes	EKT, ENJ, SHC, UCC.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Ketones—Continued		
4-Methyl-3-penten-2-one (Mesityl oxide)	No	UCC.
Methylpseudoionone	No	NCI.
2-Octanone (Hexyl methyl ketone)	No	WTH.
2,4-Pentanedione (Acetylacetone)	No	UCC.
3-Pentanone (Diethyl ketone)	No	EKT, HEX, ORT, UCC.
Pseudoionone	No	NCI, SCM.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	No	UCC.
All other ketones	No	COC.
Alcohols, monohydric, unsubstituted:	Yes	
Alcohols, C ₁₁ or lower, unmixed (95% or more pure):	Yes	
Allyl alcohol	No	FMC.
Amyl alcohols:		
Amyl alcohol, primary	No	UCC.
2-Methyl-1-butanol	No	UCC.
3-Methyl-1-butanol	No	CPS.
1-Pentanol	No	UCC.
Butyl alcohols:	Yes	
n-Butyl alcohol (n-Propylcarbinol)	Yes	BAS, CXI, EKX, GAF, HCL, SHC, UCC, VST.
sec-Butyl alcohol (Methylethylcarbinol)	No	ENJ, GAF, SHC.
tert-Butyl alcohol (Trimethylcarbinol)	No	ATR, CXI.
Isobutyl alcohol (Isopropylcarbinol)	Yes	BAS, CPS, EKX, HCL, SHC, UCC.
1-Decanol	No	TNA, VST.
Diisobutyl alcohol	No	UCC.
2,2-Dimethylbutanol (Isohexyl alcohol)	No	ENJ.
Ethyl alcohol, synthetic only	Yes	DOW, EKX, HCL, NWP, SHC, UCC.
2-Ethyl-1-hexanol	Yes	BAS, EKX, SHC, TU, UCC.
n-Heptyl alcohol	No	EKX.
n-Hexyl alcohol	No	TNA, VST.
Isodecyl alcohol	No	ENJ.
Isoheptyl alcohol	No	ENJ.
Isononyl alcohol	No	ENJ, SHC.
Iso-octadecyl alcohol	No	SHX.
Iso-octyl alcohol	No	ENJ.
Isopropyl alcohol	Yes	ATR, CXI, ENJ, LYP, SHC, UCC.
Methanol, synthetic only	Yes	AIP, BOR, DUP, EKT, GGC, HCL, LYP, TX.
Methyl amyl alcohol	No	UCC.
2-Methyl-1-pentanol	No	UCC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	No	UCC.
1-Octanol	No	TNA, VST.
2-Octanol (sec-Capryl alcohol)	No	WTH.
Propyl alcohol (Propanol)	Yes	EKX, HCL, UCC.
2-Propyl-1-ol (Propargyl alcohol)	No	GAF.
Undecanol (Linear C ₁₁ alcohol)	No	BAS, ENJ.
All other alcohols, C ₁₁ or lower, unmixed	No	SHC, UCC.
Alcohols C ₁₂ or higher, unmixed (95% or more pure):	Yes	
Dodecyl alcohol (Lauryl alcohol)	No	TNA, VST.
1-Hexadecanol (Cetyl alcohol)	No	PG, UCC, VST.
2-Hexyl-1-decanol	No	SCP.
1-Octadecanol (Stearyl alcohol)	Yes	PG, TNA, UCC, VST.
cis-9-Octadecen-1-ol (Oleyl alcohol)	No	SHX.
1-Tetradecanol (Myristyl alcohol)	No	VST.
1-Tridecanol	No	ENJ.
2,6,8-Trimethyl-4-nonanol	No	UCC.
All other alcohols, C ₁₂ or higher, unmixed	No	ENJ.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Alcohols, monohydric, unsubstituted—Continued		
Mixtures of alcohols:	Yes	
Alcohol mixtures, C ₁₁ or lower only	Yes	BAS, EKX, ENJ, NCI, PG, SHC, TNA, UCC, VST.
Alcohol mixtures, C ₁₂ through C ₁₈ only	Yes	PG, SHC, SHX, TNA, VST.
Alcohol mixtures, C ₁₉ and C ₂₀ only	No	TNA.
All other mixtures of alcohols	No	ENJ, SCP, VST, WTK.
Esters of monohydric alcohols:	Yes	
C ₁₂ -C ₁₆ Alcohol esters of lactic acid	No	VND.
Allyl methacrylate	Yes	AAC, BRD, CPS.
Amyl acetates:		
Amyl acetate (n-Pentyl acetate)	No	UCC.
All other amyl acetates	No	WTL.
Butyl acetates:		
n-Butyl acetate	Yes	BAS, EKT, HCL, UCC.
Isobutyl acetate	Yes	BAS, EKT, EKX, HCL, UCC.
Butyl acrylate	Yes	BAS, HCL, RH, UCC.
n-Butyl chlorocrotonate	No	MAL.
sec-Butyl chloroformate	No	PPG, VCM.
Butyl lactate	No	CPS.
Butyl levulinate	No	SOM.
Butyl maleate	No	TCH.
Butyl mercaptopropionate	No	EVN.
Butyl methacrylate	No	DUP, RH.
Butyl oleate	No	ELC.
Cetylcosyl methacrylate	No	RH.
Cetyl lactate	No	VND.
Diallyl maleate	No	AAC, FMC.
Dibutyl fumarate	No	RCI.
Dibutyl maleate	No	ART, NOD, RCI.
Diethyl carbonate (Ethyl carbonate)	No	PPG.
Di(2-ethyl-1-hexyl) maleate	Yes	CCC, CHP, FTX, RPC.
Di(2-ethyl-1-hexyl) peroxydicarbonate	No	WTL.
Diethyl maleate	No	ACY.
Diethyl oxalate (Ethyl oxalate)	No	TLI, (2).
Dilauryl-3,3'-thiodipropionate	Yes	CCW, EVN, WTC.
Dimethyl carbonate	No	PPG.
Dimethyl maleate	No	AAC.
Dimyristyl-3,3'-thiodipropionate	No	CCW.
Dioctyl maleate	Yes	ART, NOD, RCI.
Distearyl-3,3'-thiodipropionate	Yes	CCW, EVN, WTC.
Dithiobis(stearyl propionate)	No	EVN.
Ditridecyl maleate	No	EFH.
Di(tridecyl)-3,3'-thiodipropionate	No	EVN, WTC.
Dodecylpentadecyl methacrylate	No	RH.
Dodecyl succinic lactate	No	SM.
2-Ethoxyethyl acetate	Yes	EKT, ICI, UCC.
Ethyl acetate	Yes	EKT, EKX, HCL, MON.
Ethyl acetoacetate	No	EKT.
Ethyl acrylate	Yes	HCL, RH, UCC.
Ethyl chloroformate	No	ESX, PPG.
Ethyl chlorothioformate	No	ICI.
Ethylene carbonate	No	TX.
Ethyl-3-ethoxy propionate	No	UCC.
2-Ethyl-1-hexyl acetate	No	EKT, MRF.
2-Ethyl-1-hexyl acrylate	No	BAS, HCL.
2-Ethylhexyl chloroformate	No	PPG, UCC, VCM.
2-Ethyl-1-hexyl methacrylate	No	DUP.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Esters of monohydric alcohols—Continued		
Ethyl sulfate (Diethyl sulfate)	No	UCC.
Fatty acid esters, not included with plasticizers or surface active agents:		
Butyl myristate	No	CAS, UCC.
Diglycol dimerate	No	WTC.
Diocetyl dimerate	No	WTC.
Docosanyl docosenoate	No	SBC.
Isocetyl stearate	No	SCP, VND.
Isopropyl linoleate	No	VND.
Isopropyl myristate	No	UCC.
Isopropyl palmitate	No	UCC.
Methyl esters of lard	No	FER.
Methyl esters of tallow	No	CHL, FER.
Methyl 12-hydroxystearate	No	CAS, WTH.
Methyl iso-octadecenoate	No	SYL.
Methyl linoleate	No	HRT.
Methyl stearate	No	CHL, WTC.
Myristyl myristate	Yes	CAS, CYL(E), SBC, VND.
Tridecyl stearate	Yes	HCL, RPC, SCP.
All other fatty acid esters, not included with plasticizers surface-active agents	No	HDG, HPC, SBC.
Hexyl acetate	No	ENJ.
Hexyl acrylate	No	CPS.
Isobutyl acrylate	No	BAS.
Isobutyl chloroformate	No	VCM.
Isobutyl isobutyrate	No	EKX.
Isobutyl methacrylate	No	RH.
Isodecyl acrylate	No	AAC, CPS.
Isodecyl mercaptoacetate	No	EVN.
Isodecyl methacrylate	No	RH.
Iso-octyl mercaptoacetate	No	CCW, EVN.
Iso-octyl-3-mercaptopropionate	No	EVN.
Isopropyl acetate	Yes	EKT, HCL, UCC.
Isopropyl chloroformate	No	PPG, VCM.
Isostearyl neopentanoate	No	SBC, VND.
Lauryl acrylate	No	CPS.
Lauryl lactate	No	VND.
Lauryl methacrylate	No	AAC, CPS, RH.
2-Methoxyethyl acrylate	No	CPS.
Methyl acetoacetate	No	EKT.
Methyl acrylate, monomer	No	HCL.
Methyl chloroformate	No	PPG.
Methyl formate	No	HCL.
Methyl isodehydroacetate	No	EKT.
Methyl methacrylate, monomer	Yes	CYR, DUP, RH.
Methyl sulfate (Dimethyl sulfate)	No	DUP.
Myristyl lactate	No	VND.
Octadecyl-3-mercaptopropionate	No	EVN.
Phosphorus acid esters:	Yes	
Amyl hydrogen phosphate	No	HK.
Bis (2-Chloroethyl)-2-chloroethylphosphonate	No	ALW.
Bis(2-ethylhexyl) hydrogen phosphate	No	ALW.
Butyl acid phosphate	No	ALW, HK.
Chloroalkyl diphosphate ester, neutral	No	ALW.
Dibutyl butylphosphonate	No	ALW, HDG.
Dibutyl hydrogen phosphite	No	ALW.
Dibutyl pyrophosphate	No	ALW.

See footnotes at end of table.

Section 15

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Esters of monohydric alcohols—Continued		
Phosphorus acid esters—Continued		
Diethylhexyl phosphoric acid	No	ALW.
Diethyl hydrogen phosphite	No	ALW.
Diethyl phosphenothionic dichloride	No	TNA.
Diethyl phosphorochloridothionate	No	ICI, TNA.
Dimethyl hydrogen phosphite	No	ALW.
Dimethyl methylphosphonate	No	ALW, HDG.
Dimethyl phosphoridothionate	No	ICI.
2-Ethylhexyl hydrogen phosphate	No	ALW.
Iso-octyl hydrogen phosphate	No	ALW.
Methyl dihydrogen phosphate	No	HK.
Mixed dialkyl hydrogen phosphates, amine salts	No	ELC.
Stearyl acid phosphate	No	HK.
Tetrakis(2-chloroethyl)ethylene diphosphate	No	OMC.
Tetrakis(2-chloroisopropyl)ethylene diphosphate (T-RDT)	No	OMC.
Trialkyl phosphite	No	MCB.
Trialkyl thiophosphite	No	MCB.
Tributyl phosphate	No	FMC.
Triethyl phosphite	No	ALW, ICI.
Triso-octyl phosphite	No	ALW, MCB.
Trisopropyl phosphite	No	ALW.
Trimethyl phosphite	No	ALW, ICI.
Tris(2-chloroethyl)phosphite	No	ALW.
Tris(chloroisopropyl)thionophosphate	No	GAF.
Tris(2-ethylhexyl) phosphite	No	ALW.
All other phosphorus acid esters	No	ALW, AZT, COC, PAH, (2).
Propyl acetate	Yes	BAS, EKT, HCL, UCC.
n-Propyl chloroformate	No	VCM.
Stearyl methacrylate	No	CPS, RH, TX.
Tetraethyl orthosilicate (Tetraethyl silicate)	No	KF, UCC.
Tetraethyl silicate, condensed	No	UCC.
Tetrapropyl silicate	No	KF.
Titanic acid esters:		
Bis(2-[bis(2-hydroxyethyl)amino]ethyl)diisopropyl titanate	No	DUP.
Di(hydroxy)bis(ammoniumlactato)titanium	No	DUP.
Diisopropyltitanate bis(ethyl-3-oxobutanoate)	No	DUP.
Tetrabutyl titanate	No	DUP.
Tetraisopropyl titanate	No	DUP.
Tetrakis(2-ethylhexyl)titanate	No	DUP.
Triethanolamine titanate	No	KF.
All other titanic acid esters	No	BUC, DUP.
Triethyl citrate	No	(2).
Triethyl orthoacetate	No	KF.
Triethyl orthoformate	No	KF.
Triethyl orthopropionate	No	KF.
Trifluoroethyl methacrylate	No	(2).
Trimethyl orthoformate	No	KF.
Tristearyl citrate	No	CYL(E).
Vinyl acetate, monomer	Yes	DUP, FER, HCL, NWP, PLC, UCC.
All other monohydric alcohol esters	No	COC, EK, EKT, ENJ, MON, PIC, REZ (2).
Polyhydric alcohols:		
2,2-Bis(bromomethyl)-1,3-propanediol	No	DOW.
1,2(and 1,3)-Butanediol	No	HCL.
1,4-Butanediol	Yes	BAS, DUP, GAF, (2).

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Polyhydric alcohols—Continued		
2-Butene-1,4-diol	No	GAF.
2-Butyne-1,4-diol	No	BAS, GAF.
3-Chloro-1,2-propanediol (Glycerol α -chlorohydrin)	No	DIX, EVN.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	No	BAS, EKX.
Ethylene glycol	Yes	BAS, CNE, CXI, DOW, EKX, HCF, HCL, ICI, NWP, OMC, PDG, PLC, PPG, SHC, TX, UCC.
2-Ethyl-1,3-hexanediol	No	UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane)	No	HCL.
Glycerol, synthetic only	No	DOW, SYP.
1,6-Hexanediol	No	BAS, CXI.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolethane)	No	IMC.
Mannitol	No	ICI.
3-Mercapto-1,2-propanediol (Thioglycerol)	No	EVN.
2-Methyl-2,4-pentanediol (Hexylene glycol)	No	SHC, UCC.
Pentaerythritol	Yes	DOW, HCL, HPC, IMC, PST.
1,5-Pentanediol	No	BAS.
Propylene glycol (1,2-Propanediol)	Yes	ATR, CXI, DOW, OMC, TX, UCC.
Sorbitol (70% by weight)	No	EHC, ICI, PFZ.
2,2,4-Trimethyl-1,3-pentanediol	No	EKX.
All other polyhydric alcohols	No	ICI, PAH, VIK, (2).
Esters and ethers of polyhydric alcohols:		
Polyhydric alcohol esters:	Yes	
2-(2-Butoxyethoxy)ethyl acetate	No	EKT, ICI, UCC.
2-Butoxyethyl acetate	Yes	EKT, ICI, UCC.
1,3-Butylene glycol diborate	No	USB.
1,3-Butylene glycol diborate/hexylene glycol boric anhydride	No	USB.
Diethylene glycol adipate	No	CMB, HAL.
Diethylene glycol, borated	No	OMC.
Diethylene glycol chloroformate	No	PPG.
Diethylene glycol dimethacrylate	No	CPS.
2-(2-Ethoxyethoxy)ethyl acetate	No	EKT.
Ethylene glycol diacetate	No	EKT.
Ethylene glycol diacrylate	No	CPS, WTC.
Ethylene glycol dimercaptoacetate	No	EVN.
Ethylene glycol dimethacrylate	No	CPS.
Ethylene glycol hydroxyacetate	No	CCA.
Glycerol propoxylate triacrylate	No	REZ.
Glyceryl diacetate (Diacetin)	No	HAL.
Glyceryl monoacetate (Monacetin)	No	HAL.
Glyceryl monothioglycolate	No	EVN, WTC.
Glyceryl triacetate (Triacetin)	No	EKT.
1,6-Hexanediol diacrylate	No	REZ.
Hydroxyethyl acrylate	No	DOW, RH.
Hydroxyethyl methacrylate	No	AAC, RH.
Hydroxypropyl acrylate	No	DOW, RH.
Hydroxypropyl methacrylate	No	AAC, REZ, RH.
2-Methoxyethyl acetate	No	UCC.
1-Methoxy-2-propyl acetate	No	EKX.
Pentaerythritol stearate	No	BRD.
Pentaerythritol tetraacrylate	No	REZ.
Pentaerythritol tetrakis(3-Mercaptopropionate)	No	EVN.
Polyol aluminum chelate	No	SQA.
Tetraethylene glycol diacrylate	No	REZ.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 47)</i>
Acyclic—Continued		
Esters and ethers of polyhydric alcohols—Continued		
Polyhydric alcohol esters—Continued		
Trimethylolpropane ethoxylate triacrylate	No	AAC, REZ.
Trimethylolpropane triacrylate	No	AAC, REZ, SM.
Trimethylolpropane tri(2-mercaptopropionate)	No	EVN.
Trimethylolpropane trioleate (TMP trioleate)	No	EFH.
2,2,3-Trimethyl-1,3-pentanediol monoisobutyrate ..	No	EKX.
Tripropylene glycol diacrylate	No	AAC, REZ.
All other polyhydric alcohol esters	No	BRD, SHX, SQA, UCC, (2).
Polyhydric alcohol ethers:		
Bis(2-butoxyethyl)ether (Diethylene glycol di-n-butyl ether)	No	ASL, FER.
Bis(2-ethoxyethyl)ether (Diethylene glycol diethyl ether)	No	ASL, FER.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether)	No	ASL, FER.
Bis(2-methoxyethyl)ether (Diethylene glycol dimethyl ether)	No	ASL, FER.
2-Butoxyethanol (Ethylene glycol monobutyl ether) ..	Yes	CNE, DOW, EKX, ICI, OMC, SHC, UCC.
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	Yes	DOW, EKX, ICI, OMC, SHC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	Yes	CXI, DOW, OMC, UCC.
1-Butoxyethoxy-2-propanol	No	UCC.
Butyl ethers of tetra- and higher ethylene glycols (high boiling)	No	EKX, ICI.
1-Butyraldehyde trimer	No	HTM.
Diethylene glycol	Yes	BAS, CNE, CXI, EKX, HCL, ICI, NWP, OMC, PDG, PPG, SHC, TX, UCC.
Diethylene glycol divinyl ether	No	GAF.
Diethylene glycol mono-n-propyl ether	No	EKX.
Dimethoxyethane (Ethylene glycol dimethyl ether)	No	ASL, FER.
Dipropylene glycol	Yes	ATR, DOW, UCC.
Dipropylene glycol monomethyl ether	No	OMC.
2-Ethoxyethanol (Ethylene glycol monoethyl ether) ..	No	EKX, ICI, OMC, UCC.
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	Yes	DOW, EKX, ICI, OMC, UCC.
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	No	DOW, OMC, UCC.
Ethylene glycol di-tributyl ether	No	EKX.
Ethylene glycol di-tri-ethyl ether	No	EKX.
Ethyl ethers of tetra- and higher ethylene glycols (high boiling)	No	EKX, ICI, OMC.
2-[2-(Hexyloxy)ethoxy]ethanol	No	UCC.
2-Methoxyethanol (Ethylene glycol monomethyl ether)	Yes	ICI, OMC, UCC.
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	Yes	DOW, ICI, OMC, UCC.
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	Yes	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Triethylene glycol dimethyl ether)	No	ASL, FER, OMC.
Methoxypolyethylene glycol	No	HCL, ICI, UCC.
1-Methoxy-2-propanol	No	OMC.
Methoxypropyl acetate	No	HTM.
Paraformaldehyde	No	HCL.
Polyethoxy propoxydiethylene glycol ether	No	TX.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Esters and ethers of polyhydric alcohols—Continued		
Polyhydric alcohol ethers—Continued		
Poly(ethylene-butylene) glycol	No	(²).
Polyethylene glycol	Yes	ABB, CNE, DOW, GAF, HCL, HDG, ICI, OMC, UCC, (²), (²).
Polyethylene glycol butyl ether, propoxylated	No	ICI.
Polyethylene glycol dimethyl ether	No	FER, SHX, (²).
Polyglycols, ethylene glycol, and glycol ether, mixed	No	CXI, HCL, UCC, (²).
Polymethylvinyl ether monoethylmaleate	No	TNI.
Polyoxyalkylene glycol	No	OMC.
Polyoxypropylene polyoxyethylene glycol, mixed	No	UCC.
Poly(propoxy)butyl ether, ethoxylated	No	TX.
Polypropylene glycol	No	CXI, DOW, GAF, HCL, HDG, OMC, TX, (²).
Polytetramethylene glycol ether	No	DUP, GAF, QKO.
Propoxyethanol (Ethylene glycol monopropyl ether)	No	EKX.
Propylene glycol, mixed ethers	No	UCC.
Sorbitol, alkoxylated	No	(²).
Sorbitol, ethoxylated	No	BRD, ICI.
Sorbitol monooleate	No	WTC.
Sorbitol monostearate	No	WTC.
Sorbitol, propoxylated	No	ICI.
Tetraethylene glycol	Yes	CNE, CXI, DOW, EKX, ICI, UCC.
2,2'-Thiodiethanol (Thiodiglycol)	No	AAC, PLC.
Triethylene glycol	Yes	CNE, CXI, DOW, EKX, HCL, ICI, OMC, PDG, PPG, SHC, TX, UCC.
Tripropylene glycol	No	DOW.
Tripropylene glycol monomethyl ether	No	OMC, UCC.
Tri- and tetraethylene glycol monoethyl ethers, borate esters	No	OMC.
All other polyhydric alcohol ethers	No	CXI, DUP, MIL, OMC, UCC.
Brominated, chlorinated, and fluorinated hydrocarbons:	Yes	
Brominated (including bromochlorinated) hydrocarbons:	Yes	
1-Bromobutane (n-Butyl bromide)	No	DAZ.
Bromochloromethane	No	DOW.
Bromoethane (Ethyl bromide)	No	DOW, GTL.
1-Bromohexadecane	No	HMY.
1-Bromohexane (n-Hexyl bromide)	No	WCC.
1-Bromo-2-methyl-2-butene	No	SD.
1-Bromo-octadecane	No	HMY.
1-Bromopentane (n-Amyl bromide)	No	WCC.
2-Bromopropane (Isopropyl bromide)	No	WCC.
Ethylene bis tetrabrom	No	TNA.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	No	DOW.
Vinyl bromide (Bromoethylene)	No	TNA.
All other brominated (including bromochlorinated) hydrocarbons	No	COC, FER, HMY, TNA, WTC.
Chlorinated (Not otherwise halogenated) hydrocarbons:	Yes	
Carbon tetrachloride	Yes	DOW, FRO, HK, LCP, SFI.
Chlorinated paraffins (C ₁₀ -C ₃₀):		
Chlorinated paraffins, 35-64% chlorine	Yes	DVC, FER, HK, NEV, WTC.
Chlorinated paraffins, less than 35% chlorine	No	DVC, FER, SHC.
Chlorinated paraffins, 65% or more chlorine	Yes	DVC, FER, HK, NEV.
1-Chlorobutane (n-Butyl chloride)	No	UCC.
Chloroform	Yes	DOW, FRO, HK, LCP.
Chloromethane (Methyl chloride)	Yes	DCC, DOW, LCP, SPD, TNA, VST.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Brominated, chlorinated, and fluorinated hydrocarbons—Continued		
Chlorinated (Not otherwise halogenated) hydrocarbons—Continued		
3-Chloro-2-methyl-1-propene (Methallyl chloride)	No	FMC.
3-Chloropropene (Allyl chloride)	No	SHC.
1,2-Dichloroethane (Ethylene dichloride)	Yes	BFG, DOW, FOR, FRO, GGC, HK, LYP, OMC, PPG, SHC, VST.
1,2-Dichloropropane (Propylene dichloride)	No	DOW, OMC.
2,3-Dichloropropane	No	DOW.
Ethyl chloride (Chloroethane)	Yes	DUP, PPG, TNA.
Hexyl chloride	No	TNA.
Lauryl chlorides	No	SHC, TNA.
Methylene chloride (Dichloromethane)	Yes	DOW, FRO, HK, LCP.
Neophyl chloride	No	TNA.
t-Octyl chloride	No	RBC.
Octyl chloride	No	TNA.
Paraffin oils, chlorinated	No	BAS.
Perchloroethylene (Tetrachloroethylene)	Yes	DOW, FRO, HK, PPG.
1,1,1-Trichloroethane (Methyl chloroform)	Yes	DOW, FRO, PPG.
1,1,2-Trichloroethane (Vinyl trichloride)	No	DOW.
Trichloroethylene	No	DOW, PPG.
1,2,3-Trichloropropene	No	DOW.
Vinyl chloride, monomer (Chloroethylene)	Yes	BFG, BOR, DOW, FOR, GGC, PPG, SHC, VST.
Vinylidene chloride, monomer (1,1-Dichloroethylene)	No	DOW, PPG.
All other chlorinated (not otherwise halogenated) hydrocarbons	No	COC, WTC, (2).
Fluorinated (Including other fluorohalogenated) hydrocarbons:		
Bromochlorodifluoromethane	Yes	ICI.
2-Bromo-2-chloro-1,1,1-trifluoroethane	No	HOC.
Bromotrifluoromethane	No	DUP, GTL.
1-Chloro-1,1-difluoroethane	No	PAS.
Chlorodifluoromethane (F22)	Yes	ACS, DUP, PAS, RCN.
Chlorotrifluoroethylene (Trifluorovinyl chloride)	No	ACS.
Chlorotrifluoromethane	No	DUP.
Dibromodifluoromethane	No	GTL.
Dichlorodifluoromethane (F12)	Yes	ACS, DUP, PAS, RCN.
Dichlorotetrafluoroethane	No	ACS, DUP.
1,1-Difluoroethane	No	DUP, PAS.
Hexafluoropropylene, monomer	No	DUP.
1-Iodoperfluorohexane	No	DUP.
Polyhexafluoropropylene oxide	No	DUP.
Polytetrafluoroethylene ethyl iodide	No	(2).
Tetrafluoroethylene, monomer	No	DUP, ICI.
Tetrafluoromethane	No	DUP.
Trichlorofluoromethane (F11)	Yes	ACS, DUP, PAS, RCN.
Trichlorotrifluoroethane	No	ACS, DUP, PAS.
Trifluoropropene	No	HOC.
Vinyl fluoride, monomer	No	DUP.
Vinylidene fluoride, monomer	No	PAS.
All other fluorinated (including other fluorohalogenated) hydrocarbons	No	DUP, HOC, OH, REG.
Other miscellaneous acyclic chemicals:		
Iodinated (not otherwise halogenated) hydrocarbons:	Yes	
Diiodomethane (Methylene iodide)	No	DPW, (2).
Iodobutane	No	RSA.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Other miscellaneous acyclic chemicals—Continued		
Iodinated (not otherwise halogenated) halogenated)—Continued		
Iodoethane (Ethyl iodide), non-medical	No	DPW, RSA.
Iodomethane (Methyl iodide)	No	DPW, RSA.
All other iodinated (not otherwise halogenated) hydrocarbons	No	COC, DPW, EK, RSA.
Acetylacetonates:		
Acetone sodium bisulfite	No	EK.
Cobaltic acetylacetonate	No	SHP.
Titanium acetylacetonate	No	KF.
All other acetylacetonates	No	SHP.
Acetylacetonates complex:		
Chromium acetylacetonate complex	No	MCK.
Iron acetylacetonate complex	No	MCK.
Manganese acetylacetonate complex	No	MCK.
Zirconium acetylacetonate complex	No	MCK.
Acyclic peroxides: Yes		
Acetylacetone peroxide	No	CAD.
Acetyl peroxide	No	WTL.
tert-Amyl hydroperoxide	No	WTC.
2-Butanone peroxide	Yes	CAD, FRE, NOC, RCI, WTC, WTL.
n-Butyl-4,4-bis[t-butylperoxy]valerate	No	WTL.
tert-Butyl hydroperoxide	No	ATR, AZT, FRE, WTL.
tert-Butyl peroxide (Di-tert-butyl peroxide)	Yes	AZT, WTC, WTL.
tert-Butyl peroxyacetate	No	AZT, WTL.
tert-Butyl peroxy-2-ethylhexanoate	No	WTC, WTL.
tert-Butyl peroxyisobutyrate	No	WTL.
tert-Butyl peroxyisopropylcarbonate	No	PPG, WTL.
tert-Butyl peroxyneodecanoate	No	WTC, WTL.
tert-Butyl peroxyneooheptanoate	No	WTC.
tert-Butyl peroxyplvalate	Yes	AZT, WTC, WTL.
Decanoyl peroxide	No	WTL.
Di-(2-ethylhexyl) peroxydicarbonate	No	WTC, WTL.
Dilisononanoyl peroxide	No	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	No	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	No	WTL.
2,5-Dimethyl-2,5-dihydroperoxy) hexane	No	WTC.
2,5-Dimethyl-2,5-di(2-ethylhexanoyl peroxy) hexane	No	WTC, WTL.
Diperoxydodecanedioic acid	No	MMC.
Di-n-propyl peroxydicarbonate	No	WTL.
Ethyl 3,3-di(t-butyl peroxy) butyrate	No	WTL.
Lauroyl peroxide	No	WTL.
Peroxyacetic acid (Peracetic acid)	No	FMB, FMC, UCC.
Succinyl peroxide	No	WTL.
Tertiary amyl per-2-ethylhexanoate	No	WTC.
All other acyclic peroxides	No	PLC, WTC.
1-Butanesulfonyl chloride	No	EKT.
2-Butenedioic acid(e)-linoleic acid, reaction product	No	WVA.
Carbon disulfide	No	PAS.
2,3-Dibromopropanol	No	GTL.
Epoxides, ethers, and acetals: Yes		
Bis(2-chloroethyl)ether (Dichlorodiethyl ether)	No	BKM.
Butylene oxide	No	DOW.
Butyl vinyl ether	No	ATR, GAF.
Chloromethyl methyl ether	No	RH.
2,2-Dichloro-1,1-difluoroethyl methyl ether	No	OH.
Diethoxyethane	No	FER, WPG.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Other miscellaneous acyclic chemicals—Continued		
Epoxides, ethers, and acetals—Continued		
Dimethyl sulfone	No	CRZ.
Epichlorohydrin	No	DOW, SHC.
1,2-Ethanedithiol	No	RBC.
Ethylene oxide	Yes	BAS, CNE, DOW, EKX, HCL, ICI, NWP, PPG, SHC, SNO, TX, UCC.
Ethyl ether, absolute	No	EKX, NWP.
2-(Ethylmercapto)ethanol	No	DOM.
Ethyl vinyl ether	No	GAF.
Glycidol (2,3-Epoxy-1-propanol)	No	DIX.
Glycidyl ethers:	Yes	
Alkyl glycidyl ethers, C ₆ -C ₁₀	No	AZS, WLN.
Alkyl glycidyl ethers, C ₁₂ -C ₁₄	No	REZ, WLN.
Allyl glycidyl ether (Allyloxy-2,3-epoxy propane)	No	AAC, CPS.
1,4-Butanediol diglycidyl ether	No	ALD, REZ, WLN.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	Yes	AAC, CPS, REZ, WLN.
tert-Butyl glycidyl ether	No	AAC.
Castor oil triglycidyl ether	No	WLN.
2-Ethylhexyl glycidyl ether	No	WLN.
neoPentyl glycol diglycidyl ether	No	WLN.
Polyol glycidyl ether	No	REZ, WLN.
All other glycidyl ethers	No	REZ.
Isopropyl ether	No	ENJ, SHC.
Malonaldehyde bis(dimethyl) acetal	No	KF.
Methylal (Dimethoxymethane)	No	HCL.
Methyl ether (Dimethyl ether)	No	AIP, DUP.
Methyl vinyl ether	No	GAF, UCC.
Propylene oxide	No	ATR, DOW.
All other epoxides, ethers, acetals	No	UCC, VIK.
Fats and oils, chemically modified:	Yes	
Castor oil, hydrogenated	No	CAS.
Castor oil, polymerized	No	CAS.
Chlorinated fatty materials	No	FER.
Hydrogenated menhaden fish oil	No	CHL, WTC.
Hydrogenated tallow glycerides	No	CHL, WTC.
Linseed oil, oxygenated	No	CJO.
Sulfurized corn oil	No	SM.
Vegetable glycerides, hydrogenated	No	BRD, WTC.
All other fats and oils, chemically modified	No	CAS, UCC.
Glutaraldehyde bis(sodium bisulfite)	No	EK, FMT.
Hexadecylsulfonyl chloride	No	EKT.
Hydrocarbons:	Yes	
n-Decane	No	HMY, PLC.
3,3-Dimethylbutene	No	PLC.
n-Dodecane	No	HMY.
Hexadecane	No	HMY.
Myrcene	No	SCM, (2).
n-Nonane	No	HMY, PLC.
n-Octadecane	No	HMY.
n-Octane	No	HMY, PLC.
n-Tetradecane	No	HMY.
All other hydrocarbons	No	DUP, WTK.
2-Mercaptoethanol	No	AAC, PLC.
Methyl sulfide (Dimethyl sulfide)	No	GAY.
Methyl sulfone (Dimethyl sulfone)	No	GAY.
Methyl sulfoxide (Dimethyl sulfoxide)	No	GAY.

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Other miscellaneous acyclic chemicals—Continued		
Octadecanoic acid, 2-(1-carboxyethoxy)-1-methyl-2-oxoethyl ester, sodium salt	No	WTC.
Organo-aluminum compounds:	Yes	
Aluminum acetylacetonate complex	No	MCK.
Aluminum di- <i>sec</i> -butoxide acetoacetic ester chelate	No	CHT.
Aluminum diisopropoxide acetoacetic ester chelate	No	CHT, KCH.
Aluminum ethyl-3-oxobutanoate-O ₁ , O ₃ -dihydroxy T-4	No	CHT.
Aluminum isopropoxide	No	CHT, KCH.
Aluminum, oxo(2-propanolato)	No	KCH.
Aluminum tri- <i>sec</i> -butoxide	No	CHT.
Diethylaluminum chloride	No	TNA, TSA.
Diethylaluminum ethoxide	No	TSA.
Diethylaluminum iodide	No	TNA, TSA.
Diisobutylaluminum chloride	No	TNA, TSA.
Diisobutylaluminum hydride	No	TNA, TSA.
Ethylaluminum dichloride	No	TNA, TSA.
Ethylaluminum sesquichloride	No	TNA, TSA.
Isobutylaluminum chloride	No	TSA.
Isopropenylaluminum	No	TSA.
Oxy-aluminum octanoate	No	CHT, KCH.
Sodium dihydrobis(2-methoxyethoxy)aluminum hydride	No	HXL.
Tri- <i>n</i> -butyl aluminum	No	TNA, TSA.
Triethylaluminum	No	TNA, TSA.
Tri- <i>n</i> -hexyl aluminum	No	TNA, TSA.
Triisobutylaluminum	No	TNA, TSA.
Trimethylaluminum	No	TNA.
Tri- <i>n</i> -octylaluminum	No	TNA, TSA.
Tri-oxyaluminum tri-isopropoxide	No	CHT.
All other organo-aluminum compounds	No	KCH, MCB, TNA, TSA, (2).
Organo-boron compounds:	No	
N-Methyl-methanamine with borane (1:1)	No	(2).
2-Methyl-2-propanamine with borane (1:1)	No	(2).
Mixed alcohol borates	No	(2).
Triethylborane	No	(2).
Triethyl borate	No	ADC.
Triethyl boron	No	TSA.
Trimethoxyboroxine	No	(2).
N,N,N-Trimethyl methanaminium octahydrotriborate	No	(2).
All other organo-boron compounds	No	HCL, MHI.
Organo-lithium compounds:		
<i>n</i> -Butyllithium	No	FTE.
<i>sec</i> -Butyllithium	No	FTE.
Lithium hydroxystearate	No	WTC.
Organo-magnesium compounds:		
Butyl ethyl magnesium	No	TSA.
Di- <i>n</i> -butyl magnesium	No	TSA.
Di- <i>n</i> -hexyl magnesium	No	TSA.
Ethylmagnesium bromide	No	ARA.
Magnesium methylate	No	SOI.
Methylmagnesium bromide	No	ARA.
Methylmagnesium chloride	No	ARA.
Organo-silicon compounds:	Yes	
N-Aminoethylaminopropyl trimethoxysilane	No	KF.
α -Chloropropyltrichlorosilane	No	DCC.
Chloropropyltrimethoxysilane	Yes	DCC, KF, UCC.
Chlorotrimethylsilane	No	DCC, UCC.
Cyclohexylmethyl dimethoxy silane	No	(2).

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 47)
Acyclic—Continued		
Other miscellaneous acyclic chemicals—Continued		
Organo-silicon compounds—Continued		
Dichlorodimethylsilane	No	DCC.
Dichloromethylsilane	No	DCC, UCC.
Dichloromethylvinylsilane	No	DCC, UCC.
Dichlorooctamethyl tetrasiloxane	No	PIC.
Divinyl tetramethyldisiloxane	No	KF.
α -Glycidoxypropyltrimethoxysilane	No	UCC.
Hexamethyldisilazane	No	KF, SCM.
Isobutyltrimethoxysilane	No	KF.
Mercaptopropyltrimethoxysilane	No	KF, UCC.
α -Methacryloxypropyltrimethoxysilane	No	UCC.
Methyltrimethoxysilane and polymethyltrisiloxane	No	DCC, KF, UCC.
Polyoxyalkene silicones	No	UCC.
Silicone fluids	Yes	DCC, SPD, SWS, UCC.
Silicone resins for mold release agents	No	CNI.
Trichloromethylsilane	No	DCC.
Trichloropropylsilane	No	DCC.
Trichlorovinylsilane	No	UCC.
(Trimethoxysilyl propyl) didecyl methylammonium chloride	No	(²).
Tris(2-methoxyethoxy)vinyl silane	No	KF.
Tris(pentamethyldisiloxanyl)-3-methacrylatopropyl silane	No	(²).
Vinyltriethoxysilane	No	KF, UCC.
Vinyltrimethoxy silane	No	KF.
All other organo-silicone compounds	No	ARO, KF, SCM, UCC, (²), (²).
Organo-tin compounds:	Yes	
Dibutyltin bis(butylmaleate)	No	CCA.
Dibutyltin bis(isooctylmercaptoacetate)	No	WTC, (²).
Dibutyltin bis(mercaptolaurate)	No	(²).
Dibutyltin dichloride	No	WTC.
Dibutyltin-1OTG	No	WTC.
Dibutyltin oxide	No	(²).
Ester tin mercaptoesters	No	CCA.
Monomethyl tin	No	WTC.
Octyltin	No	CCA, (²).
Tin carboxylate	No	FER.
Tributyltin fluoride	No	(²).
Tributyltin propylene glycol maleate	No	CCA.
All other organo-tin compounds	No	CCW, COS, SCM.
Organo-zinc compounds:		
Diethylzinc	No	TSA.
Zinc acetylacetonate complex	No	MCK.
Perchloromethanethiol (Perchloromethyl mercaptan)	No	ICI, (²).
Phosgene (Carbonyl chloride)	Yes	DUP, ICI, MOB, OMC, PPG, VDM.
Pine oil, synthetic	No	NCI.
Potassium 2-methyl-2-butanol	No	(²).
Potassium 2-methyl-2-propanol	No	(²).
Sodium ethoxide	No	RBC.
Sodium methoxide (Sodium methylate)	Yes	HK, OMC, RBC.
Thioethanol, sodium salt	No	BAS.
Trifluoroethanol	No	HOC.
Trimethylsulfonium iodide	No	DPW.
All other miscellaneous acyclic chemicals	No	ABB, AIP, AMD, ANG, ASL, CGY, COC, DPW, DUP, EKT, HPC, NES, NOD, PAH, PIC, RBC, SHX, TCC, TLI, USR, (²), (²).

See footnotes at end of table.

Table 46—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1987

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics</i> ¹	<i>Manufacturers' identification codes (according to list in table 47)</i>
Acyclic—Continued		
Mixtures not specifically itemized:	Yes	
Alcohols, monohydric, and their esters, C ₈ and higher, mixed	No	EKX, (2).
Butyl formcel	No	HCL.
Celtone	No	HCL.
Fatty acid residues	No	DRL, SHX, SYP.
Gluconic acid and salts, mixed	No	PMP.
Glycol residues	No	ICI, OMC.
Lanolin alcohol mixtures	No	UCC.
Methyl formcel	No	HCL.
Morpholine residue stream	No	TX.
Oxidate light ends	No	HCF.
Oxo process bottoms	No	CXI.
All other mixtures of miscellaneous chemicals not specifically itemized	No	BAS, CGY, CXI, EKT, JSC, MON, NES, PCI, UCC, WAY.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated product.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 47

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
AAC	Alcolac, Inc.	COC	Columbia Organic Chemicals Co., Inc.
ABB	Abbott Laboratories	COS	Cosan Chemical Corp.
ACS	Allied Signal Inc., Engineered Material Sector	CPS	CPS Chemical Co., Inc.
ACY	American Cyanamid Co.	CRZ	James River Corp.
ADC	Anderson Development Co.	CWN	Upjohn Co., Fine Chemicals
AIP	Air Products & Chemicals, Inc.	CXI	Chemical Exchange Industries, Inc.
ALD	Aldrich Chemical Co., Inc.	CYL	Cyclo Chemicals Corp.
ALI	Anzon, Inc.	CYR	CYRO Industries
ALW	Albright & Wilson, Inc.	DAN	Dan River Inc., Chemical Products Div.
AMB	American Bio-Synthetics Corp.	DAZ	Diaz Chemical Corp.
AMD	Cyclo Products Inc.	DCC	Dow Corning Corp.
AMO	Amoco Corp.	DIX	Dixie Chemical Co., Inc.
ANG	Angus Chemical Co.	DKA	Denka Chemical Corp.
APC	Apollo Chemicals Corp.	DOM	Dominion Products, Inc.
ARA	Syntex Chemicals, Inc.	DOW	Dow Chemical Co.
ARC	Akzo Chemie America, Armak Chemicals	DPW	Deepwater, Inc.
ARO	Arnco	DRL	Unichema Chemicals, Inc.
ARS	Arsynco, Inc.	DUP	E. I. duPont de Nemours & Co., Inc. Chemicals & Pigments Dept. Polymer Products Dept.
ART	Aristech Chemical Corp.	DVC	Dover Chemical Corp. Sub. of ICC Industries, Inc.
ARZ	Arizona Chemical Co.	EFH	E. F. Houghton & Co.
ASH	Ashland Oil, Inc.	EHC	Ethichem Corp.
ASL	Specialtychem Products Corp.	EK	Eastman Kodak Co.:
ATL	Atlantic Industries, Inc.	EKT	Tennessee Eastman Co. Div.
ATR	Atlantic Richfield Co., Arco Chemical Co.	EKX	Texas Eastman Co. Div.
AZS	AZS Corp.	ELC	Elco Corp. Sub. of Detrex Chemical Industries, Inc.
AZT	Catalyst Resources, Inc.	EMR	Quantum Chemical Corp.
BAS	BASF Corp.	ENJ	Exxon Chemical Americas
BCC	Buffalo Color Corp.	ESA	East Shore Chemical Co.
BFG	B. F. Goodrich Co.	ESX	Essex Chemical Corp., Essex Industrial Chemicals, Inc.
BKC	J. T. Baker Chemical Co.	EVN	W. R. Grace & Co., Organic Chemicals Div. Evans Chemetics
BKM	Buckman Laboratories, Inc.	FER	Ferro Corp.: Ferro Chemical Div. Grant Chemical Div. Kell Chemical Div.
BOC	Biocraft Laboratories, Inc.	FMB	FMC Corp., Peroxygen Chemicals Div.
BOR	Borden Inc., Borden Chemical Div.	FMC	FMC Corp.
BRD	Lonza, Inc.	FMT	Fairmount Chemical Co., Inc.
BRI	Burlington Industries, Inc.	FOC	Handschy Industries, Inc., Farac Varnishes Chemicals
BTL	BTL Specialty Resin Corp.	FOR	Formosa Plastics Corporation Louisiana
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	FRE	Freeman Chemical Corp.
CAD	Akzo Chemie America, Noury Chemicals	FRO	Vulcan Materials Co., Chemicals Div.
CAS	Caschem, Inc.	FTE	Foote Mineral Co.
CBD	Chembond Corp.	FTX	Finetex, Inc.
CCA	Interstab Chemicals, Inc.	GAF	GAF Corp., Chemical Group
CCC	C.N.C. International Inc.	GAY	Gaylord Container
CCW	Morton-Thiokol, Inc., Carstab Div.	GE	General Electric Co.
CED	Cedar Chemical Co.	GGC	Georgia-Gulf Corp.: Boundbrook Div. Plaquemine Div.
CGY	Ciba-Geigy Corp.	GIV	Givaudan Corp.
CHG	Mobay Chemical Corp., Agricultural Chemicals Div.		
CHL	Chemol, Inc.		
CHP	C. H. Patrick & Co., Inc.		
CHT	Chattem, Inc.		
CIN	Stockhausen, Inc.		
CJO	C. J. Osborn Chemicals, Inc.		
CNE	Caln Chemical, Inc.		
CMB	Cambridge Industries Co.		
CNI	Conap, Inc.		
CNP	DSM Chemicals Augusta, Inc.		

Table 47—Continued

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1987

Code	Name of company	Code	Name of company
GP	Georgia-Pacific Corp., Resins Operations	NCI	Union Camp Corp., Terpene & Aromatics Div.
GTL	Great Lakes Chemical Corp.	NCI	Union Camp Corp., Chemical Products Div.
HAL	C. P. Hall Co.	NES	Ruetgers-Nease Chemical Co.
HCC	Hatco Chemical Corp.	NEV	Neville Chemical Co.
HCF	Cape Industries	NOC	Norac Co., Inc. Mathe Div.
HCL	Hoechst Celanese Corp: Chemical Group Div. Fibers Div. Sou-Tex Works	NOD	Nuodex, Inc.
HCP	Honig Chemical & Processing Corp.	NWP	USI Chemicals Co. Inc.
HDG	Hodag Chemical Corp.	OH	Anaquest
HEX	Hexagon Laboratories, Inc.	OMC	Olin Corp.
HFT	Syntex Agribusiness, Inc., Nutrition & Chemical Div.	ORT	Roehr Chemicals, Inc.
HK	Occidental Chemical Corp., & Specialty Chemical Div.	PAC	Pacific Anchor Chemical Corp.
HML	Hummel Chemical Co.	PD	Parke-Davis, Div. of Warner-Lambert Co.
HMP	W. R. Grace & Co., Hampshire Chemicals Div.	PAH	Parish Chemical Co.
HMY	Humphrey Chemical Co.	PAS	Pennwalt Corp.
HOC	Halocarbon Products Corp.	PCI	Piedmont Chemical Industries, Inc.
HPC	Hercules, Inc.	PDG	P.D. Glycol
HRT	Hart Products Corp.	PEL	Pelron Corp.
HTM	Haltermann Ltd. Co.	PEN	CPC International, Inc., Penick Corp.
HXL	Hexcel Corp., Hexcel Chemical Products	PFN	Pfanzstiehl Laboratories, Inc.
ICI	ICI Americas, Inc.: Chemicals Div. Rubicon Inc.	PFZ	Pfizer, Inc. and Pfizer Pharmaceuticals, Inc.
IFF	International Flavors & Fragrances, Inc.	PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.
IMC	Pitman-Moore Industrial Chemicals Div.	PIC	Pierce Chemical Co.
JRC	Jarchem Industries, Inc.	PKI	Perkins Industries, Inc.
JSC	Sybron Chemicals, Inc.	PLC	Phillips Petroleum Co.
KCH	Joseph Ayers, Inc.	PLS	Plastics Engineering Co.
KF	Dynamit Nobel Chemical Div.	PMP	PMP Fermentation Products, Inc.
KLM	Kalama Chemical, Inc.	PPG	PPG Industries, Inc.
KMI	Kemin Industries, Inc.	PSG	PMC Specialities Group, Inc.
LCP	LCP Chemicals - West Virginia, Inc.	PST	Perstorp Polyols, Inc.
LEM	Napp Chemicals, Inc.	QKO	QO Chemicals, Inc.
LIL	Eli Lilly & Co.	RBC	Artel Chemical Corp.
LYP	Lyondell Petrochemical Co.	RCI	Reichhold Chemicals, Inc.
MAL	Mallinckrodt, Inc.	RCN	Racon, Inc.
MCB	Borg-Warner Corp., Borg-Warner Chemicals	RDA	Rhone-Poulenc, Inc.
MCI	Mooney Chemicals, Inc.	REG	Regis Chemical Co.
MCK	MacKenzie Chemical Works, Inc.	REM	Remington Arms Co., Inc.
MHI	Morton-Thiokol, Inc., Ventron Div.	REZ	Interez, Inc.
MIL	Milliken & Co., Milliken Chemical Co.	RH	Rohm & Haas Co.
MLS	Miles Laboratories, Inc., Biotechnology Group	RPC	Hi-Tek Polymers, Inc., Lyndal Div.
MMC	EM Industries, Inc., EM Science Div.	RSA	R.S.A. Corp.
MNA	Monsanto Agricultural Co.	S	Sandoz, Inc.
MOB	Mobay Chemical Corp., Pittsburgh Div.	SBC	Scher Chemicals, Inc.
MON	Monsanto Co.	SCM	SCM Corp.: Gildco Organic.
MRF	Morflex Corp.	SCP	Henkel Corp.
MRK	Merck & Co., Inc.	SD	Sterling Drug, Inc.: Sterling Pharmaceuticals, Inc.
NCC	Niacet Corp.	SDC	Sandoz Chemicals Corp.
		SDW	Sterling Drug, Inc. Sterling Organics Div.
		SHP	Shepherd Chemical Co.
		SHC	Shell Oil Co., Shell Chemical Co. Div.
		SHX	Sherex Chemical Co., Inc.

Table 47—Continued

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1987

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
SK	SmithKline Chemicals.	UPM	UOP. Inc.
SM	Mobil Oil Corp.: Chemical Products Div.	USB	U. S. Borax & Chemical Corp., U.S. Borax Research Corp.
SNO	SunOlin Chemical Co.	USI	Quantum Chemical Corp., USI Div.
SOH	Standard Oil Chemical Co.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SOI	Speciality Organics, Inc.	UTC	Unitex Chemical Corp.
SOL	Southland Corp., Fine Chemical Div.	VCM	Vanchem, Inc.
SOM	Southland Corp.	VDM	Van De Mark Chemical Co., Inc.
SPD	General Electric Co., Silicone Products Dept.	VEL	Velsicol Chemical Corp.
SQA	Sequa Chemicals, Inc.	VIK	Viking Chemical Co.
SWS	Wacker Silicones	VNC	Vanderbilt Chemical Corp.
SYL	Sylvachem Corp.	VND	Van Dyk, Div. of Mallinckrodt, Inc.
SYP	Synthetic Products Co., Division of Plastic Specialties & Technology, Inc.	VST	Vista Chemical Co.
TCC	Sybron Chemicals, Inc.	WAY	Olin Hunt Specialty Products, Inc.
TCH	Quantum Chemical Corp., Tylon Div.	WCC	White Chemical Corp.
TLC	Twin Lake Chemical, Inc.	WCL	Wright Chemical Corp.
TLI	Teledyne Industries, Inc., Teledyne McCormick Selph	WLN	Wilmington Chemical Corp.
TNA	Ethyl Corp.	WM	Inolex Chemical Co.
TNI	Gillette Co., Chemical Div.	WPG	West Point—Pepperell, Inc., Grifftex Chemical Co. Sub.
TRO	Troy Chemical Corp.	WTC	Witco Chemical Corp.
TSA	Texas Alkyls, Inc.	WTH	Union Camp Corp.
TU	Tenn-USS Chemicals Co.	WTK	Whittaker Corp., Heico Chemicals Div.
TX	Texaco Chemical Co.	WTL	Pennwalt Corp., Lucidol Div.
TZC	Magnesium Elektron, Inc.	WVA	Westvaco Corp.,
UCC	Union Carbide Corp.	ZOC	Sandoz Corp. Protection

Note.—Complete names, telephone number, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

APPENDIX A
DIRECTORY OF MANUFACTURERS

Table A-1

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

<i>Identifi- cation Code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
AEP	A & E Plastic Inc	818-968-3801	14505 Proctor Ave. Industry, CA 91749.
AZS	AZS Corp	404-859-0536	762 Marietta Blvd., N.W., Atlanta, GA 30318.
ABB	Abbott Laboratories	312-937-7262	14th St. & Sheridan Rd., N. Chicago, IL 60064.
ABS	Abex Corp	703-662-3871	P. O. Box 3250, Winchester, VA 22601.
ILI	Acme Steel Company	312-849-2500	13500 S. Perry Avenue Riverdale, IL 60627
ACO	Adco Chemical Co	201-589-0880	129 Rutherford St., Newark, NJ 07105.
AIP	Air Products & Chemicals, Inc	215-481-4911	P. O. Box 538, Allentown, PA 18105.
AJY	Ajay Chemicals, Inc	404-943-6202	P. O. Box 127, Powder Springs, GA 30073.
AJI	Ajinomoto U.S.A., Inc	201-488-1212	4020 Ajinomoto Dr., Raleigh, NC 27610.
ARC	Akzo Chemie America, Armak Chemicals	312-906-7500	300 S. Riverside, Plaza Chicago, IL 60606.
CAD	Akzo Chemie America, Noury Chemicals	716-778-8554	2153 Lockport-Olcott Rd., Burt, NY 14028
ALW	Albright & Wilson, Inc	804-752-6100	P. O. Box 26229, Richmond, VA 23260.
ALC	Alco Chemical Corp	615-629-1405	909 Mueller Dr., Chattanooga, TN 37406.
AAC	Alcolac, Inc	301-355-2600	3440 Fairfield Rd., Baltimore, MD 21226, and 190 Wintersen Rd., Linthicum, MD 21090.
ALD	Aldrich Chemical Co., Inc	414-273-3850	940 W. St. Paul Ave., Milwaukee, WI 53233.
ALE	Alex Chemical Co	717-462-3500	119 N. Union St., Shenandoah, PA 17976.
ACH	Allico Chemical Corp	316-783-1321	P.O. Box 247, Galena, KS 66739
ALG	Allegheny Chemical Corp	814-772-3965	Gillis Ave., Ridgway, PA 15853.
ALL	Alliance Chemical, Inc	201-945-5400	Linden Ave., Ridgefield, NJ 07657.
ACS	Allied Signal Inc	201-455-5000	Columbia Rd. & Park Ave., Morristown, NJ 07960.
BME	Engineered Materials Sector Allied Signal-Bendix, Friction	518-783-0537	P. O. Box 238 Troy, NY 12180.
ALX	Alox Corp	716-282-1295	3943 Buffalo Ave., Niagara Falls, NY 14303.
APH	Alpha Corporation of Tennessee	901-853-2450	P. O. Drawer A, Hwy. 57 E, Collierville, TN 38017.
ALP	Alpha Laboratories, Inc	303-756-1338	P. O. Box 22223, Denver, CO 80222.
HES	Amerada Hess Corp. (Hess Oil Virgin Island Corp.)	201-750-6000	1 Hess Plaza, Woodbridge, NJ 07095-0961.
AMB	American Bio-Synthetics Corp	414-384-7017	710 W. National Ave., Milwaukee, WI 53204.
ACY	American Cyanamid Co	201-831-2768	One Cyanamid Plaza, Wayne, NJ 07470.
AMU	American Emulsions, Inc	404-226-7028	1202 Dozier St., Dalton, GA 30721.
API	American Polymers, Inc	617-987-0144	Old Webster Rd., Oxford, MA 01540.
ASY	American Synthetic Rubber Corp	502-448-2761	P. O. Box 32960, Louisville, KY 40232.
SPO	Ameripol Synpol Co. Div. of	216-762-4442	146 South High St. Akron, OH 44308-1493.
HVG	Ametek, Inc., Haveg Div	302-995-0400	900 Greenbank Rd., Wilmington, DE 19808.
AMO	Amoco Corporation	312-856-6111	P. O. Box 87703 Mail Code 1201, Chicago, IL 60680-0703.
AMV	Amvac Chemical Corp	213-264-3910	4100 E. Washington Blvd., Los Angeles, CA 90023.
OH	Anaquest	608-273-0019	2005 W. Beltline Hwy., Madison, WI 53713.
ADC	Anderson Development Co	517-263-2121	1415 E. Michigan St., Adrian, MI 49221.
ANG	Angus Chemical Co	312-498-6700	2211 Sanders Rd., Northbrook, IL 60062.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
ALI	Anzon, Inc	215-427-3000	2545 Aramingo Ave., Philadelphia, PA 19125.
APX	Apex Chemical Co	201-354-5420	200 S. First St., Elizabethport, NJ 07206-0254.
APC	Appollo Chemical Corp	919-226-1161	1105 Southerland St., Graham, NC 27253.
APO	Apollo Colors, Inc	312-564-9190	899 Skokie Blvd., Northbrook, IL 60062.
AQU	Aqualon	302-996-2030	2711 Centerville Rd., Wilmington, DE 19850-5417.
ARD	Ardmore Chemical Co	201-481-2406	29 Riverside Ave., Newark, NJ 07104.
ART	Aristech Chemical Corp.: Chemical Div	412-433-2747	600 Grant St., Pittsburgh, PA 15230-0250.
	Clairton Plant	412-675-1752	600 Grant St., Pittsburgh, PA 15230-0250.
	Gary Works	219-888-4797	600 Grant Dt., Pittsburgh, PA 15230-0250.
ARN	Arenol Chemical Corp	718-784-0948	40-33 - 23d St., Long Island City, NY 11101.
ARZ	Arizona Chemical Co	904-785-6700	200 Caller Box 2447, Panama City, FL 32401.
ALS	Armco, Inc	513-425-500	P. O. Box 191, Ashland, KY 41105, and 1801 Crawford St., Middletown, OH 45043.
	Eastern Steel Div	513-425-2744	703 Curtis St., Middletown, OH 45043.
ARP	Armour Pharmaceutical Co	815-932-6771	P. O. Box 511, Kankakee, IL 60901.
ARK	Armstrong World Industries, Inc	717-397-0611	Liberty & Charlotte Sts., Lancaster, PA 17604.
ARO	ARNCO	714-739-7900	One Centerpointe Dr., LaPalma, CA 90623-1094.
ARL	Arol Chemical Products Co	201-344-1510	649 Ferry St., Newark, NJ 07105.
ARS	Arsynco, Inc., Sub Div. of Aceto Corp	718-898-2300	126-02 Northern Blvd., Flushing, NY 11368.
RBC	Artel Chemical Corp	304-755-3336	P. O. Box 550 Nitro, W.VA. 25143.
ASH	Ashland Oil, Inc	614-889-3333	P. O. Box 2219, Columbus, OH 43216.
	Ashland Petroleum Co	606-329-3333	P. O. Box 391, Ashland, KY 41101.
BLA	Astor Products, Inc., Blue Arrow Div	904-783-5000	5244 Edgewood Ct., Jacksonville, FL 32205.
ATL	Atlantic Industries, Inc	201-235-1800	10 Kingsland Rd., Nutley, NJ 07110.
ATR	Atlantic Richfield Co., Arco Chemical Co	215-359-2000	3801 Westchester Pike. Newtown Square, PA 19073.
APD	Atlas Powder Co., sub. of Tyler Corp	214-387-2400	P. O. Box 87, Joplin, MO 64802.
ARI	Atlas Refinery, Inc	201-589-2002	142 Lockwood St., Newark, NJ 07105.
RSN	Atochem Inc. Polymers Div	201-447-3300	266 Harristown Rd. Glen Rock, N.J. 07452.
AUX	Auralux Corp	203-886-2616	29 Scott Ave., Norwich, CT 06360.
KCH	Joseph Ayers, Inc BP America:	215-837-1808	275 Keystone Dr., Bethlehem, PA 18017.
SIF	Filon Div., Engineering Materials Co	213-757-5141	12333 South Van Ness Ave., Hawthorne, CA 90250.
SIC	Silmar Div., Engineering Materials Co	213-757-1801	12333 South Van Ness Ave., Hawthorne, CA 90250.
BAS	BASF Corp	616-392-2391 201-316-2937	491 Columbia Ave., Holland, MI 49423. and 100 Cherry Hill Rd., Parsippany, NJ 07054.
ICF	Inmont Div	201-365-3400 201-263-4050	1255 Broad St., Clifton, NJ 07015 and 100 Cherry Hill Rd., Parsippany, NJ 07054.
BTL	BTL Specialties Corp	419-244-5856	2112 Sylvon Ave., Toledo, Oh. 43606.
BKC	J. T. Baker Chemical Co	201-859-2151	222 Red School Lane, Phillipsburg, NJ 08865.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Ident- fication Code	Name of company	Telephone number	Office address
BCK	Beckman Instruments, Inc Diagnostic Systems Group	619-993-8740	2470 Faraday Ave. Carlsbad, CA 92008.
BIB	Spinco Div Beecham, Inc.:	714-871-4848	1050 Page Mill Rd., Palo Alto, CA 94304.
BEE	Beecham Laboratories Div	201-469-5200	101 Possumtown Rd., Piscataway, NJ 08854.
BEW	Beecham Western Hemisphere, Inc	201-881-3000	3 Garret Mountain Plaza, West Paterson, NJ 07424.
BCM	Belding Chemical Industries	212-944-6040	1430 Broadway, New York, NY 10018.
BLZ	Belzak Corp	201-773-0602	850 Bloomfield Ave., Clifton, NJ 07012.
BTS	Bethlehem Steel Corp	215-694-4522	866 Martin Tower - 8th Fl., Bethlehem, PA 18016.
BDS	Biddle Sawyer Corp.	212-736-1580	2 Penn Plaza - Suite 2439, New York, NY 10121.
BNS	Binney and Smith, Inc	215-253-6271	1100 Church Lane, Easton PA 18044-0431.
BOC	Biocraft Laboratories, Inc	201-796-3434	12 Industrial Park, Waldwick, NJ 07463.
BNP	Bison Nitrogen Products Co	712-277-1340	Terra Centre, 600 4th St., Sioux City, IA 51101.
BOE	Boehme Filatex, Inc	919-342-1051	Rt. 11 Box 5 Reidsville, N.C. 27320
LAK	Bofors Nobel, Inc	616-788-2341	5025 Evanston Ave., Muskegon, MI 49443.
BOR	Borden, Inc.: Borden Chemical Div	614-225-4000	180 E. Broad St., Columbus, OH 43215.
MCB	Borg-Warner Corp., Borg-Warner Chemicals	304-424-5411	International Center, Parkersburg, WV 26101.
BFP	Breddo Inc	913-321-5300	18th & Kansas Ave., Kansas City, KS 66105.
BMC	Brin-Mont Chemicals, Inc	919-292-0566	3921 Spring Garden St., Greensboro, NC 27407.
BRS	Bristol-Myers Co	212-546-4220	345 Park Ave., New York, NY 10154
BRU	M. A. Bruder & Sons, Inc	215-353-5100	52nd & Grays Ave., Philadelphia, PA 19143
BKM	Buckman Laboratories, Inc	901-278-0330	1256 N. McLean Blvd., Memphis, TN 38122.
BCC	Buffalo Color Corp	716-827-4500	100 Lee St., Buffalo, NY 14210.
BRI	Burlington Industries Inc	919-379-2000	3330 W. Friendly Ave. Greensboro, N.C. 27406
BRR	Burriss Chemical, Inc., Color Div	803-554-7511	175 Eschelon Rd., Greenville, SC 29605.
BUR	Burroughs Wellcome Co	919-248-3000	3030 Cornwallis Rd., Research Triangle Park, NC 27709.
CFI	CF Industries, Inc	312-438-9500	Salem Lake Dr., Long Grove, IL 60047.
CLU	CL Industries, Inc	217-662-2136	P. O. Box 218 Georgetown, IL 61846.
CCC	C.N.C. International, Inc	401-769-6100	20 Privilege St., Woonsocket, RI 02895.
CPC	International, Inc.:		
ACR	Acme Resin Corp	312-343-1900	10330 W. Roosevelt Rd. Westchester, IL 60153
PEN	Penick Corp	201-621-2804	158 Mount Olivet Ave., Newark, NJ 07114.
CPS	CPS Chemical Co., Inc	201-727-3100	P. O. Box 162, Old Bridge, NJ 08857.
CYR	CYRO Industries	201-930-2000	100 Valley Rd., Mr. Arlington, NJ 07856.
CNE	Cain Chemical, Inc	713-623-2246	5 Greenway Plaza, Houston, TX 77046.
GRL	Calgon Corp., Calgon Vestal Laboratories Div	314-862-2000	5035 Manchester Ave., St. Louis, MO 63110.
CMB	Cambridge Industries Co	617-924-0026	440 Arsenal St., Watertown, MA 02172.
HCF	Cape Industries	919-341-5500	P. O. Box 327 Wilmington, NC 28402.
SVC	Capital City Products Co	614-299-3131	1530 S. Jackson St., Janesville, WI 53545.
CBC	Carbose Corp	814-443-1611	100 Maple St., Somerset, PA 15501.
CGL	Cargill, Inc	612-475-7646	P. O. Box 5630, Minneapolis, MN-55420.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
CDT	Carondelet Coke Corp	314-638-2400	526 E. Catalan Street St. Louis, MO. 63111
CHC	Carpenter Chemical Co	804-359-0800	P. O. Box 27205, Richmond, VA 23261.
BSC	Cascade Resins, Inc	503-343-2111	P. O. Box 1989, Eugene, OR 97440.
CAS	Caschem, Inc	201-858-7900	40 Avenue A, Bayonne, NJ 07002.
CEI	CastChem, Inc	412-344-7500	P.O. Box 457 Muse, PA., 15350
AZT	Catalyst Resources, Inc	713-957-6818	2190 North Loop West, Suite 400, Houston, TX 77018.
CCL	Catawba-Charlab, Inc	704-523-4242	5046 Old Pineville Rd., Charlotte, NC 28217.
CED	Cedar Chemical Co	501-572-3701 901-685-5348	Highway 242 South, West Helena, AR 72390 and P. O. Box 3, Vicksburg, MS 39180.
CNT	Certainteed Corp	215-341-7000	P. O. Box 860, Valley Forge, PA 19482.
CPR	Certified Processing Corp	201-923-5200	U.S. Highway #22, Hillside, NJ 07205.
GRS	Champlin Petroleum Co	512-882-8871	P. O. Box 9176, Corpus Christi, TX 78469.
CHH	Chr. Hansen's Laboratory, Inc	414-476-3630	9015 W. Maple St., West Allis, WI 53214.
CHT	Chattem, Inc	615-821-4571	1715 W. 38th St., Chattanooga, TN 37409.
CBD	Chembond Corp	503-687-8840	1600 Valley River Dr., Suite 390, Eugene, OR 97401.
CFX	Chemfax, Inc	601-863-6511	Three Rivers Rd., Gulfport, MS 39503.
CXI	Chemical Exchange Industries, Inc	713-526-8291	3813 Buffalo Speedway, Houston, TX 77098.
CMT	Chemithon Corp	206-937-9954	5430 W. Marginal Way, SW., Seattle, WA 98106.
CHL	Chemol Co	919-272-3121	2410 Randolph Ave., Greensboro, NC 27406.
CRT	Chemos Corp	201-623-3334	225-235 Emmet St., Newark, NJ 07114.
SOC	Chevron Corp., Chevron Chemical Co	415-842-5500	6001 Bollinger Canyon Rd., San Ramon, 94583.
CMC	Chromatic Color Corp	502-737-1700	305 Ring Rd., Elizabethtown KY, 42701.
CGY	Ciba-Geigy Corp	914-478-3131	444 Saw Mill River Rd., Ardsley, NY 10502.
FJI	Cincinnati Varnish Co	513-631-4270	1776 Mentor Ave., Cincinnati, OH 45212.
CGO	Citgo Petroleum Corp	318-491-6488	P. O. Box 1562, Lake Charles, LA 70602.
CGU	Citizens Gas & Coke Utility	317-631-2181	3133 Southeastern Ave., Indianapolis, IN 46203
CSP	Coastal Refining & Marketing Inc	713-877-1400	Nine Greenway Plaza, Houston, TX 77046.
CP	Colgate-Palmolive Co	212-310-2000	300 Park Ave., New York, NY 10022.
CLD	Colloids, Inc	201-926-6100	394 Frelinghuysen Ave., Newark, NJ 07114.
CIC	Color Chem International Corp	201-444-8563	7 Plymouth Rd., Glen Rock, NJ 07452.
CCS	Colorado Chemical Specialties, Inc	303-245-8148	569 24-1/4 Rd., Grand Junction, CO 81501.
CRS	Colorado Resins, Inc	303-245-8148	569 24-1/4 Rd., Grand Junction, CO 81501.
CNC	Columbia Nitrogen Corp	404-823-4300	#23 Columbia Nitrogen Road, Augusta, GA 30903.
COC	Columbia Organic Chemical Co., Inc	803-425-1786	1424 Mt. Zion Road, Cassatt SC 29032
CAC	Cominco Fertilizers Inc	509-747-6111	W. 818 Riverside Ave., Spokane, WA 99201.
CMP	Commercial Products Co., Inc	201-427-6887	117 Ethel Ave., Hawthorne, NJ 07506.
CNI	Conap, Inc	716-372-9650	1405 Buffalo St., Olean, NY 14760.
CON	Concord Chemical Co., Inc	609-966-1526	17th & Federal Sts., Camden, NJ 08105.
CO	Conoco Specialty Products, Inc	713-293-1764	600 N. Dairy Ashford Rd. Houston, TX 77079.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
CTP	Continental Polymers, Inc	213-637-2103	2225 E. Del Amo Blvd., Compton, CA 90220.
CPV	Cook Paint & Varnish Co	816-391-6000	P. O. Box 419389, Kansas City, MO 64141.
COP	Coopers Creek Chemical Corp	215-828-0375	River Rd., West Conshohocken, PA 19428.
CPY	Copolymer Rubber & Chemical Corp	504-355-5655	P. O. Box 2591, Baton Rouge, LA 70821.
COS	Cosan Chemical Corp	201-460-9300	400 - 14th St., Carlstadt, NJ 07072.
CMS	Cosmic Plastics, Inc	818-365-3249	12314 Gladstone Ave., San Francisco, CA 91342.
CRD	Croda, Inc	212-683-3089	183 Madison Ave., New York, NY 10016.
CK	Crompton & Knowles Corp	215-775-8000	P. O. Box 341, Reading, PA 19603.
CCP	Crown Central Petroleum Corp	301-539-7400	1 N. Charles St., Baltimore, MD 21203.
USM	Crown Metro, Inc	803-299-1331	P. O. Box 5695, Greenville, SC 29606.
CYT	Cumberland International Corp	713-682-1221	1523 N. Post Oak Rd., Houston, TX 77055.
CTR	Customs Resins Div. of Bemis Co., Inc . . .	502-826-7641	Highway 136 West, Henderson, KY 42420.
CYH	Cychem, Inc	513-681-0099	266 W. Mitchell Ave., Cincinnati, OH 45216.
CYL	Cyclo Chemical Corp	305-592-6700	7500 N.W. 66th St., Miami, FL 33166.
AMD	Cyclo Products, Inc	213-582-6411	1922 E. 64th St., Los Angeles, CA 90001.
CTL	Continental Chemical Co	201-472-5000	270 Clifton Blvd., Clifton, NJ 7011-3686
CNP	DSM Chemicals Augusta, Inc	404-823-4240	P. O. Box 2451, Augusta, GA 30903.
DAN	Dan River, Inc., Chemical Products Div.	804-799-7000	P. O. Box 261, Danville, VA 24543.
DPI	Dart Polymers, Inc., Sub. of Dart Container Corp.	517-676-3800	432 Hogsback Rd., Mason, MI 48854.
DGO	Day-Glo Color Corp	216-391-7070	4515 St. Clair Ave., Cleveland, OH 44103.
DPW	Deepwater, Inc	714-751-3522	P. O. Box 17599, Irvine, CA 92713.
DGC	Degussa Corp	201-641-6100	65 Chassenger Rd., Ridgefield Park, NJ 07660.
DRR	Delta Resins & Refractories, Inc	414-462-1200	6263 N. Teutonia Ave., Milwaukee, WI 53209.
DKA	Denka Chemical Corp	713-477-8821	8701 Park Place Blvd., Houston, TX 77017.
DNS	Dennis Chemical Co	314-771-1800	2700 Papin St., St. Louis, MO 63103.
DRB	Derby Co., Inc	617-342-5831	119 Authority Dr., Fitchburg, MA 01420.
DSO & PLX UDI	DeSoto, Inc	312-391-9000	1700 S. Mt. Prospect Rd., Des Plaines, IL 60018.
	DeSoto, Inc	312-391-9000	1220 N. Main Place, Fort Worth, TX 76106.
DTR	Detroit Coke Corp	312-842-6222	7819 West Jefferson Ave., Detroit, MI 48209
DEX	Dexter Chemical Corp	212-542-7700	845 Edgewater Rd., Bronx, NY 10474.
HYA	Dexter Corp, Hysol Aerospace & Industrial Products Div., Dexter Specialty Chemical Group.	415-687-4201	2850 Willow Pass Road, Pittsburgh, CA. 94565.
HYC	Dexter Corp., Hysol Electronic Chemical Div., Dexter Specialty Chemical Group	818-968-6511	15051 E. Don Julian Rd., Industry, CA 91749.
MID	Midland Div	312-623-4200	E. Water St., Waukegan, IL 60085.
AGP	Dial Corp	312-892-4381	2000 Aucutt Rd., Montgomery, AL 60538.
DA	Diamond Shamrock Refining & Marketin . . .	512-641-6800	P. O. Box 696000, San Antonio, TX 78269-6000.
DAZ	Diaz Chemical Corp	716-638-6321	40 Jackson St., Holley, NY 14470.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
PLN	Disogrin Industries Corp	603-669-4050	Grenier Industrial Airpark, Manchester, NH 03103.
DIX	Dixie Chemical Co., Inc	713-526-2604	3635 W. Dallas Ave., Houston, TX 77019.
DRC	Dock Resins Corp	201-862-2351	1512 W. Elizabeth Ave., Linden, NJ 07036.
DOM	Dominion Products, Inc	718-499-3050	882 - 3rd Ave., Brooklyn, NY 11232.
DVC	Dover Chemical Corp. Sub. of ICC	216-343-7711	W. 15th & Davis Sts., Dover, OH 44622.
DOW	Dow Chemical Co	517-636-6125	2020 Willard H. Dow Center, Midland, MI 48674.
DCC	Dow Corning Corp	517-496-4000	2200 W. Salzburg Rd., Midland, MI 48686-0994.
DRX	Drexel Chemical Corp	901-774-4370	2487 Pennsylvania St., Memphis, TN 38109.
ABP	Drummond Company, Inc	205-945-6301	P. O. Box 10246, Birmingham, AL 35209.
CHO	Ducon	618-654-2070	P. O. Box 219, Highland, IL 62249.
DUP	E. I. duPont de Nemours & Co., Inc	302-774-1000	1007 Market St., Wilmington, DE 19898.
DSC	Dye Specialties, Inc	201-866-9504	100 Plaza Center, Secaucus, NJ 07094.
KF	Dynamit Nobel Chemicals, Inc	201-784-0200	10 Link Dr., Rockleigh, NJ 07647.
MMC	EM Industries, Inc., EM Science Div	609-354-9200	2909 Highland Ave., Cincinnati, OH 45212.
AGI	EMS—American Grilon, Inc	803-481-9173	P. O. Box 1948, Sumter, SC 29151.
ECC	Eastern Color & Chemical Co	401-331-9000	35 Livingston St., Providence, RI 02904.
EK	Eastman Kodak Co	716-724-4000	343 State St., Rochester, NY 14650.
EKT	Tennessee Eastman Co. Div	615-229-2000	P. O. Box 1974, Kingsport, TN 37662.
EKX	Texas Eastman Co. Div	214-236-5000	P. O. Box 1974, Kingsport, TN 37662.
ESA	East Shore Chemical Co,	616-726-3106	1221 E. Barney Ave., Muskegon, MI 49443.
ELN	Elan Chemical Co	201-344-8014	268 Doremus Ave., Newark, NJ 07105.
ELC	Elco Corp. Sub. of Detrex Chemical	216-749-2605	1000 Beltline Rd. Cleveland OH 44109. Industries, Inc.
ELP	El Paso Products Co	915-333-7200	619 N. Grant, Odessa, TX 79761.
EMR	Emery Chemicals, Division of National Distillers & Chemical Corp	212-949-5000	11501 North Lake Dr., Cincinnati, OH 45249.
USM	Emhart Corp., Bostik Div	617-777-0100	Boston St., Middleton, MA 01949.
EKO	Empire Coke Co	205-323-2400	1927 1st Ave., N., Birmingham, AL 35203.
ENO	Enenco, Inc	901-320-5800	755 Crossover Lane, Memphis, TN 38117.
SAR	Esschem, Inc	215-521-3800	P. O. Box 56, Essington, PA 19029.
ESS	Essential Industries, Inc	414-691-3000	28391 Essential Rd., Merton, WI 53056.
ESX	Essex Chemical Corp., Essex Industrial Chemicals, Inc	201-773-6300	1135 Broad St., Clifton, NJ 07015.
EHC	Ethichem Corp	201-933-7880	150 Grand St., Carlstadt, NJ 07072. South Carolina 29606
ETC	Ethox Chemicals, Inc.	803-277-1620	P.O. Box 5094, Station B, Greenville, SC 29606.
TNA	Ethyl Corp	804-788-5000	330 S. 4th St., Richmond, VA 23219.
ENJ	Exxon Chemical Americas	713-870-6000	P.O. Box 3272, Houston, TX 77253-3272.
FMC	FMC Corp	215-299-6000	2000 Market St., Philadelphia, PA 19103.
FMN	Agricultural Chemical Group	215-299-6000	2000 Market St., Philadelphia, PA 19103.
FMB	Peroxygen Chemicals Div	716-876-8300	Sawyer Ave. & River Rd., Town of Tonawanda, NY 14150.
FRP	FRP Co	912-367-3616	P. O. Box 349, Baxley, GA 31513.
FAB	Fabricolor Manufacturing Corp	201-742-3900	24-1/2 Van Houten St., Paterson, NJ 07509.
FMT	Fairmount Chemical Co., Inc	201-344-5790	117 Blanchard St., Newark, NJ 07105.
FRI	Farmland Industries, Inc	913-459-6000	P.O. Box 308, Lawrence KS 66044.
	Farmland Industries, Inc	816-238-8111	1417 Lower Lake Rd., St. Joseph, A-7 Mo 64502.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
FEL	Felton International, Inc	718-497-4664	599 Johnson Ave., Brooklyn, NY 11237.
SDS	Fermenta Plant Protection	216-357-4100	5966 Haisley Rd., Mentor, OH 44061-8000.
FER	Ferro Corp. Ferro Chemical Div	216-641-8580	7050 Krick Rd., Bedford, OH 44146.
	Grant Chemical Div	504-654-6801	P. O. Box 263, Baton Rouge, LA 70821.
	Kell Chemical Div	219-931-2630	3000 Sheffield Ave., Hammond, IN 46320.
CSD	Fina Oil & Chemical Co., Cosden	214-750-2400	8350 N. Central, Dallas, TX 75206.
FTX	Chemical Div Finetex, Inc	201-797-4686	418 Falmouth Ave., Elmwood Park, NJ 07407.
	Firestone Tire & Rubber Co.:		
FRF	Firestone Fibers & Textile Co	804-541-2000	P. O. Box 450, Hopewell, VA 23860.
FRS	Firestone Synthetic Rubber & Latex	216-379-7495	P.O. Box 26611, Akron, OH 44319-0006.
	Co. Div		
CI	Firmenich, Inc	609-452-1000	P.O. Box 5880, Princeton, NJ 08543.
FST	First Chemical Corp	601-762-0870	P. O. Box 1427, Pascagoula, MS 39567.
FPC	Flambeau Paper Corp	715-762-3231	200 N. First Ave., Park Falls, WI 54552.
FLM	Fleming Laboratories, Inc	704-372-5613	2215 Thrift Rd., Charlotte, NC 28234.
CIK	Flint Ink Corp., Cal/Ink Div	415-525-1188	1404 - 4th St., Berkeley, CA 94710.
EFP	Fluorocarbon Co	216-274-3171	Main & Orchard Sts. Mantua, OH 44255.
FTE	Foot Mineral Co	215-363-6500	Route 100, Exton, PA 19341.
FOR	Formosa Plastics Corp-Louisiana	504-356-3341	P. O. Box 271, Baton Rouge, LA 70821.
	Formosa Plastics Corp-USA	201-966-6980	66 Hanover Rd., Florham Park, NJ 07932.
FLN	Franklin International	614-443-0241	2020 Bruck St., Columbus, OH 43207.
FRE	Freeman Chemical Corp	414-284-5541	217 Freeman Dr. Port Washington, WI 53074.
WLC	Freeport McMoran Resource Partners	504-582-4000	1615 Poydras St. New Orleans, LA 70112.
FB	Fritzsche Dodge & Olcott, Inc	212-929-4100	76 - 9th Ave., New York, NY 10011.
FLH	H.B. Fuller Co	612-645-3401	1200 W. County Rd. E., St. Paul, MN 55112.
COO	H.B. Fuller Co	617-658-3351	820 Woburn St. Wilmington, MA 01887
GAF	GAF Corp., Chemical Group	201-628-3000	P. O. Box 12, Linden, NJ 07036.
GLX	Galxie Chemical Corp	201-279-0558	26 Piercy St., Paterson, NJ 07524.
GAN	Ganes Chemicals, Inc	212-391-2580	1114 6th Avenue, New York, NY 10036.
GAY	Gaylord Chemical Corp	206-254-0922	P.O. Box 1209, Slidell, LA 70459-1209
GNT	Gencorp Polymers Products	216-869-4444	165 S. Cleveland Ave. Mogadore, OH 44260.
GNR	Genencor, Inc	415-742-7500	180 Kimball Way, S. San Francisco, CA 94080.
GE	General Electric Co.:		
	Electromaterials	614-622-5310	1350 S. Second St., Coshocton, OH 43812
	Plastics Business Group	413-494-4793	1 Plastics Ave., Pittsfield, MA 01201.
GEP	Plastics Div	413-448-4656	1 Plastics Ave., Pittsfield, MA 01201.
GEI	Insulating Materials	518-233-3757	1 Campbell Rd., Schenectady, NY 12345.
SPD	Silicone Products Div	518-237-3330	260 Hudson River Rd., Waterford, NY 12188.
GNF	General Foods Manufacturing Corp.,	201-420-3432	1125 Hudson St., Hoboken, NJ 07030.
	Maxwell House Coffee Co		
GLC	General Latex and Chemical Corp	617-576-8000	P.O. Box 498, Ashland, OH 44805.
GRG	P.D. George Co	314-621-5700	5200 N. Second St., St. Louis, MO 63147.
GGC	Georgia Gulf Corp:		
	Bound Brook Div	404-395-4549	400 Perimeter Ctr., Terr. Suite 595, Atlanta, GA 30346.
	Houston Div	404-395-4549	400 Perimeter Ctr., Terr. Suite 595, Atlanta, GA 30346.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
GGC	Georgia Gulf Corp—Continued: Plaquemine Div	404-521-4000	P.O. Box 105197, Atlanta, GA 30348.
	PVC Compound Div	404-395-4500	Evergreen Rd., Plaquemine, LA 70765.
	Georgia-Pacific Corp.:		
PSP	Bellingham Div	206-733-4410	P. O. Box 1236, Bellingham, WA 98227.
GP	Resins Inc	404-521-4000	133 Peachtree St. NE., Atlanta, GA 30303
TNI	Gillette Co	617-421-7000	3500 W. 16th St., N. Chicago, IL 60064.
GBF	Gist-Brocades, USA, Inc	704-527-9000	5550 - 77 Center Dr., Charlotte, NC 28224-1068.
GIV	Givaudan Corp	201-365-8000	100 Delawanna Ave., Clifton, NJ 07014.
GLD	Glidden Company	216-344-8000	925 Euclid Ave., Cleveland OH 44115
BFG	B. F. Goodrich Co	216-447-6000	6100 Oak Tree Blvd., Cleveland, OH 44131.
HGC	Goodson Polymers, Inc	513-339-0591	1250 South Union St., Troy, OH 45373
GYR	Goodyear Tire & Rubber Co	216-796-2121	1144 E. Market St., Akron, OH 44316.
	W. R. Grace & Co.:		
GCC	Agricultural Chemicals Group	212-819-5500	P. O. Box 27147, Memphis, TN 38127.
HMP	Hampshire Chemicals Div	617-861-6600	55 Hayden Ave., Lexington, MA 02173.
EVN	Organic Chemicals Div., Evans	617-861-6600	90 Tokeneke Rd., Darien, CT 06820.
	Chemetics.		
GRD	Organic Chemicals & Polymers Div	617-801-6600	55 Hayden Ave., Lexington, MA 02173.
GPC	Grain Processing Corp	319-264-4211	P. O. Box 349, Muscatine, IA 52761.
CPC	Grant Industries, Inc	201-791-6700	P. O. Box 360, Elmwood Park, NJ 07407.
GTL	Great Lakes Chemical Corp	317-497-6100	Hwy. 52 N.W., Lafayette, IN 47906.
GNW	Greenwood Chemical Co	703-456-6832	State Hwy. #690, Greenwood, VA 22943.
GDC	Gresco, Inc	919-475-8101	216 E. Holly Hill Rd., Thomasville, NC 27360.
GRV	Guardsman Chemicals, Inc	616-452-5181	1350 Steele Ave., S.W., Grand Rapids, MI 49507.
GSS	Gulf States Steel, Inc	205-543-6201	174 South 26th Street Gadsden AL 35904.
HAR	Haarmann & Reimer Corp	201-686-3132	70 Diamond Rd., Springfield, NJ 07081.
HAL	C. P. Hall Co	312-767-4600	7300 S. Central Ave., Chicago, IL 60638.
HOC	Halocarbon Products Corp	201-343-8703	82 Burlews Ct., Hackensack, NJ 07601.
HTM	Haltermann Ltd. Co	713-452-5951	16717 Jacintoport Blvd., Houston, TX 77015.
FOC	Handschy Industries, Inc.,	312-597-7990	13601 S. Ashland Ave., Riverdale, IL 60627-1099.
	Farac Varnishes & Chemicals		
HAN	Hanna Chemical Coatings Corp	614-294-3361	1313 Windsor Ave., P.O. Box 147, Columbus, OH 43216.
HSH	Harshaw/Filtrol Partnership	216-292-9200	3400 Band St., Louisville, KY 40212.
HRT	Hart Products Corp	201-433-6662	173 Sussex St., Jersey City, NJ 07302.
HCC	Hatco Chemical Co	201-738-1000	King George Post Rd., Fords, NJ 08863.
HKY	Hawkeye Chemical Co	319-243-5800	P.O. Box 899, Clinton, IA 52732.
HAP	Helmerich & Payne, Inc.,	713-424-5568	3601 Decker Dr., P.O. Box 1429, Baytown, TX 77520.
	Natural Gas Odorizing Div		
SCP	Henkel Corp	612-828-8000	7900 W. 78th St., Minneapolis, MN 55435.
HPC	Hercules, Inc	302-594-5000	Hercules Plaza, Wilmington, DE 19894.
HER	Heresite Protective Coating, Inc	414-684-6646	822 S. 14th St., Manitowoc, WI 54220.
HTN	Heterene Chemical Corp	201-278-2000	790-21st Ave., Paterson, NJ 07513.
HEU	Heubach Inc	201-242-1800	Heubach Ave., Newark, NJ 07114.
HEC	Hewchem	601-863-6600	P.O. Box 188 Gulfport, MS 39501.
HEW	Hewitt Soap Co., Inc	513-253-1151	333 Linden Ave., Dayton, OH 45403.
HEX	Hexagon Laboratories, Inc	212-324-7550	4166 Boston Rd., Bronx, NY 10475.
HXL	Hexcel Corp, Hexcel Chemical Products:		
		818-882-3022	20701 Nordhoff, Chatsworth, CA 91311.
		616-772-2193	215 N. Centennial, Zeeland, MI 49464.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
HIP	Fine Organics Corp	201-472-6800	205 Main St. Lodi, NJ 07644.
	High Point Chemical Corp	919-884-2214	601 Taylor Ave., High Point, NC 27261.
SDG	Hill Petroleum Company	713-923-3563	P.O. Box 5038 Houston, TX 77262-5038
HIM	Himont, U.S.A., Inc	302-594-5500	1313 N. Market St.,
RPC	Hi-Tek Opolymers, Inc., Lyndal Div	404-259-4831	1338 Coronet Dr., Dalton, GA 30720.
HDG	Hodag Chemical Corp	312-675-3950	7247 N. Central Park Ave., Skokie, IL 60076. Wilmington, DE 19894.
HCL	Hoechst Celanese Corp:		
	Bayport Works	201-231-2000	12212 Port Rd., Pasadena, TX 77507.
	Chemical Group Div	214-689-4000	1250 W. Mockingbird Lane, Dallas, TX 75247.
	Engineering Plastics Div	201-635-2600	26 Main St., Chatham, NJ 07928.
	Fibers Div	704-554-2000	P.O. Box 32414, Charlotte, NC 28232.
	Fibers Industrial Div	803-579-5522	Frontage Rd., Spartanburg, SC 29304-5887.
	Rhode Island Works	201-231-2000	129 Quidnick St., Coventry, RI 02816.
	Sou-Tex	704-827-7531	P.O. Box 866, Mt. Holly, NC 28120.
	Virginia Chemicals, Inc	804-393-3100	801 Water St., Portsmouth, VA 23704.
HOF	Hoffmann-LaRoche, Inc	201-235-5000	340 Kingsland St., Nutley, NJ 07110.
HCP	Honig Chemical & Processing Corp	201-344-0881	414 Wilson Ave., Newark, NJ 07105.
EFH	E. F. Houghton & Co	215-666-4000	P.O. Box 930, Valley Forge, PA 19482.
HML	Hummel Chemical Co., Inc	201-754-1800	10 Harmich Rd., S. Plainfield, NJ 07080.
HMY	Humphrey Chemical Co	203-281-0012	45 Divine St., N. Haven, CT 06473-0325.
HNT	Huntington Laboratories, Inc	219-356-8100	970 E. Tipton St., Huntington, IN 46750.
HMN	Huntsman Chemical Corp	801-532-5200	2000 Eagle Gate Tower, Salt City, UT 84111.
HYD	Hydrolabs, Inc	201-345-5100	27 East 33rd St., Paterson, NJ 07514.
ICI	ICI Americas, Inc	302-575-3000	Concord Pike & Murphy Rd., Wilmington, DE 19897.
	Films Group Div	302-575-3000	Concord Pike & Murphy Rd., Wilmington, DE 19897.
	Polyurethanes Group	609-423-7400	Mantua Grove Rd., W. Deptford, NJ 08066.
	Resin Div	617-658-6600	730 Main St., Wilmington, DE 19897.
	Specialty Chemicals Control	302-575-3000	Concord Pike & Murphy Rd., Wilmington, DE 19897.
RAY	ITT Rayonier, Inc	203-348-7000	1177 Summer St., Stamford, CT 06904.
IGC	Indiana Gas & Chemical Corp	812-232-0231	1341 Hulman St., Terre Haute, IN 47808.
IND	Indol Color Co., Inc	201-541-4159	1029 Newark Ave., Elizabeth, NJ 07201.
IDC	Industrial Color, Inc	815-722-7402	50 Industry Ave., Joliet, IL 60435.
INL	Inland Steel Co	219-399-5385	3210 Watling, St., E. Chicago, IL 46312.
WM	Inolex Chemical Co	215-271-0800	Jackson & Swanson Sts., Philadelphia, PA 19148.
SPC	Insilco Corp., Sinclair Paint Co. Div	213-268-2511	6100 South Garfield Ave., Los Angeles, CA 90040.
REZ	Interez, Inc	502-499-4011	9814 Bluegrass Parkway, KY 40299.
IFF	International Flavor & Fragrances Inc	212-765-5500	1515 Highway #36, Union Beach, NJ 07735.
IPC	Interplastic Corp	612-331-6850	2015 NE Broadway, Minneapolis, MN 55413.
CCA	Interstab Chemicals, Inc	201-247-2202	500 Jersey Ave., New Brunswick, NJ 08903.
IOV	Iovite, Inc	312-481-8900	21625 Oak St., Matteson, IL 60443.
IRI	Ironsides Co	312-655-4595	7575 Plaza Court, Willowbrook IL 60521.
CRZ	James River Corp., Specialty Chemicals Div	206-834-8134	4th & Adams Sts., Camas, WA 98607.
JRC	Jarchem Industries, Inc	201-344-0600	40 Ball St., Newark, NJ 07105.
JFR	George A. Jeffreys & Co., Inc	703-389-8220	P. O. Box 909, Salem, VA 24153.
JRG	Andrew Jergens Co	513-421-1400	2535 Spring Grove Ave., Cincinnati OH 45214.
JTO	Jetco Chemicals, Inc	214-872-3011	P. O. Box 1898, Corsicana, TX 75110.

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Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
UPF	Jim Walter Resources, Inc	205-254-7835	P. O. Box 5327, Birmingham, AL 35207.
MRX	Johnson Matthey, Inc.:	215-971-3000	2002 Nolte Dr., W. Deptford, NJ 08066.
JNS	S. C. Johnson & Son, Inc	414-631-2000	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Co	214-353-1600	2728 Empire Central, Dallas, TX 75045.
KLM	Kalama Chemical, Inc	206-682-7890	Suite 1110, Bank of California Center, Seattle, WA 98164.
KAN	Kanasco, Ltd	301-789-7800	6118 Robinwood Road, Baltimore, MD 21125.
KMP	Kelly-Moore Paint Co., Inc	415-592-8337	987 Commercial St., San Carlos, CA 94070.
KMI	Kemin Industries, Inc	515-266-2111	2100 Maury St., Des Moines, IA 50301.
KCU	Kennecott Minerals Co., Utah Copper Div	801-569-6000	8362 West 10200 South, Bingham Canyon, UT 84006-0525
KPI	Kenrich Petrochemicals, Inc	201-823-9000	140 E. 22nd St., Bayonne, NJ 07002-0032.
KTP	Kent Polymers, Inc	717-455-2021	666 Dietrich Ave., Hazelton, PA 18201.
KYS	Keysor Century Corp	805-259-2360	P. O. Box 308, Saugus, CA 91350.
KCW	Keystone Color Works, Inc	717-854-9541	151 W. Gay Ave., York, PA 17403.
CHF	Kincaid Enterprises, Inc	304-755-3377	P. O. Box 549, Nitro, WV 25143.
KHI	Koch Refining Co	316-832-5500	P. O. Box 2302, Wichita, KS 67201.
KON	H. Kohnstamm & Co., Inc	212-620-4800	161 Avenue of the Americas, New York, NY 10013.
KPT	Koppers Co., Inc	412-227-2000	Koppers Bldg., K 601, Pittsburgh PA 15217.
LCP	LCP Chemicals: Maine	201-225-4840	P. O. Box 149, Orrington, ME 04474.
	West Virginia, Inc	304-843-1310	P. O. Box Box J, Moundsville, WV 26041.
LTV	LTV Steel Co., Inc	216-622-5000	LTV Steel Bldg., 25 W. Prospect Ave., Cleveland, OH 44115.
LKY	Lake States Div. of Rhinelander Paper Co	715-369-4356	515 W. Davenport St., Rhinelander, WI 54501.
ARM	LaRoche Industries Inc.	404-851-0407	1100 Johnson Ferry Rd., Atlanta GA 30342.
LUR	Laurel Products Corp	215-423-5300	2600 E. Tloga St., Philadelphia, PA 19134.
LII	Lawter International, Inc	312-498-4700	990 Skokie Blvd., Northbrook, IL 60062.
LEA	Leatex Chemical Co	215-739-6324	2722 N. Hancock St., Philadelphia, PA 19133
LLI	Lee Laboratories, Inc	804-862-2534	P. O. Box 1658, Petersburg, VA 23805.
LEV	Lever Brothers Co	212-688-6000	390 Park Ave., New York, NY 10022.
LVR	C. Lever Co., Inc	215-639-8640	736 Dunks Ferry Rd., Bensalem, PA 19020.
LIL	Eli Lilly & Co	317-261-2000	307 E. McCarty St., Indianapolis, IN 46285.
	Eli Lilly Industries, Inc	809-757-4000	Call Box 1198 - Pueblo Station, Carolina, PR 00630-1198.
LIC	Lilly Industrial Coatings, Inc	317-634-8512	P. O. Box 946, Indianapolis, IN 46206.
LMC	Lomac, Inc	616-788-2341	5025 Evanston Ave., Muskegon, MI 49443.
BRD	Lonza, Inc	201-794-2400	17-17 Route 208, Fair Lawn, NJ 07410.
LC	Lord Corp., Chemical Products Group	814-868-3611	2000 W. Grandview Blvd., Erie, PA 16514-0038.
LAS	Los Angeles Soap Co	213-627-5011	617 E. 1st St., Los Angeles, CA 90051.
LCS	Louisiana Chemical Polymers	504-775-1801	12537 Scenic Hwy., Baton Rouge, LA 70807.
LYP	Lyondell Petrochemical Co	713-652-7200	1221 McKinney, Suite 1600, Houston, TX 77253-3646.
MCK	MacKenzie Chemical Works, Inc	516-234-8600	55 G Brook Ave., Deer Park, NY 11729.
MCC	McCloskey Corp. McCloskey Varnish Co.:	215-624-4400	7600 State Rd., Philadelphia, PA 19136.
MCC	McCloskey Corp. McCloskey Varnish Co.:	215-624-4400	7600 State Rd., Philadelphia, PA 19136.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
MCC	McCloskey Corp. McCloskey Varnish Co. —Continued: McCloskey Varnish Co., Oregon	503-226-3751	4155 N.W. Yeon Ave., Portland, OR 97210.
	McCloskey Varnish Co., California	213-726-7272	5501 E. Slanson Avenue, Los Angeles, CA 90040.
STG	McCormick & Co., Inc., McCormick- Stange, Flavor Div	301-667-7401	230 Schilling Circle S., Hunt Valley, MD 21031.
MGK	McLaughlin Gormley King Co	612-544-0341	8810 - 10th Ave., N., Minneapolis, MN 55427.
MNP	McWhorter, Inc	312-428-2657	400 E. Cottage Place, Carpentersville, IL 60110.
MAK	MAK Chemical Corp	317-288-4464	1200 Rochester Ave., Muncie, IN 47307-0423.
SOR	MW Manufacturers, Inc., Southern Resin Div.	919-475-1348	P.O. Box 68, Thomasville, NC 27360.
TZC	Magnesium Elektron, Inc	201-782-5800	500 Point Breeze Road, Flemington, NJ 08822
MGR	Magruder Color Co., Inc	201-242-1300	1029 Newark Ave., Elizabeth, NJ 07201.
MAL	Mallinckrodt, Inc	314-895-2000	3600 N. Second St., St. Louis MO 63147
MOC	Marathon Petroleum Co., Texas Refining Div	419-422-2121	539 S. Main St., Findlay, OH 45840.
MRV	Marlowe-Van Loan Corp	919-886-7126	1511 Joshua Circle, High Point, NC 27261.
MCA	Masonite Corp., Alpine Resin Div	312-750-0900	P.O. Box 1048, Laurel, MS 39441.
MAX	Max Marx Color Corp	201-373-7801	1200 Grove St., Irvington, NJ 07111.
MYO	Mayo Chemical Co	404-696-6711	5544 Oakdale Rd., Smyrna, GA 30081.
MZC	Mazer Chemicals, Inc	312-244-3410	3938 Porett Dr., Gurnee, IL 60031.
MLC	Melamine Chemicals, Inc	504-473-3121	P. O. Box 748, Donaldsonville, LA 70346.
MRK	Merck & Co., Inc	201-574-4000	P. O. Box 2000, Rahway, NJ 07065.
MER	Merichem Co	713-455-1311	1914 Haden Rd., Houston, TX 77015.
MLS	Miles Laboratories, Inc: Biotechnology Group	219-262-7445	1127 Myrtle St., Elkhart, IN 46515.
MIL	Milliken & Co., Milliken Chemical Div	803-472-9041	P. O. Box 817, Inman, SC 29349.
MMM	Minnesota Mining & Manufacturing Co	612-733-3647	3M Center 224-6S, St. Paul, MN 55144.
MIR	Miranol Chemical Co., Inc	201-329-3900	P. O. Box 436, Dayton, NJ 08810.
MSC	Mississippi Chemical Corp	601-746-4131	P. O. Box 388, Yazoo City, MS 39194.
CHG	Mobay Chemical Corp.: Agricultural Chemicals Div	816-242-2345	Hawthorne Rd., Kansas City, MO 64120.
VPC	Dye & Pigment Div	201-686-3700	Mobay Road, Pittsburgh, PA 15205.
MOB	Pittsburgh Div	412-777-2000	Mobay Road, Pittsburgh, PA 15205.
SM	Mobil Oil Corp.: Gas Liquids Dept	703-849-3000	P. O. Box 900, Dallas, TX 75221.
	Mobil Chemical Co	201-321-6000	P. O. Box 240, Edison, NJ 08818.
	Chemical Products Div	201-321-6000	P. O. Box 250, Edison, NJ 08818.
	Petrochemicals Div	713-590-7700	World Towers One, 15600 Drummet Blvd., Houston, TX 77032.
MOA	Mona Industries, Inc	201-345-8220	76 E. 24th St., Paterson, NJ 07544.
MON	Monsanto Co	314-694-1000	800 N. Lindbergh Blvd., St. Louis, MO 63167.
MNA	Monsanto Agricultural Co	314-694-1000	800 N. Lindbergh Blvd., St. Louis, MO 63167.
MCI	Mooney Chemicals, Inc	216-781-8383	2301 Scranton Rd., Cleveland, OH 44113.
MCP	Moretex Chemical Products, Inc	803-583-8441	314 W. Henry St., Spartanburg, SC 29304.
MRF	Morflex Chemical Co., Inc	919-292-1781	2110 High Point Road, Greensboro, NC 27403.
CCW	Morton Thiokol, Inc.: Carstab Div	513-733-2100	2000 West St., Reading, OH 45215.
MRT	Morton Chemical Div	312-807-2000	333 W. Wacker Dr. Chicago, IL 60606.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
	Morton Thiokol, Inc.—Continued:		
PYI	Morton Chemical Div	312-807-2000	Mountain Creek Church Rd., Greenville, SC 29602.
MHI	Ventron Div	617-774-3100	150 Andover St., Danvers, MA 01923.
MOT	Motomco, Ltd	608-244-2904	P. O. Box 8422, Madison, WI 53708.
RTC	Mount Vernon Mills, Inc	803-233-4151	One Shelter Place, Greenville, SC 29602.
PNX	The Murphy-Phoenix Co	216-831-0404	23811 Chagrin Blvd., Beechwood, OH 44122.
NLT	NL Chemicals Div	609-443-2000	P. O. Box 700, Hightstown, NJ 08520.
NLT	NL Treating Chemicals	713-870-6000	17402 Wallsville Rd., Houston, TX 77049.
LEM	Napp Chemicals, Inc	201-773-3900	199 Main St., Lodi, NJ 07644.
NTC	National Casein Co	312-846-7300	601 W. 80th St., Chicago, IL 60620.
NCJ	National Casein of New Jersey	312-846-7300	601 W. 80th St., Chicago, IL 60620.
NMC	National Milling & Chemical Co., Inc	215-482-6600	4601 Flat Rock Rd., Philadelphia, PA 19127.
NSC	National Starch & Chemical Corp	201-685-5000	10 FINDERNE AVE., BRIDGEWATER, NJ 08807.
NTS	National Steel Corp., Great Lakes Plant	313-297-3000	1 Quality Dr., Ecorse, MI 48229.
NEP	Nepera, Inc	914-782-1200	Route #17, Harriman, NY 10926.
NEV	Neville Chemical Co	412-331-4200	2800 Grand Avenue, Pittsburgh, PA 15225.
NBC	New Boston Coke Corp	614-456-4154	P.O. Box 3128 New Boston, OH 45662.
NCC	Niacet Corp	716-285-1474	400 - 47th St., Niagara Falls, NY 14304.
NLO	Niklor Chemical Co., Inc	213-830-2253	2060 E. 220th St., Long Beach, CA 90810.
NCP	Niles Chemical Paint Co	616-683-3377	P. O. Box 307, Niles, MI 49120.
	Mishawaka Div	219-255-9678	1413 Clover Rd., Mishawaka, IN 46544.
NOC	The Norac Co., Inc	818-334-2908	405 S. Motor Ave., Azusa, CA 91702.
	Mathe Div	201-779-4981	169 Kennedy Dr., Lodi, NJ 07644-0230.
FSN	NOR-AM Chemical Co	302-575-2000	3509 Silverside Road, Wilmington, DE 19803.
NPC	Northwest Petrochemical Corp	206-293-3176	708 N. Texas Rd. - March Point, Anacortes, WA 98221.
NW	Northwestern Chemical Co	312-231-6111	120 N. Aurora St., West Chicago, IL 60185.
NOR	Norwich Eaton Pharmaceutical, Inc	607-335-2111	17 Eaton Ave., Norwich, NY 13815.
NBI	Novo Biochemical Industries, Inc	919-494-2014	State Road 1003, Franklinton, NC 27525.
NOD	Nuodex, Inc	201-981-5000	Turner Place, Piscataway, NJ 08854.
NSW	The Nutrasweet Co	312-940-9800	1751 Cook Road, Deerfield, IL 60015.
NUT	Nutrius, Inc	216-526-5522	8221 Brecksville Rd., Brecksville, OH 44141.
OBC	The O'Brien Corp	415-761-2300	450 E. Grand Ave., S. San Francisco, CA 94080.
	Occidental Chemical Corp.:		
HKD	Durez Div	716-696-6000	Walck Rd., N. Tonawanda, NY 14120.
HKO	Olefins Div	318-437-8100	One Lakeshore Dr., Suite 1895 Lake Charles, LA 70629.
HKP	PVC Div	214-251-1000	P. O. Box 1772, Berwyn, PA 19312.
HK	Specialty Chemical Div-	214-404-3300	505 LBJ Freeway, Dallas, TX 75244.
EPI	Ohio Rubber Eagle Pitcher Ind Orthane Div	817-387-0585	1500 I 35-W, Denton, TX 76202.
OMC	Olin Corp	203-356-2000	120 Long Ridge Rd., Stamford, CT 06904.
WAY	Olin Hunt Speciality Products, Inc.	201-977-6000	One Wellington Rd., Lincoln, RI 02865.
OC	Omega Chemicals, Inc	803-582-5346	P.O. Box 1723, Spartanburg, SC 29304.
ORG	Organics/LaGrange, Inc	312-764-6700	7125 N. Clark St., Chicago, IL 60626.
OCC	Orient Chemical Corp	201-465-0714	121 Tyler St., Port Newark, NJ 07114.
BSW	Original Bradford Soap Works, Inc	401-821-2141	200 Providence St., W. Warwick, RI 02893.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
CJO	C. J. Osborn Chemicals, Inc	609-662-0128	820 Sherman Ave., Pennsauken, NJ 08110.
OCF	Owens-Corning Fiberglas Corp	419-248-8000	Fiberglas Tower, Toledo, OH 43659.
PBI	PBI-Gordon Corp	816-421-4070	1217 W. 12th St., Kansas City, MO 64101-9984.
PDG	P.D. Glycol	409-838-4521	P.O. Box 3785, Beaumont, TX 77704.
PSG	PMC Specialties Group, Inc	216-356-0700	20525 Center Ridge Rd, Rocky River, OH 44116.
PMP	PMP Fermentation Products, Inc	414-352-3001	7670 N. Port Washington Rd., Milwaukee, WI 53217.
PPG	PPG Industries, Inc	412-434-3131	One PPG Place, Pittsburgh, PA 15272.
PPS	P/P Splitter Venture	713-972-1307	6161 Savoy Dr. Suite 222, Houston, TX 77036.
PAC	Pacific Anchor Chemical Corp	213-725-1800	5701 S. Eastern Ave. Suite 530, Los Angeles, CA 90040.
PRA	Para-Chem. Southern	803-967-7691	P.O. Box 127, Simpsonville, SC 29681.
PAH	Parish Chemical Co	801-226-2018	145 N. Geneva Rd., Orem, UT 84057.
PD	Parke-Davis Div., of Warner Lambert, Inc	201-540-2000	188 Howard Ave., Holland, MI 49424.
PSC	Passaic Color & Chemical Co	201-279-0400	28-36 Paterson St., Paterson, NJ 07501.
PAT	Pat-Chem, Inc	803-233-3941	11 Worley Rd., Greenville SC 29602.
CHP	C. H. Patrick & Co., Inc	803-244-4831	P. O. Box 2526, Greenville, SC 29602.
PEL	Pelron Corp	312-442-9100	7847 W. 47th St., Lyons, IL 60534.
PAS	Penwalt Corp	215-587-7000	Three Parkway, Philadelphia, PA 19102.
WTL	Lucidol Div	716-877-1740	1740 Military Rd., Buffalo, NY 14240.
PAR	Penreco, Pennzoil Products Co., Div	713-337-1534	4401 Park Ave., Dickinson, TX 77539.
PKI	Perkins Industries, Inc	913-677-5831	10453 W. 84th Terrace, Lenexa, KS 66214.
BPT	Permuthane Coating, Inc	617-531-1880	13 Corwin St., Peabody, MA 01960.
PER	Perry & Derrick Co	513-351-5800	2510 Highland Ave., Cincinnati, OH 45212.
PST	Perstorp Compounds, Inc	413-584-2472	238 Nonotuck St., Florence, MA 01060.
PST	Perstorp Polyols, Inc	419-729-5448	600 Matzinger Rd., Toledo, OH 43612.
PFN	Pfanstiehl Laboratories, Inc	312-623-0370	1219 Glen Rock Ave., Waukegan, IL 60085.
PCW	Pfister Chemical, Inc	201-945-5400	Linden Ave., Ridgefield, NJ 07657.
PFZ	Pfizer, Inc	212-573-2323	235 E. 42nd St., New York, NY 10017.
	Pfizer Pharmaceuticals, Inc	809-846-4300	P. O. Box 628, Barceloneta, PR 00617.
PHR	Pharmachem Corp	215-867-4654	719 Stefko Blvd., P.O. Box 1035 Bethlehem, PA 18016.
PLB	Pharmacia P-L Blochemicals, Inc	414-225-2600	2202 N. Bartlett Ave., Milwaukee, WI 53202.
PDI	Phelps Dodge Industries, Inc.	219-456-4444	4300 New Haven Ave., Fort Wayne, IN 46803.
	Phelps Dodge Magnet Wire Co. Div.		
PPX	Phillips Paraxylene, Inc	809-864-1515	P. O. Box 1166, Guayama, PR 00655.
PLC	Phillips Petroleum Co	918-661-6600	Phillips Bldg., Bartlesville, OK 74006.
PPR	Phillips Puerto Rico Core, Inc	809-864-1515	P. O. Box 1166, Guayama, PR 00655.
PHC	Phthalchem, Inc	513-681-0099	266 W. Mitchell Ave., Cincinnati, OH 45232.
PCI	Piedmont Chemical Industries, Inc	919-885-5131	331 Burton Ave., High Point, NC 27261.
PIC	Pierce Chemical Co	815-968-0747	3747 N. Meridan Rd., Rockford, IL 61103.
PIL	Pilot Chemical Co	213-723-0036	11756 Burke St., Santa Fe Springs, CA 90670.
IMC	Pitman-Moore, Inc	812-232-0121	P.O. Box 207, Terre Haute, IN 47808.
	Industrial Chemicals, Div	312-566-2600	421 E. Hawley St., Mundelein, IL 60060.
PKL	Plaskolite, Inc	614-294-3281	P. O. Box 1497, Columbus, OH 43216.
PSL	Plaslok Corp	716-681-7755	3155 Broadway, Buffalo, NY 14227.
PLS	Plastics Engineering Co	414-458-2121	3518 Lakeshore Rd., Sheboygan, WI 53081.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
PMC	Plastics Manufacturing Co	214-330-8671	2700 S. Westmoreland, Dallas, TX 75233.
PTC	Polycast Technology Corp	203-327-6010	69 Southfield Ave., Stamford, CT 06902.
PLR	Polysar, Inc Plastics Div	671-537-9901	29 Fuller St., Leominster, MA 01453.
POP	Pope Chemical Corp	201-279-2702	33 - 6th Ave., Paterson, NJ 07524.
PRT	Pratt & Lambert, Inc	716-873-6000	P.O. Box 22, Buffalo, NY 14240.
JLP	J. L. Prescott Co	201-777-4200	27 8th St., Passaic, NJ 07055.
PCH	Prochem, Inc	215-436-4812	116 Concord MTG. Road, Glen Mills, PA 19342.
PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.	513-627-5194	P. O. Box 599, Cincinnati, OH 45201.
PRC	Products Research & Chemical Corp	818-240-2060	5430 San Fernando Rd., Glendale, CA 91209.
QKO	QO Chemicals, Inc	312-572-2330	823 Commerce Dr., Suite 200, Oak Brook, IL 60521.
QCP	Quaker Chemical Corp	215-828-4250	Elm & Lee Sts., Conshohocken, PA 19428-0809.
TCH	Quantum Chemical Corp.: Emery Div	803-963-4031	P.O. Box 628, Mauldin, SC 29662.
USI	USI Div	513-530-6580	11500 Northlake Dr., Cincinnati, OH 45249.
QUN	K. J. Quinn & Co., Inc.	617-321-3200	195 Canal St., Malden, MA 02148.
RSA	R.S.A. Corp	914-693-1818	690 Saw Mill River Rd., Ardsley, NY 10502.
RCN	Racon, Inc	316-524-3245	6040 S. Ridge Rd., Wichita, KS 67201.
BLC	Ranbar Technology, Inc., Ball Chemical Co	412-486-1111	1114 William Flinn Highway, Glenshaw, PA 15116.
RAB	Raytech Corp	203-371-0101	1204 Darlington Ave., Crawfordsville, IN 47933.
MAR	Reed Lignin, Inc	203-625-0701	81 Holly Hill Lane, Greenwich, CT 06830.
RBI	Reeves Brothers, Inc	803-576-1210	P. O. Box 1898, Spartanburg, SC 29304.
REG	Regis Chemical Co	312-967-6000	8210 Austin Ave., Morton Grove, IL 60053.
RCI	Reichhold Chemicals, Inc	914-682-5700	525 N. Broadway, White Plains, NY 10603.
RIL	Rellly Tar & Chemical Corp	317-247-8141	151 N. Delaware St., 1510 Market Square Center, Indianapolis, IN 46204.
REL	Reliance Universal, Inc., Louisville Resins Div	502-459-9110	4730 Crittenden Dr., Louisville, KY 40232.
REM	Remington Arms Co., Inc	302-774-1000	615 Asylum St., Bridgeport, CT 06601-2190.
RDA	Rhone-Poulenc, Inc	201-821-2034	P.O. Box 125, Princeton, NJ 08543-5266.
RCD	Richardson Polymer Corp	203-245-0441	17 Woodland Rd., Madison, CT 06443.
AMS	Ridgway Color Co	513-771-1900	75 Front St., Ridgway, PA 15853.
RIK	Riker Laboratories, Inc. Sub. of 3M Co	818-341-1300	19901 Nordhoff St., Northridge, CA 91324.
RIV	Riverdale Chemical Co	312-754-3330	220 E. 17th St., Chicago Heights, IL 60411.
ROB	Robeco Chemicals, Inc.,	212-986-6410	99 Park Ave., New York, NY 10016.
ORT	Roehr Chemicals, Inc, Div. of Aceto	718-784-8473	52-20 37th St., Long Island City, NY 11101.
RH	Rohm & Haas Co	215-592-3000	Independence Mall West., Philadelphia, PA 19105.
ROM	Roma Color, Inc	617-676-3481	749 Quequechan St., Fall River, MA 02723.
RUC	Rubicon, Inc	504-673-6141	P. O. Box 517, Geismar, LA 70734.
RUO	Ruco Polymer Corp	516-931-8104	New South Rd., Hicksville, NY 11802.
NES	Ruetgers-Nease Chemical Co	814-238-2424	201 Struble Rd., State College, PA 16801.
SBP	SBS Products Inc	517-799-4941	302 Waller St., Saginaw, MI 48605.

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Table A-1—Continued

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(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identification Code	Name of company	Telephone number	Office address
SCM	SCM Corp.:		
	Glidco Organics	904-768-5800	P.O. Box 389, Jacksonville, FL 32201
	PCR, Inc	904-376-8246	P.O. Box 1466, Gainesville, FL 32609.
SOS	SSC Industries, Inc	404-762-9651	1550 E. Taylor Ave., East Point, GA 30344.
NPR	Safeway Stores, Inc	415-944-4478	2800 Ygnacio Valley Rd., Walnut Creek, CA 94598.
STX	St. Croix Petrochemical Corp	809-778-6450	P. O. Box 6801, Christiansted, St. Croix, U.S. VI 00820.
SLM	Salem Oil & Grease Co	508-745-0585	60 Grove St., Salem, MA 01970.
SAL	Salsbury Laboratories, Inc	515-257-2422	2000 Rockford Rd., Charles City, IA 50616.
SBG	Samuel Bingham Co	312-298-6777	479 Business Center Dr., Suite 109, Franklin Park, IL 60131.
	Sandoz Corp.:		
SCM	Sandoz Chemical Corp	704-331-7016	4000 Monroe Rd., Charlotte, NC 28205.
ZOC	Sandoz Corp. Protection	312-699-1616	P.O. Box 220, Wasco, CA 93280.
ZOC	Sandoz Corp. Protection	312-699-1616	1300 E. Touity Ave., Des Plaines, IL 60018.
SCN	Schenectady Chemicals, Inc	518-370-4200	P. O. Box 1046, Schenectady, NY 12306.
SBC	Scher Chemicals, Inc	201-471-1300	Industrial West, Clifton, NJ 07012.
SCH	Schering Corp	201-298-4000	1011 Morris Ave., Union, NJ 07083.
SCO	Scholler, Inc	215-739-0900	P. O. Box 26968, Philadelphia, PA 19134.
SPR	Scientific Protein Laboratories	608-849-5944	700 E. Main St., Waunakee, WI 53597.
SPA	Scott Paper Co	215-521-5000	P. O. Box 925, Everett, WA 98206.
SRL	G. D. Searle & Co	312-982-7000	5200 Old Orchard Rd., Skokie, IL 60077.
SQA	Sequa Chemicals, Inc	803-385-5181	P.O. Box 70, Chester, SC 29706.
SKP	Shakespeare Monofilament Div	803-754-7011	6111 Shakespeare Rd., Columbia, SC 29240.
SHO	Shell Oil Co	713-241-1242	P. O. Box 3105, Houston, TX 77002.
SHC	Shell Chemical Co	713-241-1242	P. O. Box 3105, Houston, TX 77002.
SGO	Shenango, Inc	412-771-4400	200 Neville Rd., Pittsburgh, PA 15225-1690.
SHP	Shepherd Chemical Co	513-731-1110	4900 Beech St., Cincinnati, OH 45212.
SHX	Sherex Chemical Co., Inc	614-764-6500	5777 Frantz Rd., Dublin, OH 43017.
	The Sherwin-Williams Co.:		
SW	Sherwin-Williams Co	216-566-2000	11541 S. Champlain, Chicago, IL 60628.
SW	Sherwin-Williams Co	216-566-2000	2802 W. Miller Rd., Garland TX 75040.
BAL	Consumer Div	301-625-8247	2325 Hollins Ferry Rd., Baltimore, MD 21230.
SHT	Shintech, Inc	713-965-0713	24 Greenway Plaza, Suite 811, Houston, TX 77046.
SMP	J. R. Simplot Co	208-336-2110	P.O. Box 912 Pocatello, ID 83204.
GFS	G. Frederick Smith Chemical Co	614-881-5501	P. O. Box 23214, Columbus, OH 43223.
SK	SmithKline Chemicals	215-751-4000	900 River Rd., Conshohocken, PA 19428.
SMO	Smooth-On, Inc	201-647-5800	1000 Valley Rd., Gillette, NJ 07933.
SIO	Sohio Oil Co	419-226-2300	1150 S. Metcalf St., Lima, OH 45804.
SLT	Soltex Polymer Corp	713-522-1781	P. O. Box 1000, Deer Park, TX 77536.
SLC	Soluol Chemical Co., Inc	401-821-8100	Green Hill & Market Sts., W. Warwick, RI 02893.
SAC	Southeastern Adhesives Co	704-754-3493	815 D Virginia St., SW., Lenoir, NC 28645.
	Southland Corp.:		
ACT	Chemical Div	214-333-2151	7666 W. 63d St., Summit, IL 60501.
SOL	Fine Chemical Div	214-333-2151	2841 Pierce St. Dallas, TX 75233.
SOM	Great Meadows Div	214-828-7011	Alphano Rd., Great Meadows, NJ 07838.
SWR	Southwestern Refining Co., Inc	512-884-8863	P. O. Box 9217, Corpus Christi, TX 78469.
SPL	Spaulding Composites Co., Industrial Plastics Div	716-692-2000	310 Wheeler St., Tonawanda, NY 14150.

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Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

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Identifi- cation Code	Name of company	Telephone number	Office address
ASL	SpecialtyChem Products Corp	715-735-9033	2 Stanton St., Marinette, WI 54143.
SOI	Specialty Organics, Inc	818-962-2008	5623 N. 4th St., Irwindale, CA 91706.
IPP	Spectrachem Corp	201-595-8181	200 Sheridan Ave., Paterson, NJ 07512.
TRD	Squibb Manufacturing, Inc	809-852-1255	P. O. Box 609, Humacao, PR 00661.
SCC	Standard Chlorine of Delaware, Inc	201-997-1700	1035 Belleville Turnpike, Kearny, NJ 07032.
SOH	Standard Oil Chemical Co	216-586-4141	200 Public Square, (31-41505-N) Cleveland, OH 44114-2375.
STP	Stepan Co	312-446-7500	RR #1, Elwood, IL 60421 and 100 W. Henter Ave., Maywood, NJ 07607.
SC	Sterling Chemicals, Inc	409-945-4431	201 Bay St. South, Texas City, TX 77592-1311.
SD	Sterling Drug, Inc	212-907-2000	2144 E. State St., Trenton, NJ 08619.
SDH	SDI Divestiture Cprp.	513-841-4000	2335 Langdon Farm Rd., Cincinnati, OH 45237.
SDW	Sterling Organics Div	212-907-2000	90 Park Ave., New York, NY 10016.
SD	Sterling Pharmaceuticals, Inc	212-907-2000	P. O. Box 11247, Barcelonita, PR 00617.
PPL	Sterling Engineered Products	207-784-9111	1 Plonite Road, Auburn, ME 04210.
CIN	Stockhausen, Inc	919-378-9393	2408 Doyle St., Greensboro, NC 27406.
SNA	Sun Chemical Corp., Pigments Div	212-986-5500	411 Sun Ave., Cincinnati, OH 45232.
SUN	Sun Company, Inc	215-977-6358	1801 Market St., Philadelphia, PA 19103.
SNO	SunOlin Chemical Co	215-977-6358	1801 Market St., Philadelphia, PA 19103.
RAS	Surface Coatings, Inc	617-933-4200	100 Eames St., Wilmington, MA 01887.
JSC & TCC	Sybron Chemical, Inc	609-893-1100	Birmingham Rd., Birmingham, NJ 08011.
SYL	Sylvachem Corp	904-785-6700	P. O. Box 947, Port St. Joe, FL 32456.
INP	Synair Corp	615-698-8801	2003 Amnicola Hwy., Chattanooga, TN 37406.
BUC	Synalloy Corp., Blackman Uhler	803-585-3661	P. O. Box 5627, Spartanburg, SC 29304.
SRY	Synray Corp	201-245-2600	209 N. Michigan Ave., Kenilworth, NJ 07033.
HFT	Syntex Agribusiness, Inc.,	417-866-7291	P. O. Box 1246 S.S.S., Springfield, MO 65805.
ARA	Syntex Chemicals, Inc	303-442-1926	2075 N. 55th St., Boulder, CO 80301.
SYP	Synthetic Products Co., Div of Plastic	216-531-6010	1000 Wayside Rd., Cleveland, OH 44110.
SYT	Specialties & Technology		
SYT	Synthron, Inc	704-437-8611	P. O. Box 1111, Morganton, NC 28655.
TEK	Teknor Apex Co	401-725-8000	505 Central Ave., Pawtucket, RI 02861.
TLI	Teledyne Industries, Inc., Teledyne	408-637-3731	3601 Union Rd., Hollister, CA 95024-0006.
TU	McCormick Selph		
TU	Tenn-USS Chemicals Co	713-884-4400	P. O. Box 600, Pasadena, TX 77501.
TOC	Tenneco Oil Co	713-757-3373	P. O. Box 2511, Houston, TX 77001.
TEN	Tennessee Chemical Co	615-496-3331	1 Ocoee St., Copperhill, TN 37317.
TVA	Tennessee Valley Authority, NFDC,	205-386-3522	Muscle Shoals, AL 35660.
	TVA, OACD, Div. of Developmental Production		
TER	Terra International, Inc	712-277-1340	Terra Centre, 600 - 4th St., Sioux City, IA 51101.
TER	Terra Nitrogen, Inc	712-277-1340	Terra Centre, 600 - 4th St., Sioux City, IA 51101.
TX	Texaco Chemical Co	713-432-3734	4800 Fournace Place, Bellaire, TX 77401.
TUS	Texaco Butadiene Co	713-666-8000	P. O. Box 430, Bellaire, TX 77401.
TSA	Texas Alkyls, Inc	713-479-8411	P. O. Box 600, Deer Park, TX 77536.
TCR	Texas City Refining, Inc	409-945-4451	P. O. Box 1271, Texas City, TX 77592.
TPC	Texas Petrochemicals Corp	713-477-9211	8600 Park Place Blvd., Houston, TX 77017.
TXS	Texstyrene Plastics, Inc	817-831-3541	3607 N. Sylvania Ave., Fort Worth, TX 76111.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in each of the 15 individual sections of this report)

Identifi- cation Code	Name of company	Telephone number	Office address
TMH	Thompson Hayward Chemical Co	913-321-3131	5200 Speaker Rd., Kansas City, KS 66110.
TWD	Tonawanda Coke Corp	716-876-6222	P.O. Box A-500 Tonawanda, NY 14151
TRI	Triad Chemical	504-473-9231	P. O. Box 310, Donaldsonville, LA 70346.
TRO	Troy Chemical Co	201-589-2500	One Avenue L, Newark, NJ 07105.
TUL	Tull Chemical Co., Inc	205-831-1154	P. O. Box 3246, Oxford, AL 36203.
TLC	Twin Lake Chemical, Inc	716-433-3824	520 Mill St., Lockport, NY 14094.
UPM	UOP, Inc	312-391-2000	25 E. Algonguin Road, Des Plaines, IL 60017-5017.
UHL	Paul Uhlich & Co., Inc	914-478-2000	1 Railroad Ave., Hastings-on-Hudson, NY 10706.
UNG	Ungerer & Co	201-628-0600	4 Bridgewater Lane, Lincoln Park, NJ 07035.
DRL	Unichema Chemical, Inc	201-327-6100	4650 S. Racine Ave., Chicago, IL 60609.
WTH	Union Camp Corp	201-628-2000	875 Harger Street Dover, OH 44622.
NCI	Chemical Products Div	201-628-2000	1600 Valley Rd., Wayne, NJ 07470.
NCI	Terpene & Aromatics Div	201-628-2000	P. O. Box 37617, Jacksonville, FL 32236.
UCC	Union Carbide Corp	203-794-3113	P.O. Box 8361, S. Charleston, WVA 25303.
UOC	Union Oil Co. of California	213-977-7746	1201 W. Fifth St., Los Angeles, CA 90017.
UTP	Union Texas Petroleum Corp	713-968-2366	1330 Post Oak Blvd. Houston TX 77252-2120.
USR	Uniroyal, Inc., Uniroyal Chemical Div	203-573-3886	World Headquarters, Middlebury, CT 06749
UNN	United Anlline Co	617-762-4057	Endicott St., Norwood, MA 02062.
UNO	United Erle, Inc	814-456-7561	438 Huron St., Erie, PA 16502.
VAL	United Merchants & Manufacturers, Inc., Valchem Div	201-837-1700	1650 Pallsades Ave., Teaneck, NJ 07666.
USB	U.S. Borax & Chemical Corp., U.S	213-251-5600	3075 Wilshire Blvd., Los Angeles, CA 90010.
	Borax Research Corp		
UTC	Unitex Chemical Corp	919-378-0965	520 Broome Rd. Greensboro, N.C 27406.
UPJ	The Upjohn Co	616-323-4000	7000 Portage Rd., Kalamazoo, MI 49001
CWN	Fine Chemicals	203-281-2722	410 Sackett Point Rd., North Haven, CT 06473.
VSV	Valentine Sugars, Inc	504-532-2541	Rt 2, Box 625, Lockport, LA 70374.
VLR	Valero Refining Co	512-246-2000	530 McCullough, San Antonio, TX 78215.
VCM	Vanchem, Inc	716-434-2624	1 N. Transit Rd., Lockport, NY 14094.
VDM	Van De Mark Chemical Co., Inc	716-433-6764	1 N. Transit Rd., Lockport, NY 14094.
VNC	Vanderbilt Chemical Corp	203-744-3900	31 Taylor Ave., Bethel, CT 06801
		203-853-1400	and Rt. #2, Box 54, Murray, KY 42071.
VND	Van Dyk, Div. of Mallinckrodt, Inc	201-759-3225	Main & William Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp	312-698-9700	5600 N. River Rd., Rosemont, IL 60018.
VIK	Viking Chemical Co	612-333-0394	838 Baker Bldg., Minneapolis, MN 55402.
VIN	Vineland Chemical Co., Inc	609-691-3535	W. Wheat Rd., Vineland, NJ 08360.
VCC	Vinings Industries, Inc	404-436-1542	3950 Cumberland Pkwy., Atlanta, GA 30339.
VKR	Virkler Co	704-527-2350	1022 Pressley Rd., Charlotte, NC 28210.
VST	Vista Chemical Co	713-531-3200	15990 N. Barker's Landing Rd., Houston, TX 77224.
VTM	Vitamins, Inc	312-861-0700	200 E. Randolph Dr., Chicago, IL 60601.
FRO	Vulcan Materials Co., Chemicals Div	205-877-3000	P. O. Box 7689, Birmingham, AL 35233.
VYN	Vygen Corporation	216-998-1120	Middle Road, Ashtabula, OH 44004.
SWS	Wacker Silicones Corp	517-263-5711	3301 Sutton Rd., Adrian, MI 49221.
WJ	Warner-Jenkinson	314-889-7600	2526 Baldwin St., St. Louis, MO 63106.
WES	Wesley Industries, Inc	205-626-2040	P.O. Box 490, Montrose, AL 36559.
WCA	West Coast Adhesives Co	503-286-3515	11104 NW Front Ave., Portland, OR 97231.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1987

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1987 are listed below alphabetically, together with their identification codes as used in table 2 of the 15 individual sections of this report)

<i>Identification Code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
EW	Westinghouse Electric Corp., Insulating Materials Div	412-864-7960	Route 993, Manor, PA 15665.
WPG	WestPoint Pepperell, Inc Grifftex Chemical Co. Sub.	404-645-4753	1900 Cunningham Dr., Opelika, AL 36801.
WVA	Westvaco Corp	212-688-5000	P. O. Box 70848, Charleston Heights, SC 29415.
WRD	Weyerhaeuser Co	715-384-2141	118 S. Palmetto Ave., Marshfield, WI 54449.
WPS	Wheeling-Pittsburgh Steel Corp	304-234-2439	1134 Market Square Wheeling, W VA 26003.
WBG	White & Bagley Co	617-791-3201	P. O. Box 706, Worcester, MA 01613.
WCC	White Chemical Corp	201-621-4100	660 Frelinghuysen Ave., Newark, NJ 07114.
WTK	Whittaker Corp., Helco Chemicals Div	717-476-0353	Rt. 611, Delaware Water Gap, PA 18327.
WHW	Whittmore-Wright Co., Inc	617-242-1180	62 Alford St., Boston, MA 02129.
CHN	Wil-Gro Fertilizer, Inc	918-825-3383	P.O. Box 429, Pryor, OK 74362.
WLM	Wilmington Chemical Corp	302-658-3515	Pyles Lane, Wilmington, DE 19899.
WTC	Witco Corp	201-573-2800	155 Tice Blvd., Woodcliff Lake, NJ 07675.
WCL	Wright Corp	919-251-0234	102 Orange, Wilmington, NC 28403.
WYK	Wyckoff Chemical Co., Inc	616-637-8474	1421 Kalamazoo St., S. Haven, MI 49090.
WYC	Wycon Chemical Co	307-637-2700	P. O. Box 1287, Cheyenne, WY 82003.
WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp	215-341-3867	P.O. Box 13745, Philadelphia, PA 19101-3745.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

APPENDIX B
CYCLIC INTERMEDIATES;
GLOSSARY OF SYNONYMOUS NAMES

Table B-1

Cyclic Intermediates: Glossary of synonymous names

<i>Common name</i>	<i>Standard (chemical abstracts) name</i>
A acid	3,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
Acetyl-p-phenylenediamine	4'-Aminoacetanilide.
1,2,4-acid	4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1-Amino-2-naphthol-4-sulfonic acid).
Acid yellow 9	6-Amino-3,4'-azodibenzenesulfonic acid.
p-Aminobenzenesulfonic acid	Sulfanilic acid and salt.
m-Aminobenzoyl J acid	4-Hydroxy-7-(m-aminobenzamido)-2-naphthalenesulfonic acid.
Aminoepsilon acid	8-Amino-1,6-naphthalenedisulfonic acid.
Amino G acid	7-Amino-1,3-naphthalenedisulfonic acid.
Amino J acid	6-Amino-1,3-naphthalenedisulfonic acid.
Amino R sal	3-Amino-2,7-naphthalenedisulfonic acid.
Aniline oil	Aniline.
Anthraflavic acid	2,6-Dihydroxyanthraquinone.
Anthrarufin	1,5-Dihydroxyanthraquinone.
Armstrong & Wynne's acid	4-Hydroxy-2-naphthalenesulfonic acid.
B acid	5-Amino-4-hydroxy-1,7-naphthalenedisulfonic acid.
2B acid	6-Amino-4-chloro-m-toluenesulfonic acid.
4B acid	6-Amino-m-toluenesulfonic acid.
Benzal chloride	α, α -Dichlorotoluene.
Benzanthrone	7H-Benz[de]anthracen-7-one.
Benzotrichloride	α, α, α -Trichlorotoluene.
Bisphenol A	4,4'-Isopropylidenediphenol.
B.O.N.	3-Hydroxy-2-naphthoic acid.
Broenner's acid	6-Amino-2-naphthalenesulfonic acid.
Bromamine acid	1-Amino-4-bromo-2-anthraquinonesulfonic acid.
Bromobenzanthrone	3-Bromo-7H-benz[de]anthracen-7-one.
C acid	3-Amino-1,5-naphthalenedisulfonic acid.
C.A. acid	3-Amino-6-chloro-4-sulfobenzoic acid.
C-Amine (Lake Red C acid)	2-Amino-5-chloro-p-toluenesulfonic acid.
Cassella acid	5-Hydroxy-1-naphthalenesulfonic acid.
Chicago Acid (SS acid)	4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid.
Chlorobenzanthrone	Chloro-7H-benz[de]anthracen-7-one.
Chromotropic acid	4,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
Chrysazin	1,8-Dihydroxyanthraquinone.
1,6-Cleve's acid	5-Amino-2-naphthalenesulfonic acid.
1,7-Cleve's acid	8-Amino-2-naphthalenesulfonic acid.
Crocein acid	7-Hydroxy-1-naphthalenesulfonic acid.
2-Cyanopyridine	Picolinonitrile.
3-Cyanopyridine	Nicotinonitrile.
Cyanuric chloride	2,4,6-Trichloro-s-triazine.
D acid	6-Amino-1-naphthalenesulfonic acid.
DADI	Dianisidine diisocyanate.
DDB	p-Dibutoxybenzene.
Decacyclene	Diacenaphtho[1,2-j:1',2'-l]fluoranthene.
Dehydrothio-p-toluidine	2-(p-Aminophenyl)-6-methylbenzothiazole.
Developer Z	3-Methyl-1-phenyl-2-pyrazolin-5-one.
o-Dianisidine	3,3'-Dimethoxybenzidine.
1,1'-Dianthrimide	1,1'-Iminodianthraquinone.
Dibenzanthrone	Violanthrone.
Dichlone	2,3-Dichloro-1,4-naphthoquinone.
4,4'-Dihydrocydiphenylsulfone	4,4'-Sulfonyldiphenol.
Dimethyl POPO	1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene.
4,5-Dinitrochrysazin	1,8-Dihydroxy-4,5-dinitroanthraquinone.
Dioxy S acid	4,5-Dihydroxy-1-naphthalenesulfonic acid.
Diphenyl epsilon aci	6,8-Dianilino-1-naphthalenesulfonic acid.
Durene	1,2,4,5-Tetramethylbenzene.
Epsilon acid (Andresen's acid)	8-Hydroxy-1,6-naphthalenedisulfonic acid.
F acid	7-Hydroxy-2-naphthalenesulfonic acid.
Fast Red G base	2-Nitro-p-toluidine [$\text{NH}_2=1$].
Fast Scarlet R base	5-Nitro-o-anisidine [$\text{NH}_2=1$].
Fischer's aldehyd	1,3,3-Trimethyl- ω^2, α -indolineacetaldehyde.
Fischer's base	1,3,3-Trimethyl-2-methyleneindoline.
Freund's acid	4-Amino-2,7-naphthalenedisulfonic acid.

Table B-1—Continued

Cyclic Intermediates: Glossary of synonymous names

<i>Common name</i>	<i>Standard (chemical abstracts) name</i>
G salt	7-Hydroxy-1,3-naphthalenesulfonic acid, sodium salt.
Gamma acid	6-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt.
Gold salt	9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt.
H acid	4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, (8-Amino-1-naphthol-3,6-disulfonic acid).
Hellimellitene	1,2,3-Trimethylbenzene.
Indoxyl	3(2H)-Indolone.
Isodurene	1,2,3,5-Tetramethylbenzene.
J acid	7-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt.
J acid urea	7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid]
K acid	4-Amino-5-hydroxy-1,7-naphthalenedisulfonic acid.
Koch's acid	8-Amino-1,3,6-naphthalenetrisulfonic acid.
L acid	5-Hydroxy-1-naphthalenesulfonic acid.
Lake Red C amine	2-Amino-5-chloro-p-toluenesulfonic acid.
Laurent's acid	5-Amino-1-naphthalenesulfonic acid.
M acid	8-Amino-4-hydroxy-2-naphthalenesulfonic acid.
MEP	5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine).
Mesitylene	1,3,5-Trimethylbenzene.
Methane base	4,4'-Methylenebis[N,N-dimethylaniline].
Michler's hydrol	4,4'-Bis[dimethylamino]benzhydrol.
Michler's ketone	4,4'-Bis[dimethylamino]benzophenone.
MOCA	3,3'-Dichloro-4,4'-diaminodiphenylmethane.
MVP	5-Vinyl-2-picoline.
Naphthionic acid	4-Amino-1-naphthalenesulfonic acid.
o-Naphthionic acid	1-Amino-2-naphthalenesulfonic acid.
β -Naphthol	2-Naphthol, tech
Naphthol AS	3-Hydroxy-2-naphthanilide.
α -Naphthylamine	1-Naphthylamine.
Neville & Winther's acid	4-Hydroxy-1-naphthalenesulfonic acid.
m-Nitrobenzoyl J acid	4-Hydroxy-7-(m-nitrobenzamido)-2-naphthalenesulfonic acid.
Oxy Koch's acid	1-Naphthol-3,6,8-trisulfonic acid.
Pentaanthrimide	1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone.
Peri acid	8-Amino-1-naphthalenesulfonic acid.
Phenylbiphenyl	Terphenyl.
N-Phenyldiethanolamine	2,2'-[(Phenyl)imino]diethanol.
Phenyl gamma acid	6-Anilino-4-hydroxy-2-naphthalenesulfonic acid.
Phenyl J acid	7-Anilino-4-hydroxy-2-naphthalenesulfonic acid.
Phenyl peri acid	8-Anilino-1-naphthalenesulfonic acid.
Picric acid	2,4,6-Trinitrophenol.
POPO	1,4-Bis[2-(5-phenyloxazoyl)]benzene.
Pseudocumene	1,2,4-Trimethylbenzene.
Pyrazoleanthrone	Anthra[1,9-cd]pyrazol-6(2H)-one.
Pyrazoleanthrone yellow	[3,3'-Bianthral[1,9-cd]pyrazole]-6,6'-(2H,2'H) dione.
Pyrazolone T	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Quinizarin	1,4-Dihydroxyanthraquinone.
2-Quinizarinsulfonic acid	9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid.
Quinoline yellow base	Quinophthalone.
R salt	3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt.
RG acid (Violet acid)	4-Hydroxy-2,7-naphthalenedisulfonic acid.
Rhoduline acid (J Acid Imide)	7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid].
RR acid	3-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid.
S acid	4-Amino-5-hydroxy-1-naphthalenesulfonic acid.
Schaffer's acid	6-Hydroxy-2-naphthalenesulfonic acid.
Silver salt	9,10-Dihydro-9,10-dioxo-2-anthracenesulfonic acid and salt.
Solvent Yellow 1	p-Phenylazoaniline and hydrochloride.
Solvent Yellow 3	4-(o-Tolylazo)-o-toluidine.
SS acid (Chicago acid)	4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid.
Sulfanilic acid	p-Aminobenzenesulfonic acid.
o-Sulfobenzaldehyde	o-Formylbenzenesulfonic acid.

Table B-1—Continued

Cyclic Intermediates: Glossary of synonymous names

<i>Common name</i>	<i>Standard (chemical abstracts) name</i>
Tetralin	1,2,3,4-Tetrahydronaphthalene.
Thiolindoxyl	3(2H)-Thianaphthenone.
Thiosalicylic	o-Mercaptobenzoic acid.
Tobias acid	2-Amino-1-naphthalenesulfonic acid.
TODI	Bitolylene diisocyanate.
o-Toldine	3,3'-Dimethylbenzidine.
α -Toluic acid	Phenylacetic acid.
α -Tolunitrile	Phenylacetonitrile.
4-m-Tolylenediamine	Toluene-2,4-diamine.
Trimellitic anhydride	1,2,4-Benzenetricarboxylic acid, 1,2-anhydride.
Trimethyl base	1,3,3-Trimethyl-2-methyleneindoline.
Trinitrophenol	Picric acid.
Urea J acid (J acid urea)	7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid].
Veratraldehyde	3,4-Dimethoxybenzaldehyde.
Veratrole	o-Dimethoxybenzene.
Vinyltoluene	ar-Methylstyrene.
Violet acid (RG acid)	4-Hydroxy-2,7-naphthalenedisulfonic acid.

APPENDIX C
SYNTHETIC ORGANIC CHEMICALS,
U.S. PRODUCTION AND SALES, 1987

Synthetic Organic Chemicals, U.S. Production And Sales, 1987, Harmonized System Basis

The following table contains 1987 U.S. production and sales data for synthetic organic chemicals in the 6-digit Harmonized System (HS) format. The Commission decided to compile such data in this format in response to the decision by the U.S. Bureau of the Census to publish Standard Industrial Classification (SIC) data which will be convertible to the HS beginning with the 1987 *Census of Manufactures*. The U.S. Bureau of the Census has historically referred to the *Synthetic Organic Chemicals, United States Production and Sales (SOC)* report in the chemicals section of the *Census of Manufactures*, which permits them to omit collecting synthetic organic chemicals production and shipments data from its respondents. Because of this situation, the SOC data will now also be compiled on an HS basis to provide comparability with the new SIC format.

The table provides production and sales data on a 6-digit HS basis only where publication would not violate the statutory provisions relating to unlawful disclosure of information accepted in confidence by the Commission. It includes only the 6-digit item numbers with publishable data from a number of HS chapters in which these chemicals are classified, but does not provide totals by chapter or overall total figures.

Table C-1
Synthetic organic chemicals: U.S. production and sales, 1987, harmonized system basis

HS number	Description	Production		Sales
		Quantity	Quantity	Value
		Pounds	Pounds	Dollars
151800	Chemically modified fats and oils and their fractions (except those of heading 1516)	161,141,359	149,406,233	76,088,594
220720	Ethyl alcohol and other spirits, denatured, of any strength	573,687,392	714,202,268	168,831,509
271113	Butanes, liquefied	3,195,922,145	1,393,993,183	114,758,406
271114	Ethylene, propylene, butylene and butadiene, liquefied	3,995,808,542	1,946,498,320	225,251,391
271119	Other petroleum gases and other gaseous hydrocarbons nspf, liquefied	6,474,130,636	2,085,680,649	90,005,759
271129	Other petroleum gases and other gaseous hydrocarbons nspf, in gaseous state	11,123,859,953	8,208,243,577	489,568,525
290110	Acyclic hydrocarbons, saturated	3,813,500,638	1,143,833,735	154,073,194
290121	Ethylene	34,950,791,770	11,075,508,887	1,590,662,227
290122	Propene (Propylene)	19,019,302,251	9,870,188,768	1,411,357,394
290123	Butene (Butylene) and isomers thereof	1,496,719,753	598,206,209	103,830,766
290124	Buta-1,3-diene and isoprene	3,037,797,552	2,870,894,854	664,649,482
290129	Unsaturated acyclic hydrocarbons nspf	2,497,779,132	1,641,406,113	385,166,389
290211	Cyclohexane	2,276,060,246	2,157,305,353	443,773,693
290220	Benzene	11,532,819,013	.....	.....
290230	Toluene	6,969,852,001	.....	.....
290250	Styrene	8,014,020,000	2,175,680,000	848,886,000
290260	Ethylbenzene	9,346,118,724	314,721,969	66,406,688
290270	Cumene	4,104,961,173	2,523,241,403	486,480,918
290311	Chloromethane (Methyl chloride) and chloroethane (Ethyl chloride)	527,762,604	.....	.....
290312	Dichloromethane (Methylene chloride)	516,132,000	473,110,640	83,121,870
290313	Chloroform (Trichloromethane)	461,819,000	446,377,320	53,535,015
290314	Carbon tetrachloride	672,151,000	717,822,000	102,068,000
290315	1,2-Dichloroethane (Ethylene dichloride)	12,196,585,000	1,296,930,000	103,816,000
290319	Other saturated chlorinated derivs of acyclic hydrocarbons nspf	1,461,377,093	1,344,679,877	347,277,679
290321	Vinyl chloride (Chloroethylene)	8,401,595,436	3,458,777,093	598,724,547
290329	Other unsaturated chlorinated derivs of acyclic hydrocarbons nspf .....	.....	46,841,000	18,333,665
290340	Halogenated derivs of acyclic hydrocarbons containing two or more different halogens	1,161,114,328	997,475,880	759,661,031
290410	Hydrocarbon derivs containing only sulfo groups, their salts and ethyl esters 1Butan-1-ol (n-Butyl alcohol)	1,154,866,663	583,726,351	127,593,593
290514	Other butanols nspf	1,576,491,000	230,398,000	36,435,000
290531	Ethylene glycol (Ethanediol)	5,183,229,147	3,778,030,872	669,634,831
290532	Propylene glycol (Propane-1,2-diol)	747,208,900	663,739,982	182,214,072
290539	Other acyclic diols nspf	2,740,957,003	1,838,210,135	955,268,897
290542	Pentaerythritol .....	.....	130,416,000	63,286,555
290549	Other acyclic polyhydric alcohols nspf .....	.....	880,055,754	65,898,319
290550	Halogenated, sulfonated, nitrated or nitrosated derivs of acyclic alcohols .....	.....	6,278,374	10,517,819
290711	Phenol (Hydroxybenzene) and its salts	3,841,091,000	1,533,009,072	444,626,924
290723	4,4'-Isopropylidenediphenol (Bisphenol A, Diphenylolpropane) and its salts	1,000,351,000	409,386,700	199,393,400
290919	Other acyclic ethers, and their halo, sulfo, nitro or nitroso derivs	3,672,392,832	.....	.....
290941	2,2'-Oxydiethanol (Diethylene glycol, Digol)	435,986,000	393,807,673	63,562,299
290942	Monomethyl ethers of ethylene glycol or of diethylene glycol	108,057,891	99,449,996	34,145,687
290943	Monobutyl ethers of ethylene glycol or of diethylene glycol	491,301,000	447,007,000	128,791,000
290949	Other ether-alcohols and their halo, sulfo, nitro or nitroso derivs nspf	557,025,536	466,357,912	260,611,178
290960	Alcohol-, ether- and ketone peroxides and their halo, sulfo, nitro or nitroso derivs	79,389,321	50,366,734	59,178,359

Table C-1— Continued
 Synthetic organic chemicals: U.S. production and sales, 1987, harmonized system basis

HS number	Description	Production		Sales	
		Quantity		Value	
		Pounds	Pounds	Pounds	Dollars
291010	Oxirane (Ethylene oxide)	4,785,306,886	670,809,847	135,125,043	
291211	Methanal (Formaldehyde)	5,733,238,007	1,691,080,439	107,114,319	
291213	Butanal (Butyraldehyde, normal isomer)	1,758,934,440	.....	.....
291230	Aldehyde-alcohols	4,609,285	2,341,693	11,328,850	
201411	Acetone	1,845,586,000	.....	.....
291412	Butanone (Methyl ethyl ketone)	671,858,630	549,373,600	123,887,164	
291413	4-Methylpentan-2-one (Methyl isobutyl ketone) ..	151,241,000	155,490,000	51,201,000	
291422	Cyclohexanone and methylcyclohexanones	930,376,161	91,923,913	36,455,375	
291423	Ionones and methylionones	2,021,046	1,275,538	10,332,936	
291430	Aromatic ketones without other oxygen function ..	5,253,070	3,616,227	8,620,113	
291521	Acetic acid	3,245,948,000	1,102,599,000	140,337,000	
291522	Sodium acetate	47,182,128	.....	.....
291531	Ethyl acetate	214,002,936	162,370,127	34,096,618	
291532	Vinyl acetate	1,813,312,848	1,641,242,171	326,265,093	
291533	n-Butyl acetate	201,853,236	168,867,767	48,919,152	
291534	Isobutyl acetate	88,246,804	70,094,770	17,802,082	
291535	2-Ethoxyethyl acetate (Ethylene glycol, monoethyl ether acetate)	84,863,000	85,250,588	31,137,051	
291539	Other esters of acetic acid nspf	227,221,345	217,827,209	126,424,014	
291550	Propionic acid, its salts and esters	256,185,205	132,329,794	57,505,874	
291570	Palmitic acid, stearic acid, their salts and esters	208,367,199	189,966,472	131,480,615	
291590	Other saturated acyc monocarboxylic acids, their anhydrides, halides, peroxides, peroxyacids; halo, sulfo, nitro, nitroso derivs nspf	423,766,286	200,814,199	162,707,570	
291611	Acrylic acid and its salts	1,100,893,500	204,499,824	75,256,983	
291615	Oleic, linoleic or linolenic acids, their salts and esters	88,046,587	77,603,213	41,760,506	
291619	Other unsaturated acyc monocarboxylic acids, their anhydrides, halides, peroxides, peroxyacids nspf; halo, sulfo, nitro, nitroso deriv	44,474,607	46,636,485	64,037,571	
291620	Cyclanic, cyclenic or cycloterpenic monocarboxylic acids, their anhydrides, halides, peroxides, peroxyacids and their derivs	101,026,723	.....	.....
291631	Benzoic acid, its salt and esters	94,619,000	.....	.....
291639	Other aromatic monocarboxylic acids, their anhydrides halides, peroxides, peroxyacids and their derivs nspf	26,986,077	20,684,063	65,111,895	
291719	Other acyc. polycarboxylic acids, their anhydrides, halides, peroxides, peroxyacids nspf; halo, sulfo, nitro or nitroso derivs	574,098,367	464,824,111	266,319,489	
291731	Dibutyl orthophthalates	25,167,407	22,614,292	10,044,971	
291732	Diocetyl orthophthalates	343,138,087	353,863,174	124,896,867	
291735	Phthalic anhydride	1,035,187,000	454,932,644	113,240,346	
291739	Other aromatic polycarboxylic acids, their anhydrides halides, peroxides, peroxyacids nspf and their derivs	4,608,340,080	1,137,168,785	436,148,802	
291819	Other carbox. acids w/add alcohol function only, anhydrides, halides, peroxides, peroxyacids nspf; halo, sulfo, nitro, nitroso derivs	34,708,151	20,973,804	24,365,423	
291821	Salicylic acid and its salts	25,131,000	.....	.....
291822	O-Acetylsalicylic acid (Aspirin), its salts and esters	24,088,861	.....	.....
291829	Other carboxylic acids w/ add phenol funct only, anhydrides, halides, peroxides, peroxyacids nspf; halo, sulfo, nitro, nitroso derivs	4,909,055	4,811,163	15,524,708	
291830	Other carboxylic acids with add aldehyde or ketone function only, anhydrides, halides, peroxides, peroxyacids nspf; halo, etc. derivs	853,295,009	26,440,754	14,774,062	

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Table C-1—Continued
Synthetic organic chemicals: U.S. production and sales, 1987, harmonized system basis

HS number	Description	Production		Sales
		Quantity		Value
		Pounds	Pounds	Dollars
291890	Other carboxylic acids w/ add oxygen function, anhydrides, halides, peroxides, peroxyacids nspf; halo sulfo, nitro, nitroso derivs	83,063,111	73,312,024	193,685,965
291900	Phosphoric esters and their salts, incl. lactophosphates; their halo, sulfo, nitro, nitroso derivs	184,904,360	131,566,545	140,320,496
292010	Thiophosphoric esters (phosphorothioates), their salts; their halo, sulfo, nitro, nitroso derivs	118,495,728	62,646,465	140,279,110
292090	Other esters of inorg. acids (excl. esters of hydrogen halides) nspf, their salts; halo, sulfo, nitro, nitroso derivs	175,705,485	134,429,248	121,475,790
292111	Methylamine, dl- or trimethylamine, and their salts	155,884,696	130,505,979	43,618,142
292119	Other acyclic monoamines and their derivs nspf; salts thereof	273,438,817	233,881,719	151,582,455
292129	Other acyclic polyamines and their derivs nspf; salts thereof .....	.....	98,318,465	108,629,833
292130	Cyclanic, cyclenic, cycloterpenic mono- or polyamines and their derivs; salts thereof ...	18,914,037	21,282,469	81,310,798
292141	Aniline and its salts	859,074,674	430,181,762	127,929,172
292211	Monoethanolamine and its salts	231,835,000	163,344,000	38,571,000
292212	Diethanolamine and its salts	194,406,000	183,584,000	44,424,000
292213	Triethanolamine and its salts	216,241,155	212,010,630	62,185,055
292219	Other amino-alcohols nspf, their ethers and esters, containing only one kind of oxygen function; salts thereof	134,887,256	107,414,776	110,367,675
292229	Other amino-naphthols and amino-phenols nspf, their ethers, esters, containing only one kind of oxygen function; salts thereof	12,624,189	8,948,590	12,617,847
292230	Amino-aldehydes, amino-ketones and amino-quinones, containing only one kind of oxygen function; salts thereof	153,209	.....	.....
292249	Other amino-acids nspf and their esters, containing only one kind of oxygen function; salts thereof	68,346,896	36,186,623	80,843,347
292250	Amino-alcohol-phenols, amino-acid-phenols and other amino-compounds with oxygen function	71,942,531	26,634,874	52,732,919
292390	Other quaternary ammonium salts and hydroxides nspf	51,218,886	43,435,152	54,236,009
292410	Acyclic amides (including acyclic carbamates), and their derivs; salts thereof	336,363,893	138,544,396	137,620,177
292421	Ureines and their derivs; salts thereof	30,397,090	22,675,948	64,238,677
292429	Other cyclic amides nspf (including cyclic carbamates) and their derivs; salts thereof	147,203,104	148,444,469	444,902,660
292519	Other imides nspf and their derivs; salts thereof	11,923,482	9,492,366	25,967,760
292520	Imines and their derivs; salts thereof	179,647,399	140,559,346	100,532,276
292690	Other nitrile-function compounds nspf	4,728,449,245	1,644,779,079	737,547,506
292700	Diazo-, azo-, or azoxy-compounds	21,048,307	16,727,086	58,875,585
292800	Organic derivs of hydrazine or of hydroxylamine ..	3,567,075	4,078,775	14,596,542
292910	Isocyanates	1,568,338,000	1,363,296,000	1,046,592,000
292990	Other compounds nspf with other nitrogen functions	54,321,519	40,498,205	29,330,882
293020	Thiocarbamates and dithiocarbamates	88,170,302	78,206,918	188,308,625
293090	Other organo-sulfur compounds nspf	369,292,884	255,607,039	416,477,902
293100	Other organo-inorganic compounds	293,740,683	172,765,197	990,851,079
293211	Tetrahydrofuran	142,902,550	71,394,370	59,271,674
293229	Other lactones nspf with oxygen hetero-atom(s) only	77,167,399	17,857,916	63,614,786
293339	Other heterocyclic cmpds with nitrogen hetero-atom(s) only nspf, with unfused pyridine ring (hydrogenated or not) in structure	106,270,348	74,202,798	420,868,676

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Appendix C

Table C-1 —Continued
Synthetic organic chemicals: U.S. production and sales, 1987, harmonized system basis

HS number	Description	Production		Sales	
		Quantity		Value	
		Pounds	Pounds	Pounds	Dollars
293359	Heterocyc cmpds w/ nitrogen hetero-atom(s) only, pyrimidine (hydrogenated or not) or piperazine ring in struct; nucleic acids, salts	36,722,206	25,728,639		122,623,959
293369	Other heterocyc cmpds w/nitrogen hetero-atom(s) only nspf, with unfused triazine ring (hydrogenated or not) in the structure	348,393,956	254,728,564		530,823,893
293371	6-Hexanelactam (epsilon-Caprolactam)	1,156,336,310	276,870,986		170,252,204
293390	Other heterocyclic compounds with nitrogen hetero atom(s) only nspf	177,606,592	107,148,903		496,560,540
293420	Heterocyclic compounds containing a benzothiazole ring-system (hydrogenated or not), not further fused	101,193,018	61,084,112		141,233,260
293490	Other heterocyclic compounds nspf	99,469,522	70,284,505		266,669,654
294190	Other antibiotics nspf	11,986,831	3,002,220		245,529,688
294200	Organic compounds nspf	228,770,076	187,084,219		197,612,367
310210	Urea, whether or not in aqueous solution	11,530,120,118	11,529,565,380		563,796,493
320411	Disperse dyes and preparations based thereon	26,137,386	20,801,105		79,664,389
320412	Acid dyes, premetallized or not, mordant dyes and preparations based thereon	17,927,818	16,811,810		81,554,999
320413	Basic dyes and preparations based thereon	12,718,804	11,861,428		66,385,641
320414	Direct dyes and preparations based thereon	36,856,147	35,745,493		84,436,333
320417	Pigments and preparations based thereon	100,465,908	89,915,398		598,053,128
320419	Other synth. organic coloring matter nspf and preparations based thereon, incl mixtures of items of subheadings 3204.11 thru 3204.19	36,088,406	31,322,278		131,800,727
320420	Fluorescent brightening agents	65,424,147	.....		.....
380610	Rosin	150,110,704	140,570,971		51,038,216
380630	Ester gums	167,015,914	163,190,271		109,678,283
380991	Other finishing agents, dye carriers, like products nspf, for textile industry use	61,617,130	59,544,995		34,383,718
380999	Other finishing agents, dye carriers, like products nspf, for leather industry use	35,965,640	24,588,343		16,598,763
381121	Lubricating oil additives containing petroleum oils or oils obtained from bituminous minerals	1,891,692,078	1,289,324,846		939,429,354
381230	Antioxidizing preps and compound stabilizers for rubber or plastics	101,117,304	83,185,422		52,941,852
381590	Reaction initiators, reaction accelerators, and catalytic preps, nspf .....	.....	12,916,346		31,959,755
382320	Naphthenic acids, their water-insoluble salts and their esters	66,546,905	.....		.....
382390	Other chemical products, preparations, and residual products of the chemical or allied industries nspf	11,496,943,715	5,656,933,143		900,396,282
390110	Polyethylene having a specific gravity of less than 0.94	9,467,960,065	8,606,631,233		2,970,975,563
390120	Polyethylene having a specific gravity of 0.94 or more	7,906,674,788	7,901,864,749		2,609,051,954
390210	Polypropylene	6,977,333,991	5,644,014,860		2,153,716,511
390311	Polystyrene, expandable	553,197,950	553,141,950		332,831,343
390319	Polystyrene, other than expandable	5,043,745,000	4,136,402,000		2,020,290,000
390320	Styrene-acrylonitrile (SAN) copolymers	208,670,515	109,124,290		69,805,806
390330	Acrylonitrile-butadiene-styrene (ABS) copolymers	1,260,608,009	1,243,086,228		983,771,907
390390	Other polymers of styrene nspf, in primary forms	1,216,544,000	1,189,661,000		858,956,000
390511	Polymers of vinyl acetate in aqueous dispersion	704,577,712	560,342,633		314,116,880
390590	Polymers of vinyl esters nspf, in primary forms; other vinyl polymers nspf, in primary forms	642,549,924	562,609,187		315,940,456
390610	Polymethyl methacrylate	596,587,782	383,021,937		395,209,266
390690	Other acrylic polymers nspf in primary forms	1,901,393,716	1,441,496,613		1,556,196,421
390730	Epoxide resins	838,316,528	536,786,157		669,304,510

Table C-1—Continued
Synthetic organic chemicals: U.S. production and sales, 1987, harmonized system basis

HS number	Description	Production	Sales	
		Quantity	Quantity	Value
		Pounds	Pounds	Dollars
390750	Alkyd resins	752,251,342	502,047,438	298,862,505
390760	Polyethylene terephthalate	3,912,629,000	2,434,372,000	1,898,624,000
390791	Other polyesters nspf, unsaturated, in primary forms	1,343,796,000	1,264,020,000	793,208,000
390799	Other polyesters nspf, saturated, in primary forms	736,106,000	461,464,000	529,457,000
390810	Polyamide-6, -11, -12, -6,6, -6,9, -6,10 or -6,12 (nylon type)	2,807,561,000	2,060,635,000	3,244,192,000
390910	Urea resins; thiourea resins	1,963,759,000	1,714,932,000	235,606,000
390920	Melamine resins	250,314,269	219,133,537	189,387,811
390940	Phenolic resins	1,697,074,000	1,223,894,000	627,238,000
390950	Polyurethanes	227,481,921	142,983,244	214,722,195
391231	Carboxymethylcellulose and its salts	99,654,240	105,556,966	181,340,969
400299	Other synthetic rubber nspf	1,064,171,159	554,509,298	824,872,703

APPENDIX D
ALPHABETICAL CHEMICAL INDEX

Alphabetical Chemical Index

The alphabetical index of chemicals contained in this appendix table is an outgrowth of the processing of data by the U.S. International Trade Commission for its annual report, *Synthetic Organic Chemicals, United States Production and Sales*. This index will aid those who have an interest in the report, either as users of the published data or as suppliers of individual company data to the Commission, principally by showing the section number and line item number of specific chemicals. This information can be used to assist in locating a chemical in the report and to provide respondents to the Commission's questionnaire with information on where to list their production and sales data. The index shows only those chemicals for which production or sales were reported to the Commission for this edition of the report.

The index, initially designed for Commission use in computer processing of data for the annual report, has certain characteristics that should be noted to increase its usefulness. For example, superior headings for individual entries are not shown in the index. Thus, understanding the contents of the first item in the index, "accelerators, activators, and vulcanizing agents, acyclic, *other*," necessitates that the index user turn to the individual section (in the report) and item number (in the questionnaire) to find those acyclic accelerators, activators, and vulcanizing agents already specified. Similarly, the index entry "specific gravity 0.940 and below" does not by itself identify the chemical product. The index user will need to turn to the indicated section number and item number to determine the chemical referred to—in this case, polyethylene.

The chemical names used in this report and in the questionnaires sent to U.S. producers to obtain the data aggregated in the report are listed alphabetically in the first column of each listing in the index. The second column refers to the section in the report and questionnaire containing the chemical, and the third column shows the appropriate item number in that section in the questionnaire.

Table D-1
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Accelerators, activators, and vulcanizing agents, acyclic, other	09	163.000	N-Acetyl methyl anthranilate	07	93.555
Accelerators, activators, and vulcanizing agents, cyclic, other	09	49.000	Acetyl peroxide	15	1282.000
Acetaldehyde	15	782.000	Acetyl propionyl (2,3-Pentanedione)	07	126.600
Acetaldehyde dimethylhydrazone	15	307.200	2-Acetylpyridine	03	19.450
Acetaldehyde ethyl phenethyl acetal	07	1.300	Acid Black 1	04	203.000
Acetaldehyde phenethyl propyl acetal	07	1.400	Acid Black 2	04	211.000
Acetal resins	08	19.000	Acid Black 60	04	214.000
Acetamide	15	227.000	Acid Black 63	04	214.063
Acetamidethanol (N-Acetyl-ethanolamine)	15	220.000	Acid Black 107	04	216.000
3-Acetamido-N-(2-succinimidoethyl)-N-ethylaniline	03	6.275	Acid Black 112	04	217.112
Acetaminophen	06	392.000	Acid Black 172	04	218.172
Acetanilide, tech.	03	7.000	Acid Black 194	04	218.194
Acetazolamide	06	736.000	Acid Black 210	04	218.210
Acetic acid, amides with polyalkylene polyamines, salt	12	357.900	Acid black dyes, all other	04	219.000
Acetic acid, phenyl ester	03	8.000	Acid Blue 9	04	132.000
Acetic acid salts, all other	15	608.000	Acid Blue 15	04	133.000
Acetic acid, synthetic (100%)	15	486.000	Acid Blue 25	04	136.000
Acetic anhydride from acetaldehyde (100%)	15	487.000	Acid Blue 27	04	137.000
Acetic anhydride from acetic acid, other than recovered, by the vapor-phase process (100%)	15	488.000	Acid Blue 40	04	140.000
Acetic anhydride from acetic acid, recovered, by vapor-phase process	15	488.000	Acid Blue 41	04	141.000
Acetoacetanilide	15	489.000	Acid Blue 80	04	149.000
o-Acetoacetanilide	03	9.000	Acid Blue 104	04	155.000
Acetoacetylaldehyde	05	10.000	Acid Blue 113	04	157.000
Acetoacetylaldehyde, all others	05	7.000	Acid Blue 118	04	158.000
o-Acetoacetotolulide	03	11.000	Acid Blue 145	04	161.000
2',4'-Acetoacetylulide	03	11.500	Acid Blue 231	04	168.000
Acetoguanamine	03	11.513	Acid Blue 277	04	168.277
Acetohexamide	06	686.000	Acid Blue 283	04	168.283
1'-Acetonaphthone	03	12.000	Acid Blue 298	04	168.298
2'-Acetonaphthone (β -Methyl naphthyl ketone)	07	1.500	Acid Blue 321	04	168.321
Acetone, crude	15	809.000	Acid Blue 324	04	168.324
Acetone from cumene	15	806.000	Acid Blue 330	04	168.330
Acetone-formaldehyde resins	08	1.000	Acid blue dyes, all other	04	169.000
Acetone from isopropyl alcohol	15	807.000	Acid Brown 14	04	189.000
Acetone sodium bisulfite	15	1281.500	Acid Brown 19	04	190.000
Acetonitrile	15	432.000	Acid Brown 50	04	194.050
3-(α -Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	13	169.000	Acid Brown 97	04	196.000
Acetophenone, tech.	03	14.000	Acid Brown 147	04	197.147
p-Acetotolulide	03	15.000	Acid Brown 159	04	199.159
1-Acetoxy-2-sec-butyl-1-ethenylcyclohexane	07	93.500	Acid Brown 160	04	199.160
6-Acetoxy-2,4-dimethyl-1,3-dioxane	15	1.000	Acid Brown 161	04	199.161
4-Acetoxyethyl-4-nonene	07	126.050	Acid Brown 163	04	199.163
Acetylacetones, all other	15	1281.700	Acid Brown 165	04	199.165
Acetylacetone peroxide	15	1281.990	Acid Brown 227	04	200.227
N-[(Acetylamino)methyl]-2-chloro-N-(2,6-diethylphenyl)acetamide	13	168.995	Acid Brown 239	04	200.239
Acetyl-n-butyl (2,3-Hexanedione)	07	126.100	Acid Brown 264	04	200.264
Acetyl cedrene (Vertofex)	07	93.550	Acid brown dyes, all other	04	202.000
Acetyl chloride	15	490.500	Acid Green 1	04	170.000
Acetylene (For chemical use only)	02	38.000	Acid Green 3	04	171.000
Acetyl isovaleryl (5-Methyl-2,3-hexanedione)	07	126.500	Acid Green 5	04	172.000
			Acid Green 9	04	173.000
			Acid Green 20	04	177.000
			Acid Green 25	04	179.000
			Acid Orange 7	04	43.000
			Acid Orange 8	04	44.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Acid Orange 10	04	Acid Yellow 99	04
Acid Orange 24	45.000	Acid Yellow 119	25.000
Acid Orange 60	47.000	Acid Yellow 127	26.119
Acid Orange 64	54.000	Acid Yellow 129	29.000
Acid Orange 89	57.000	Acid Yellow 135	31.000
Acid Orange 116	61.089	Acid Yellow 151	32.000
Acid Orange 128	62.000	Acid Yellow 159	33.000
Acid Orange 152	64.000	Acid Yellow 198	34.000
Acid Orange 156	65.152	Acid Yellow 200	37.000
Acid Orange 161	65.156	Acid Yellow 219	37.200
Acid orange dyes, all other	65.161	Acid Yellow 226	37.219
(Acid Red 26)	66.000	Acid Yellow 239	24.096
Acid Red 1	214.000	Acid yellow dyes, all other	37.239
Acid Red 4	67.000	Acrolein (Acrylaldehyde)	04
Acid Red 14	68.000	Acrylamide-2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	04
Acid Red 18	69.000	Acrylamide-acrylic acid copolymer	15
Acid Red 57	71.000	Acrylamide-acrylic acid copolymer, potassium salt	14
Acid Red 73	79.000	Acrylamide-acrylic acid copolymer, sodium salt	14
Acid Red 85	81.000	Acrylamide N-dimethylaminomethylacrylamide copolymer	14
Acid Red 87	83.000	Acrylamide monomer	14
Acid Red 88	84.000	Acrylamide polymer with N,N-Diethyl-N-methyl-2[(1-oxo-2-propenyloxy) ethaniminium sulfate	15
Acid Red 97	85.000	Acrylamide-trimethylaminoethyl acrylate chloride polymer	14
Acid Red 114	87.000	Acrylamide-trimethylaminoethyl methacrylate chloride	14
Acid Red 119	87.000	Acrylate-alkyd copolymer resins	08
Acid Red 137	92.000	Acrylic acid	15
Acid Red 151	94.000	Acrylonitrile-butadiene-styrene (ABS) terpolymer resins	15
Acid Red 182	97.000	Acrylonitrile, monomer	08
Acid Red 186	99.000	Acyclic amphoteric surface-active agents, all other	15
Acid Red 226	103.000	Acyclic herbicides	13
Acid Red 266	105.000	Acyclic peroxides, all other	15
Acid Red 296	110.226	Acyclic plasticizers, all other	11
Acid Red 299	111.000	Acyclovir	06
Acid Red 337	111.296	Acyclic elastomers, all other	10
Acid Red 384	112.000	Adipic acid	03
Acid Red 384	114.000	Adipic acid, ammonium salt	15
Acid Red 396	115.364	Adipic acid-crosslinked polycrylamide	15
Acid Red 410	115.384	Adipic acid-diethylene triamine condensate	14
Acid red dyes, all other	115.396	Adipic acid-diethylenetriamine-epichlorohydrin polymer	15
Acids, acid anhydrides, and acyl halides, all other	115.410	Adipic acid esters, all others	14
Acid Violet 3	116.000	Adipic acid, sodium salt	11
Acid Violet 7	586.000	Adipic acid type complex linear polyesters and polymeric plasticizers	11
Acid Violet 12	118.000	Adipic dihydrazide	11
Acid Violet 17	119.000	Adiponitrile	15
Acid Violet 17	120.000	Alkamide	06
Acid Violet 49	121.000	β-Alanine-N-(2-hydroxyethyl)-N-2 1-oxococoyl amino ethyl, sodium salt	12
(Acid Yellow 1)	126.000	Albumin	06
(Acid Yellow 23)	204.001	C ₁₂ -C ₁₅ Alcohol esters of lactic acid	15
Acid Yellow 3	204.023	C ₁₂ -C ₁₅ Alcohol, ethoxylated, propoxylated and phosphated	12
Acid Yellow 17	3.000	Alcohol mixtures, other	15
Acid Yellow 23	6.000	Alcohol mixtures, C-11 or lower only	15
Acid Yellow 23	8.000		
Acid Yellow 34	11.000		
Acid Yellow 36	12.000		
Acid Yellow 49	17.000		
Acid Yellow 59	19.000		
Acid Yellow 65	21.000		
Acid Yellow 73	22.000		
Acid Yellow 87	24.087		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Alcohol mixtures, C ₁₈ and C ₂₀ only	883.300	Allyl n-butyl trithiocarbonate	14
Alcohol mixtures, C ₁₂ through C ₁₈ only	883.200	Allyl cyclohexyl propionate	07
Alcohols, monohydric, and their esters, C ₆ and higher, mixed	1425.200	4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	07
Alcohols and phenols, alkoxylated and phosphated or polyphosphated, all other	91.000	Allyl disulfide	07
Alcohols, unmixed C ₁₂ or higher, all other	882.000	Allyl heptanoate	07
Alcohols, unmixed C ₁₁ or lower, all other	870.000	Allyl hexanoate	07
Aldadiene	21.400	Allyl methacrylate	15
Aldene-amine reaction products, cyclic, other	8.000	4-Allyl-2-methoxyphenol (Eugenol)	07
Aldehydes, acyclic, all other	805.000	4-Allyl-2-methoxyphenol acetate (Eugenol acetate)	07
Aliphatic hydrocarbon sulfides	253.000	1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)	15
Alkene thiophosphonate	245.000	Allyl resins	08
Alkyl succinimide	245.021	Allyl sulfonate, sodium salt	12
3-Alkoxo-2-hydroxypropyl trimethyl ammonium chloride	51.500	Alpha olefins, C ₆ -C ₁₀	02
Alkoxo triacryl titanate	1.905	Alpha olefins, C ₁₁ and higher	02
Alkyl phenol	3.900	Aluminum acetate	06
Alkyd copolymers, all other	318.600	Aluminum acetylacetonate complex	15
Alkylalcohol ethoxylated and carbonated, sodium salt	455.950	Aluminum chlorohydroxyphthalocyanine blue	15
2-(C ₁₃ -17 Alkyl)-1-(C ₁₄ -18 amidoethyl)(4,5-dihydro-3-methyl)imidazolium, methyl sulfate	207.950	Aluminum di-s-propoxide acetoacetic ester chelate	03
N-alkylamine bismethylenephosphonic acid	292.900	Aluminum diisopropoxide acetoacetic ester chelate	15
Alkyl C ₁₂ -C ₁₄ amine hydrochloride	28.000	Aluminum distearate	15
t-Alkylamines, primary, mixed	4.000	Aluminum ethylhexanoate	15
N-alkylaminobismethylene phosphonic acid salts	55.100	Aluminum ethyl-3-oxobutanoate-0',0'-dihydroxy T-4	15
Alkyl aromatics, all other	84.800	Aluminum isopropoxide (Aluminum isopropylate)	15
Alkylary-p-phenylenediamines	22.000	Aluminum monostearate	15
Alkylary phosphites, mixed	423.200	Aluminum octanoate	15
Alkybenzene straight-chain (Except dodecyl and tridecyl)	1317.320	Aluminum oxo(2-propanolato)	15
Alkyl dimethyl amine oxide	1317.320	Aluminum phenolsulfonate	06
Alkyl glycidyl ethers, C ₁₂ -C ₁₄	267.000	Aluminum tri-sec-butoxide	15
Alkyl glycidyl ethers, C ₆ -C ₁₀	321.045	Aluminum tristearate	15
Alkyl imidazoline	321.065	Amides, all other	15
3-(C ₁₂ -15 alkyl)-1-propanamine	3.450	Amido amine salts as curing agents	15
3-(C ₁₂ -18 alkyl)-1-propanamine	726.000	Amido amine salts as curing agents	15
N-(C ₁₂ -18 alkyl)oxypropyl trimethylene diamine	219.000	Amilolide hydrochloride	06
Alkylphenol formaldehyde condensate, alkoxylated	23.350	Amine oxides and oxygen-containing amines (Except those with amide linkages), acyclic, all other	12
Alkylphenol-formaldehyde condensates, alkoxylated, all other	268.000	Amine oxides and oxygen-containing amines (Except those having amine linkages), cyclic, all other	12
Alkyl phenols	269.000	Amines, all other	15
Alkylpyridines, mixed	172.000	Amine salts of fatty, rosin, and tall oil acids, all other	15
Alkyl succinic anhydride	93.000	3'-Aminoacetanilide	12
Alkyl terphenylamate	1215.000	4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	03
All other acyclic flavor and perfume materials	89.900	3'-Amino-p-acetanilide	03
All other benzenoid or naphthalenoid chemicals	126.800	Amino acids and salts, cyclic, all other	14
All other dyes	829.000	2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	03
All other octanoic acid esters	36.000	1-Aminoanthraquinone and salt	03
Allo-ocimene	165.950	p-Aminobenzamide	03
Allopurinol	165.950	3'-Aminobenzamide	03
All other products from petroleum and natural gas, cyclic	840.000	o-Aminobenzamide	03
All other succinic anhydride derivatives	126.000	p-Aminobenzamide	03
All other terpenoid, heterocyclic, or alicyclic flavor and perfume chemicals	258.000	2-Amino-6-benzothiazolesulfonic acid	03
Allyl alcohol	2.600	3-Aminobenzotrifluoride	03
Allylamines	61.000	1-Amino-4-bromo-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid and sodium salt	03
p-Allylanisole	64.500	7-Aminocephalosporanic acid	03

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
6-Amino-5-chloro-m-toluenesulfonic acid [SO ₃ H=1] (2BAcid)	03	5-Amino-2-[(2-oxo-5-benzimidazolyl)amino]benzenesulfonic acid	03
p-Amino-o-cresol	83.000	p-Aminophenol	182.000
3-Amino-2,5-dichlorobenzoic acid, ammonium salt	84.200	p-[(p-Aminophenyl)azo]benzenesulfonic acid	03
(2,5-Dichloro-3-aminobenzoic acid, ammonium salt)	40.500	2-(4-Aminophenylazo)-4-methylphenol	03
4-Amino-N,N-di(β-hydroxyethyl)aniline sulfate	91.503	7-[[4-Aminophenyl]azo]-1,3-naphthalenedisulfonic acid	03
5-Amino-4,5'-dihydroxy-3,4'-[(2-methoxy-5-methyl-p-phenylene)bis(azo)]-di-2,7-naphthalenedisulfonic acid, 5'-benzenesulfonate	03	1-(3-Aminopropyl)morpholine	15
2-Amino-4,6-dihydroxypyrimidine	92.000	2-Aminopyridine	03
5-Amino-2,3-dimethylbenzenesulfethanolamide	92.100	3-Aminopyridine	03
Amino dimethyl butyronitrile	92.503	Aminosalicyllic acid	03
4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5-(4H)-one	434.400	2-Aminothiazole nitrate	06
2-Aminoethanol hydrochloride	40.600	3-Amino-p-toluamide	03
2-Aminoethanol (Monoethanol amine) sulfite	309.900	4-Amino-m-toluenesulfonic acid [SO ₃ H=1]	03
Aminoethoxyethanol	310.000	4-Amino-m-toluenesulfonic acid [SO ₃ H=1] (Picloram)	03
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	311.000	Aminotrimethyl phosphonic acid	13
N-Aminoethylaminopropyl trimethoxysilane	312.000	Amritriptyline	14
3-Amino-9-ethylcarbazole	317.000	Amritriptyline hydrochloride	06
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate	1378.450	Ammonium acetate	06
2-Aminoethyl mercaptoacetate (Monoethanolamine thio-glycolate)	95.000	Ammonium benzoate	15
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline	448.000	Ammonium citrate	15
1-(2-Aminoethyl)piperazine	313.000	Ammonium formate	15
2-Amino-2-ethyl-1,3-propanediol	406.000	Ammonium heparin	15
N-2-(4-Amino-N-ethyl-m-toluidino)ethyl methane-sulfonamide	4.000	Ammonium isovalerate	06
Aminoglutethimide	5.000	Ammonium lactate	07
Aminoguanidine hydrochloride	314.000	Ammonium mercaptoacetate	15
2-Amino-2-(hydroxymethyl)-1,3-propanediol	318.000	Ammonium oxalate	15
[Tris(hydroxymethyl)aminomethane]	417.000	Ammonium oxydiethylenebis(alkyl* dimethyl chloride)	15
4-Amino-5-methoxy-2-methylbenzenesulfonic acid (5-methyl-o-anisinesulfonic acid)	315.020	*Alkyl-40% C ₁₂ , 50% C ₁₄ , 10% C ₁₆	
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid	316.000	Ammonium phenolsulfonate	13
4-[[4-Amino-5-methoxy-o-tolyl]azo]-4-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate	116.803	Ammonium polyacrylate	06
2-Amino-2-methyl-1,3-propanediol	118.000	Ammonium stearate	14
2-Amino-2-methyl-1-propanol	121.000	Amobarbital	15
2-Amino-2-methyl-1-propanol hydrochloride	317.000	Amobarbital, sodium	06
2-Amino-2-methylpropyl 8-bromothioephylinate	319.000	Amoxicillin (trihydrate)	06
2-Amino-3-methylpyridine	320.000	Amoxicillin (anhydrous)	06
2-Amino-4-methylpyridine	130.100	Amphetamines, all other	06
2-Amino-5-methylpyridine	133.500	Amphetamine sulfate	06
2-Amino-6-methylpyridine	133.600	Amphotericin B	06
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	134.000	Ampicillin (anhydrous)	06
5-(and 8)-Amino-2-naphthol	159.000	Ampicillin (trihydrate)	06
2-(N-Amino-2-nitroanilino)ethanol	168.000	Ampicillin, sodium	06
2-Amino-4-nitrophenol	169.890	Amprorlum	06
2-[(2-Amino-4nitrophenyl)amino]-2-hydroxymethyl-1,3-propanediol	175.000	Amyl acetate (n-Pentyl acetate)	06
2-Amino-5-nitrothiazole	176.200	Amyl acetates, all other	15
2-Amino-4-nitrotoluene hydrochloride	178.000	Amyl alcohol, ethoxylated and phosphated	15
		Amyl alcohol, primary	12
		Amylases, all other	15
		α-Amyl cinnamic aldehyde	14
		Amyl cinnamic aldehyde dimethyl acetal	07
		Amyl cinnamyl alcohol	07
		Amyl cyclohexyl acetate	07
		Amyl hydrogen phosphate	15
		tert-Amyl hydroperoxide	15

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
p-tert-Amylphenol sulfide (Tackifier)	09	124.000
Amlyl vinyl carbonyl acetate	07	127.340
Amryls acetate	07	93.650
Anabolic agents and androgens, all other	06	644.000
Anhydro sorbitol diolate	12	589.000
Anhydro sorbitol esters, all other	12	603.000
Anhydro sorbitol monoester of tall oil acids	12	590.000
Anhydro sorbitol monolaurate	12	591.000
Anhydro sorbitol mono-oleate	12	592.000
Anhydro sorbitol monopalmitate	12	593.000
Anhydro sorbitol monostearate	12	594.000
Anhydro sorbitol sesquiolate	12	596.000
Anhydro sorbitol sesquistearate	12	596.500
Anhydro sorbitol triester of tall oil acids	12	599.000
Anhydro sorbitol tristearate	12	600.000
Aniline (Aniline oil)	03	212.000
Aniline, ethoxylated	12	342.200
2-Anilinoethanol	03	215.000
Anilinoethanesulfonic acid and salt	03	219.000
p-Anilinophenol	09	66.000
Animal grease, sodium salt	12	52.100
Anionic surface-active agents, all other	12	320.000
p-Anisaldehyde	07	6.000
o-Anisidinomethanesulfonic acid	03	228.000
Anisole, tech.	03	230.000
Anisoyl chloride	03	230.090
Anisyl acetate	07	7.000
Anthracene, refined	03	231.000
Anthranilic acid (o-Aminobenzoic acid)	03	232.000
N,N'-(1,5-Antraquinonylene)dianthranilic acid	03	237.000
Antibiotics, for medicinal use, all other	06	62.000
Antifungal agents, all other	06	141.000
Antineoplastic agents, all other	06	283.000
Antiviral agents, all other	06	189.000
Apramycin	06	38.600
l-Arabinose	14	455.000
Arachidylbenzylalkyl amine	12	417.900
Aromatics, C ₉	02	36.010
Arsanilic acid	06	151.000
Aryl alkyl polyether alcohol	14	324.000
Ascorbic acid	06	807.000
Aspartic acid	14	2.000
Aspirin	06	385.000
Atracurium besylate	06	745.200
Aurantol	07	7.100
Aurothioglucose	06	398.000
Azathioprine	06	277.000
Azelaic acid	15	493.000
Azidothymidine	06	188.300
1,1'-Azobisformamide	15	229.000
2,2'-Azobis[2-methylpropanitrile] (Azobisisobutyronitrile)	15	435.000
Azobic Black 4	04	251.000
Azobic black compositions, all other	04	253.000
Azobic Blue 3	04	238.000
Azobic Brown 7	04	245.000
Azoic Brown 9	04	246.000
Azoic brown compositions, all other	04	249.000
Azoic Coupling Component 2	04	297.000
Azoic Coupling Component 3	04	298.000
Azoic Coupling Component 4	04	299.000
Azoic Coupling Component 7	04	301.000
Azoic Coupling Component 12	04	305.000
Azoic Coupling Component 14	04	307.000
Azoic Coupling Component 17	04	310.000
Azoic Coupling Component 18	04	311.000
Azoic Coupling Component 20	04	313.000
Azoic Coupling Component 21	04	314.000
Azoic Coupling Component 24	04	315.000
Azoic Coupling Component 34	04	317.000
Azoic Coupling Component 35	04	318.000
Azoic Coupling Component 43	04	319.000
Azoic coupling components, all other	04	320.000
Azoic Diazo Component 5, base	04	257.000
Azoic Diazo Component 13, base	04	262.000
Azoic Diazo Component 14, base	04	263.000
Azoic Diazo Component 32, base	04	265.000
Azoic Diazo Component 1, salt	04	271.000
Azoic Diazo Component 3, salt	04	273.000
Azoic Diazo Component 5, salt	04	275.000
Azoic Diazo Component 6, salt	04	276.000
Azoic Diazo Component 8, salt	04	277.000
Azoic Diazo Component 9, salt	04	278.000
Azoic Diazo Component 10, salt	04	279.000
Azoic Diazo Component 11, salt	04	280.000
Azoic Diazo Component 12, salt	04	281.000
Azoic Diazo Component 13, salt	04	282.000
Azoic Diazo Component 14, salt	04	283.000
Azoic Diazo Component 20, salt	04	284.000
Azoic Diazo Component 32, salt	04	285.000
Azoic Diazo Component 34, salt	04	286.000
Azoic Diazo Component 35, salt	04	287.000
Azoic Diazo Component 41, salt	04	290.000
Azoic Diazo Component 42, salt	04	291.000
Azoic Diazo Component 44, salt	04	292.000
Azoic Diazo Component 48, salt	04	293.000
Azoic Diazo Component 49, salt	04	294.000
Azoic diazo components, base, all other	04	270.000
Azoic diazo components, salt, all other	04	296.000
Azoic Orange 3	04	224.000
Azoic Red 1	04	227.000
Azoic Red 2	04	228.000
Azoic Red 6	04	229.000
Azoic red compositions, all other	04	234.000
Azoic Violet 1	04	235.000
Azoic violet compositions, all other	04	236.000
Azobicyclohexane	04	220.000
Aztreonam	06	38.700
Bacillus thuringiensis	13	166.010
Bacitracin (medicinal grade)	06	39.000
Bacitracin (animal feed grade)	06	63.000
Bacterial amylase	14	93.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Barium benzoate	15	Basic violet dyes, all other	04
Barium cadmium laurate	9,260	(Basic Violet 3, PMA)	04
Barium 2-ethylhexanoate	677,000	Basic Yellow 2	05
Barium naphthenate	630,000	Basic Yellow 11	04
Barium neodecanoate	296,000	Basic Yellow 13	04
Barium stearate	701,800	Basic Yellow 15	04
Basic black dyes, all other	750,000	Basic Yellow 24	04
Basic black dyes, all other, modified	359,999	Basic Yellow 25	04
(Basic Blue 7)	420,000	Basic Yellow 28	04
Basic Blue 1	123,007	Basic Yellow 29	04
Basic Blue 3	343,000	Basic Yellow 37	04
Basic Blue 7	400,000	Basic Yellow 53	04
Basic Blue 21	347,000	Basic Yellow 58	04
Basic Blue 41	401,000	Basic Yellow 65	04
Basic Blue 54	404,000	Basic Yellow 79	04
Basic Blue 60	407,000	Basic Yellow 83	04
Basic Blue 77	408,000	Basic Yellow 94	04
Basic Blue 94 and 94:1	412,000	Basic Yellow 96	04
Basic blue dyes, all other	414,094	Basic Yellow 102	04
Basic blue dyes, all other, modified	351,000	Basic yellow dyes, all other	04
(Basic Blue 14, PMA)	415,000	Basic yellow dyes, all other, modified	04
(Basic Blue 1, PTA)	227,014	(Basic Yellow 2), fugitive	04
Basic Brown 1	227,001	Beclomethasone	05
Basic Brown 4	355,000	Behenamide	06
Basic brown dyes, all other	357,000	Benzaldehyde glyceryl acetal	15
Basic Green 1	358,000	Benzaldehyde, tech.	07
Basic Green 4	352,000	Benzalkonium heparin	03
Basic green dyes, all other	354,000	Benzanilide	06
(Basic Green 1, PMA)	354,100	Benzene High purity (98-100%)	03
Basic Orange 1	230,101	Benzene other	02
Basic Orange 2	326,000	Benzenephosphinic acid	02
Basic Orange 21	372,000	Benzene phosphorous dichloride	15
Basic orange dyes, all other	329,000	Benzenesulfonic acid	15
(Basic Red 1)	215,001	Benzene sulfonic acid	03
Basic Red 12	333,000	Benzenesulfonic acid, 2-formyl-, sodium salt	12
Basic Red 14	383,000	Benzenesulfonic acid, 2-formyl-, sodium salt	03
Basic Red 15	384,000	Benzene, toluene, xylene, mixtures	03
Basic Red 17	386,000	1,2,4-Benzenetetracarboxylic acid, 1,2-dianhydride	02
Basic Red 29	390,000	Benzhydrol (Diphenylmethanol)	03
Basic Red 46	391,046	Benzimidazole	03
Basic Red 51	392,051	Benzocaine	06
Basic Red 54	392,054	Benzocaine, propoxylated	12
Basic Red 73	392,073	1,3-Benzodioxole	06
Basic Red 104	392,104	Benzocic acid	03
Basic Red 111	392,111	Benzocic acid, 2-[4-(dimethylamino)-benzoyl]-	06
Basic red dyes, all other	334,000	Benzocic acid, isodecyl ester	03
(Basic Red 81, PMA)	210,050	Benzocic acid, methyl ester	15
(Basic Violet 1)	221,001	Benzocic acid, tech.	03
(Basic Violet 4)	221,001	Benzonate	03
(Basic Violet 10)	221,004	Benzophenone	06
Basic Violet 1	221,010	Benzophenone	07
Basic Violet 3	335,000	2-Benzothiazole	15
Basic Violet 4	337,000	2-Benzothiazolethiol, sodium salt	03
Basic Violet 10	338,000	1H-Benzotriazole	03
Basic Violet 16	339,000	Benzotriazole, substituted	03
Basic Violet 35	396,000	2-Benzoxazolethiol	15
	398,035		03
			283,200

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Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Benzoyl chloride	03	Benzyl(tallow alkyl)bis(2-hydroxyethyl) ammonium chloride	12
Benzoyl peroxide	15	Benzyltriethylammonium chloride	03
Benzophetamine hydrochloride	06	Benzyltriethylammonium chloride	12
Benzthiazide	06	Benzyltrimethylammonium chloride	03
Benzotropine mesylate	06	Benzyltrimethylammonium hydroxide	03
Benzyl acetate	07	Beta carotene (provitamin A)	06
Benzyl alcohol	15	Betaine hydrochloride	06
Benzyl(alkylpyridinium) chloride	12	Betamethasone	06
Benzylamine	03	Betamethasone dipropionate	06
2-(Benzylamino)ethanol	03	Betamethasone sodium phosphate	06
Benzyl (polyoxyethylene, octadecylamine) ammonium chloride with benzyl(polyoxyethylene, tallowamine) ammonium chloride	12	Betamethasone valerate	06
Benzyl benzoate	07	Beta methyl ionone coevr	07
Benzyl butyrate	07	Bethanechol chloride	06
Benzyl chloroformate	15	Biological stains	14
Benzyl-2-chloro-4-(trifluoromethyl)-5-thiazolecarboxylate	13	Biotin	06
Benzyl cinnamate	07	Biphenyl	03
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl) ammonium chloride	12	N,N-Bis(2,2-acetamido)glycine	14
Benzyl(coconut oil alkyl)dimethylammonium chloride	12	Bis(N-amidopropyl)-N,N-dimethyl-N-ethylammonium ethyl sulfate, dimer acid	12
Benzyl-di(hydrogenated tallow alkyl)methylammonium chloride	12	1,4-Bis(3-aminopropyl)piperazine	03
Benzyl dimethyl (hydrogenated tallow alkyl) ammonium chloride	12	2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone	03
Benzyl dimethylerucylammonium chloride	12	1,3-Bis(2-benzothiazolylmercaptomethyl) urea	09
Benzyl(dimethyl(mixed alkyl)ammonium chloride	12	Bis[2-(bis[2-hydroxyethyl]amino)ethyl] diisopropyl titan	15
Benzyl(dimethyloctadecylammonium chloride	12	Bis-1,4-bromoacetoxy-2-butene	15
Benzyl(dimethyloctadecylammonium chloride	12	2,2-Bis(bromomethyl)-1,3-propanediol	15
Benzyl(dimethyl(tallow alkyl)ammonium chloride	12	Bis(2-butoxyethyl)ether (Diethylene glycol di-n-butyl ether)	15
6-benzylidenine (BAP)	13	1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolium chloride, disodium salt	15
3-(Benzylethylamino)acetanilide	03	Bis(p-chlorobenzoyl)peroxide	12
Benzyl formate	07	Bis(2-chloroethyl)ether (Dichlorodiethyl ether)	15
Benzylhexadecyldimethylammonium chloride	12	Bis(2-chloroethyl)-2-chloroethylphosphonate	15
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride	12	Bis(coconut oil alkyl)amine	12
2-Benzyl-2-hydroxy-5,9-dimethyl-6,7-benzomorphan-hydrobromide	03	Bis(coconut oil alkyl)dimethylammonium chloride	12
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazole	12	Bis[coconut oil alkyl] dimethylammonium nitrate	12
Benzyl isobutyrate	07	Bis-cumylphenyl-oxoethylene titanate	12
Benzyl isopentyl ether	07	1,2-Bis(3,5-di-tert-butyl-4-hydroxyhydrocinnamoyl)hydrazine	12
Benzyl isovalerate	07	Bis(dibutylthiocarbonyl) disulfide	15
Benzyl laurate	07	Bis(2,4-dichlorobenzoyl) peroxide	09
Benzyl-methyl-bis(hydrogenated tallow) ammonium chloride	12	Bis(dimethylaminoethyl) ether	15
1-(Benzylloxy)-2-methoxy-4-propenylbenzene (Benzyl iso-eugenyl ether)	07	Bis(α,α-dimethylbenzyl)peroxide	15
Benzyl phenylacetate	07	N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	09
1-Benzyl-4-phenylisonipecotonitrile	03	S-[1,2-Bis(ethoxycarbonyl)ethyl]O,O-dimethyl phosphoro-dithioate (Malathion)	13
Benzyl picolinium chloride	12	Bis(2-ethoxyethyl)ether (Diethylene glycol diethyl ether)	15
Benzyl(polyoxyethylene cocoamine) ammonium chloride with benzyl (polyoxyethylene, tallowamine) ammonium chloride	12	Bis(2-ethylhexyl)hydrogen phosphite	15
Benzyl propionate	07	Bis(2-ethylhexyl)terephthalate	11
1-Benzylpyridinium chloride	12	N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine	09
Benzyl salicylate	07	Bis(N,N1-ethyl(stearic/arachidic/behenic)amide) cyanoethyl ethylammonium ethosulfate	12
		2,2-Bis(ferrocenyl)propane	15
		Bis-hexamethylenetriamine amine	15
		Bis(hydrogenated tallow alkyl)amine	12
		Bis(hydrogenated tallow alkyl)dimethylammonium chloride	12
			481.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Bis (hydrogenated tallow alkyl) dimethylammoniummethyl sulfate	12	482.000
Bis-Hydroxyethyl coco amine oxide, phosphated potassium salt	12	321.095
Bis(2-hydroxyethyl, ethoxylated)methyl(9-octadecenyl)-ammonium chloride	12	454.000
Bis(2-hydroxyethyl, ethoxylated)methyloctadecylammonium chloride	12	455.000
Bis-2-hydroxyethyl-hydrogenated tallow-ethyl sulfate	12	455.500
Bis(2-hydroxyethyl)isododecylpropylamine oxide	12	321.700
Bis(2-hydroxyethyl)methyl(tallow alkyl)ammonium chloride	12	455.540
N,N-bis-(2-Hydroxyethyl)octadecanamide	14	489.000
N,N-Bis(2-hydroxyethyl)octadecylamine	12	322.000
Bis-2-hydroxyethyl-octyl-methyl-p-toluene sulfonate	12	455.600
N,N-Bis(2-hydroxyethyl) (tallow alkyl) amine	12	324.000
N,N-Bis(2-hydroxyethyl) (tallow alkyl) amine acetate	12	325.000
Bis(2-hydroxyethyl)tallowammonium ethanoate	12	0.500
Bis(hydroxymethyl)oleyl oxazoline	15	20.500
2,2-bis(Hydroxy-methyl)-propionic acid	15	494.500
2,2-Bis(4-hydroxyphenyl)4-methylpentane	15	20.550
Bis(hydroxypropyl) azelate	11	66.600
2,4-Bis(isopropylamino)-6-(methylthio)-s-triazine (Prometryn)	13	41.500
Bis(2-(2-methoxyethoxy)ethyl) ether (Tetraethylene glycol dimethyl ether)	15	1145.000
Bis(2-methoxyethyl) ether (Diethylene glycol dimethyl ether)	15	1146.000
N,N-Bis(1-methylheptyl)-p-phenylenediamine	09	60.000
N,N-Bis((4-methylphenyl)sulfonyl)amine, potassium salt	03	327.500
Bis(morpholinothiocarbonyl) disulfide	09	38.500
Bismuth neodecanoate	15	630.500
Bismuth 2-ethylhexanoate	15	701.900
Bismuth subsalicylate	06	154.000
Bis(2-(octadecylamido)ethyl)-N-(2-cyanoethyl)-N-ethyl ammonium ethyl sulfate	15	229.500
Bis(pentachloro-2,4-dicyclopentadien-1-yl)	13	128.000
Bisphenol, hindered	09	88.100
1,3-Bis(Stearyl)dimethyl ammonium chloride)-2-propanol	12	455.700
Bis(tallow alkyl)dimethylammonium chloride	12	482.500
1,2-Bis(tribromophenoxy)ethane	03	330.218
Bis(tributyltin) oxide	13	195.015
Bis(triphenylsilyl)chromate (TODI)	15	21.400
Bitolyene diisocyanate (TODI)	03	1017.000
Blend of fatty and phosphate esters	12	111.800
Blowing agents, cyclic, all other	09	110.000
Bornyl phenylamine	14	271.000
Boron fluoride phenol complex	15	22.000
Bromchlorenone	06	251.000
Brominated (including bromochlorinated) hydrocarbons, all other	15	1216.000
Bromogacetic acid	13	245.017
Bromiacetic acid	15	495.000
3-Bromoacetophenone	03	992.500
p-Bromoaniline	03	332.000
Bromobenzaldehyde	03	333.100
Bromobenzene, mono	03	335.000
o-Bromobenzoic acid	03	336.000
3-[3-(4'-Bromo[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one	13	169.500
1-Bromobutane (n-Butyl bromide)	15	1197.000
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)	13	42.000
Bromobutyric acid	15	496.000
Bromochlorodifluoromethane	15	1252.800
Bromochloromethane	15	1199.000
2-Bromo-2-chloro-1,1,1-trifluoroethane (Halothane)	15	1253.000
4-Bromo-3,5-dihydroxybenzamide	03	343.503
4-Bromo-3,5-dihydroxybenzoic acid	03	343.700
2-Bromo-4,6-dinitroaniline	03	344.000
Bromoethane (Ethyl bromide)	15	1202.000
1-Bromo-4-ethoxy-2-methylbenzene	03	344.900
p-Bromofluorobenzene	03	345.500
1-Bromohexadecane	15	1202.990
1-Bromohexane (n-Hexyl bromide)	15	1203.000
2-Bromohexanoic acid	15	496.500
2-Bromo-4'-hydroxyacetophenone	13	40.017
1-Bromo-2-methyl-2-butene	15	1205.000
β-Bromo-β-nitrostyrene	15	22.400
1-Bromo-octadecane	15	1206.000
1-Bromopentane (n-Amyl bromide)	15	1207.000
2-Bromopropane (Isopropyl bromide)	15	1210.000
2-Bromopyridine	03	359.000
Bromotrifluoromethane	15	1254.000
Brompheniramine maleate	06	85.000
Butabarbital	06	447.000
Butabarbital, sodium	06	448.000
Butadiene and butylene fractions	02	49.000
1,3-Butadiene, grade for rubber (Elastomers)	02	48.000
Butalbital	06	449.000
Butamben	06	700.000
n-Butane	02	44.000
1,2(and 1,3)-Butanediol	15	1072.000
1,4-Butanediol	15	1073.000
1,4-Butanediol diglycidyl ether	15	1317.400
Butanediol, ethoxylated	12	758.900
1-Butanesulfonyl chloride	15	1296.565
Butanoic acid, 1-cyclohexylethyl ester	07	127.470
2-Butanol, ethoxylated and propoxylated	12	726.910
2-Butanone peroxide (MEK peroxide)	15	1284.000
1-Butene	02	45.000
2-Butene	02	46.000
1-Butene and 2-butene, mixed	02	47.000
2-Butenedioic acid(e)-linoleic acid, reaction product	15	1296.570
2-Butene-1,4-diol	15	1074.000
2,3,4,5-δ ² -Butenylene-tetrahydrofurfural	13	166.014
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	15	1317.460
2-Butoxyethanol [Ethylene glycol monobutyl ether]	15	1147.000
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	15	1148.000
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	15	1149.000
α-[2-(2-n-Butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide)	13	172.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
2-(2-Butoxyethoxy)ethyl acetate	15	1098.000
1-Butoxyethoxy-2-propanol	15	1159.000
2-Butoxyethyl acetate	15	1099.000
2-Butoxyethyl benzoate	15	22.990
Butoxyethylene oxycetic acid, sodium salt	12	35.950
p-Butoxyphenol	03	364.000
n-Butyl acetate	15	890.000
n-Butyl acetylacetic acid	11	106.000
Butyl acid phosphate	15	1020.000
Butyl acrylate	15	893.000
Butyl acrylate ethyl acrylate copolymer resins	08	19.950
n-Butyl alcohol (n-Propylcarbinol)	15	845.000
sec-Butyl alcohol (Methylethylcarbinol)	15	846.000
tert-Butyl alcohol (Trimethylcarbinol)	15	847.000
Butyl alcohol, ethoxylated and phosphated	12	76.100
Butyl alcohol, propoxylated	12	734.950
n-Butylamine, mono	15	261.000
sec-Butylamine, mono	15	264.000
tert-Butylamine, mono	15	265.000
tert-Butylaminoethyl methacrylate	15	327.455
p-Butylaniline	03	368.000
p-tert-Butylbenzaldehyde	03	370.000
n-Butylbenzene	03	371.000
N-n-butyl benzenesulfonamide	11	0.500
Butyl benzoate	15	23.000
N-tert-Butyl-2-benzothiazolesulfenamide	09	25.000
tert-Butylbenzylamine	12	323.700
Butyl benzyl phthalate	11	17.000
n-Butyl-4,4-bis[1-(tert-butoxy)valerate]	15	1284.200
Butyl butyl lactate	07	127.500
n-Butyl chloroacetate	15	896.400
sec-Butyl chloroformate	15	898.000
3-tert-Butyl-5-chloro-6-methyluracil	13	118.018
2-tert-Butyl-p-cresol	03	377.000
2-tert-Butyl cyclohexanol	07	93.710
2-sec-Butylcyclohexanone	07	93.700
o-tert-Butylcyclohexyl acetate	07	93.800
p-tert-Butylcyclohexyl acetate (Verbenilax)	07	94.000
4-tert-Butylcyclohexyl peroxydicarbonate	15	23.500
tert-Butyldiethanolamine	15	327.500
Butylene glycol adipate	11	58.750
1,3-Butylene glycol diborate	15	1100.150
1,3-Butylene glycol diborate/hexylene glycol boric anhydride	15	1100.155
1,3-Butylene glycol, ethoxylated	12	758.940
Butylene oxide	15	1303.000
tert-Butyl ethanolamine	15	327.900
Butyl ethers of tetra- and higher ethylene glycols (high boiling)	15	1151.500
n-Butylethylamine	15	267.000
Butyl 2-ethylhexyl phthalate	11	21.000
Butyl ethyl magnesium	15	1374.800
N-Butyl-N-ethyl-, -trifluoro-2,6-dinitro-p-toluidine (Benefin)	13	43.000
Butyl formcel	15	1430.000
tert-Butyl glycidyl ether	15	1317.470
tert-Butyl hydroperoxide	15	1285.000
tert-Butylhydroquinone	15	24.850
4,4'-Butyldienebis(6-tert-butyl-m-cresol)	09	88.200
Butyl(isobutylene-isoprene) type	10	9.000
Butyl and isopropyl phthalimides	15	27.495
Butyl lactate	15	900.000
Butyl levulinate	15	900.400
n-Butyllithium	15	1372.000
sec-Butyllithium	15	1373.000
Butyl maleate	15	901.000
n-Butyl mercaptan (1-Butanethiol)	02	90.910
sec-Butyl mercaptan (2-Butanethiol)	02	90.915
tert-Butyl mercaptan (2-Methyl-2-propanethiol)	02	91.000
Butyl mercaptopropionate	15	901.800
Butyl methacrylate	15	902.000
Butyl methacrylate-ethyl methacrylate copolymer resins	08	19.960
2-(and 3)-tert-Butyl-4-methoxyphenol (BHA)	15	25.000
p-tert-Butyl- α -methylhydrocinnamalehyde	07	21.900
2-[[1-(tert-Butyl-2-methylindol-3-yl)carbonylbenzoic acid	03	382.200
Butyl methyl pyrophosphate ethlenedioxy titanium salt/n,		
n-dimethyl amino ethyl methacrylate salt	12	102.205
Butyl methyl pyrophosphate isopropoxy titanium salt		
octyl phosphite adduct		
Butylmorpholine	12	92.300
Butyl myristate	15	25.500
Butyl naphthalenesulfonic acid, sodium salt	15	968.900
Butyl octyl phthalates	12	162.000
Butyl oleate	11	23.000
Butyl oleate	11	90.000
Butyl oleate, sulfated, sodium salt	15	909.000
n-Butyl palmitate	12	257.000
tert-Butyl peroxide (Di-tert-butyl peroxide)	11	96.200
tert-Butyl peroxyacetate	15	1286.000
tert-Butyl peroxybenzoate	15	903.000
tert-Butyl peroxy-2-ethylhexanoate	15	26.000
tert-Butyl peroxyisobutyrate	15	904.000
tert-Butyl peroxyisopropylcarbonate	15	905.000
tert-Butyl peroxy maleic acid	15	907.000
tert-Butyl peroxyneodecanoate	15	498.000
tert-Butyl peroxyneohexanoate	15	908.000
tert-Butyl peroxyvalerate	15	1286.500
o-sec-Butylphenol	15	910.000
p-sec-Butylphenol	03	383.000
p-tert-Butylphenol	03	385.000
Butylphenols, mixed	03	384.000
2-(p-tert-Butylphenoxy)cyclohexyl-2-propynyl sulfite	03	386.000
p-tert-Butylphenyl glycidyl ether	13	166.017
N-(3-(p-tert-butylphenoxy)-2-methylpropylidene)-anthranilic acid, methyl ester	15	25.200
Butylphenylphenol sulfonic acid, sodium salt	15	26.550
N-sec-Butyl-N-phenylphenylenediamine	07	21.920
Butyl phosphate, potassium salt	12	162.100
Butyl phthalyl butyl glycolate	12	155.000
	11	92.500
		41.400

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Butyl picolinium bromide	12	Canrenoate, potassium	07
Butyl and propyl oleate, sulfated, sodium salt	12	Capreomycin	06
Butyl ricinoleate	11	Capric acid (Ratio = 2/1)	12
n-Butyl stearate	11	Capric acid (Ratio = 1/1)	12
p-tert-Butyltoluene	03	Caprolactam (2-Oxohexamethylenimine)	15
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene (Musk tibetene)	07	Caprolactone	15
tert-Butyl urea	15	3-[Caprylamidoethylene-(2-hydroxyethyl) amino]propionic acid	12
Butyl vinyl ether	15	Caprylamphopropionate	12
5-tert-Butyl-m-xylene	03	Caprylic acid tetraethylene-pentamine condensate	12
6-tert-Butyl-2,4-xyleneol	03	Caprylic amphopropionate	12
2-Butyne-1,4-diol	15	Captopril	06
Butynediol, ethoxylated	12	Caramiphen edisylate	06
Butyraldehyde	15	Carbenicillin, sodium	06
Butyraldehyde-aniline condensate	09	Carbidopa	06
n-Butyraldehyde-butylamine condensate	09	2-Carbomethoxy-1-propen-2-yl dimethyl phosphate	13
Butyraldehyde diethyl acetal	07	Carbon black feedstock	02
i-Butyraldehyde trimer	15	Carbon black oil	01
Butyric acid	15	Carbon disulfide	15
Butyric anhydride	15	Carbon tetrachloride	15
Butyrolactone	15	Carbonyl bis [phthalic anhydride]	03
n-Butyronitrile	15	Carboplatin	06
Butyryl chloride	15	Carboprost	06
Cadinene	07	1-Carboxyethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium salt	12
Cadmirum benzoate	15	1-Carboxyethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium salt	12
Cadmirum 2-ethylhexanoate	15	(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt	12
Cadmirum naphthenate	14	5 (or 6) carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, potassium/sodium salts	12
Cadmirum stearate	15	5 (or 6)-Carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, reaction products with castor oil	12
Cadmirum tallate	15	Carboxylic acid alkanolamine condensates, all other	12
Caffeine, natural	06	Carboxylic acid amides, all other	12
Caffeine, synthetic	06	Carboxylic acid-diamine and polyamine condensate, all other	12
Calcifediol (vitamin D ₂)	06	Carboxylic acid-diamine and polyamine condensates, all other	12
Calcitonin	06	Carboxylic acid-diimine and polyamine condensates, alkoxylated, all other	12
Calcium acetate	15	Carboxylic acid esters, all other	12
Calcium t- α -alkylcarboxylate	15	Carboxylic acids, all other	12
Calcium ascorbate	06	Carboxylic acids with amide, ester or ether linkage, other	12
Calcium citrate	15	N-Carboxy-N-methylanthranilic anhydride	03
Calcium citrate	15	Carboxymethyl-3-cocoamidopropyl dimethyl ammonium chloride, sodium salt	12
Calcium 2-ethylhexanoate	15	(Carboxymethyl) [3-(coconut oil amido) propyl] dimethylammonium hydroxide, inner salt	12
Calcium gluceptate	06	1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium hydroxide, sodium salt	12
Calcium lactate	15	1-Carboxymethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium salt	12
Calcium linoleate	15	imidazolium hydroxide, sodium derivative, sodium salt	12
Calcium manganese tallate	15	imidazolium hydroxide, sodium derivative, sodium salt	12
Calcium mercaptoacetate	15		
Calcium naphthenate	14		
Calcium neodecanoate	15		
Calcium oleate	15		
Calcium polycarbophil	06		
Calcium propionate	15		
Calcium stearate	15		
Calcium tallate	15		
Calcium undecylenate	06		
Camphene	15		
α -Campholenic aldehyde	07		
Campholenic aldehyde	15		
Canrenoate, potassium	06		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
1-Carboxymethyl-1-(2-hydroxyethyl)-2, imidazolium hydroxide sodium derivative, sodium salt	12	Cetylpyridinium chloride	06
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium salt	12	Chelating agents, nitriloacids and salts, all other	256.000
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium salt	12	Chemical indicators	14
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	Chemically defined linear alcohol, alkoxylated, all other	14
1-Carboxymethyl-3-(lauryl amido propyl dimethyl ammonium hydroxide inner salt	12	Chemical reagents and fine chemicals	12
Cardiovascular agents, all other	06	Chlorinated fatty materials	14
Carvacrol	07	Chlorinated (Not otherwise halogenated) hydrocarbons, all other	15
1-Carvone	07	Chlorinated insecticides, cyclic, all other	15
β -Caryophyllene	07	Chlorinated paraffins, 35-64% chlorine	13
Caryophyllene oxide	07	Chlorinated paraffins, less than 35% chlorine	15
Castor oil acids (Ratio = 2/1)	12	Chlorinated paraffins, 65% or more chlorine	15
Castor oil acids, potassium salt	12	Chlorinated rubber, natural and synthetic	10
Castor oil acids, sodium salt	12	Chloroacetic acid, mono	15
Castor oil, ethoxylated	12	4'-Chloroacetophenone	03
Castor oil fatty acids, dehydrated	15	Chloroalkyl diphosphate ester, neutral	15
Castor oil, hydrogenated	15	1-(3-Chloroallyl)-3,5,7-triazo-1-azoniaadamantane chloride	15
Castor oil, polymerized	15	o-Chloroaniline	03
Castor oil, sulfated, sodium salt	12	p-Chloroaniline	03
Castor oil triglycidyl ether	14	Chlorobenzene, mono	03
Catechol (Pyrocatechin)	14	p-Chlorobenzenesulfonic acid	03
Cationic cellulose ether	14	5-Chlorobenzotriazole	14
Cationic surface-active agents, all other	12	4-Chloro-2,6-bis(2,4-dihydroxybenzyl)phenol	09
α -Cedrene epoxide (Andrane)	07	2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)	13
Cedrenol	07	2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine)	13
Cedrol	07	1-Chlorobutane (n-Butyl chloride)	15
Cedryl acetate	07	2-Chloro-1,4-dibutoxybenzene	03
Cedryl formate	07	1-Chloro-2,5-dibutoxy-4-nitrobenzene	03
Cefaclor	06	2-Chloro-1,4-dithoxybenzene	03
Cefamandole	06	1-Chloro-2,5-diethoxy-4-nitrobenzene	03
Cefazolin, sodium	06	3-Chloro-4-diethylaminobenzenediazonium chloride (p-Diazo-2-chloro-N,N-diethylaniline zinc chloride)	03
Cefonicid	06	2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)acetanilide (Butachlor)	13
Cefoxitin	06	2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor)	13
Ceftazidime	06	1-Chloro-1,1-difluoroethane	15
Cefuroxime	06	Chlorodifluoromethane (F-22)	15
Cellulose acetate	14	4'-Chloro-2',5'-dimethoxyacetacetanilide	03
Cellulose acetate butyrate	08	5-Chloro-2,4-dimethoxyaniline	03
Cellulose acetate hexahydrophthalate	08	2-Chloro-10-[3-(dimethylamino)propyl]phenothiazine	03
Cellulose acetate phthalate	15	2-Chloro-4,6-dimethylaniline	03
Cellulose acetate propionate	15	2-Chloro-N,N-dimethylethylamine (Dimethylanilino ethyl chloride) hydrochloride	15
Cellulose ethers and esters, all other	14	1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	03
Cellulose, oxidized	06	2-Chloro-N-(2,6-dinitro-4-(trifluoromethyl)phenyl)-N-ethyl-6-fluorobenzenemethanamine	13
Celtone	15	3-Chlorodiphenylamine	03
Cephalalexin	06	2-Chloro-N-ethoxymethyl-N-(2-ethyl-6-methylphenyl)acetamide (Acetochlor)	13
Cephalothin, sodium	06	2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene (Oxyfluorfen)	13
Cephalirin, sodium	06	2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (Atrazine)	13
Cephradine	06		
Cerium 2-ethylhexanoate	15		
Cetylceicosyl methacrylate	15		
Cetyl lactate	15		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
2-[4-Chloro-6-(ethylamino)-s-triazin-2-ylamino]-2-methylpropionitrile (Cyanazine)	13	Chlorothiazide	06
N-(2-Chloroethyl)-N-ethylamine	03	o-Chlorotoluene	719.000
p-[(2-Chloroethyl)methylamino]benzaldehyde	03	m-Chlorotoluene	543.000
2-(Chloroethyl)phosphonic acid	13	p-Chlorotoluene	542.000
Chloroform	15	α-Chlorotoluene (Benzyl chloride)	544.000
Chlorohydroquinone	15	3-Chloro-p-toluidine (NH ₂ =1)	545.000
2-Chloro-N-isopropylacetanilide (Propachlor)	14	2-Chloro-6-(trichloromethyl)pyridine	547.000
Chloromethane (Methyl chloride)	13	Chlorotrifluoroethylene (Trifluorovinyl chloride)	168.991
2-Chloro-N-[[4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]benzenesulfonamide	15	Chlorotrifluoromethane (F-13)	1258.000
Chloromethyl methyl ether	13	2-Chloro-N-[[4-(trifluoromethoxy)phenyl]amino]carbonyl]benzamide	1259.000
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt	13	5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid	133.200
4-Chloro-2-methylphenoxyacetic acid, iso-octyl ester	15	3-(2-Chloro-4-trifluoromethylphenoxy)toluene	555.500
2-(4-Chloro-2-methylphenoxy)propionic acid, dimethylamine salt	13	p-Chloro-α, α, α-trifluorotoluene	556.050
3-Chloro-2-methyl-1-propene (Methallyl chloride)	15	6-Chloro-α, α, α-trifluoro-m-toluidine	558.000
2-Chloro-4-methylsulfonfylaniline	03	Chlorotrimethylsilane	03
2-[(Chloromethyl)thio]benzothiazole	03	p-Chloro-o-xylene	15
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	03	4-Chloro-3,5-xylene	03
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	03	Chlorphenesin carbamate	06
2-Chloro-4-nitrobenzoic acid	03	Chlorpheniramine maleate	06
2-Chloro-4-nitrobenzoic acid, potassium salt	03	Chlorpheniramine tannate	06
α-Chloro-4-nitrotoluene	03	Chlorpromazine hydrochloride	06
2-Chloro-4-nitrotoluene	03	Chlorpropamide	06
5-Chloro-2-pentanone	15	Chlortracycline (medicinal grade)	06
2-Chlorophenothiazine	03	Chlortracycline (animal feed grade)	06
1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1,2,4-triazol-1-yl)-butan-2-one	13	Cholecalciferol (vitamin D ₃)	06
α-(2-Chlorophenyl)-α-(4-chlorophenyl)-5-pyrimidinemethanol	13	Cholesterols and hydrocholesterols, all other	06
N-(4-Chlorophenyl)-N-(3,4-dichlorophenyl)urea	03	Cholesterol oxidase	14
4-Chloro-o-phenylenediamine	03	Choline	122.000
α-(2-Chlorophenyl)-α-(4-fluorophenyl)-5-pyrimidinemethanol	13	Choline bicarbonate	342.000
β-(4-Chlorophenyl)methyl-α-(1,1-dimethylethyl)-1,2,4-triazole-1-ethanol	13	Choline bitartrate	605.000
2-(2-Chlorophenyl)methyl-4,4-dimethyl-3-isoxazolinone	13	Choline chloride (animal feed grade)	606.000
4-Chlorophthalic acid	03	Choline chloride (medicinal grade)	607.000
1-Chloropinacolone	15	Choline dihydrogen citrate	06
3-Chloro-1,2-propanediol (Glycerol α-chlorohydrin)	15	Choline magnesium salicylate	06
3-Chloropropane (Chloroacetone)	15	Chromium acetate	611.000
3-Chloropropene (Allyl chloride)	15	Chromium acetate	385.300
1-(3-Chloropropyl)-4-methylpiperazine	03	Chromium acetylacetonate complex	592.000
α-Chloropropyltrichlorosilane	15	Chromium 2-ethylhexanoate	1371.100
Chloropropyltrimethoxysilane	15	Chromium naphthenate	632.500
3-Chloropropyl-2,5-xylyl ether	03	Cimetidine	299.000
2-Chloropyridine	03	Cimetidine hydrochloride	619.400
4-Chlororesorcinol	03	Cineole [leucalyptol]	619.600
5-Chlorosalicylic acid	03	Cinnamaldehyde	23.700
Chlorosulfonated polyethylene (CSM) type	10	Cinnamic aldehyde dimethyl acetal	24.200
Chlorosulfurized sperm oil	14	Cinnamyl acetate	25.000
Chlorothiaxanthone	15	Cinnamyl alcohol	26.000
		Cinnamyl butyrate	27.100
		Cinnamyl cinnamate	27.200
		Cinnamyl nitrate	27.500
		Cinnamyl propionate	28.000
		Cinoxacin	276.002
		Cisplatin	278.200

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Citral dimethyl acetal	07	127,700
Citral and acetylcitric acid esters, all other	11	71,000
Citric acid	15	505,000
Citric acid, sodium salts (50%) in sodium phosphates (20%)	12	53,500
Citronellyl acetate	07	128,000
Citronellyl butyrate	07	129,000
Citronellyl formate	07	130,000
Citronellyl isobutyrate	07	131,000
Citronellyl propionate	07	131,500
Cilindamycin	06	45,000
Clorzepate dipotassium	06	498,000
Clorsulon	06	116,500
Cloxacillin, benzathine	06	20,001
Cloxacillin, sodium	06	13,000
Cobalt acetate	15	593,000
Cobalt t- α -alkylcarboxylate	15	669,000
Cobalt 2-ethylhexanoate	15	633,000
Cobaltic acetylacetonate	15	1281,600
Cobalt manganese acetate	15	593,010
Cobalt manganese tellate	15	172,010
Cobalt naphthenate	14	301,000
Cobalt neodecanoate	15	705,000
Cobalt-potassium 2-ethylhexanoate	15	633,010
Cobalt stearate	15	753,000
Cobalt tellate	15	172,000
N-Cocoalkyl-1,3-propylenediamine acetate	13	245,011
Cocamidopropylbetaine	12	9,250
3-Cocooamido-N,N-dimethyl propylamine oxide	12	385,285
Cocamidopropyl betaine	12	9,255
Cocamidopropyl dimethyl amine	12	328,300
Cocamidopropyl dimethyl amine oxide	12	385,280
N-Cocooamido-propyl-N,N-dimethylamine oxide	12	9,580
3-[3-(Cocooamidopropyl)dimethylammonio]-2-hydroxypropan sulfonate	12	9,600
3-Cocooamidopropyl-2-hydroxy-3-sulfopropyl dimethyl ammonium hydroxide, inner salt	12	9,700
Cocooamphocarbonylglycinate	12	9,260
Cocooamphocarbonylpropionate	12	9,265
Cocooamphopropionate	12	9,280
Cocodimethyl ethyl ammonium ethyl sulfate	12	482,750
Cocoonitrile	15	437,000
Cocoonitrile, dimethylpropylamine condensate, carboxylated	12	359,950
Cocoonitrile, modified	12	546,004
Cocoonitrile	12	569,000
Cocoonitrile (Ratio = 1/1)	12	564,000
Cocoonitrile (Ratio = 2/1)	12	532,000
Cocoonitrile (Ratio = 1/1)	12	546,000
Cocoonitrile (Ratio = 2/1)	12	556,000
Cocoonitrile	12	554,000
Cocoonitrile, diethanolamine salt	12	29,100
Cocoonitrile, dimethylaminopropylamine condensate (amine/acid ratio = 1/1)	12	586,480
Cocoonitrile, dimethylaminopropylamine condensate, ethoxylated	12	576,000
Coconut oil acids, ethanolamine salt	12	29,200
Coconut oil acids-ethanolamine salt, sulfated, potassium salt	12	248,000
Coconut oil acids, potassium salt	12	54,000
Coconut oil acids, sodium salt	12	55,000
Coconut oil acids, 2-sulfoethyl ester, sodium salt	12	198,000
N-(Coconut oil acyl)-N-methyltaurine, sodium salt	12	183,000
N-(Coconut oil acyl)sarcosine, sodium salt	12	40,000
Coconut oil alcohol, ethoxylated	12	735,000
N-(Coconut oil alkyl)- β -alanine, partial sodium salt	12	10,100
N-(Coconut oil alkyl)- β -alanine, sodium salt	12	10,000
3-[(Coconut oil alkyl)amidoethylene-(2-hydroxyethyl)amino]propionic acid	12	10,130
(Coconut oil alkyl)amine	12	418,000
(Coconut oil alkyl)amine acetate	12	392,000
(Coconut oil alkyl)amine, ethoxylated	12	326,000
(Coconut oil alkyl)amine, ethoxylated, acetate	12	327,000
(Coconut oil alkyl)amine, ethoxylated, diethosulfate	12	455,970
Coconut oil alkyl amine, propoxylated	12	327,550
N-[(Coconut oil alkyl)amino]butyric acid	12	10,150
N-[(Coconut oil alkyl)amino]butyric acid, sodium salt	12	483,000
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)-methylammonium chloride	12	456,000
N-[Coconut oil alkyl]sulfosuccinamic and disodium salt	12	176,950
N-(Coconut oil alkyl)trimethylenediamine	12	407,000
Coconut oil amide	15	232,000
Coconut oil dimethanolamine-propylamine	12	575,100
Coconut oil, ethoxylated	12	669,200
Coconut oil fatty acid polyoxyethylene	12	456,100
Coconut oil, sulfated, sodium salt	12	306,000
Coconut oil and tallow acids (Ratio = 2/1)	12	533,000
Cocoyl amidopropyl dimethylamine oxide	12	327,600
Codeine	06	429,000
Cod oil, sulfated, sodium salt	12	298,000
Colistipol hydrochloride	06	614,500
Complex glycerol esters, all other	12	651,000
Complex linear polyesters and polymeric plasticizers, all other	11	132,000
Copolyurethane urea	14	386,000
Copper acetate	15	594,000
Copper t- α -alkylcarboxylate	15	669,050
Copper 2-ethylhexanoate	15	634,000
Copper formate	15	650,000
Copper gluconate	06	762,000
Copper naphthenate	14	302,000
Copper, [2,2',2'',2''']-[29H,31H-phthalacylanine]pentakis(methylene)]pentakis[1H-isobutole-1,3(2H)-dionato]	03	568,603
Corn oil acids, potassium salt	12	56,000
Corticotropin	06	692,000
Cortisone acetate	06	653,000
Coumarin	07	29,000
Coumarone-Indene resins	08	22,000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Creosote oil (Dead oil) creosote content in solution (100 Percent basis)	01	21.000
Creosote oil (Dead oil) creosote in coal tar solution (100 Percent solution basis)	01	20.000
Creosote oil (Dead oil) distillate as such (100 Percent creosote basis)	01	19.000
m-Cresol	03	569.000
p-Cresol	03	572.000
o-Cresol, from petroleum	03	571.000
(m,p)-Cresol, from petroleum	03	574.000
Creosulfonic acid, formaldehyde condensate	15	34.830
m-Cresyl acetate	06	258.500
Cresyl glycidyl ether	15	35.500
Cresylic acid (Less than 75 percent distilling over 215° C)	02	12.000
Cresylic acid, refined; from petroleum	03	580.000
Crotonaldehyde	15	786.000
Crotonic acid (2-Butenoic acid)	15	506.000
Crotonitrile	15	438.000
Crude acetate mixture (Linallyl, neryl, geranyl acetates, main components)	07	162.100
Crude coal tar	01	0.500
Crude coal tar solvent	01	22.030
Crude light oil	01	1.000
Crude tar acid oils having a tar acid content of all other	01	17.000
Crude tar acid oils having a tar acid content of 5 percent to less than 24 percent	01	15.000
Cumene (Isopropyl benzene)	03	581.000
Cumene hydroperoxide	15	35.000
Cumenesulfonic acid, ammonium salt	12	144.000
Cumenesulfonic acid, sodium salt	12	144.100
Cumyl acetate	07	29.200
Cumyl formate	07	29.400
α-Cumyl peroxydecanoate	15	35.400
Cumyl phenolate isopropoxy titanium salt	12	776.500
Cyanoacetic acid (Malonic nitrile)	15	438.600
4-(Cyanoacetyl)morpholine	03	582.200
Cyanocobalamin (animal feed grade)	06	795.000
Cyanocobalamin (U.S.P. crystalline)	06	797.000
1-(2-Cyanoethyl)ethyl urea	15	349.000
Cyano(4-fluoro-3-phenoxyphenyl)methyl-3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate	13	166.050
N-Cyano-s-methyl-N-2 (4-methyl-5-imidazolyl)-methylthioethylisothiourea	03	584.213
Cyano-3-phenoxybenzyl-cis, trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate	13	166.049
Cyano(3-phenoxyphenyl)methyl-4-chloro-α-(1-methylethyl)benzeneacetate	13	166.024
Cyanuric acid	15	36.000
Cyclic amphoteric surface-active agents, all other	12	28.000
Cyclic chemicals, all other	15	218.000
Cyclic elastomers, all other	10	6.000
Cyclic fungicides, all other	13	40.000
Cyclic herbicides, all other	13	118.000
Cyclic insecticides, all other	13	166.000
Cyclic intermediates, all other	03	1554.000
Cyclic plasticizers, all other	11	58.000
Cyclic silizane	15	36.250
Cyclized polyisoprene (Cyclorubber)	10	0.500
Cyclobenzaprime hydrochloride	06	477.500
2,5-Cyclohexadiene-1,4-dione, dioxime	03	585.700
Cyclohexane	03	586.000
1,2-Cyclohexanedicarboxylic acid anhydride	03	588.000
Cyclohexane dimethanol diglycidyl ether	15	36.300
Cyclohexanesulfamic acid (Cyclamic acid)	07	82.000
Cyclohexanesulfamic acid, calcium salt (Calcium cyclamate)	07	83.000
Cyclohexanesulfamic acid, sodium salt (Sodium cyclamate)	07	84.000
Cyclohexanethiol	15	36.800
Cyclohexanol	03	589.000
Cyclohexanone	03	590.000
Cyclohexanone oxime	03	591.000
Cyclohexene	03	592.000
4-Cyclohexene-1,2-dicarboxylic anhydride	03	594.000
2-Cyclohexene-1-octanoic acid, 5 (and 6)-carboxy-4-hexyl, C ₂₀ H ₃₆ O ₄	15	39.500
Cyclohexene oxide	03	594.100
β-(1-Cyclohexenyl)ethylamine	03	594.296
Cycloheximide	06	65.000
Cyclohexylamine	03	595.000
N-Cyclohexyl-2-benzothiazolesulfenamide	09	26.000
3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1H,3H)-dione	13	118.019
1,4-Cyclohexylenedimethanol	15	41.000
Cyclohexyl isocyanate	03	597.500
Cyclohexyl isooctyl phthalate	11	23.200
Cyclohexyl methacrylate	15	36.850
Cyclohexylmethyl dimethoxy silane	15	1981.500
N-Cyclohexyl-N'-palmitoyltaurine, sodium salt	12	182.000
N-Cyclohexyl-N'-phenyl-p-phenylenediamine	09	58.000
Cyclohexyl pyrrolidone	15	41.300
Cyclohexyl salicylate	07	95.270
N-(Cyclohexylthio)phthalimide	09	124.250
cyclooctadiene	03	597.800
Cyclopentane	02	11.000
Cyclopentanone	07	95.250
Cyclopentene	03	600.000
Cyclopropane	15	42.000
Cyclopropane carboxylic acid, 3-(2-chloro-3,3-trifluoro-1-propenyl)-2,2-dimethyl-(2-methyl[1,1'-biphenyl]-3-yl) methyl ester	03	601.500
α-Cyclopropyl-α-(p-methoxyphenyl)-5-pyrimidine methanol (Ancymidol)	13	168.140
2-Cyclopropylmethylamino-5-chlorobenzophenone	03	601.780
2-(N-Cyclopropylmethyl-N-phthalimidoacetyl)-amino-5-chlorobenzophenone	03	601.800
Cycloserine	06	5.000
Cyclosols	02	4.010
p-Cymene	03	602.000
Cypermethrin	13	166.029
Cyproheptadine hydrochloride	06	91.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Cytarabine	06	278.300	Diatrizoate, sodium	06	564.000
Danazol	06	692.500	1,8-Diazabicyclo (5,4,0)undecane	15	46.600
Decabromodiphenyl ether (DBDP)	15	43.005	1,4-Diazobicyclo(2,2,2)octane	15	47.000
Decahydronaphthalene (Decalin)	15	44.000	4-Diazo-2,5-dithoxymorpholinobenzene	14	336.000
Decanal (Capraldehyde)	07	132.000	6-Diazo-5,6-dihydro-5-oxo-1-naphthalene sulfonyl chloride	14	340.500
1-Decanamine, N,N-didodecyl	12	432.850	Diazodinitrophenol	15	48.000
n-Decane	15	1337.000	Diazoxide	06	355.500
1-Decanol	15	850.500	2,5-Di(benzoyl peroxy)-2,5-dimethylhexane	15	49.000
Decanoyl chloride	15	507.000	Dibenzylamine	09	40.000
Decanoyl peroxide	15	1291.000	Dibenzylthiocarbamic acid, sodium salt	09	9.000
Decyl acetate	07	132.500	Dibenzylthiocarbamic acid, zinc salt	09	10.000
Decyl alcohol, ethoxylated	12	727.000	1,3-Dibenzylglycerol	03	654.300
Decyl alcohol, ethoxylated and phosphated	12	76.200	N,N-Dibenzylhydroxylamine	14	476.000
Decyl alcohol, ethoxylated and phosphated, potassium salt	12	76.205	m-Dibromobenzene	03	658.000
Decyl alcohol, ethoxylated and polyphosphated	12	76.208	1,2-Dibromo-3-chloropropane (DBCP)	13	237.000
Decyl alcohol, ethoxylated and propoxylated	12	727.010	1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled)	13	217.000
n-Decyl mercaptan	09	170.800	1,2-Dibromo-2,4-dicyanobutane	13	195.012
Decyl and octyl alcohols, ethoxylated	12	736.000	Dibromodifluoromethane	15	1260.000
Decyl and octyl phosphate	12	92.000	(1,2-Dibromoethyl)benzene	03	659.300
Decyl and octyl sulfate, sodium salt	12	217.000	3,5-Dibromo-4-hydroxybenzotrile (Bromoxynil)	13	118.031
Decyl oleate	11	90.300	2,2-Dibromo-3-nitropropionamide	15	233.500
Decyloxypoly(ethyleneoxy)ethyl chloride	12	728.000	2,4-Dibromo-6-nitro-m-cresyl methyl ether	07	29.750
Decyl polyphosphate, sodium salt	12	95.000	2,3-Dibromopropanol	15	1296.700
Decyl sulfate, sodium salt	12	218.000	Dibucaine	06	702.000
7-Dehydrocholesterol (provitamin D)	06	812.000	Dibucaine hydrochloride	06	703.000
Developmental alcohol, ethoxylated	12	736.500	Dibutoxy acetophenone	15	50.500
Dexamethasone	06	654.000	p-Dibutoxybenzene (DBB)	03	665.100
Dexamethasone acetate	06	654.500	Di(2-(2-butoxyethoxy)ethyl) adipate	11	59.200
Dexamethasone sodium phosphate	06	655.000	Dibutoxyethyl adipate	11	59.200
Dexbrompheniramine maleate	06	93.000	Di(2-butoxyethyl) phthalate	11	24.000
Dexchlorpheniramine maleate	06	92.000	Dibutoxyethyl sebacate	11	111.900
Dexpanthenol	06	789.000	2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate salt (DBB Sulfate)	03	666.100
Dextran	06	614.000	2,5-Dibutoxy-4-morpholinonitrobenzene	03	666.200
Dextroamphetamine	06	517.000	Di-n-butylamine	15	262.000
Dextroamphetamine sulfate	06	430.000	4,4'-Di-sec-butylaminodiphenylmethane	14	156.000
Dextromethorphan hydrobromide	06	605.600	2-Dibutylaminoethanol	15	350.000
3-Diacetoxymethylaminobenzanilide	03	582.000	Dibutylaminomethanol	15	350.500
Diagnostic agents, other than roentgenographic contrast media, all other	06	608.200	Dibutyl butylphosphonate	15	1022.000
Diallylbenzene	03	127.950	2,6-Di-tert-butyl-p-cresol (BHT), food grade	15	51.000
Dialkylthiocarbamic acid derivative	09	162.500	2,6-Di-tert-butyl-p-cresol (BHT), technical grade	15	52.000
Di(C ₈ -C ₈ alkyl)naphthalenesulfonic acid	12	349.200	2,5-Di-sec-butyldecylhydroquinone	09	88.400
Diallyldimethyl ammonium chloride	15	4.030	Di-t-butyl diperoxophthalate	15	53.200
Diallyl isophthalate	08	913.000	Di-tert-butyl disulfide	02	92.000
Diallyl maleate	15	267.500	Dibutylthiocarbamic acid, nickel salt	09	128.100
Di-amine derivatives of dimer acids	15	417.000	Dibutylthiocarbamic acid, sodium salt	09	128.000
Diamines and polyamines, all other	12	616.000	Dibutylthiocarbamic acid, zinc salt	09	130.000
2,4-Diaminobenzenesulfonic acid [SO ₃ H=1]	03	45.830	Di-tert-butylethyldiamine	15	267.800
Diamino cyclohexane	15	629.500	Dibutyl fumarate	15	915.000
Diaminodiphenylamine sulfonic acid	03	45.840	Dibutyl hydrogen phosphite	15	1023.000
4,4-Diaminodiphenyl ether	15	634.000	2,5-Di-tert-butylhydroquinone	15	53.000
2,6-Diaminopyridine	03	627.400	Di-n-butylmagnesium	15	1374.200
Diammonium dithiodiglycolate	15	640.000	Dibutyl maleate	15	916.000
2,5-Dianilinothephthalic acid	03	59.000	Dibutylmaleatesulfonic acid	12	163.000
Diarylene-diamines, mixed	09				

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
1,1-Di-(t-butyl peroxy) cyclohexane	15	50,530
Di(sec-butyl)peroxydicarbonate	15	917,000
1,1-Di(t-butyl peroxy)-3,3,5-trimethyl cyclohexane	15	50,540
2,4-Di-tert-butylphenol	03	667,000
2,6-Di-sec-butylphenol	03	860,040
2,6-Di-tert-butylphenol	03	860,050
2,6-Di-tert-butylphenol	03	846,900
2,4-Di-tert-butylphenol	15	53,500
2,4-Di-t-butyl phenyl 3,5-di-t-butyl hydroxybenzoate	14	180,000
N,N'-Di-sec-butyl-p-phenylenediamine	11	25,000
Dibutyl phthalate (including diisobutyl phthalate)	15	1023,500
Dibutyl sebacate	11	112,000
1,3-Dibutyl-3-thiourea	15	351,000
Dibutyltin bis(butylmaleate)	15	1401,100
Dibutyltin bis(isooctylmercaptoacetate)	15	1401,200
Dibutyltin bis(mercaptolaurate)	15	1402,000
Dibutyltin dichloride	15	1402,500
Dibutyltin diaurate	15	677,500
Dibutyltin maleate	15	687,000
Dibutyltin oxide	15	1404,000
Di-n-butylxantho disulfide	09	152,000
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt	12	177,000
Dicacetyl borate, di-o-tolylguanidine salt	09	17,000
2,2-dichloroacetyl chloride	15	507,500
3,4-Dichloroaniline	03	670,000
3,6-Dichloro-2-anisic acid (Dicamba)	13	50,000
o-(and p)-Dichlorobenzene	03	678,000
o-Dichlorobenzene	03	677,000
m-Dichlorobenzene	03	676,000
p-Dichlorobenzene	03	679,000
3,3'-Dichlorobenzidine base and salts	03	682,000
2,6-Dichlorobenzonitrile	13	51,100
3,4-Dichlorobenzotrifluoride	03	683,150
3,5-Dichlorobenzoyl chloride	03	684,050
2,4-Dichlorobenzylidimethyl (mixed alkyl) ammonium chloride	12	519,900
2,2-Dichloro-6-(o-chloroanilino)-s-triazine	15	1308,000
Dichlorodifluoromethane (F-12)	03	1262,000
4,6-Dichloro-1,3-dihydroxybenzene	15	687,500
1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)	13	4,000
1,3-Dichloro-5,5-dimethylhydantoin	15	54,000
Dichlorodimethylsilane	03	1382,000
Dichlorodiphenylsilane	03	690,000
1,2-Dichloroethane (Ethylene dichloride)	15	1233,000
2,6-Dichloro-3-methylaniline	03	694,050
Dichloromethylphenylsilane	03	696,000
Dichloromethylvinylsilane	15	1383,000
2,6-Dichloro-4-nitroaniline	03	1384,000
1,2-Dichloro-4-nitrobenzene	15	697,000
2,4-Dichloro-5-nitrofluoromethylbenzene	03	698,000
Dichloroacetarnethyl tetrasiloxane	03	699,900
2,4-Dichlorophenoxyacetic acid, dimethylamine salt	15	1384,500
2,4-Dichlorophenoxyacetic acid, esters and salts, all other	13	91,000
2,4-Dichlorophenoxyacetic acid, iso-octyl ester	13	95,000
2,4-Dichlorophenoxyacetic acid, isopropyl ester	13	96,000
2-(2,4-Dichlorophenoxy)propionic acid, dimethylamine salt	13	118,052
2-(2,4-Dichlorophenoxy)propionic acid, isooctyl ester	13	118,060
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	13	53,000
O-(2,4-Dichlorophenyl) O-ethyl S-propyl phosphorodithioate	13	165,013
3,4-Dichlorophenyl isocyanate	03	700,700
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	13	54,000
1-[-(2,4-Dichlorophenyl)4-propyl]-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole	13	118,065
1,2-Dichloropropane (Propylene dichloride)	15	1235,000
2,3-Dichloropropane	15	1236,000
3,4'-Dichloropropionamide (Propanil)	13	56,000
2,2-Dichloropropionic acid, sodium salt (Dalapon)	13	201,000
Dichlorotetrafluoroethane	15	1263,000
p,-Dichlorotoluene	03	708,000
2,5-Dichloro-p-xylene	03	710,250
Dioxacillin, sodium	06	14,000
Dicresylphosphorodithioic acid	14	130,000
Dicresylphosphorodithioic acid, ammonium salt	14	131,000
Dicresylphosphorodithioic acid, sodium salt	14	132,000
Dicumyl peroxide	15	56,500
Dicyandiamide (Cyanoguanidine)	15	438,900
Dicyandiamide resins	08	4,050
Dicyanodiamide formaldehyde ammonium chloride polymer	14	477,000
Dicyanoethylstyrene triamine	15	438,920
Dicyclohexylamine	03	712,000
Dicyclohexylamine, nitrate salt	03	712,100
Dicyclohexylammonium nitrite	15	57,000
Dicyclohexyl phthalate	11	27,000
Dicyclopentadiene (includes Cyclopentadiene)	03	714,000
(Didecyl)amine acetate	12	393,160
Didecylidimethylammonium chloride	12	483,500
2,5-Di-(1,1-dimethylpropyl)hydroquinone	09	89,000
Diesel fuel additives, acyclic, all other	14	151,000
Diesel fuel additives, cyclic, all other	14	152,000
Diethanolamine	15	380,000
Diethanolamine condensate, all other	12	555,000
Diethanolamine condensates (amine/acid = 2/1), all other	12	545,000
Diethanolamine condensates, amine/acid ratio=1/1, all other	12	553,000
Diethanolamine-stearic acid (amine acid ratio=1/2)	12	575,130
α, α -Diethoxyacetophenone	03	716,200
p-Diethoxybenzene	03	718,000
Diethoxyethane	15	1308,500
2,5-Diethoxy-4-morpholinobenzene diazonium chloride	14	338,000
2,5-diethoxy-4-morpholinobenzene	03	666,250
Diethoxyphenyl acetophenone	15	57,200
2-(Diethoxyphosphinyl)irmino-4-methyl-1,3-dithiolane	13	165,016
Diethyl acetal	07	132,700

Table D-1—Continued
Alphabetical Chemical Index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Diethylaluminum chloride	15 1356.000	(Diethylenetriamine)pentamethylenephosphonic acid, sodium salt	14 32.000
Diethyl aluminum ethoxide	15 1356.200	Diethylenetriamine, triethylphosphate, urea polymer, stearate	14 478.000
Diethylaluminum iodide	15 1357.000	(Diethylenetriamino)benzaldehyde, 1,1-diphenylhydrazone	14 33.000
Diethylamine	15 277.000	4-(Diethylamino)benzaldehyde	03 721.000
p-(Diethylamino)benzaldehyde	03 721.000	p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline zinc chloride)	03 721.500
4-(Diethylamino)benzaldehyde	03 721.000	2-Diethylaminoethanol (N,N-Diethylethanolamine)	14 340.000
p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline zinc chloride)	03 721.500	2-Diethylaminoethoxyethanol	15 355.000
2-Diethylaminoethanol (N,N-Diethylethanolamine)	14 340.000	2-(2-Diethylaminoethoxy)ethanol	15 356.000
2-Diethylaminoethoxyethanol	15 355.000	Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt	15 357.100
2-(2-Diethylaminoethoxy)ethanol	15 356.000	2-Diethylaminoethyl methacrylate	15 358.000
Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt	15 357.100	2[4-(Diethylamino-2-hydroxybenzyl)benzoic acid]	03 722.503
2-Diethylaminoethyl methacrylate	15 358.000	o-(2-(Diethylamino)-6-methyl (4-pyrimidinyl) o,o-dimethyl phosphorothioate	13 152.600
2[4-(Diethylamino-2-hydroxybenzyl)benzoic acid]	03 722.503	N,N-Diethylaniline	03 727.000
o-(2-(Diethylamino)-6-methyl (4-pyrimidinyl) o,o-dimethyl phosphorothioate	13 152.600	2,6-Diethylaniline	03 727.200
N,N-Diethylaniline	03 727.000	Diethylbenzene	03 729.000
2,6-Diethylaniline	03 727.200	Diethylcarbamazine citrate	06 118.000
Diethylbenzene	03 729.000	Diethyl carbonate (Ethyl carbonate)	15 922.000
Diethylcarbamazine citrate	06 118.000	N,N-Diethylcyclohexylamine	03 730.000
Diethyl carbonate (Ethyl carbonate)	15 922.000	O,O-Diethyl O-(2-diethylamino-6-methyl-4-pyrimidinyl) phosphorothioate	13 166.034
N,N-Diethylcyclohexylamine	03 730.000	3,5-Diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	03 730.600
O,O-Diethyl O-(2-diethylamino-6-methyl-4-pyrimidinyl) phosphorothioate	13 166.034	N,N'-Diethyl-N,N'-diphenylurea	15 57.400
3,5-Diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	03 730.600	Diethyldithiocarbamic acid, cadmium salt and bis (diethyldithiocarbamoyl) disulfide, mixture	09 132.000
N,N'-Diethyl-N,N'-diphenylurea	15 57.400	Diethyldithiocarbamic acid, cadmium salt	09 134.000
Diethyldithiocarbamic acid, cadmium salt and bis (diethyldithiocarbamoyl) disulfide, mixture	09 132.000	Diethyldithiocarbamic acid, selenium salt	09 135.000
Diethyldithiocarbamic acid, cadmium salt	09 134.000	Diethyldithiocarbamic acid, sodium salt	09 136.000
Diethyldithiocarbamic acid, selenium salt	09 135.000	Diethyldithiocarbamic acid, tellurium salt	09 137.000
Diethyldithiocarbamic acid, sodium salt	09 136.000	N,N-Diethylidodecanamide	15 235.000
Diethyldithiocarbamic acid, tellurium salt	09 137.000	Diethylene glycol	15 1153.000
N,N-Diethylidodecanamide	15 235.000	Diethylene glycol adipate	15 1100.800
Diethylene glycol	15 1153.000	Diethylene glycol, borated	15 1101.000
Diethylene glycol adipate	15 1100.800	Diethylene glycol chloroformate	15 1102.000
Diethylene glycol, borated	15 1101.000	Diethylene glycol dibenzoate	11 1.300
Diethylene glycol chloroformate	15 1102.000	Diethylene glycol dimethacrylate	15 1103.000
Diethylene glycol dibenzoate	11 1.300	Diethylene glycol distearate	12 604.000
Diethylene glycol dimethacrylate	15 1103.000	Diethylene glycol divinyl ether	15 1153.350
Diethylene glycol distearate	12 604.000	Diethylene glycol monoester of coconut oil acids	12 605.000
Diethylene glycol divinyl ether	15 1153.350	Diethylene glycol monoester of tall oil acids	12 606.000
Diethylene glycol monoester of coconut oil acids	12 605.000	Diethylene glycol monoester of tallow acids	12 607.000
Diethylene glycol monoester of tall oil acids	12 606.000	Diethylene glycol monolaurate	12 608.000
Diethylene glycol monoester of tallow acids	12 607.000	Diethylene glycol mono-oleate	15 1154.000
Diethylene glycol monolaurate	12 608.000	Diethylene glycol mono-n-propyl ether	12 610.000
Diethylene glycol mono-oleate	15 1154.000	Diethylene glycol monostearate	12 27.500
Diethylene glycol mono-n-propyl ether	12 610.000	Diethylene glycol phthalate	11 27.500
Diethylene glycol monostearate	12 27.500	Diethylene glycol sesquilester of tall oil acids	12 611.000
Diethylene glycol phthalate	11 27.500	Diethylene glycol sesquilaurate	12 612.000
Diethylene glycol sesquilester of tall oil acids	12 611.000	Diethylene glycol succinate	11 125.500
Diethylene glycol sesquilaurate	12 612.000	Diethylene glycol terephthalate	12 614.200
Diethylene glycol succinate	11 125.500	Diethylenetriamine	15 269.800
Diethylene glycol terephthalate	12 614.200	(Diethylenetriamine)pentamethylenephosphonic acid	14 31.000
Diethylenetriamine	15 269.800		
(Diethylenetriamine)pentamethylenephosphonic acid	14 31.000		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrole)	07	Dimethylidene(C12-18)ammonium chloride (mixed straight and branched chains)	12
3,4-Dimethoxytoluene	30,000	2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	485,780
N,N-Dimethylacetamide	794,400	2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane-3	1295,000
N,N-Dimethylacetamide	236,000	O,O-Dimethyl-O-2,2-dichlorovinyl phosphate (DDVP)	1296,000
O,S-Dimethylacetylphosphoramidothioate (Acephate)	236,500	2,5-Dimethyl-2,5-diglydroperoxy hexane	223,000
Dimethyl adipate	222,500	Dimethyl diisocyanate	1296,050
N,N-Dimethyl-N-alkylamine phosphate	63,225	Dimethyldioctadecylammonium chloride	372,500
Dimethylamine	393,200	N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)	486,000
Dimethylamine epichlorohydrin ethylenediamine copolymer	288,000	Dimethyldithiocarbamic acid, bismuth salt	59,000
Dimethylamine sulfate	417,000	Dimethyldithiocarbamic acid, copper salt	138,000
p-(Dimethylamino)benzaldehyde	289,000	Dimethyldithiocarbamic acid, lead salt	139,000
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline zinc chloride)	795,250	Dimethyldithiocarbamic acid, potassium salt	140,000
m-(Dimethylamino)benzoic acid	346,000	Dimethyldithiocarbamic acid, potassium salt	181,100
2-[4-(Dimethylamino)benzoyl]benzoic acid	796,000	Dimethyldithiocarbamic acid, potassium salt	174,000
2-Dimethylaminoethanethiol hydrochloride	796,500	Dimethyldithiocarbamic acid, selenium salt	141,000
2-Dimethylaminoethanol (N,N-Dimethylethanolamine)	365,000	Dimethyldithiocarbamic acid, sodium salt	175,000
Dimethylaminoethylacrylate, methyl chloride, quaternary salt	366,000	Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide	142,000
Dimethylaminoethyl methacrylate	367,900	Dimethyldithiocarbamic acid, zinc salt	143,000
Dimethylaminoethylmethacrylate, dimethyl sulfate, quaternary salt	368,000	N,N-Dimethyldodecylamine	434,000
Dimethylaminoethylmethacrylate, methyl chloride, quaternary salt	368,200	N,N-Dimethyldodecylamine oxide	327,910
2-Dimethylamino-2-methyl-1-propanol hydrochloride	369,000	Dimethyl dodecyl ethyl ammonium ether sulfate	456,500
1-(Dimethylaminophenol	369,600	N,N-Dimethylerucyl amine	433,420
(Dimethylamino)-2-propanol	802,000	Dimethylethanolamine-stearic acid (amine acid ratio=1/1)	575,150
Dimethylaminopropylamine, propoxylated	369,700	4-(1,1-Dimethylethyl)cyclohexanol	134,400
11-[3(Dimethylamino)propyl]-6H-hydroxydibenz(b,e)oxepin	274,000	S-[[[1,1-Dimethylethyl]thio]methyl] O,O-diethyl phosphorodithioate (Turbufos)	1294,000
Dimethylaminopropyl methacrylamide	369,900	N,N-Dimethylformamide	223,500
4-Dimethylaminopyridine	803,000	N,N-Dimethylglycine	237,000
Dimethylammonium hydrogen isophthalate	803,500	N,N-Dimethylglycine hydrochloride	5,000
N,N-Dimethylaniline	286,780	2,6-Dimethylheptan-2-ol	6,000
2,6-Dimethylaniline	41,725	2,6-Dimethyl-5-hepten-1-ol	95,610
Dimethylarsinic acid (Cacodylic acid)	805,000	N,N-Dimethylhexadecylamine	134,500
N,N-Dimethyl(benhenyl alkyl)amine	201,200	N,N-Dimethylhexadecylamine oxide	435,000
N,N-Dimethyl(benhenyl arachidyl)amine	432,200	Dimethyl hexanediol	328,000
2,2-Dimethyl-1,3-benzodioxol-4-yl N-methylcarbamate	432,970	2,5-Dimethyl-3-hexyne-2,5-diol	134,600
N,N-Dimethylbenzylamine	166,027	5,5-Dimethylhydantoin	134,650
1,1'-Dimethyl-4,4'-bipyridinium dichloride	809,000	N,N-Dimethyl(hydrogenated tallow alkyl)amine	816,000
2,2-Dimethylbutane (isohexyl alcohol)	118,049	Dimethyl hydrogen phosphite	436,000
N,N-Dimethylbutylamine	851,700	Dimethyl isophthalate	1028,000
N,N-Dimethylbutylamine	1337,400	Dimethyl maleate	31,500
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine	274,995	Dimethyl methylphosphonate	943,000
Dimethyl caprylamide capramide	59,310	O,O-Dimethyl O-[4-(methylthio)-m-tolyl]phosphorothioate (Fenthion)	1029,000
Dimethyl carbonate	40,350	N,N-Dimethyl(mixed alkyl)amine	157,000
N,N-Dimethyl(coconut oil alkyl)amine	236,800	N,N-Dimethyl(mixed alkyl)amine oxide	437,000
Dimethyl-1,4-cyclohexanedicarboxylate	941,000	2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydrochloride	328,100
Dimethyl cyclohexane methanol	433,000	0,0-Dimethyl 0-(p-nitrophenyl)phosphorothioate (Methyl parathion)	819,600
β,γ-Dimethyl-3-cyclohexene-1-propanal	811,500	N,N-Dimethyl(9-octadecenyl-alkyl)amine	819,750
γ,4-Dimethyl-3-cyclohexene-1-propanol	95,580	N,N-Dimethyloctadecylamine	158,000
N,N-Dimethylcyclohexylamine	30,501	3,7-Dimethyl-cis-2,6-octadienal (Citral B) (Neral)	437,500
	30,500		438,000
	813,000		134,800

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
3,7-Dimethyl-trans-2,6-octadienal (Citral A; geranial)	07	Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	13
3,7-Dimethyl-2,6-octadienal (citral a & b)	07	N,N-Dimethyltetradecylamine	12
3,7-Dimethyl-2,6-octadienenitrile	07	Dimethyltetradecylamine oxide	12
3,7-Dimethyl-2,6-octadiene oxime	07	N-[5-1,1-Dimethyl]-1,3,4-thiadiazol-2-yl]-N,N-dimethylurea (Tebuthiuron)	13
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	07	Dimethyltin dichloride	15
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geranlol)	07	Dimethyltin iodide	15
3,7-Dimethyl-1,6-octadien-3-ol (Linalool)	07	N,N-Dimethyl-o-toluidine	15
(Linalyl alcohol)	07	N,N-Dimethyl-p-toluidine	03
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	07	N-[2,4-dimethyl-5-[[trifluoromethyl]sulfonyl]amino]phenyl]acetamide, diethanolamine salt	03
3,7-Dimethyl-1,6-octadien-3-ol, acetate (Linalyl acetate)	07	Dimorpholine diethyl ether	13
3,7-Dimethyl-1,6-octadien-3-yl formate	07	Dimyristyl-3,3'-thiodipropionate	15
isobutyrate)	07	N,N'-Di-2-naphthyl-p-phenylenediamine	15
3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate)	07	Dinitolamide	09
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate)	07	m-Dinitrobenzene	06
Dimethyloctanol	07	Dinitrobenzene	03
3,7-Dimethyloctanol-1 (Tetrahydrogeranlol)	07	Dinitrobenzene-nitrobenzene mixture (30/70)	03
3,7-Dimethyl-3-octanol	07	2,4-Dinitrobenzenesulfonic acid, sodium salt	03
Dimethyloctanyl acetate	07	3,5-Dinitrobenzoyl chloride	03
3,7-Dimethyl-6-octen-1-ol (Citronellal)	07	Dinitrobutylphenol (DNBP)	03
3,7-Dimethyl-6-octene oxime	07	Dinitrobutylphenol, triethanolamine salt	13
3,7-Dimethyl-6-octen-1-ol (Citronellol)	07	3,5-Dinitrochlorobenzenesulfonic acid, potassium salt	03
3,7-Dimethyl-6-octene oxime	07	2,6-Dinitro-N,N-dipropyl curmidine	03
3,7-Dimethyl-7-octenol 70%, 6-octenol isomer 30%	07	3,5-Dinitro-N ₂ N ₂ -dipropylsulfanilamide	13
Dimethyldihydroxyethylene urea	14	2,4-Dinitrophenol, tech.	13
N,N-Dimethyl oleyl amine oxide	12	2,4-Dinitrophenoxyethanol	03
Dimethyl oleylammonium ethanoate	12	2,4-Dinitrophenyl dimethyldithiocarbamate	03
4,4-Dimethyl oxazolidene	15	3,5-Dinitrosalicylic acid	09
O,O-Dimethyl oxazoline	15	3,5-Dinitrosalicylic acid, methyl ester	03
methyl]phosphorodithioate (Azinphos-methyl)	13	p-Dinitrosobenzene	03
N,N'-Dimethyl-3,4,9,10-perylene-tetracarboxylic acid 3,4:9,10-dilimide	13	4,4'-Dinitrostilbene-2,2'-disulfonic acid	03
α,α-Dimethylphenethyl acetate	03	2,4-Dinitrotoluene	03
Dimethyl phenylethyl carbinol	07	2,4-(and 2,6)-Dinitrotoluene	03
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide	13	3,5-Dinitro-p-toluenesulfonic acid	03
Dimethyl phosphorimidothioate	13	3,5-Dinitro-o-toluic acid	03
Dimethyl phosphoridothionate	15	Dinonyldihydroxybenzenesulfonic acid	03
Dimethyl phthalate	11	Dinonylphenol, ethoxylated	12
Dimethyl piperazine	15	Dinonyl phthalate	12
1,1-Dimethylpiperidinium chloride	13	Dinoprostone	11
N,N-Dimethyl-1,3-propanediamine polymer with epichlorohydrin, sulfate	14	N,N'-Dioctadecyl-N,N'-diisopropyl thiuram disulfide	06
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	15	Dioctyl dimerate	11
Dimethylpropionic acid (Neopentanoic acid)	15	N,N-Dioctyl-N,N-dimethyl ammonium chloride	12
N-(1,1-Dimethyl-2-propynyl)-3,5-dichlorobenzamide (Prinamide)	15	Di-tert-octyl hydroquinone	15
Dimethyl sebacate	13	Dioctyl maleate	15
Dimethyl (soya alkyl) ammonium ethyl sulfate	11	Di-n-octyl phthalate	11
N,N-Dimethyl (soybean oil alkyl) amine	12	Dioctyl phthalates, all other	11
Dimethyl succinate	12	Dioleic acid (Ratio = 1/2)	12
Dimethyl sulfide	02	Dioxane (1,4-Diethylene oxide)	15
Dimethyl sulfone	15	1,3-Dioxolane	15
		Di-para-benzoquinone dioxime	03
		Di-para-xylene	15
		Di-N,N'-pentamethylenethiuram tetrasulfide	09
			42.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Dipentylamine	15	295.000	Direct Blue 199	04	567.000
2,4-Di-tert-pentylphenol	03	847.000	Direct Blue 218	04	568.000
Diperoxododecanedioic acid	15	1296.200	Direct Blue 269	04	570.269
Diphenyldramine citrate	06	115.000	Direct Blue 279	04	570.279
Diphenyldramine hydrochloride	06	95.000	Direct Blue 281	04	570.281
1,4-Diphenoxybenzene	03	850.500	Direct Blue 283	04	570.283
1,2-Diphenoxyethane	15	73.200	Direct Blue 285	04	570.285
Diphenoxylate	06	620.300	Direct Blue 286	04	570.286
2-Diphenylacetyl-1,3-indandione and sodium salt	13	171.010	Direct blue dyes, all other	04	571.000
Diphenylamine	03	853.000	Direct Brown 31	04	593.000
Diphenylamine-acetone aldehyde	09	52.700	Direct Brown 44	04	606.230
Diphenylamine-acetone condensate	09	53.000	Direct Brown 230	04	606.231
p-Diphenylaminediazonium sulfate	14	350.000	Direct Brown 231	04	606.232
Diphenyldimethoxysilane	03	855.500	Direct Brown 238	04	606.238
Diphenyl-4,4'-diphenylmethylenedicarbamate	09	124.350	Direct brown dyes, all other	04	607.000
Diphenyldisulfide	03	855.250	Direct Green 1	04	573.000
Diphenyl-2-ethylhexyl phosphite	15	73.250	Direct Green 6	04	574.000
Diphenylsodocyl phosphite	15	73.300	Direct Green 92	04	586.092
Diphenylsodocyl phosphite	15	73.340	Direct green dyes, all other	04	587.000
Diphenylmercuric dodeceny succinate	13	7.500	Direct Orange 6	04	457.000
Diphenylmethane-4,4'-diisocyanate (MDI)	03	1020.000	Direct Orange 15	04	461.000
N,N'-Diphenyl-p-phenylenediamine	09	62.000	Direct Orange 26	04	462.000
Diphenylsulfone sulfonic acid, potassium salt	12	210.700	Direct Orange 29	04	463.000
1,3-Di-4-piperidylpropane	03	858.313	Direct Orange 34	04	464.000
Dipropenediol dibenzoate (Dipropylene glycol dibenzoate)	11	4.000	Direct Orange 39	04	466.000
Dipropylamine	15	300.000	Direct Orange 72	04	470.000
Dipropylene glycol	15	1156.000	Direct Orange 80	04	475.000
Dipropylene glycol monomethyl ether	15	1156.500	Direct Orange 102	04	479.000
Dipropylene glycol salicylate	15	74.000	Direct Orange 118	04	479.118
Di-n-propylisocinchomeronate	13	148.500	Direct orange dyes, all other	04	480.000
Di-n-propyl peroxydicarbonate	15	1296.300	Direct Red 2	04	482.000
Di-n-propyl phosphorodithioic acid	15	513.020	Direct Red 4	04	483.000
Di-N-propylphosphorodithioic acid	14	234.000	Direct Red 9	04	483.009
Di(pyrrolidonylethyl)imine	12	328.435	Direct Red 16	04	488.000
Direct Black 1	04	607.991	Direct Red 23	04	490.000
Direct Black 4	04	608.000	Direct Red 24	04	491.000
Direct Black 22	04	613.000	Direct Red 26	04	492.000
Direct Black 80	04	623.000	Direct Red 28	04	493.000
Direct Black 165	04	623.165	Direct Red 72	04	499.000
Direct Black 170	04	623.170	Direct Red 73	04	500.000
Direct black dyes, all other	04	625.000	Direct Red 80	04	504.000
Direct Blue 1	04	534.000	Direct Red 81	04	505.000
Direct Blue 2	04	535.000	Direct Red 83	04	506.000
Direct Blue 8	04	537.000	Direct Red 236	04	521.236
Direct Blue 15	04	539.000	Direct Red 238	04	521.238
Direct Blue 22	04	540.000	Direct Red 239	04	521.239
Direct Blue 25	04	542.000	Direct Red 254	04	521.254
Direct Blue 71	04	545.000	Direct red dyes, all other	04	522.000
Direct Blue 75	04	547.000	Direct Violet 9	04	525.000
Direct Blue 80	04	550.000	Direct Violet 66	04	531.000
Direct Blue 86	04	552.000	Direct Yellow 4	04	421.000
Direct Blue 98	04	555.000	Direct Yellow 5	04	422.000
Direct Blue 108	04	557.108	Direct Yellow 6	04	423.000
Direct Blue 160	04	564.000	Direct Yellow 11	04	427.000
Direct Blue 189	04	565.000	Direct Yellow 28	04	433.000
Direct Blue 191	04	566.000			

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No. No.	Chemical name	Sect. Item No. No.
Direct Yellow 34	04 435.000	Disperse Orange 25 and 25:1	04 658.000
Direct Yellow 44	04 438.000	Disperse Orange 29	04 659.000
Direct Yellow 51	04 439.051	Disperse Orange 30	04 660.000
Direct Yellow 105	04 445.000	Disperse Orange 37	04 661.000
Direct Yellow 106	04 446.000	Disperse Orange 41	04 662.000
Direct Yellow 107	04 447.000	Disperse Orange 44 and 44:1	04 663.000
Direct Yellow 118	04 450.000	Disperse Orange 73	04 667.073
Direct Yellow 119	04 451.000	Disperse Orange 89	04 668.089
Direct Yellow 127	04 453.000	Disperse Orange 94	04 668.094
Direct Yellow 131	04 454.000	Disperse Orange 136	04 668.136
Direct Yellow 132	04 454.132	Disperse Orange 138	04 668.138
Direct Yellow 133	04 454.133	Disperse Orange 145	04 668.145
Direct Yellow 137	04 454.137	Disperse orange dyes, all other	04 669.000
Direct Yellow 147	04 454.147	Disperse Red 1	04 670.000
Direct Yellow 148	04 454.148	Disperse Red 5	04 672.000
Direct Yellow 150	04 454.150	Disperse Red 13	04 676.000
Direct yellow dyes, all other	04 455.000	Disperse Red 17	04 678.000
N,N'-Disalicylidene-1,2-propanediamine	14 161.000	Disperse Red 30	04 680.000
Disodium cyanodithioimidocarbonate	13 179.000	Disperse Red 35	04 682.000
Disopyramide phosphate	06 378.500	Disperse Red 40	04 682.040
Disperse Black 9	04 751.000	Disperse Red 50	04 688.000
Disperse Black 33	04 752.000	Disperse Red 55	04 688.000
Disperse black dyes, all other	04 753.000	Disperse Red 60	04 688.000
Disperse Blue 3	04 716.000	Disperse Red 65	04 687.000
Disperse Blue 27	04 719.000	Disperse Red 73	04 688.000
Disperse Blue 56	04 722.000	Disperse Red 74	04 688.074
Disperse Blue 60	04 723.000	Disperse Red 88	04 691.000
Disperse Blue 62	04 725.000	Disperse Red 91	04 692.091
Disperse Blue 64	04 727.000	Disperse Red 112	04 693.112
Disperse Blue 72	04 728.072	Disperse Red 117	04 694.000
Disperse Blue 73	04 729.000	Disperse Red 133	04 695.000
Disperse Blue 79	04 731.000	Disperse Red 135	04 695.135
Disperse Blue 95	04 734.000	Disperse Red 136	04 696.000
Disperse Blue 102	04 735.000	Disperse Red 137	04 697.000
Disperse Blue 118	04 739.000	Disperse Red 145	04 699.145
Disperse Blue 122	04 739.122	Disperse Red 153	04 699.153
Disperse Blue 148	04 742.148	Disperse Red 159	04 700.000
Disperse Blue 200	04 743.200	Disperse Red 167 and 167:1	04 700.167
Disperse Blue 281	04 743.281	Disperse Red 177	04 701.000
Disperse Blue 284	04 743.284	Disperse Red 179	04 702.000
Disperse Blue 291	04 743.291	Disperse Red 195	04 703.195
Disperse Blue 337	04 743.337	Disperse Red 263	04 703.263
Disperse Blue 338	04 743.338	Disperse Red 274	04 703.274
Disperse Blue 359	04 743.359	Disperse Red 278	04 703.278
Disperse Blue 360	04 743.360	Disperse Red 305	04 703.305
Disperse blue dyes, all other	04 744.000	Disperse Red 307	04 703.307
Disperse Brown 1	04 746.000	Disperse Red 309	04 703.309
Disperse Brown 18	04 747.018	Disperse Red 311	04 703.311
Disperse Brown 22	04 747.022	Disperse Red 313	04 703.313
Disperse Brown 26	04 747.026	Disperse Red 316	04 703.316
Disperse Brown 27	04 747.027	Disperse Red 325	04 703.325
Disperse Green 9	04 745.009	Disperse Red 333	04 703.333
Disperse green dyes, all other	04 745.999	Disperse Red 338	04 703.338
Disperse Orange 3	04 653.000	Disperse Red 339	04 703.339
Disperse Orange 5	04 654.000	Disperse Red 340	04 703.340
Disperse Orange 17	04 656.000	Disperse Red 345	04 703.345

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Disperse red dyes, all other	04	704.000
Disperse Violet 1	04	705.000
Disperse Violet 17	04	707.017
Disperse Violet 28	04	710.000
Disperse Violet 33	04	710.033
Disperse Violet 36	04	710.036
Disperse Violet 60	04	713.060
Disperse violet dyes, all other	04	714.000
Disperse Yellow 3	04	628.000
Disperse Yellow 23	04	631.000
Disperse Yellow 34	04	635.000
Disperse Yellow 42	04	636.000
Disperse Yellow 54	04	638.000
Disperse Yellow 64	04	639.064
Disperse Yellow 77	04	642.000
Disperse Yellow 86	04	644.000
Disperse Yellow 88	04	646.000
Disperse Yellow 108	04	650.108
Disperse Yellow 125	04	651.000
Disperse Yellow 126	04	651.126
Disperse Yellow 198	04	651.198
Disperse Yellow 210	04	651.210
Disperse Yellow 219	04	651.219
Disperse Yellow 238	04	651.238
Disperse Yellow 239	04	651.239
Disperse yellow dyes, all other	04	652.000
Distearyldimethyl ammonium methosulfate	12	456.550
Distearyl-3,3'-thiodipropionate	15	949.000
Distriaxane, hexakis(2-methyl-2-phenylpropyl)	13	166.011
Disulfuram	06	832.000
Ditallowamidoammonium sulfate	12	487.500
Di-tertiary nonylpoly sulfide	14	257.500
2,2',2'',2'''-Dithiobis(benzanilide)	09	115.000
2,2'-Dithiobis[benzothiazole]	09	29.000
Dithiobis(stearyl propionate)	15	950.000
2,5-Dithiobiurea	15	376.000
Dithiocarbamic acid derivatives, acyclic, other	09	144.000
Dithiocarbamic acid derivatives, cyclic, other	09	16.000
Dithiodiglycolic acid	15	513.080
4,4'-Dithiodimorpholine	09	43.000
Dithiodipropionic acid	15	513.100
2,5-Di-p-toluidinoterephthalic acid	03	865.100
Di-tridecyl adipate	11	63.400
Ditridecyl maleate	15	951.000
Di-tridecyl phthalate	11	39.000
Di(tridecyl)-3,3'-thiodipropionate	15	39.300
Diundecyl phthalate	11	39.300
1,5-diureidonaphthalene	03	865.800
Divinylbenzene	03	866.000
Divinyl tetramethyldisiloxane	15	1385.500
1,1-Di-3,4-xyllylethane	03	1553.200
Diobutamine hydrochloride	06	326.300
Docosanyl docosenoate	15	969.050
N-(Docosyl and eicosyl) trimethylenediamine	12	408.300
Docosate, calcium	06	591.700
Docosate, potassium	06	591.720
Docosate, sodium	06	591.740
n-Dodecane	15	1338.000
Dodecanedioic acid	15	514.000
Dodecane nitrile	07	143.930
Dodecene	02	78.000
Dodecenylic-acetic succinimide	14	247.000
Dodecenylic succinic acid, benzotriazole salt	14	276.000
Dodecenylic succinic anhydride	15	165.600
Dodecyl alcohol (Lauryl alcohol)	15	872.000
Dodecyl alcohol, ethoxylated	12	729.000
Dodecyl alcohol, ethoxylated and phosphated ammonium salt	12	77.000
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	12	270.000
Dodecylamine	12	271.000
Dodecylamine	12	420.000
Dodecylamine	03	866.200
Dodecylbenzene, other	03	870.000
Dodecylbenzene, straight-chain	03	869.000
Dodecylbenzene sulfonates, all other	12	128.000
Dodecylbenzenesulfonic acid	12	114.000
Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt	12	122.000
Dodecylbenzenesulfonic acid, ammonium salt	12	115.000
Dodecylbenzenesulfonic acid, calcium salt	12	117.000
Dodecylbenzenesulfonic acid, diethanolamine salt	12	118.000
Dodecylbenzene sulfonic acid, DMAP salt	12	118.500
Dodecylbenzenesulfonic acid, isopropanolamine salt	12	120.000
Dodecylbenzenesulfonic acid, isopropylamine salt	12	121.000
Dodecylbenzenesulfonic acid, isopropyl titanium salt	12	121.100
Dodecylbenzenesulfonic acid, monoethanolamine salt	12	122.500
Dodecylbenzenesulfonic acid, oleyl amine, ethoxylated, salt	12	122.700
Dodecylbenzenesulfonic acid, potassium salt	12	123.000
Dodecylbenzenesulfonic acid, sodium salt	12	125.000
Dodecylbenzenesulfonic acid, triethanolamine salt	12	127.000
N-Dodecyl-diethylenetriamine	12	408.000
Dodecyl diphenyloxidesulfonic acid, disodium salt	12	206.000
Dodecyl disodium banaline, N-(2-carboxyethyl), sodium salt	12	10.420
n-Dodecylguanidine acetatec (Dodine)	13	188.000
Dodecylguanidine hydrochloride	13	195.011
N-Dodecyl-3-iminodipropionic acid	12	10.500
N-Dodecyl-3-iminodipropionic acid, disodium salt	12	11.000
N-Dodecyl-3-imino-dipropionic acid, monosodium salt	12	11.020
tert-Dodecyl mercaptan, ethoxylated	12	759.000
n-Dodecyl mercaptans	09	171.000
Dodecylmethylbenzyl chloride	03	871.000
Dodecylnitrobenzene	03	872.000
4-(Dodecyloxy)-2-hydroxybenzophenone	15	75.000
Dodecylpoly(ethyleneoxy)acetic acid, sodium salt	12	40.400
Dodecylpentadecyl methacrylate	15	952.700
p-Dodecylphenol	03	873.000
Dodecylphenol, ethoxylated	12	744.000
Dodecylphenol, ethoxylated and phosphated	12	79.000
Dodecylphenol, sulfurized, calcium salt	14	228.000
Dodecylphenylinaphthylamine	14	277.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Dodecylphenylamphthylamine, dioctyl diphenylamine copolymer	14	Epoxidized esters, all other	11
Dodecyl pyridinium chloride	15	Epoxidized linseed oils	11
1-Dodecylpyridinium chloride	12	epoxidized pentaerythritol tetraphthalate	11
Dodecyl succinic anhydride	14	Epoxidized soya oils	11
Dodecylsuccinic anhydride	15	Epoxidized tall oils	11
Dodecyl succinic lactate	15	Epoxy, resins advanced	08
Dodecyl sulfate, ammonium salt	12	Epoxy, resins unmodified	08
Dodecyl sulfate, diethanolamine salt	12	Ergocaliferol (vitamin D)	06
Dodecyl sulfate, N,N-diethylcyclohexylamine salt	12	Erucamide	15
Dodecyl sulfate, isopropanolamine salt	12	Erucamide stearamide mix	15
Dodecyl sulfate, magnesium salt	12	[Erucyl alkyl]amine	12
Dodecyl sulfate, potassium salt	12	Erythromycin	06
Dodecyl sulfate, sodium salt	12	Erythromycin estolate	06
Dodecyl sulfate, triethanolamine salt	12	Erythromycin stearate	06
Dodecyl sulfacetate, sodium salt	12	Ester tin mercaptoesters	15
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt	12	Estradiol cypionate	06
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, magnesium salt	12	Estrogens, all other	06
Dodecyltrimethylammonium chloride	06	Estrogens, conjugated	06
Doxapram hydrochloride	06	Estrogens, esterified	06
Doxepin hydrochloride	06	Ethacrynic acid	06
Droperidol	06	Ethanolamine, 2-hydroxy-N,N-bis(2-hydroxyethyl)-N-methyl-, salt with silicic acid	12
Drug and Cosmetic Green 5	04	Ethane	02
Drug and Cosmetic Green 8	04	1,2-Ethanedithiol	15
Drug and Cosmetic Orange 4	04	1,2-Ethanedithiol	15
Drug and Cosmetic Orange 5	04	Ethanolglycine, disodium salt	14
Drug and Cosmetic Orange 17	04	2-Ethanolpyridine	03
Drug and Cosmetic Red 3	04	5-Ethanoxy-3-trichloromethyl-1,2,4-thiadiazole	03
Drug and Cosmetic Red 6	04	Ethchlorvynol	06
Drug and Cosmetic Red 7	04	Ethers and thioethers, all other	12
Drug and Cosmetic Red 9	04	Ethisterone	03
Drug and Cosmetic Red 17	04	Ethopabate	06
Drug and Cosmetic Red 19	04	Ethosuximide	06
Drug and Cosmetic Red 21	04	Ethotoin	06
Drug and Cosmetic Red 22	04	p-Ethoxybenzaldehyde	07
Drug and Cosmetic Red 27	04	N-(p-ethoxycarbonylphenyl)-n-ethyl-n-phenylformamide	07
Drug and Cosmetic Red 28	04	6-Ethoxy-12-dihydro-2,2,4-trimethyl quinoline	15
Drug and Cosmetic Red 30	04	2-Ethoxyethanol (Ethylene glycol monoethyl ether)	15
Drug and Cosmetic Red 33	04	2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	15
Drug and Cosmetic Red 36	04	2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	15
Drug and Cosmetic Yellow 5	04	2-(2-Ethoxyethoxy)ethyl acetate	15
Drug and Cosmetic Yellow 6	04	Ethoxylated anhydrosorbitol esters, all other	12
Drug and Cosmetic Yellow 8	04	Ethoxylated anhydrosorbitol monolaurate	12
Drug and Cosmetic Yellow 10	04	Ethoxylated anhydrosorbitol mono-oleate	12
Ergophonium chloride	06	Ethoxylated anhydrosorbitol monopalmitate	12
Ergosane	02	Ethoxylated anhydrosorbitol monostearate	12
Eralapril maleate	06	Ethoxylated anhydrosorbitol triester of tall oil acids	12
Enflurane	06	Ethoxylated anhydrosorbitol trioleate	12
Epichlorohydrin	15	Ethoxylated anhydrosorbitol tristearate	12
Epichlorohydrin bisphenol A, ethoxylated	12	Ethoxylated 1,3-butyleneglycol stearate	12
Epichlorohydrin elastomers (CO, ECO) type	10	Ethoxylated castor oil, ditridecylmaleate	12
Epoxides, ethers, acetals, all other	15	Ethoxylated glycerol mono- and diesters of hydrogenated tallow acids	12

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Ethoxylated glycerol and propylene glycol esters of coco fatty acids	12	Ethylbenzene	03
Ethoxylated(hydrogenated tallow amine), methyl ammonium chloride	12	p-(N-Ethylbenzimid)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylamine)-zinc chloride	14
Ethoxylated nonylphenol esters of coconut oil acids	12	Ethyl benzoate	07
Ethoxylated nonylphenol laurate	12	(Ethylbenzyl)dimethyl(mixed alkyl) ammonium chloride	12
Ethoxylated 1,2-propanediol monostearate	12	N-Ethyl-N,N-bis(polyoxyethylene)tallow ammonium ethyl sulfate	12
Ethoxylated and propoxylated glycerol mono- and diesters of tallow acids	12	Ethyl butyrate	07
Ethoxylated, quaternized(C ₁₂₋₁₈ alkyl) oxypropyl trimethylene diamine	12	2-Ethylbutyric acid (Diethylacetic acid)	15
Ethoxylated, quaternized reaction product of formaldehyde and tallow diamine	12	Ethyl caprate	07
Ethoxylated sorbitol beeswax ester	12	Ethyl cellulose	08
Ethoxylated sorbitol hexaester of tall oil acids	12	Ethyl chloride (Chloroethane)	15
Ethoxylated sorbitol hexaoleate	12	Ethyl chloroformate	15
Ethoxylated sorbitol lanolin ester	12	Ethyl chloroformate	15
Ethoxylated sorbitol mono-oleate	12	Ethyl cinnamate	07
Ethoxylated sorbitol monostearate	12	Ethyl cyanoacetate	15
Ethoxylated sorbitol oleate, acetylated	12	Ethyl-2-cyano-3,3-diphenyl acrylate	15
Ethoxylated sorbitol pentaoleate	12	2-(N-Ethyl-N,β-cyanoethyl)-4-acetaminoanisole	03
Ethoxylated sorbitol tetraester of lauric and oleic acids	12	Ethyl cyclohexylamine	15
Ethoxylated sorbitol tetraester of tall oil acids	12	S-Ethyl cyclohexylmethylthiocarbamate	15
Ethoxylated sorbitol tetraoleate	12	Ethyl 3,3-di(t-butyl peroxy) butyrate	13
Ethoxylated sorbitol tetraoleate	12	Ethyl 4,4'-dichlorobenzilate (Chlorobenzilate)	15
Ethoxylated tallow amine, potassium propionate derivative	12	N-Ethyl-N-(2,3-dihydroxypropyl)-m-toluidine	03
Ethoxylated tallow amine propionate methyl sulfate, potassium salt	12	S-Ethyl disobutylthiocarbamate (Butylate)	12
4-Ethoxy-3-methoxybenzaldehyde	03	Ethylidimethyl(mixed alkyl) ammonium ethyl sulfate	13
1-Ethoxy-3-methylbenzene	03	O-Ethyl S,S-dipropyl phosphorodithioate	13
4-Ethoxy-2-methyl-N-phenylaniline	03	S-Ethyl dipropylthiocarbamate (EPTC)	13
2-Ethoxynaphthalene	07	Ethylene	02
3-Ethoxypropionitrile	15	Ethylene-acrylic acid resins (EAA)	08
2-Ethylhexyl pelargonate	11	Ethylenebis(α-amino-2-hydroxyphenol) acetic acid, hydroferric salt	14
Ethyl acetate (100% basis)	15	Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	13
Ethyl acrylate	15	Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions	13
Ethyl acrylate methacrylic acid copolymer	14	Ethylene bis(dithiocarbamic acid), zinc and manganese salts	13
Ethyl alcohol, synthetic only	15	Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)	13
Ethyl-alpha-cyano-beta-methyl cinnamate	03	N,N'-Ethylenebis(12-hydroxystearamide)	15
Ethylaluminum dichloride	15	N,N'-Ethylenebis-oleamide (Oleic acid-ethylene diamine condensate (amine/acid ratio = 1/2))	15
Ethylaluminum sesquichloride	15	N,N'-Ethylenebis(stearamide)	15
Ethylamine, mono-	15	Ethylene bis tetrabrom	15
3-(Ethylamino)acetanilide	03	Ethylene carbonate	15
2-Ethylaminoethanol (Ethylmonoethanolamine)	03	Ethylenediamine	15
2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s-triazine (Ametryne)	15	Ethylenediamine, alkoxylated	12
o-Ethylaniline	13	Ethylenediamine dihydroiodide	06
N-Ethylaniline, refined	03	Ethylene diamine ethoxylated	12
2-(N-Ethylanilino)ethanol	03	Ethylenediamine, propoxylated	12
3-(N-Ethylanilino)propionitrile	03	Ethylene dibromide	14
α-(N-Ethylanilino)-m-toluenesulfonic acid	03	(Ethylenedinitrilo) tetraacetic acid	14
Ethyl anthranilate	07	(Ethylenediaminetetraacetic acid) (EDTA)	14
5-Ethyl-1-aza-3,7-dioxabicyclo[3.3.0]octane	15	(Ethylenedinitrilo) tetraacetic acid, calcium disodium salt	14
		(Ethylenedinitrilo) tetraacetic acid, diammonium salt	14

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Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
(Ethylenedinitrilo) tetraacetic acid, disodium copper salt, dihydrate	14	2-Ethylhexanol, ethoxylated and phosphated	12
(Ethylenedinitrilo) tetraacetic acid, disodium salt	14	2-Ethylhexanol, ethoxylated, phosphated, potassium salt	12
(Ethylenedinitrilo) tetraacetic acid, disodium zinc salt, dihydrate	14	2-Ethylhexanoyl chloride	15
(Ethylenedinitrilo) tetraacetic acid, manganese salt	14	2-Ethyl-1-hexyl acetate	15
(Ethylenedinitrilo) tetraacetic acid, monoammonium ferric salt	14	2-Ethyl-1-hexyl acrylate	15
(Ethylenedinitrilo) tetraacetic acid, monosodium iron salt	14	2-Ethylhexyl acrylate-methyl acrylate copolymer resins	08
(Ethylenedinitrilo) tetraacetic acid, tetraammonium salt	14	(2-Ethylhexyl) amine, mono-	15
(Ethylenedinitrilo) tetraacetic acid, tetrasodium salt	14	2-Ethylhexyl benzoate	15
(Ethylenedinitrilo) tetraacetic acid, trisodium salt	15	N-(2-Ethylhexyl) bicyclo(2.2.1)-5-heptene-2,3-dicarboximide	13
1,1-Ethylenediurea	15	2-Ethylhexyl chloroformate	15
Ethylene glycol	11	2-Ethylhexyl-2-cyano-3,3-diphenyl acrylate	15
Ethylene glycol adipate	15	2-Ethylhexyl epoxytallates	11
Ethylene glycol diacetate	15	2-Ethylhexyl hydrogen phosphate	15
Ethylene glycol diacrylate	15	2-Ethyl-1-hexyl methacrylate	15
Ethylene glycol dimercaptoacetate	15	2-Ethylhexyl oleate	11
Ethylene glycol dimethacrylate	15	2-Ethylhexyl palmitate	11
Ethylene glycol distearate	12	2-Ethylhexyl phosphate	12
Ethylene glycol di-tributyl ether	15	2-Ethylhexyl phosphate, potassium salt	12
Ethylene glycol di-tri-ethyl ether	15	2-Ethylhexyl phosphate, sodium salt	12
Ethylene glycol di-tri-ethyl ether	15	2-Ethylhexyl polyphosphate, sodium salt	12
Ethylene glycol hydroxyacetate	15	2-Ethyl hexyl salicylate	07
Ethylene glycol monostearate	12	2-Ethylhexyl stearate	11
Ethylene oxide	15	2-Ethylhexyl sulfate, sodium salt	12
Ethylene-propylene copolymer	14	P-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride-diazo-n-hydroxyethylamine zinc chloride	14
Ethylene-propylene (EP) type	10	(N-Ethyl-N-(2-hydroxyethyl)-3-methyldehydrogen sulfate)	14
Ethylene-vinyl acetate (EVA) copolymer resins	08	p-phenylenediamine	14
Ethyl- α , β -epoxy- β -methylhydrocinamate	07	N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	15
Ethyl ether, absolute	15	N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	14
Ethyl ethers of tetra and higher ethylene glycols (high boiling)	15	N-Ethyl-N-(2-hydroxyethyl)-m-toluidine	03
Ethyl 3-ethoxy propionate	15	Ethyl hydroxymethyl oleyl oxazoline	15
Ethyl formate	15	2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane)	15
Ethyl furoate	07	Ethylidene norbornene	15
Ethyl glycol monoricinoleate	11	Ethyl isovalerate	07
4-Ethyl guaiacol	07	Ethyl laurate	07
1-Ethyl-2-(8-heptadecenyl)-1(2-hydroxyethyl)-2-imidazolium ethyl sulfate	12	Ethylmagnesium bromide	15
Ethyl heptanoate	07	N-Ethylmaleimide	03
Ethylhexadecyldimethylammonium bromide	12	Ethyl mercaptan (Ethanethiol)	02
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate	12	2-(Ethylmercapto)ethanol	15
S-Ethyl-hexahydro-1H-azepine-1-carbothioate (Mollinate)	13	N-Ethyl-2-methylallylamine	15
2-Ethylhexanal (α -Ethylcaproaldehyde)	15	6-Ethyl-2-methylaniline	03
2-Ethyl-1,3-hexanediol	15	Ethyl-2-methyl butyrate	07
Ethyl hexanoate	07	Ethyl-2 methyl pentanoate	07
2-Ethylhexanoic acid (α -Ethylcaproic acid)	15	2-[Ethyl(3-methylphenyl)amino] ethanol	03
2-Ethylhexanoic acid, potassium salt	12	N-[3-(1-Ethyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (Flexidor)	13
2-Ethylhexanoic acid salts, all other	15	O-Ethyl O-[4-(methylthio)phenyl] S-propyl phosphorodithioate	13
2-Ethyl-1-hexanol	15	7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	13
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated	12	2-Ethylmexanol, ethoxylated	12
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated, sodium salt	12	4-Ethylmorpholine	15
		Ethyl myristate	07

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Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
9-Ethyl-3-nitrocarbazole	03	Fluorescent Brightener 49	04
O-Ethyl O-(p-nitrophenyl)phenylphosphonothioate (EPN)	13	Fluorescent Brightener 52	04
2-Ethyl-2-nitro-1,3-propanediol	15	Fluorescent Brightener 61	04
Ethyl octanoate	07	Fluorescent Brightener 71	04
Ethyl oxhydrate	07	Fluorescent Brightener 102	04
Ethyl phenylacetate	07	Fluorescent Brightener 128	04
N-Ethyl-N-phenylbenzylamine	03	Fluorescent Brightener 134	04
Ethyl(polyoxyethylene, cocoamine) ethylsulfate	12	Fluorescent Brightener 205	04
Ethyl propionate	07	Fluorinated (including other fluorhalogenated)	04
N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzamine	13	hydrocarbons, all other	15
3-Ethylpyridine	03	o-Fluorobenzoyl chloride	03
5-Ethyl-2,3-pyridinedicarboxylic acid	03	Fluorocarbon resins, all other	08
N-Ethyl pyrrolidone	15	Fluorometholone	06
Ethyl salicylate	07	Floxetine hydrochloride	06
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate	12	Fluoxymesterone	06
Ethyl sulfate (Diethyl sulfate)	15	Fluphenazine hydrochloride	06
N-Ethyl-N-(3'-sulfobenzyl) aniline	03	Food, Drug, and Cosmetic Blue 1	04
Ethylthioethanol	02	Food, Drug, and Cosmetic Blue 2	04
N-Ethyl-p-toluenesulfonamide	11	Food, Drug, and Cosmetic Green 3	04
N-Ethyl-m-toluidine	03	Food, Drug, and Cosmetic Red 3	04
3-(N-Ethyl-m-toluidino)propionitrile	03	Food, Drug, and Cosmetic Red 4	04
Ethyl trimethyl cyclopentanyl buterol	07	Food, Drug, and Cosmetic Red 40	04
Ethyl 3,7,11-trimethyldeca-2,4-dienoate	13	Food, Drug, and Cosmetic Yellow 5	04
Ethyl valerate	07	Food, Drug, and Cosmetic Yellow 6	04
Ethyl vinyl ether	15	Formaldehyde (37% HCHO by weight)	15
Etidronate, disodium	06	Formaldehyde adduct condensation	15
Etreinate	06	Formaldehyde, dicyandiamide, ethylene sulfate polymers	12
Expandable polystyrene beads	08	Formaldehyde polymer with carbamate esters	14
External Drug and Cosmetic Orange 3	04	phenol derivatives	14
External Drug and Cosmetic Yellow 7	04	Formic acid, 90%	15
Famotidine	06	4-Formyl-4-nonene	07
Fats and oils, chemically modified, all other	15	1-Formylpiperidine	03
Fatty acid amide mixtures	15	Fuel additives, acyclic, all other	14
Fatty acid esters, not included with plasticizers	15	Fuel additives, cyclic, all other	14
Fatty acid polyamine condensate	14	Fumaric acid	15
surface-active agents, all other	15	Fumaric acid, lead salt	15
Fatty acid polyamide condensate	15	2-Furaldehyde (Furfural)	15
fatty acid residues	15	Furan	03
Fatty acids, hydrogenated	15	Furan derivatives, all other	15
Fatty acids, non-hydrogenated	15	Furfuryl alcohol	03
Fatty acids, partially hydrogenated	15	Furfuryl alcohol, ethoxylated	12
Fatty amines	15	Furfurylidene acetone	07
Fenoprofen	06	Furfuryl type resins	08
Fentanyl citrate	06	1-(2-Furoyl)piperazine	03
Fish oil, C ₁₄ -C ₂₂ menhaden, lead salts	15	D-Galactose	14
Flavoxate hydrochloride	06	Galaxolide(1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta-γ-2-benzopyran)	07
Flecanide acetate	06	Gasoline additives, acyclic, all other	14
Flotation reagents, all other	06	Gasoline additives, cyclic, all other	14
Fluidocortisone acetate	14	Gemfibrozil	06
Flunixin	06	Gentamycin	06
Fluorelastomers (CFM, FKM, FFKM) type	10	Geranyl acetate	07
9-Fluorenone	03	Geranyl butyrate	07
Fluorescent Brightener 290	04		
Fluorescent Brightener 28	04		
Fluorescent Brightener 22	04		
Fluorescent Brightener 46	04		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Geranyl crotonate	07	153.001
Geranyl ethyl ether	07	153.007
Geranyl formate	07	153.010
Geranyl isobutyrate	07	153.020
Geranyl isovalerate	07	153.400
Geranyl nitrile (Citralva)	07	153.560
Geranyl propionate	07	153.600
Geranyl tiglate	07	153.800
Giberellic acid	13	168.450
Glipizide	06	688.000
Glucosylase	14	96.000
Glucosylase, β -isomer, sodium salt	14	65.000
Glucosylase, sodium salt	14	66.000
α -Glucosylase dimethyl-2-hydroxyethyl ammonium chloride	12	471.500
Glucosyl acid, potassium and sodium salts W/20% mix of sodium bisulfite-formaldehyde	12	57.530
Glucosyl acid and salts, mixed	15	1434.800
Glucosyl acid, technical	15	526.000
Glucosyl- δ -lactone	15	104.650
Glucose isomerase	14	111.000
Glucose oxidase	14	123.000
Glucose-6-phosphate dehydrogenase	14	124.000
Glutamic acid hydrochloride	14	8.000
Glutaryl-p-nitroaniline (liver function test)	06	576.500
Glutaraldehyde	15	792.000
Glutaraldehyde bis(sodium bisulfite)	15	1333.000
Glutaric acid	15	526.900
Glutaric acid esters, all other	11	85.950
Glutaric anhydride	15	527.000
Glutethimide	06	471.000
Glycerine, ethoxylated	12	761.710
Glycerol diacetyl tartrate monostearate	12	644.000
Glycerol diester of coconut oil acids	12	659.960
Glycerol dilaurate	12	651.500
Glycerol dioleate	12	652.000
Glycerol esters of mixed acids, all other	12	668.000
Glycerol, ethoxylated	12	729.700
Glycerol, ethoxylated and phosphated	12	111.900
Glycerol kinase	14	125.000
Glycerol mono- and diesters of mixed fatty acids	12	648.800
Glycerol mono-, di-, and triesters of hydrogenated tallow acids	12	667.000
Glycerol monoester of C ₈ -C ₁₀ acids	12	660.900
Glycerol monoester of coconut oil acids	12	661.000
Glycerol monoester of coconut oil acids, sulfated, sodium salt	12	267.000
Glycerol monoester of cottonseed oil acids	12	662.000
Glycerol monoester of hydrogenated cottonseed oil acids	12	663.000
Glycerol monoester of hydrogenated lard acids	12	663.500
Glycerol monoester of hydrogenated soybean oil acids	12	665.000
Glycerol monoester of lard acids	12	665.000
Glycerol monoester of mixed fatty acids, acetylated	12	649.000
Glycerol monoester of mixed fatty acids, phosphated	12	112.000
Glycerol monoester of mixed fatty acids, succinylated	12	649.100
Glycerol monoester of palm oil acids	12	665.800
Glycerol monoester of safflower oil acids	12	666.200
Glycerol monoester of tall oil acids	12	666.300
Glycerol monoester of tallow acids	12	666.400
Glycerol monolaurate	12	655.000
Glycerol mono-oleate	12	656.000
Glycerol mono-oleate, ethoxylated	12	650.100
Glycerol monolinoleate	12	657.000
Glycerol monostearate	12	658.000
Glycerol propoxylate triacrylate	15	1110.600
Glycerol sesquiester of hydrogenated tallow acids	12	667.400
Glycerol, synthetic only	15	1084.000
Glycerol triester of mixed fatty acids	12	667.900
Glycerol trioctanoate/decanoate	12	658.400
Glycerol trioleate	12	658.500
Glycerol p-aminobenzoate	15	86.000
Glycerol diacetate (Diacetin)	15	1111.000
Glycerol monoacetate (Monoacetin)	15	1112.000
Glycerol monoricinoleate	11	108.000
Glycerol monothioglycolate	15	1113.000
Glycerol triacetate (Triacetin)	15	1114.000
Glycerol trifluoroacetate	11	109.000
Glycerol tribenzoate	11	5.500
Glycerol trioleate (Triolein)	11	91.000
Glycerol tripropionate	11	83.000
Glycidol (2,3-Epoxy-1-propanol)	15	1317.000
α -Glycidoxypolytrimethoxysilane	15	1387.000
Glycidyl ethers, all other	15	1317.900
Glycine (Aminoacetic acid), non-medical	14	10.000
Glycol amide stearate (amine acid ratio=1/1)	12	564.070
Glycolic acid (Hydroxyacetic acid)	15	528.000
Glycolic acid, potassium salt	15	663.750
Glycolic acid, sodium salt	15	664.000
Glycol peltargonate	11	84.000
Glycol residues	15	1435.000
Glycopyrrolate	06	288.500
Glyoxal	15	793.000
Glyoxal-formaldehyde resins	08	7.500
Gonadorelin, acetate	06	692.900
Grease, other than wool, sulfated, sodium salt	12	292.000
Guaiacwood acetate	07	96.100
Guaiene	07	96.200
Guaienesin	06	584.000
Guanethidine sulfate	06	356.000
Halazepam	06	500.600
Halcinonide	06	659.500
Haloperidol	06	500.800
Heliotropyl acetate	07	80.500
Heliotropyl acetone	07	80.520
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor)	13	136.000
2-Heptadecyl-1,4-hydroxymethyl-4-ethyl-2-oxazoline	12	345.950
2-Heptadecyl-2-imidazoline	12	410.000
Heptadecyl/methylbenzimidazolinesulfonic acid, sodium salt	12	26.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Heptafluorobutyric anhydride	15	1,6-Hexanediol diacrylate	15
Heptaldehyde-aniline condensate	6,000	2-Hexenal	07
n-Heptane	71,000	1-Hexene	02
Heptanoic acid	528,500	Hexenes, mixed	02
Heptanoic acid, potassium salt	57,550	2-Hexenol	07
2-Heptanone (Methyl amyl ketone)	819,000	cis-3-Hexen-1-yl acetate	07
3-Heptanone (Ethyl butyl ketone)	820,000	cis-3-Hexenyl butyrate	07
Heptenes, mixed	72,000	cis-3-Hexenyl methyl carbonate	07
Heptyl acetate	154,900	cis-3-Hexenyl salicylate	07
n-Heptyl alcohol	856,000	Hexenylsuccinic anhydride	15
Heptyl butyrate	155,005	cis-3-Hexenyl tiglate	07
2-Heptylcyclopentanone	96,500	Hexoxyacetaldehyde dimethyl acetal	07
Herring oil, sulfated	298,490	Hexyl acetate	15
Herring oil, sulfated, sodium salt	299,000	Hexyl acrylate	15
Hetacillin, potassium	15,200	n-Hexyl alcohol	15
Hexabromocyclodecane	87,800	N-Hexyl alcohol, ethoxylated	12
Hexachlorocyclopentadiene	924,000	Hexylalcohol, ethoxylated and phosphated	12
1,4,5,6,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride (Chlorendic anhydride)	925,100	n-Hexylamine	12
Hexadecane	1342,000	Hexylamine ethoxylate	15
1-Hexadecanilum-N-carboxymethyl-N-dimethyl, hydroxy salt	11,700	Hexyl caproate	15
1-Hexadecanol (Cetyl alcohol)	873,000	Hexyl (isononyl amide) carboxylic acid, mono, triethanolamine salts	07
Hexadecanolid	96,600	Hexyl chloride	12
n-Hexadeceny succinic anhydride	165,680	α -Hexylcinnamaldehyde	15
Hexadecyl alcohol, ethoxylated	730,000	2-Hexyl-2-cyclopenten-1-one	07
Hexadecylamine	421,000	2-Hexyl-1-decanol	07
Hexadecyldiphosphate	99,500	Hexyl n-decyl phthalate	15
Hexadecylmonophosphate	99,520	Hexyl(isononyl amide)carboxylic acid, triethanol-, diethanolamine, mixed salts	11
N-Hexadecylmorpholine	347,000	Hexyl nitrate	12
Hexadecyl stearate	121,310	2-[2-(Hexyloxy)ethoxy]ethanol	14
Hexadecyl sulfate, sodium salt	230,000	Hexyloxypropyl amine	15
Hexadecylsulfonfyl chloride	1335,020	Hexyl phosphate	12
Hexadecyltrimethylammonium bromide	494,000	Hexyl phosphate, potassium salt	12
Hexadecyltrimethylammonium chloride	495,000	Hexyl sulfate, potassium salt	12
Hexafluoropropylene, monomer	1267,000	Hormones and synthetic substitutes, all other	12
Hexaglycerol	691,947	Humatrope	06
Hexahydro-5-methoxy-4,7-methano-1H-indene	40,300	Hydralazine hydrochloride	06
Hexahydro-1,3,5-triethyl-s-triazine	40,012	Hydratropaldehyde	07
Hexahydro-1,3,5-tri(2-hydroxyethyl)-s-triazine	40,022	Hydratropaldehyde, dimethyl acetal	07
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	87,900	Hydrazine acetate	15
Hexamethyldisilazane	1387,500	Hydrindantin	15
1,1'-Hexamethylenebis-[5-(4-chlorophenyl) biguanide] diacetate	928,000	Hydrocarbon carboxylic acid derivatives (specify)	15
Hexamethylenediamine adipate (Nylon salt)	397,000	Hydrocarbon derivatives all other hydrocarbon derivatives	14
Hexamethylenediaminetetra(methylenephosphonic acid), potassium salt	68,000	Hydrocarbon phosphorous acid, barium salt	02
Hexamethylene-1,6-diliscyanate (HD1)	397,100	Hydrocarbon phosphoryl derivatives	14
Hexamethylene- α ,6-diliscyanate biurets (HD1-biurets)	397,150	Hydrocarbons, all other	15
Hexamethylene-1,6-diliscyanate trimers (HD1 trimers)	88,000	Hydrocarbons, C ₆ , all other	02
Hexamethylenetetramine, tech.	155,310	Hydrocarbons, C ₆ , all other	02
N ₂ -hexanal	65,000	Hydrocarbons, C ₇ , all other	02
Hexane	283,000	Hydrocarbons, C ₈ , all other	02
1,6-Hexanediamine (Hexamethylenediamine)	1085,000	Hydrocarbons, C ₈ , and above, all other, including mixtures	02
1,6-Hexanediol	89,000		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Hydrocarbons, C ₂ fraction	02	2-Hydroxyethane, sulfonic acid, sodium salt	15
Hydrocarbons, C ₂ -C ₃ mixtures	02	4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin)	07
Hydrocarbons, C ₄ mixtures	02	Hydroxyethyl acrylate	15
Hydrocarbons, C ₅ mixtures	02	2,2'-[[4-(2-Hydroxyethylamino)-3-nitrophenyl]imino] diethanol	03
Hydrocarbons, C ₅ -C ₆ mixtures	02	Hydroxyethylcellulose	14
Hydrocarbons, C ₅ -C ₇ mixtures	02	N-(2-Hydroxyethyl)-o-chloroaniline	03
Hydrochlorothiazide	06	N-β-Hydroxyethyl-2,4-dihydroxybenzamide	03
Hydrocinnamic acid	07	(2-Hydroxyethyl)dimethyl(3-stearamidopropyl) ammonium	12
Hydrocodone bitartrate	06	dihydrogen phosphate	12
Hydrocortisone	06	(2-Hydroxyethyl)dimethyl(3-stearamidopropyl) ammonium nitrate	12
Hydrocortisone acetate	06	N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	12
Hydrocoumarin	07	(N-Hydroxyethylethylenedinitrilo) triacetic acid	14
Hydrogenated castor oil, ethoxylated	12	(N-Hydroxyethylethylenedinitrilo) triacetic acid, iron salt	14
Hydrogenated menhaden fish oil	12	(N-Hydroxyethylethylenedinitrilo) triacetic acid, trisodium salt	14
Hydrogenated tallow acids, (Ratio = 2/1)	15	1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-capryl-2-imidazolium hydroxide	12
Hydrogenated tallow acids, aminoethylethanolamide, acetate salt	12	1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-nor-coconut oil fatty acids-2-imidazolium hydroxide	12
(Hydrogenated tallow alkyl)amine	12	1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-oleyl-2-imidazolium hydroxide	12
(Hydrogenated tallow alkyl)amine acetate	12	N-(2-Hydroxyethyl)-12-hydroxystearamide	15
(Hydrogenated tallow alkyl)amine, ethoxylated	12	Hydroxyethylidene diphosphonic acid, potassium salt	14
(Hydrogenated tallow alkyl)amine, ethoxylated, diethosulfate	12	Hydroxyethylidene diphosphonic acid, sodium salt	14
(Hydrogenated tallow alkyl)trimethylammonium chloride	12	Hydroxyethyl methacrylate	15
1-(2-Hydrogenated tallow amidoethyl)-2-nor (hydrogenated tallow)-2-imidazole	12	p-[[2-Hydroxyethyl]methylamino]benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline)-zinc chloride	14
Hydrogenated tallow fatty acid aminoethylethanolamine condensation products	14	1-(2-Hydroxyethyl)-2-nonyl-2-imidazole	12
Hydrogenated tallow glycerides	15	1-(2-Hydroxyethyl)-2-nor (coconut oil alkyl)-2-imidazole	12
Hydrogenated tallow glycerides diethylenetriamine condensate	15	Imidazole	12
Hydrolytic enzyme mixtures	14	1-(2-Hydroxyethyl)-2-nor (soya oil alkyl)-2-imidazole	12
Hydroquinone (Hydroquinol)	14	1-(2-Hydroxyethyl)-2-nor (tall oil alkyl)-2-imidazole	12
Hydroquinone, di(β-hydroxyethyl) ether	15	N-(Hydroxyethyl) piperazine	13
Hydroquinone, tech.	03	3-Hydroxy-2-ethyl-4-pyrone (Ethylmaltol)	15
p-Hydroxyanisole	03	1-(2-Hydroxyethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-coconut oil fatty acids-2-imidazolium hydroxide	12
p-Hydroxybenzaldehyde	03	1-(2-Hydroxyethyl)-2-(tall oil alkyl)imidazole, fatty acid salt	12
p-Hydroxybenzenesulfonic acid	03	N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine	12
p-Hydroxybenzoic acid	03	Hydroxyethyl-2-undecyl-2,3-imidazole	12
p-Hydroxybenzoic acid, butyl ester	15	2-Hydroxy, 3-(lauryl-myristyl)oxy-1 propane sulfonic acid, sodium salt	12
p-Hydroxybenzoic acid, ethyl ester	15	4-Hydroxymetanilamide	03
p-Hydroxybenzoic acid, methyl ester	15	4-Hydroxy-3-methoxybenzaldehyde (Vanillin)	07
p-Hydroxybenzoic acid, propyl ester	15	2-Hydroxy-4-methoxybenzophenone	15
4-Hydroxy-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	03	4(4-Hydroxy-3-methoxybenzophenyl)-2-butanone (Vanillylacetone)	15
4-Hydroxybenzylbenzene	03	2-[(Hydroxymethyl)amino]-2-methylpropanol	07
Hydroxychloroquine sulfate	06		13
2-Hydroxycineole	03		
Hydroxycitronellal methyl anthranilate	07		
Hydroxycitronellol	07		
2-Hydroxy-5,9-dimethyl-6,7-benzomorphan	03		
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	07		
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal)	07		
Hydroxyethane-1-diphosphonic acid	14		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Item No.	Chemical name	Sect. Item No.	Item No.
4-Hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	03	969.050	Imipramine hydrochloride	06	528.000
2-Hydroxymethylene-17 α -ethynylandroster-17 β -ol-4-en-3-one	03	969.010	1,2,3-Indantrione monohydrate (Ninhydrin)	15	103.000
2-(Hydroxymethyl)ethanol	13	245.012	Indomethacin	06	402.000
Hydroxymethyl-5-hydantoin	15	99.500	Insulin	06	694.000
Hydroxymethyl(methyl)dithiocarbamic acid, potassium salt	13	185.500	Iodinated glycerol	06	586.000
4(5)-Hydroxymethyl-5(4)-methylimidazole hydrochloride	03	970.502	Iodinated (Not otherwise halogenated) hydrocarbons, all other	15	1281.000
4-Hydroxymethyl-4-methyl-1-phenyl-3-pyrazolidone	14	360.000	Iodobutane	15	1277.900
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolthane)	15	1086.000	Iodochlorhydroquin	06	176.000
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris-(hydroxymethyl)nitromethane)	15	401.000	Iodoethane (Ethyl iodide), non-medical	15	1278.000
4-Hydroxymethyl-4-nonene	07	157.050	Iodoform	06	262.000
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	15	823.000	Iodomethane (Methyl iodide)	15	1280.000
4-(4-Hydroxy-4-methyl pentyl)-3-cyclohexene-10-carboxaldehyde (Lyril)	07	97.200	1-Iodoperfluorohexane	15	1268.000
3-Hydroxy-2-methyl-4-pyrone (Maltol)	07	98.000	3-Iodo-2-propynyl butylcarbamate	13	245.013
3-Hydroxy-N-(3-N-morpholinopropyl)-2-naphthimide	03	972.500	Iohexol	06	566.000
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt	03	978.000	Ionone (α - and β -)	07	104.000
1-Hydroxy-2-naphthoic acid	03	990.000	α -Ionone	07	102.000
3-Hydroxy-2-naphthoic acid (B.O.N.)	03	992.202	Iothalamate, meglumine	06	570.000
3-Hydroxy-2-naphthoic acid, diethylenetriamineamide	03	992.302	Iproniadazole	06	176.300
1-Hydroxynaphthoic acid, ethanamide	03	990.500	Iron acetylacetonate complex	15	1371.750
3-Hydroxy-2-naphthoic acid, methyl ester	03	994.802	Iron t- α -alkylcarboxylate	15	670.000
2-Hydroxynaphthoic ethylamide	14	358.000	Iron 2-ethylhexanoate	15	636.000
4-Hydroxynonan-1-ol, γ -lactone (γ -Nonalactone)	07	99.000	Iron naphthenate	14	303.000
2-Hydroxy-4-N-octoxybenzophenone	15	99.750	Isatoic anhydride	03	1016.700
p-Hydroxy phenylbutanone	07	44.850	Isosamyl caproate	07	157.400
α -D-P-Hydroxyphenylglycine methyl ester K	15	100.200	Isosamyl phenylacetate	07	157.405
Hydroxyprogesterone caproate	06	679.800	Isosamyl propionate	07	45.300
Hydroxypropyl acrylate	15	1120.000	Isosorbic acid (Erythorbic acid)	15	533.000
Hydroxypropyl ammonium cyano acetate	12	497.800	Isosorbic acid, sodium salt (Sodium erythorbate)	15	667.000
Hydroxypropyl guar gum	14	421.000	Isobornyl acetate	07	105.000
Hydroxypropyl methacrylate	15	1121.000	Isobornyl methyl ether	07	105.200
N-2-hydroxy propyl-n-methyl-N,n-bis(tallow amide ethyl) ammonium ethyl sulfate	12	474.190	Isobornyl propionate	07	105.300
8-Hydroxy-5-quinolinesulfonic acid	06	261.000	Isobutane (2-Methylpropane)	02	50.000
4-Hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy	15	100.040	Isobutanol, ethoxylated and sulfated, ammonium salt	12	275.200
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)	07	101.000	Isobutyl acetate	15	892.000
Hydroxizine hydrochloride	06	501.000	Isobutyl acrylate	07	158.000
Hydroxizine pamoate	06	502.000	Isobutyl alcohol (Isopropylcarbinol)	15	987.000
Hygromycin B	06	66.000	Isobutylaluminum chloride	15	849.000
Ibuprofen	06	401.500	Isobutybenzene	03	1361.500
2-Imidazolidenethione (1,3-Ethylene-2-thiourea)	09	44.000	Isobutyl-2-butenolate	07	1016.750
Imidazole from tall oil fatty acids and diethylenetriamine	14	164.000	Isobutyl butyrate	07	158.003
Imidazolium, 1-carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-nor(cocaoalkyl), hydroxides, monosodium salts	12	474.400	Isobutyl chloroformate	15	988.000
Imidazolium, 1-(carboxymethyl)-2-heptyl-1-(2-hydroxyethyl), hydroxide, sodium salt	12	474.430	Isobutylene (2-Methylpropene)	02	51.000
Iminodiacetic acid	15	403.000	Isobutyl isobutyrate	15	989.000
Impenem	06	62.100	Isobutyl methacrylate	15	989.500
			Isobutyl oleate	11	92.300
			Isobutyl palmitate	11	97.000
			Isobutyl phenylacetate	07	46.000
			Isobutyloleone	07	46.400
			Isobutyl salicylate	07	47.000
			Isobutyl stearate	11	121.390
			Isobutyritrimethoxysilane	15	1387.600
			Isobutyraldehyde	15	796.000

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Chemical name	Sect. Item No.	Sect. Item No.
Isobutyric acid	15	534.000
Isobutyric anhydride	15	535.000
Isobutyronitrile	15	443.000
Isobutryl chloride	15	536.000
Isocetyl stearate	15	971.800
Isodecyl acrylate	15	990.000
Isodecyl alcohol	15	857.500
Isodecyl alcohol, alkoxylated	12	730.150
Isodecyl alcohol, ethoxylated	12	760.900
Isodecyl alcohol, ethoxylated and propoxylated	12	760.910
Isodecyl diphenyl phosphite	11	12.500
Isodecyl mercaptoacetate	15	990.100
Isodecyl methacrylate	15	990.700
Isodecylpropylamine	12	330.100
Isodecylpropylamine, ethoxylated	12	330.103
3-(3-Isodecylxy)propylamine	12	330.105
Isodecylpropylamine propoxylated	12	13.900
N-Isodecylpropyltrimethylene diamine	12	330.350
Isodecyl peltargonate	11	85.000
Isodecyl stearate	11	121.395
Isodicyclopropylamine propoxylated acetate	12	330.420
Isoflupredone, acetate	06	439.001
Isoflurane	06	69.000
Isoheptanes	02	69.000
Isoheptyl alcohol	15	857.700
iso-Hexadecenyl succinic anhydride	15	165.720
Isohexane	02	66.000
Isohexenyl tetrahydrobenzaldehyde (Myrac aldehyde)	07	47.200
Isoionifolene epoxide	07	105.800
Isonenthone	07	106.000
Isonanoic acid, mono- and triethanolamine salt	12	564.150
Isonanoic acid, sodium salt	12	57.570
Isonanylamidocaproic acid, triethanolamine salt	12	27.000
Isonicotinitrile	03	1029.000
Isononanoic acid, lead salt	15	672.500
Isononanoyl chloride	15	536.730
Isononyl acetate	07	158.800
Isononyl alcohol	15	858.000
Isononyloxypropylamine	12	330.500
iso-octadecenyloxy succinic anhydride	15	165.750
iso-octadecyl alcohol	15	858.800
Isooctanoic acid, calcium salt	15	859.000
iso-octyl alcohol	15	1033.000
iso-octyl hydrogen phosphate	15	991.000
iso-octyl mercaptoacetate	15	992.000
iso-octyl-3-mercaptopropionate	15	992.600
iso-octyl oleate	11	92.600
iso-octylphenol, ethoxylated	12	745.000
iso-octyl phosphate	12	100.400
iso-octyl phosphate, potassium salt	12	100.420
iso-octylphenol, ethoxylated and sulfonated, sodium salt	12	207.100
isopentane (2-Methylbutane)	15	798.000
isopentyl acetate (isornyl acetate)	02	53.000
isopentyl benzoate	07	158.950
isopentyl butyrate	07	47.700
isopentyl myristate	13	231.014
isopentyl myristate	11	88.000
isopentyl naphthalenesulfonic acid	15	972.100
isopentyl oleate, sulfated, sodium salt	12	170.000
isopentyl palmitate	12	260.000
isopentyl palmitate	11	98.000
o-Isopropylphenol	15	972.200
isopropylphenol	03	1041.000
isopropylphenol, mixed	03	1041.100
isopropyl N-phenylcarbamate (IPC)	13	75.000
N-Isopropyl-N'-phenyl-p-phenylenediamine	09	63.000
isopropyl stearate	11	121.400
isopulegyl acetate	07	106.220
isostearamidopropyl dimethylamino glycolate	12	474.500
isostearic acid, aminoethylethanolamide, acetate salt	12	575.340
isostearic acid, isopropoxy titanium salt	12	57.600
isostearic acid, mixed isopropanolamines salt	12	29.490
isostearic acid, triethanolamine salt	12	29.500
isostearic amphopropionate	12	13.100
isostearyl alcohol, ethoxylated	12	730.200
isostearylamidopropyl dimethylethylammonium ethyl sulfate	12	474.525
isostearyl neopentanoate	15	995.000
isothiocyanic acid, phenyl ester	03	1043.102

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Isotridecyloxypropylamine	330.300	Lauryl pyridinium chloride	498.500
N-Isotridecyloxypropyl trimethylene diamine	330.320	Lead acetate	595.000
Isovalerone (Disobutyl ketone)	824.000	Lead t- α -alkylcarboxylate	670.500
2-Isovaleryl-1,3-indandione	169.900	Lead-cobalt neodecanoate	706.000
Itaconic acid (Methylenesuccinic acid)	539.000	Lead 2-ethylhexanoate	637.000
Ivermectin	133.001	Lead linoleate	684.000
Kanamycin	50.000	Lead naphthenate	306.000
Ketamine hydrochloride	437.000	Lead neodecanoate	707.000
Ketimine, tetratrifunctional	414.000	Lead stearate	756.000
Ketones, all other	839.000	Lead stearate, dibasic	757.000
Lactic acid, edible, 100%	541.000	Lead subacetate	596.000
Lanolin acid	104.763	Lead tallate	176.000
Lanolin acid, isopropyl ester	104.765	Leuco Sulfur Black 1	1107.000
Lanolin alcohol acetate	104.770	Leuco Sulfur Black 2	1110.000
Lanolin alcohol mixtures	104.773	Leuco Sulfur Black 18	1115.018
Lanolin alcohol, propoxylated	671.000	Leuco Sulfur Blue 7	1075.000
Lanolin, ethoxylated	104.773	Leuco Sulfur Blue 11	1080.000
Lanolin, hydroxylated	104.785	Leuco Sulfur Brown 1, 1:1	1089.000
Lanolin wax	104.793	Leuco Sulfur Brown 3	1091.000
Lardine	96.500	Leuco Sulfur Brown 10	1093.000
Lard oil acids (ratio = 1/1)	546.600	Leuco Sulfur Brown 37	1101.000
Lard oil acids	533.650	Leuco Sulfur Brown 52	1101.052
Lard, sulfated, sodium salt	293.000	Leuco Sulfur Green 3	1085.000
Lasalocid	66.500	Leuco Sulfur Green 16	1087.000
Latex type polyvinylidene chloride resins	50.010	Leuco Sulfur Green 34	1087.034
Lauraldehyde	162.000	Leuco Sulfur Green 35	1087.035
3-Lauramido-N,N-dimethylpropylamine oxide	387.000	Leuco Sulfur Green 36	1087.036
(3-Lauramidopropyl)trimethylammonium methyl sulfate	475.000	Leuco Sulfur Red 14	1070.014
Lauric acid	570.000	Leuco Sulfur Yellow 22	1064.022
Lauric acid (Ratio = 1/1)	547.000	Leuprolide acetate	278.600
Lauric acid (Ratio = 2/1)	534.000	Levodopa	835.000
Lauric acid esters, all other	87.000	Lidocaine	706.000
Lauric acid - ethanalamine condensate, ethoxylated	578.500	Lidocaine hydrochloride	706.100
Lauric acid, potassium salt	58.000	Light-oil distillates, all other	9.000
Lauric acid salts, all other	679.000	Lignin amine	357.010
Lauric and myristic acid (Ratio = 1/1)	547.200	Lignin, ethoxylated	761.900
Lauric and myristic acids (Ratio = 2/1)	535.000	Lignin, sodium salt	318.400
Lauric and myristic acids (Ratio = 1/1)	564.400	Ligninsulfonic acid, ammonium salt	153.000
Luroamphocarboxyglycinate	13.480	Ligninsulfonic acid, calcium salt	154.000
Lauryl chloride	543.000	Ligninsulfonic acid, chromium salt	155.000
Lauryl peroxide	1296.400	Ligninsulfonic acid, chromium salt, iron salt	156.000
N-Lauroylsarcosine, sodium salt	44.000	Ligninsulfonic acid, magnesium salt	157.000
Lauryl acrylate	995.270	Ligninsulfonic acid, manganese salt	157.100
Lauryl alcohol, phosphated	100.600	Ligninsulfonic acid, mixed chromium and iron salts	157.200
Lauryl alkyl dimethylamine acetate	489.250	Ligninsulfonic acid, potassium salt	157.700
Lauryl alkyl dimethylamine phosphate	489.260	Ligninsulfonic acid, sodium salt	158.000
Laurylamidopropyl betaine	13.400	Ligninsulfonic acid, zinc salt	158.500
Laurylamidopropylidimethyl amine	387.040	l-Limonene	50.200
Laurylamphoglycinate	13.500	Linallyl anthranilate	49.500
Lauryl benzoate	10.500	Linallyl benzoate	49.600
Lauryl chlorides	1239.000	Lincomycin (animal feed grade)	67.000
Lauryl lactate	996.000	Lincomycin (medicinal grade)	51.000
Lauryl methacrylate	997.000	Linear alcohols, sulfated, all other	240.000
Lauryl methacrylate-stearyl methacrylate copolymer resins	19.980	Linear saturated polyester	387.000
		Linoleic acid (Ratio = 1/1)	547.800

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Linoleic acid (Ratio = 2/1)	12	p-Mentha-1,3-diene (α -Terpinene)	07
Linoleic acid dimers, alkoxylated	12	p-Mentha-1,4-diene (γ -Terpinene)	07
Linseed oil, oxygenated	15	p-Mentha-1,8-diene (Limonene)	07
Lipase	14	dl-p-Mentha-1,8-diene (Limonene)	03
Lithium heparin	06	p-Mentha-6,8-dien-2-ol (Carveol)	07
Lithium hydroxystearate	15	p-Mentha-6,8-dien-2-one (Carvone, Carvol)	07
Lithium naphthenate	14	1-p-Mentha-6,8-dien-2-yl acetate (Carvyl acetate)	07
Lithium neodecanoate	15	p-Menth-1-en-3-ol (Isopulegol)	07
Lithium stearate	15	p-Menth-1-en-3-one (Piperitone)	07
Lovastatin	06	p-Menth-4-(8)-en-3-one (Pulegone)	07
Lubricating oil and grease additives, acyclic, all other	14	1-p-Menthen-6-yl-1-propanone	07
Lubricating oil and grease additives, cyclic, all other	14	dl-Menthol, synthetic	07
2,6-Lutidine	03	l-Menthol, synthetic	07
3,5-Lutidine	03	Menthyl acetate	07
Mafenide	06	l-Menthyl acetate	07
Mafenide acetate	06	Menthyl anthranilate	07
Magnesium acetate	15	Meperidine hydrochloride	06
Magnesium gluconate	15	Mercaptoacetic acid (Thioglycolic acid)	15
Magnesium methylvate	15	Mercaptoacetic acid (Thioglycolic acid) salts, all other	15
Magnesium stearate	15	2-Mercaptobenzothiazole	09
Maleic acid, monoalkyl ester	12	2-Mercaptobenzothiazole, copper salt	09
Maleic anhydride	15	2-Mercaptobenzothiazole, sodium salt	13
Maleic anhydride-diisobutylene copolymer, sodium salt	12	2-Mercaptobenzothiazole, zinc salt	09
Maleic anhydride, polypropylene glycol copolymer	12	2-Mercaptoethanol	15
Malic acid	15	N-(Mercaptoethyl)phthalimide S-(O,O-dimethylphosphorodithioate)	13
Malonaldehyde bis(dimethyl) acetal	15	3-Mercapto-1,2-propanediol (Thioglycerol)	15
Maltase	14	3-Mercaptopropionic acid	15
D-Maltose	14	Mercaptopropyltrimethoxysilane	15
Manganese acetate	15	Mercaptosuccinic acid (Thiomalic acid)	15
Manganese acetylacetonate complex	15	2-Mercaptotoluidimidazole, zinc salt neutralized	09
Manganese t- α -alkylcarboxylate	15	Methacrylamide	12
Manganese gluconate	15	Methacrylic acid	15
Manganese naphthenate	14	α -Methacryloxypropyltrimethoxysilane	15
Manganese neodecanoate	15	Methadone hydrochloride	06
Manganese tallate	15	Methamphetamine hydrochloride	06
Mannitol	15	Methane	02
Maprotiline hydrochloride	15	Methanesulfonic acid, disodium salt (DSMA)	13
Mecizline hydrochloride	06	Methanesulfonic acid, dodecyl- and octyl- ammonium salts	13
Meclofenamate, sodium	06	Methanesulfonic acid, monosodium salt (MSMA)	13
Meclofenamic acid	06	Methanesulfonic acid	15
Medicinal chemicals, all other	06	Methanesulfonyl chloride	15
Medroxyprogesterone acetate	06	Methanol, synthetic only	15
Medrysone	06	Methanamine	15
Mefenamic acid	06	Methanamine hippurate	06
Megestrol acetate	06	Methanamine mandelate	06
Melamine	03	Methimazole	06
Melamine formaldehyde methanol polymer	14	Methionine (animal feed grade)	14
Melamine-formaldehyde resins	14	Methionine, hydroxy analogue, calcium salt	14
Melaxline formaldehyde triethanolamine mixed fatty alcohol polymer	08	Methocarbamol	06
Melamine formaldehyde copolymer	14	Methotrexate	06
Melamine stearyl alcohol polymer	14	o-Methoxy benzaldehyde	07
Melengestrol acetate	06		
Menadione sodium bisulfite (anhydrous)	06		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Item No.
p-Methoxybenzyl alcohol (Anisyl alcohol)	07	52,000
2-Methoxyethanol (Ethylene glycol monomethyl ether)	15	1168,000
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	15	1169,000
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	15	1170,000
2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Triethylene glycol dimethyl ether)	15	1171,000
2-Methoxyethyl acetate	15	1124,000
2-Methoxyethyl acrylate	15	1001,000
Methoxyethyl morpholine	15	108,450
2-Methoxyethylpiperidine	03	1057,503
2-Methoxynapthalene	07	53,000
4-Methoxy-1-naphthol	14	361,000
N-(4-Methoxy-3-nitrophenyl)acetamide	03	1060,100
Methoxyphenamine hydrochloride	06	335,000
4-Methoxyphenol	15	109,000
(p-Methoxyphenyl)acetic acid	03	1063,000
1-p-Methoxyphenyl penten-1-one-3 (α -Methyl-anisalacetone)	07	53,400
3-(2-Methoxyphenyl)-2-propenal	07	76,700
Methoxypolyethylene glycol	15	1172,000
1-Methoxy-2-propanol	15	1173,000
2-Methoxy-4-propenylphenol (Isoeugenol)	07	54,000
2-Methoxy-4-propenylphenol, acetate	07	54,100
3-Methoxypropionitrile	15	448,200
Methoxypropyl acetate	15	1173,200
1-Methoxy-2-propyl acetate	15	1125,300
3-Methoxypropylamine	15	417,000
2-Methoxy-4-propylphenol	07	54,150
Methocopolamine bromide	06	620,700
Methsuximide	06	421,000
3-Methyl butanol	07	162,445
Methyl acetoacetate	15	1003,000
4-Methylacetophenone	07	55,000
Methyl acetylacrylate	11	111,010
Methyl acrylate, monomer	15	1004,000
Methylal (Dimethoxymethane)	15	1320,000
Methyl alcohol, alkoxylated	12	730,700
Methylamine, mono-	15	290,000
2-Methylaminoethanol (N-Methylethanolamine)	15	419,000
p-Methylaminophenol sulfate (Metol)	14	362,000
Methyl (tri-hydrogenated tallow alkyl) ammonium chloride	12	498,900
Methyl amyl alcohol	15	862,999
Methyl-t-amyl ether	14	183,000
2-(N-Methylamino)ethanol	03	1070,000
3-(N-Methylamino)propionitrile	03	1071,000
p-Methylanisole	07	56,000
Methyl anthranilate	07	57,000
2-Methylantraquinone	03	1075,000
Methylaziridine	15	110,000
β-Methylbenzene propanal	07	57,070
Methylbenzene sulfonate	15	110,150
Methyl benzoate	07	57,100
Methyl-p-benzoquinone	15	110,200
2-Methylbenzothiazole	03	1078,000
4-Methylbenzotriazole	03	1078,300
o-Methylbenzoyl chloride	03	1078,700
α-Methylbenzyl acetate (Styralyl acetate)	07	58,000
N-Methylbenzylamine	03	1079,000
Methyl benzyl ether	03	1080,000
N-Methylbis (coconut oil alkyl) amine	12	441,000
N-Methylbis(hydrogenated tallow alkyl) amine	12	442,000
Methyl, bis-(2-hydroxyethyl) hydrogenated tallow alkylammonium chloride	12	465,120
Methyl, bis-(2-hydroxyethyl) isodecylxypropylammonium chloride	12	465,135
Methyl, bis-(2-hydroxyethyl) isotridecylxypropylammonium chloride	12	465,140
Methyl, bis-(2-hydroxyethyl) soyaalkylammonium chloride	12	465,160
Methyl bromide (Bromomethane)	13	240,000
2-Methyl-1-butanol	15	841,000
3-Methyl-1-butanol	15	841,001
3-Methyl-2-butenyl acetate	07	162,012
3-Methyl butyl acetate	07	162,450
3-Methyl butyl butyrate	07	162,453
Methyl-1-(butylcarbonyl)-2-benzimidazolecarbamate (Benormyl)	13	24,900
Methyl-t-butyl ether	14	184,000
Methylbutyl pyrophosphate, ethylenedioxy titanium salt	12	100,200
Methyl butynol	07	162,020
Methylcellulose	14	411,000
Methyl chloroformate	15	1008,000
2-(2-Methyl-4-chlorophenoxy)propionic acid, diethanolamine salt	13	118,056
2-(2-Methyl-4-chlorophenoxy)propionic acid, iso-octyl ester	13	118,057
1-Methyl-4-(3-chloropropyl)piperazine hydrochloride	03	1081,300
α-Methylcinnamaldehyde	07	59,000
Methyl cinnamate	07	60,200
6-Methylcoumarin	07	448,650
Methyl cyanoacetate	15	1083,000
Methylcyclohexane	03	111,730
α-Methylcyclohexanemethanol	07	111,100
2-Methylcyclohexylamine	15	111,100
1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)	13	76,000
Methylcyclopentadienylmanganese tricarbonyl	14	185,000
2-Methyldecanal	07	162,458
Methyl 3-(2,2-dichloroethyl)-2,2-dimethyl-3-cyano-3-phenoxyphenylcyclopropanecarboxylate	13	166,035
Methyl 5-(2,4'-dichlorophenoxy)-2-nitrobenzoate	13	76,050
Methyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxate	03	1084,150
Methyl didecylamine	12	442,800
Methyl dihydrogen phosphate	15	1034,000
5-Methyl-1,7-dihydroxy-1,3,4-triazindolizine	14	366,000
Methyl N',N'-dimethyl-N-[(methylcarbonyl)oxy]-1-thiooxamide	13	231,010
Methyl 2-[[[4,6-dimethyl-2-pyrimidinyl]amino]carbonyl]amino] sulfonyl]benzoate	13	118,055
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-o-cresol)	03	1084,700

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Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
4-Methyl-2,6-dinitrophenol	1084.703	Methylolone (α - and β -)	114.000
N-Methyldioctadecylamine	443.000	γ -Methylolone	114.100
Methyl dioleyl ethoxy ammonium methyl sulfate	465.250	6-Methyl- α -ionone	112.000
Methyl-ditalowimidazolium methosulfate	465.163	Methyl isobutyl ketone	828.000
N-Methyldithiocarbamic acid, potassium salt	187.012	Methylisobutyl ketone aminonitrile	448.800
N-Methyldithiocarbamic acid, sodium salt (Metham)	241.000	Methyl isobutyrate	162.500
Methyldopa	358.000	Methyl isocyanate	424.500
2,2-Methylenebis(6-tert-butyl-p-cresol)	90.000	Methyl isodehydroacetate	1010.200
2,2-Methylenebis(6-tert-butyl-4-ethylphenol)	91.000	1-Methyl-iso-hexyl-hexanhydro benzaldehyde	61.100
2,2-Methylenebis(4-chlorophenol) (dichlorophene)	40.025	Methyl iso-octadecenoate	977.500
4,4'-Methylenebis(2,6-di-tert-butylphenol)	1038.100	Methylisopropyl ketone	828.200
4,4'-Methylenebis[N,N-diethylaniline]	1037.000	Methyl isothiocyanate and 1,3-dichloropropene	243.012
4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)	1038.000	Methyl isovalerate	162.520
Methylene-bis(dimethyl)hydantoin and derivatives	166.000	2-Methylacetonitrile (Acetone cyanohydrin)	449.000
2,2'-Methylenebis(4-methyl-6-nonyl-p-cresol)	1089.100	Methyl linoleate	977.600
Methylenbis(thiocyanate)	195.010	Methylmagnesium bromide	1376.000
2,2'-Methylenebis[3,4,6-trichlorophenol] (Hexachlorophene)	114.000	Methylmagnesium chloride	1377.000
Methylene chloride (Dichloromethane)	1234.000	Methyl mercaptan (Methanethiol)	94.000
4,4'-Methylenedianiline	1091.000	Methyl methacrylate-butadiene styrene (MBS) resins	44.041
Methylenedicyclohexylmethane 1,4-disocyanate	1091.300	Methyl methacrylate, monomer	1011.000
1,2-Methylenedioxy-4-propylene benzene (IsoSafrole)	60.600	N-Methyl-methanamine with borane (1:1)	1368.600
Methylene diphenylamine (polymeric)	1091.700	Methyl N-methylantranilate	62.000
5,5'-Methylenedisalicylic acid	1092.000	Methyl-2-methyl butyrate	162.550
2-Methylene undecanal	163.200	S-Methyl-N-[(methylcarbamoyl)oxy]thioacetimidate (Methonyl)	213.400
Methyl esters of lard	974.500	α -Methyl-3,4-methylene dioxycinnamaldehyde	62.200
Methyl esters of tallow	975.000	4-Methyl-N-[(4-methylphenyl)sulfonyl]benzenesulfonamide	1096.200
N-Methyl-2-ethanopiperidine	1092.100	3-Methyl-N-[2(methylsulfonamidoethyl)-N-ethyl-p-phenylenediamine] sequisulfate monohydrate	367.500
Methyl ether (Dimethyl ether)	1321.000	2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb)	213.500
Methyl ethyl ketone	826.500	4-Methylmorpholine	117.000
Methyl ethyl sulfide	93.800	Methylnaphthalene	12.500
Methyl formate	1010.000	Methylnaphthalenesulfonic acid, sodium salt	173.000
Methyl formol	1450.000	N-Methyl-p-nitroaniline	1102.000
Methyl p-formylbenzoate	897.500	4-Methyl-2-nitroanisole	1104.000
Methylglucoside, ethoxylated	712.970	3-Methyl-2-nitro-1-propanol	1106.020
Methylglucoside laurate	713.000	3-Methyl-2-[and3]nonene nitrile	426.000
Methylglucoside, propoxylated	714.350	Methylnonylnaphthalenesulfonic acid, sodium salt	162.750
Methylglucoside sesquistearate	714.300	2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	174.000
1-Methyl-2-(8-heptadecenyl)-1-(9-octadecenyl)amido ethyl	476.850	1-methyl-2-nor-tallow-1-[2-tallow amidoethyl]imidazoliummethyl sulfate	1108.000
N-(1-Methylethyl)ethanolamine	185.500	Methyl oleate	476.880
N-(1-Methylethyl)-N'-phenyl-p-phenylenediamine	64.000	Methyl oleate, sulfated, sodium salt	94.000
5-Methyl-2-hexanone (Methyl isoamyl ketone)	827.000	N-Methyl-N-oleoyltaurine, sodium salt	261.000
Methylhexyl ketone	826.800	Methylol methyl hexyl ketone	184.000
p-Methylhydratropaldehyde	60.800	N-Methyl-N-palmitoyltaurine, sodium salt	162.700
Methyl hydrazine, mono	60.800	2-Methyl-2,4-pentanediol (Hexylene glycol)	185.000
Methyl(hydrogenated tallow alkyl)diethylamine condensate, polyethoxylated, methyl sulfate	424.200	2-Methyl-1-pentanol	1089.000
Methyldroquinone	465.165	4-Methyl-3-pentanol (1-Methylisobutylcarbinol)	863.000
Methyl 12-hydroxystearate	1094.000	4-Methyl-3-penten-2-one (Mesityl oxide)	864.000
4,4-Methylidene-bis-1(p-sulfophenyl)3-methylpyrazolone	976.000	N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine	829.000
2-Methylimidazole	367.000	Methyl pentynol	64.200
(2,4-Methyl-5-imidazolyl)methylthioethylamine dihydrochloride	1095.000	Methylphenidate hydrochloride	162.660
2,2'-(Methylirmino)diethanol (Methyldiethanolamine)	1094.853		
4-Methyl-2-imino-1,3-dithiolane hydrochloride	424.000		
	1094.880		

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Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Methyl phenylacetate	07	Mixed alcohol borates	15
3-Methyl-5-phenyl-1-pentanol	07	Mixed alcohols, ethoxylated	1368.720
4-Methyl-1-phenyl-3-pyrazolidone	14	Mixed alkane sulfonic acid	762.000
1-Methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridone (Fluridone)	13	Mixed alkane sulfonic acid, sodium salt	211.000
4-Methylphthalic acid	03	3-(Mixed alkoxy)propylamine, ethoxylated oxides	12
4-Methylphthalic anhydride	15	3-(3-Mixed alkoxy)propylaminopropyl amine	330.950
2-Methylpiperidine	03	(Mixed alkoxy)amine	423.000
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Pipron)	13	(Mixed alkoxy)amine, ethoxylated	331.000
N-Methyl-N-polyoxyethylene-N,N-bis(hydrogenated tallow amidoethyl) ammonium	12	(Mixed alkoxy)ammonium chloride	499.500
N-Methyl-N-polyoxyethylene-N,N-bis(tallow amidoethyl)	12	Mixed t- α -alkylcarboxylic acid salts	671.100
Methylprednisolone	06	(Mixed alkoxy)dibenzyltrimethyl-1,3-propane diammonium chloride	527.580
2-Methyl-2-propanamine with borane(1:1)	15	Mixed alkoxy imidazole derivative, ethoxylated	465.300
Methyl propionate	07	(Mixed alkoxy)phenol, alkoxyated	745.900
Methylpropudionone	15	(Mixed alkoxy)phenol alkylenediaminealkanolamine formaldehyde	782.950
1-Methyl-2-pyrolidone, monomer	11	(Mixed alkoxy)phenol epichlorohydrin-formaldehyde, alkoxyated	722.100
Methyl ricinoleate	07	(Mixed alkoxy)phenol, ethoxylated	746.000
Methyl salicylate	15	(Mixed alkoxy)phenol, ethoxylated, butyl ether	747.000
Methyl stearate	15	(Mixed alkoxy)phenol, ethoxylated and sulfated, sodium salt	286.000
α -Methylstyrene	03	(Mixed alkoxy)phenol-formaldehyde, alkoxyated	722.000
ar-Methylstyrene (Vinyltoluene)	03	(Mixed alkoxy)phenol formaldehyde, methoxylated	722.015
α -Methyl styrene polymers	08	Mixed alkoxy phenol sulfite, ethoxylated,	
Methyl sulfate (Dimethyl sulfate)	15	triethanolamine salt	244.300
Methyl sulfide (Dimethyl sulfide)	15	(Mixed alkoxy)phenoxypropyl(ethyleneoxy)ethyl chloride	748.000
Methyl sulfone (Dimethyl sulfone)	15	Mixed alkoxy phosphate, sodium salt	102.100
Methyl sulfoxide (Dimethyl sulfoxide)	15	Mixed alkoxy phosphate	101.000
N-Methyl-N-(tall oil acyl)taurine, sodium salt	12	Mixed alkoxy phosphate, alkylamine salt	101.500
Methyl-1-tallowamidoethyl-2-tallowimidazolium-methyl sulfate	12	Mixed alkoxy phosphate, diethanolamine salt	102.000
Methylaloxylated, methytriuramine condensate,		Mixed alkoxy phosphate, potassium salt	102.050
polyethoxylated, methytriuramine condensate,		Mixed alkoxy phosphate, triethanolamine salt	102.120
Methylaloxylated, methytriuramine condensate,		N-(Mixed alkoxy)polyethylenepolyamine	412.000
polypropoxylated, methyl sulfate		Mixed alkoxy stearate	714.520
Methyltestosterone	06	(Mixed alkoxy)sulfobetaine	15.000
Methyl thiobutyrat	07	Mixed aryl diimides	167.000
Methylthiosulfonic acid, S-(2-hydroxypropyl) ester	13	Mixed carboxylic acids	536.450
Methyl tri(C ₈₋₁₀) ammonium chloride	12	Mixed carboxylic acids	547.850
1-Methyl-3,5,7-triaza-1-azonia tricyclodecane chloride	15	Mixed (coco and soya fatty acids), reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	477.220
Methyltrimethoxysilane and polymethyltrisiloxane	12	Mixed dialkyl hydrogen phosphates, amine salts	1034.502
Methyltriethylammonium chloride	15	Mixed di and triethylene glycol mono ester of tall oil acid	714.600
2-Methylundecanal	07	Mixed ester of resin and rosin acids	660.450
Methyl vinyl ether	15	Mixed fatty acid amide with diethylene triamine/ethyl sulfate	477.226
Methylpyrion	06	Mixed fatty acid-ethoxylated nonyl phenol ester	783.500
Metoclopramide hydrochloride	06	Mixed fatty acids-alkylenediamine condensate,	
Metoprolol tartrate	06	polyethoxylate	377.000
Metryrapone	12	Mixed fatty acids, alkyl ether, ethoxylated	671.100
Mexane-1,6-bis(tributyl ammonium bromide)	12	Mixed fatty acids (camine/acid ratio=1/1)	547.855
Mexylisonanylamidocarboxylic acid, monoethanolamine salt	12	Mixed fatty acids, diethanolamine condensate	578.800
Mirk amido-propyl dimethyl amine (amine acid ratio=1/1)	06	Mixed fatty acids, neutralized	536.570
Mincocycline	06	Mixed fatty acids-polyalkylenepolyamine condensate	361.000
Minoxidil	06	Mixed fish oils, sulfated, ammonium salt	299.990
Miscellaneous acyclic chemicals, all other	15		
Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt	12		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Mixed fish oils, sulfated, sodium salt	12	300,000
Mixed higher glycol amine (MHGA)	15	430,500
Mixed linear alcohol, ethoxylated, sulfated, mixed sodium and cocoamphocarboxy glycinate salts	12	276,700
Mixed linear alcohols, alkoxyated, all other	12	741,000
Mixed linear alcohols, alkoxyated	12	736,950
Mixed linear alcohols, alkoxyated and phosphated, potassium salt	12	87,007
Mixed linear alcohols, ethoxylated	12	737,000
Mixed linear alcohols, ethoxylated, benzyl ether	12	737,100
Mixed linear alcohols, ethoxylated and carbonated, sodium salt	12	318,500
Mixed linear alcohols, ethoxylated and phosphated	12	87,000
Mixed linear alcohols, ethoxylated and phosphated, sodium salt	12	87,010
Mixed linear alcohols, ethoxylated and propoxylated	12	738,000
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt	12	276,000
Mixed linear alcohols, ethoxylated and sulfated, diethanolamine salt	12	276,500
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	12	278,000
Mixed linear alcohols, sulfated, ammonium salt	12	232,000
Mixed linear alcohols, sulfated, diethanolamine salt	12	232,200
Mixed linear alcohols, sulfated, magnesium salt	12	232,400
Mixed linear alcohols sulfated, mixed sodium/cocodiethanolamine salts	12	232,520
Mixed linear alcohols, sulfated, sodium salt	12	233,000
Mixed linear alcohols, sulfated, triethanolamine salt	12	233,100
(Mixed linear alkyl)dimethyl ammonium methyl sulfate	12	500,100
Mixed linear alkylpoly(ethyleneoxy)ethyl chloride	12	738,100
Mixed linear olefin sulfonate	12	212,125
Mixed oleic, lauric, stearic, and palmitic hexaglycerol esters	12	692,000
Mixed polyesters	14	284,000
Mixed (secondary linear alcohol)polyethylene propionic acid, sodium salt	12	45,700
Mixed stearic/palmitic alcohol, ethoxylated	12	730,800
Mixed tall oil and castor oil acids, ethoxylated	12	671,280
Mixed tall oil and rosin acids, ethoxylated	12	671,300
Mixed tridecyl alcohol and 2-ethylhexanol, phosphated, potassium salt	12	87,050
Mixed vegetable fatty acids, potassium salt	12	59,000
Mixed vegetable fatty acids, sodium salt	12	58,990
Mixed vegetable oils, sulfated, sodium salt	12	308,000
Mixture of N-octyl, N-decyl, N,N-dimethyl ammonium chloride and benzyl, dimethyl, (mixed alkyl) ammonium chloride	12	499,600
Mixtures not specifically itemized, all other	15	1500,000
Modified rosin (unesterified)	08	41,000
Modified rosin esters	08	40,000
Monesin	06	68,000
Mono-, di-, and triesters of phenyl(2,3,4-trihydroxyphenyl)methanone with 6-diazo-5,6-dihydro-5-oxo-1-naphthalenesulfonic acid	03	1345,500
Monoethanolamine	15	379,000
Chemical name	Sect. Item No.	Sect. Item No.
Monohydric alcohol esters, all other	15	1070,000
Monoisopropanolamine	15	407,000
Monomethylacetacetamide	15	248,100
Monomethyl tin	15	1404,877
Mordant Black 9	04	887,000
Mordant Black 11	04	888,000
Mordant Brown 1	04	871,000
Mordant Brown 18	04	875,000
Mordant Brown 33	04	878,000
Mordant Brown 70	04	882,000
Mordant Orange 1	04	848,000
Mordant Orange 6	04	848,000
Mordant Red 7	04	850,000
Mordant Red 9	04	856,000
Morphine sulfate	06	405,500
Morpholine	15	121,000
Morpholine residue stream	15	1440,000
Morpholine salt of p-toluene sulfonic acid	15	122,000
N-Morpholinyl-2-benzothiazolyl disulfide	09	33,000
p-Morpholinyl-2,5-dibutoxybenzene diazonium chloride	14	370,000
Moxalactam	06	51,500
Myrcene	15	1343,000
Myrcenyl acetate	07	163,800
Myristaldehyde	07	164,000
Myristic acid	12	572,000
Myristic acid (Ratio = 1/1)	12	547,900
Myristic acid esters, all other	11	89,000
Myristyl alcohol, propoxylated	12	738,300
Myristylbenzyltrimethylammonium chloride.2H ₂ O	03	1418,000
Myristyl ethoxy myristate	11	88,600
Myristyl lactate	15	1015,000
Myristyl myristate	15	979,000
Myristyl stearate	11	124,525
Nadolol	06	358,500
Nafclillin, sodium	06	17,000
Naphazoline hydrochloride	06	336,000
1-Naphthaldehyde	03	1133,800
Naphthalene	02	17,000
Naphthalene, crude, solidifying at less than 74° C.	01	12,000
Naphthalene, crude, solidifying at 76° C to less than 79° C	01	14,000
1,5-Naphthalenedisulfonic acid, 2-amino-, monosodium salt	03	1138,500
Naphthalenesulfonates, all other	12	176,000
1-Naphthalenesulfonic acid	03	1140,000
2-Naphthalenesulfonic acid	03	1141,000
1-Naphthalenesulfonic acid, formaldehyde condensate and salt	14	465,000
2-Naphthalenesulfonic acid, formaldehyde condensate and salt	14	466,000
1-Naphthalenesulfonic acid, 8-(phenylamino)-monosodium salt	03	1308,500
Naphthalene sulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone	12	722,445

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Naphthalene sulfonic acid, polymer with formaldehyde, sodium salt	12	Nickel 2-ethylhexanoate	15
2-Naphthalenesulfonic acid, sodium salt	03	Nicotinic acid, 2-(4-isopropyl-4,5-oxo-2-imidazolyl-2-yl)-ester	03
Naphthalene sulfonic acid, sodium salt, formaldehyde condensate	12	Nicotinonitrile (3-Cyanopyridine)	03
Naphthalimide	03	Nifedipine	06
Naphthenate driers, mixed salts	14	3-Nitro-6-pyrrolodimyl toluene	03
Naphthenic acid, acid number 150-199	02	Nitarsone	06
Naphthenic acid, acid number 200-224	02	Nitrated dodecylbenzene	03
Naphthenic acid, acid number less than 150	02	Nitrated lard oil	15
Naphthenic acid, copper salt	13	Nitriles, all other	15
Naphthenic acid, potassium salt	12	Nitroacetic acid, zinc salt	14
Naphthenic acids-polyalkylene polyamine condensate	12	Nitrotriacetic acid	14
Naphthenic acids-tall oil fatty acids-polyalkylene polyamine condensate	12	Nitrotriacetic acid, trisodium salt	14
1-Naphthol (α -Naphthol)	12	Nitrotriacetone	15
1-Naphthol, ethoxylated and sulfated, free acid	03	Nitrolo-tris-methylene triphosphonic acid	14
Naphthol reds, all other	05	Nitrolo-tris-methylene triphosphonic acid, potas	14
1-Naphthylamine (α -Naphthylamine)	03	Nitrolo-tris-methylene triphosphonic acid, sodium salt	14
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2-naphthylamine)	03	3'-Nitroacetanilide	03
1-Naphthyl N-methylcarbamate (Carbaryl)	13	o-Nitroaniline	03
N-1-Naphthylphthalamic acid (NPA)	13	p-Nitroaniline	03
Naphthalene sulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone, ammonium salt	12	1-Nitroanthraquinone	03
Natural fats and oils, ethoxylated, all other (NBR) type	10	p-Nitrobenzamide	03
Neat's foot oil, sulfated, sodium salt	12	Nitrobenzene	03
Neo-C ₉ -C ₁₂ acids	15	m-Nitrobenzenesulfonic acid, sodium salt	03
Neodecanoyl chloride	15	6-Nitrobenzimidazole	14
Neoneptanoyl chloride	15	5-Nitrobenzimidazole nitrate	14
Neohexane (2,2-Dimethylbutane)	05	o-Nitrobenzoic acid	03
Neomycin (medicinal grade)	06	m-Nitrobenzoic acid	03
Neomycin (animal feed grade)	06	p-Nitrobenzoic acid	03
Neopentyl glycol adipate	11	m-Nitrobenzoic acid, sodium salt	03
neopentyl glycol diglycidyl ether	15	2-Nitro-N-benzoylaniline	03
Neopentyl glycol dioleate	11	2-Nitro-p-cresol	03
Neopentyl glycol glutarate	11	5-Nitrodimethylisophthalate	03
Neophyl chloride	15	Nitrodiphenylamine	03
Neostigmine bromide	06	Nitroethane	15
Neostigmine methylsulfate	06	Nitrogenous compounds, acyclic, all other	15
Neritlimin	06	5-Nitroisophthalic acid	03
Niacin (medicinal grade)	06	Nitromethane	15
Niacinamide (medicinal grade)	06	3-Nitro-4-methylacetophenone	03
Niacinamide hydrochloride	06	4-Nitro-N-methylphthalimide	03
Nickel acetate	15	Nitromide	06
		1-Nitronaphthalene	03
		p-Nitrophenethyl alcohol	03
		o-Nitrophenol	03
		p-Nitrophenol	03
		p-Nitrophenol, sodium salt	03
		2-(o-Nitrophenylazo)-4,6-di-tert-pentylphenol (OH=1)	03
		2-Nitro-N'-phenyl-p-phenylenediamine	03
		1-Nitropropane	15
		2-Nitropropane	15
		5-Nitrosalicylaldehyde	03
		p-Nitrosophenol	03
		4-Nitrosophenol, sodium salt	03
		N-Nitrosophenylhydroxylamine salt	15

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
3-Octyloxy and 3-dicyloxy-propylamine	12	Oleyl acid phosphate	14
Octylphenol	03	Oleyl alcohol, ethoxylated	209.000
n-Octylphenol, ethoxylated	12	Oleyl betaine	732.100
Octylphenol, ethoxylated and benzylated	12	Oleyl oleate	16.100
Octylphenol, ethoxylated and phosphated	12	Oleyloxyethylamide oxypropanol sulfonic acid	94.500
n-Octylphenol, ethoxylated and sulfonated, sodium salt	12	Oleyl sulfate, sodium salt	212.200
tert-Octylphenol-formaldehyde, ethoxylated	12	Olive oil acids, sodium salt	238.200
Octyphenoxydiethoxy chloride	03	Organo-aluminum compounds, all other	62.000
Octyphenoxy polyethoxy ethyl sulfate	12	Organo-aluminum compounds, all other	1367.000
Octyl phosphate	12	Organo-boron compounds, all other	1371.000
Octyl phosphate, alkylamine salt	12	Organo-silicone compounds, all other	1399.000
Octyl phosphate, ethoxylated	12	Organo-tin compounds, all other	1407.000
Octyl phosphate, isopropoxy titanium salt	12	Ormetoprim	265.500
Octyl phosphate, isopropoxy titanium salt	12	Orphenadrine citrate	479.500
Octyl phosphate nealkoxy titanium salt	12	Other copolymer resins of acrylic and/or methacrylic acid esters	20.000
Octyl polyphosphate	12	Other ethylene copolymer resins	31.800
Octyl polyphosphate, potassium salt	12	Other homopolymer resins of acrylic and/or methacrylic acid esters	20.050
Octyl pyrophosphate, ethylenedioxy titanium salt	12	Other homopolymer resins of acrylic and/or methacrylic acid esters	120.000
Octyl pyrophosphate, ethylenedioxy titanium salt/dimethylamino methacrylate salt	12	Other hydrolytic enzymes	83.000
Octyl pyrophosphate, isopropoxy titanium salt	12	7-Oxabicyclo-[2.2.1]-heptane-2,3-dicarboxylic acid, disodium salt (Endothal)	18.000
Octyl pyrophosphate nealkoxy titanium salt	12	Oxacillin, sodium	727.000
Octyl pyrophosphate, oxoethylenedioxy titanium salt	12	Oxalic acid salts, all other	125.490
Octyl sulfate, sodium salt	15	Oxaly bis(benzylidene hydrazide)	251.250
Octylin	14	Oxamide	641.400
Oil-soluble petroleum sulfonate, all other	14	Oxandrolone	1451.000
Oil-soluble petroleum sulfonate, ammonium salt	14	Oxamate	566.000
Oil-soluble petroleum sulfonate, barium salt	14	Oxandrolone	218.000
Oil-soluble petroleum sulfonate, calcium salt	14	Oxamate	238.500
Oil-soluble petroleum sulfonate, magnesium salt	14	Oxidate light ends	1272.000
Oil-soluble petroleum sulfonate, sodium salt	14	Oxidized Fischer-Tropsch wax	1451.000
Oleamide (Octadecene amide)	15	Oxidized hydrocarbon mixture	566.000
Oleamidopropyl dimethyl amine	12	Oxalalcohol bottoms, sulfated, sodium salt	218.000
Oleamidofluorosuccinamic acid, disodium salt	12	3-Oxo-1,2-benzisothiazoline-2-acetic acid, methyl ester, 1,1-dioxide	1272.000
Oleic acid (Ratio = 1/1)	12	Oxo process bottoms	1451.300
Oleic acid (Ratio = 2/1)	12	Oxtriphylline	745.800
Oleic acid	15	Oxaluminum benzoate	1275.700
Oleic acid, ammonium salt	12	Oxy-aluminum octanoate	1363.200
Oleic acid-diethylenetriamine condensate	12	p,p'-Oxybis(benzenesulfonhydrazide)	109.000
Oleic acid-N,N-dimethyltrimethylenediamine condensate	12	Oxybutynin chloride	301.500
Oleic acid, epoxidized, ammonium salt	12	Oxycodone hydrochloride	406.000
Oleic acid esters, all other	11	4,4'-Oxydianiline	1275.000
Oleic acid-ethanolamine condensate, ethoxylated	12	N-Oxydiethylene-2-benzothiazolesulfenamide	34.000
Oleic acid, ethoxylated and propoxylated	12	N-Oxydiethylenethiocarbonyl-N'-oxydiethylenesulfenamide	34.100
Oleic acid-ethylenediamine condensate, propoxylated and sulfated, sodium salt	12	Oxygen-containing tertiary ammonium salts (Except those having amide linkages), all other	467.000
Oleic acid, mixed isopropanolamine salt	12	Oxyphenacylimine hydrochloride	302.000
Oleic acid, morpholine salt	12	Oxyquinoline benzoate (benoxiquiline)	268.000
Oleic acid, potassium salt	12	Oxyquinoline sulfate	270.000
Oleic acid, sodium salt	12	Oxytetracycline (medicinal grade)	36.000
Oleic acid, sulfated	12	Oxytetracycline (animal feed grade)	72.000
Oleic acid, sulfated, disodium salt	12	Oxytocin	695.000
Oleic acid, sulfated, sodium salt	12	Padimate A	555.300
Oleic acid, sulfated, sodium salt	12	Padimate O	555.400
Oleic acid, triethanolamine salt	12	Paint dryers, naphthenic acid salts, all other	316.000
Oleonic acid	15	Palmitic and stearic acids (Ratio = 2/1)	540.000
Oleonitrile (Octadecene nitrile)	12	Palmitic and stearic acids (Ratio = 1/1)	549.000
N-(Oleoyloxyisopropyl)sulfosuccinamic acid	15	Palmitoyl chloride	567.000
Oleoylpalmitamide	15		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Palmitylamidopropyl dimethyl amine	12	387.600
Palm kernel oil acids (Ratio = 1/1)	12	549.100
Palm kernel oil acids, potassium salt	12	62.890
Palm kernel oil acids, sodium salt	12	62.900
Palm oil acids, sodium salt	12	63.000
Panthenol	06	790.000
Papain	14	102.000
para-Cymene	07	95.400
Paraffin oils, chlorinated	15	1241.500
n-Paraffins, other	02	85.000
n-Paraffins, C ₁₀ -C ₁₄	02	84.000
n-Paraffins, C ₁₀ -C ₁₆	02	84.250
n-Paraffins, C ₁₂ -C ₁₈	02	84.260
n-Paraffins, C ₈ -C ₁₈	02	82.000
n-Paraffins, C ₆ -C ₉	02	81.000
n-Paraffins, C ₉ -C ₁₅	02	83.000
Parafomaldehyde	15	1176.500
Parahydroxyphenylglycine potassium methyl dane salt	03	1121.650
Peanut oil, sulfated, sodium salt	12	310.000
Pecan oil, sulfated, sodium salt	12	309.900
Pectinase	14	116.000
Pelargonic acid (Ratio = 2/1)	12	541.000
Pelargonic acid, calcium salt (Calcium nonoate)	15	730.200
Pelargonic acid esters, all other	11	101.500
Pelargonic acid-tetraethylenepentamine condensate	12	366.000
Pelargonic alcohol, ethoxylated	12	732.300
Pelargonyl amine	12	426.600
Pemoline	06	547.500
Penicillin V	06	26.000
Penicillin G, benzathine	06	21.000
Penicillin G, potassium	06	22.000
Penicillin V, potassium	06	29.000
Penicillin G, procaine (animal feed grade)	06	74.000
Penicillin G, procaine (medicinal grade)	06	23.000
Pentabromoethybenzene	03	1275.352
Pentachlorophenol, sodium salt	13	29.000
Pentadecylbenzenesulfonic acid, potassium salt	12	139.000
Pentaerythritol	15	1091.000
Pentaerythritol distearate	12	715.000
Pentaerythritol esters	14	286.000
Pentaerythritol phosphate	12	110.230
Pentaerythritol stearate	15	1129.000
Pentaerythritol stearate	12	715.100
Pentaerythritol tetraacrylate	15	1130.000
Pentaerythritol tetrakis (3-Mercaptopropionate)	15	1131.000
Pentaerythritol tribenzoate	15	125.700
Pentaethylenhexamine	15	294.000
1,1,3,3,5-Pentamethyl-4,6-dinitroindan	07	64.900
1,1,3,3,5-Pentamethylindan	03	1277.000
N,N,N',N'-Pentamethyl-N-(tallow alkyl) trimethylene-bis(ammonium chloride)	12	501.000
Pentamide isethionate	06	270.700
n-Pentane	02	55.000
1,5-Pentanediol	15	1092.000
2,4-Pentanedione (Acetylacetone)	15	833.000
1-Pentanol	15	843.000
3-Pentanone (Diethyl ketone)	15	835.000
Pentazocine	06	416.001
Pentazocine hydrochloride	06	416.003
2-Pentene	02	57.000
Pentenitrile	15	450.400
Pentenes, mixed	02	58.000
Pentobarbital	06	456.000
Pentylamine, mono-	15	296.000
α-Pentylcinnamaldehyde	07	65.000
o-Pentylphenol (o-Amylphenol)	03	1279.000
p-tert-Pentylphenol	03	1279.100
Pepsin	14	103.000
Perchloroethylene (Tetrachloroethane)	15	1243.000
Perchloromethanethiol (Perchloromethyl mercaptan)	15	1410.000
Perfluoropropionic anhydride	15	567.600
Permethrin acid chloride	03	1279.600
Peroxyacetic acid (Peracetic acid)	15	568.000
Perphenazine	06	486.000
3,4,9,10-Perylenetetracarboxylic-3,4,9,10-dianhydride	03	1280.503
3,4,9,10-Perylenetetracarboxylic-3,4,9,10-dilimide	03	1281.000
Pesticides and related products, acyclic, all other	13	245.000
Petroleum hydrocarbon resins	08	24.000
Petroleum sulfonic acid, calcium salt	12	207.090
Petroleumsulfonic acid, water soluble (Acid layer), sodium salt	12	213.000
1,10-Phenanthroline	03	1281.950
Phendimetrazine tartrate	06	548.200
Phenethyl acetate	07	66.000
Phenethyl alcohol	07	67.000
α-Phenethylamine	03	1282.500
2-Phenethylamine	03	1282.000
Phenethyl bromide	15	125.945
Phenethyl formate	07	68.000
Phenethyl isobutyrate	07	69.000
Phenethyl isovalerate	07	70.000
2-Phenethyl phenylacetate	07	71.000
1-Phenethyl-2-picolinium bromide	12	527.700
Phenethyl propionate	07	72.000
Phenethyl pyridinium bromide	12	527.750
Phenethyl salicylate	07	73.000
p-Phenetidine	03	1286.000
Phenindamine tartrate	06	102.000
Phenobarbital	06	458.000
Phenobarbital, sodium	06	459.000
Phenol, alkylated	09	101.000
Phenol, benzoylated	03	1298.103
Phenol, ethoxylated	12	754.000
Phenol, ethoxylated and phosphated	12	88.000
Phenol-formaldehyde resin (with lignite)	12	725.100
Phenol, hindered	09	102.000
Phenolic antioxidants, all other	08	105.000
Phenolic and other tar acid resins	09	9.000
Phenol, natural, from petroleum, all other	03	1292.000
Phenol, natural, from petroleum, U.S.P.	03	1291.000
Phenol, propoxylated	12	754.020

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Phenol salts, all other	14	α-D-Phenylglycine methyl ester K	15
Phenols, ethoxylated, all other	12	Phenylglycine, potassium salt	131,600
Phenol, styrenated	03	Phenylglycine, sodium salt	1322,702
Phenol, styrenated, mixtures	09	Phenylhydroquinone	1323,000
Phenolsulfonaphthalein, sodium salt	03	1-Phenyl-2-hydroxy-2-methyl-propanone-1	1325,000
1-(Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated))	14	2,2'-[[Phenyl]imino]diethanol (N-Phenyldiethanolamine)	132,100
Phenolsulfonic acid, sodium salt	03	2,2'-[[Phenyl]imino]diethanol (N-Phenyldiethanolamine)	1327,000
Phenol, synthetic, by caustic fusion, all other	03	Phenyl-5-mercaptopentatriazole	1327,500
Phenol, synthetic, from chlorobenzene by vapor-phase hydrolysis, U.S.P.	03	Phenylmercuric acetate (PMA)	375,000
Phenol, synthetic, from cumene by oxidation, U.S.P.	03	Phenylmercuric ammonium acetate	15,500
Phenol, synthetic, from toluene by oxidation, U.S.P.	03	Phenylmercuric carboxylate	16,000
Phenoxyacetic acid derivatives, all other	13	Phenylmercuric oleate	1329,050
Phenoxyacetic acid, sodium salt	03	o-Phenylphenol	1330,000
3-Phenoxybenzaldehyde	03	p-Phenylphenol	1331,000
3-Phenoxybenzaldehyde acetal	03	o-Phenylphenol, sodium salt	1333,000
3-Phenoxybenzaldehyde cyanohydrin	03	p-Phenylphenoxypolyethylene glycol	134,600
3-Phenoxybenzenemethanol	03	N-Phenyl-p-phenylenediamine	134,600
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	15	1-Phenyl-1,2-propanedione, 2-oxime	1334,000
2-Phenoxyethyl isobutyrate	07	3-Phenyl-1-propanol (Hydrocinamic alcohol)	1338,000
Phenoxyethyl propionate	07	Phenylpropanolamine bitartrate	78,000
2-(Phenoxyethyl)benzoic acid	03	Phenylpropanolamine hydrochloride	343,500
2-(Phenoxyphenyl) methyl-cis, trans-3-(2,2-dichloroethyl)-2,2-dimethyl cyclopropanecarboxylate	13	3-Phenylpropyl acetate	343,000
Phenoxy resin (other than for coating and adhesives)	08	3-Phenylpropyl cinnamate	79,000
m-Phenoxytoluene	06	4-Phenylpropylpyridine	79,200
Phentermine	06	1-Phenyl-3-pyrazolidone	1339,853
Phentermine hydrochloride	07	Phenylstyrene, ethoxylated	377,000
Phenylacetalddehyde	06	dl-Phenylsuccinic acid	12,754,080
Phenylacetalddehyde, dimethyl acetal	07	5-Phenyltetrazole	1341,009
Phenylacetic acid	07	4-Phenylthiomorpholine-1,1-dioxide	109,200
Phenylacetic acid isopentyl ester	07	Phenyltoloxamine citrate	1342,202
Phenyl acid phosphate	15	Phenyltriethoxysilane	104,000
Phenyl acid phosphate	14	Phenyl xylol ethane	1342,250
Phenyl alanine	14	1-Phenylsal-1,2-propanidione	134,800
α-Phenylanisole	07	Phenytol	115,150
4-(Phenylazo) diphenylamine	03	Phenytol, sodium	423,300
2-Phenylbenzimidazole	03	Phosgene (Carbonyl chloride)	423,600
4-Phenyl-3-buten-2-one	07	Phosphated and polyphosphated alcohols, all other	1411,000
Phenyldisodocyl phosphite	15	2-Phosphonobutane-1,2,4-tricarboxylic acid, sodium salt	111,000
m-Phenylenebismaleimide	03	N-(Phosphonomethyl)glycine, isopropylamine salt	86,000
m-Phenylenebismaleimide	09	N-(Phosphonomethyl)glycine, sodium sesqui salt	205,950
o-Phenylenediamine	03	Phosphoric acid esters, all other	231,592
m-Phenylenediamine	03	Phosphoric and polyphosphoric acid esters, all other	16,000
p-Phenylenediamine	03	Phosphorodithioates used as lubricating oil and grease additives, all other	113,000
p-Phenylenediamines, substituted, other	09	Phosphorodithioic acid salts (Dithiophosphates), all other	244,000
Phenylephrine bitartrate	06	Phosphorus acid esters, all other	736,000
Phenylephrine hydrochloride	06	Photographic chemicals, all other	1049,000
Phenyl ether (Diphenyl oxide)	03	Phthalic acid	383,000
o(H)-Phenyliethylenamine	03	Phthalic acid, diallyl ester	1346,000
Phenylolethyl benzoate	07	Phthalic acid, lead salt, (dibasic)	23,400
Phenylolethyl tiglate	07	Phthalic anhydride	135,000
Phenyl glycidyl ether	15	Phthalic anhydride esters, all other	1348,000
N-Phenylglycine	03	Phthalic anhydride type alkyd resins	51,000
		Phthalimide	2,000
		Phthalimidoacetic acid	1351,000
			1351,402

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
[Phthalocyaninato(2-)]copper	03	1352.000	Pigment orange toners, all other	05	29.000
[Phthalocyaninato(2-)]nickel	03	1352.200	Pigment Red 1, (light)	05	48.000
[Phthalocyaninetetramethanaminato]copper	03	1353.300	Pigment Red 2	05	30.000
Phthalocyaninetetrafluoronyl chloride, copper derivative	03	1353.800	Pigment Red 3	05	49.000
Phthaloyl chloride (Phthalyl chloride)	03	1355.000	Pigment Red 4	05	50.000
Picoline (3,4-mixture)	03	1359.000	Pigment Red 5	05	31.000
2-Picoline (α -Picoline)	03	1356.000	Pigment Red 6	05	51.000
3-Picoline (β -Picoline)	03	1357.000	Pigment Red 13	05	36.000
4-Picoline (γ -Picoline)	03	1358.000	Pigment Red 14	05	37.000
3-Picoline-N-oxide	03	1359.003	Pigment Red 17	05	39.000
Picolinic acid	03	1360.000	Pigment Red 21	05	40.021
Picolonitrile (2-Cyanopyridine)	03	1359.100	Pigment Red 22	05	43.000
2-Picolylamine	03	1360.900	Pigment Red 23	05	44.000
3-Picolylamine	03	1361.000	Pigment Red 31	05	45.000
Picramic acid, sodium salt	15	136.000	Pigment Red 38	05	52.000
Picric acid (Trinitrophenol)	03	1362.000	Pigment Red 41	05	54.000
Pigment Black 7	05	143.007	Pigment Red 48	05	55.000
Pigment black toners, all other	05	144.000	Pigment Red 48:1, (barium)	05	55.100
Pigment Blue 1, (PMA)	05	99.000	Pigment Red 48:2, (calcium)	05	55.200
Pigment Blue 2, (PMA)	05	102.000	Pigment Red 48:3, (strontium)	05	55.300
Pigment Blue 14, (PMA)	05	111.000	Pigment Red 48:4, (manganese)	05	55.400
Pigment Blue 15, (α form)	05	113.010	Pigment Red 49:1, (barium)	05	57.000
Pigment Blue 15:1, (α form)	05	113.020	Pigment Red 49:2, (calcium)	05	58.000
Pigment Blue 15:2, (α form)	05	113.030	Pigment Red 52:1, (calcium)	05	61.000
Pigment Blue 15:3, (β form)	05	114.010	Pigment Red 52:2, (manganese)	05	62.000
Pigment Blue 15:4, (β form)	05	114.020	Pigment Red 53:1, (barium)	05	64.000
Pigment Blue 19	05	116.000	Pigment Red 57	05	67.057
Pigment Blue 25	05	119.000	Pigment Red 57:1, (calcium)	05	68.000
Pigment Blue 61	05	120.061	Pigment Red 60:1	05	209.000
Pigment Blue 62	05	120.062	Pigment Red 63	05	70.000
Pigment blue toners, all other	05	124.000	Pigment Red 66	05	45.066
Pigment brown 5	05	140.000	Pigment Red 81, (PMA)	05	74.000
Pigment brown toners, all other	05	142.000	Pigment Red 81, (PTA)	05	75.000
Pigment Green 1, (PMA)	05	125.000	Pigment Red 83	05	211.000
Pigment Green 2, (PTA)	05	128.000	Pigment Red 88	05	78.000
Pigment Green 4, (fugitive)	05	129.000	Pigment Red 112	05	45.810
Pigment Green 4, (PMA)	05	130.000	Pigment Red 119	05	79.119
Pigment Green 7	05	132.000	Pigment Red 122	05	79.320
Pigment Green 8	05	133.000	Pigment Red 123	05	80.000
Pigment Green 10	05	134.000	Pigment Red 145	05	45.846
Pigment Green 36	05	134.260	Pigment Red 147	05	45.847
Pigment green toners, all other	05	135.000	Pigment Red 168	05	80.550
Pigment Orange 1	05	19.000	Pigment Red 169	05	80.555
Pigment Orange 2	05	20.000	Pigment Red 170	05	45.870
Pigment Orange 5	05	21.000	Pigment Red 179	05	80.660
Pigment Orange 13	05	23.000	Pigment Red 190	05	80.770
Pigment Orange 15	05	24.000	Pigment Red 200	05	84.200
Pigment Orange 16	05	25.000	Pigment Red 202	05	84.202
Pigment Orange 17	05	206.000	Pigment Red 206	05	84.206
Pigment Orange 34	05	25.180	Pigment Red 207	05	84.207
Pigment Orange 43	05	25.270	Pigment Red 209	05	84.209
Pigment Orange 46	05	26.046	Pigment Red 224	05	84.224
Pigment Orange 48	05	26.048	Pigment Red 245	05	84.245
Pigment Orange 49	05	26.049	Pigment Red 63:1, calcium	05	70.001
			Pigment red toners, all other	05	86.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Pigment Violet 1, (fugitive)	05	87,000	Piperonal (Heliotropin)	07	80,000
Pigment Violet 1, (PMA)	05	88,000	Piperonyl (1,3-Pentadiene)	02	58,600
Pigment Violet 1, (PTA)	05	89,000	Piroxicam	06	412,500
Pigment Violet 3, (fugitive)	05	90,000	Pitch of tar, all other	01	30,000
Pigment Violet 3, (PMA)	05	91,000	Pitch of tar: hard (M.P. 161° F and over)	01	28,000
Pigment Violet 3, (PTA)	05	92,000	Pitch of tar: medium (M.P. 110° To 160° F)	01	27,000
Pigment Violet 4, (fugitive)	05	92,004	Pitch of tar: soft (M.P. 80° To 109° F.)	01	26,000
Pigment Violet 19	05	93,160	Pivaloyl chloride	15	569,000
Pigment Violet 23	05	93,200	2-Pivaloyl-1,3-Indandione (Plindone)	13	170,000
Pigment Violet 29	05	93,229	Plastics alloys or blends	08	25,200
Pigment Violet 39, (PMA)	05	93,439	Plinyl acetate	07	115,290
Pigment Violet 42	05	94,042	Polyacrylamide	14	403,000
Pigment violet toners, all other	05	98,000	Polyacrylamide copolymers, all other	14	405,500
Pigment Yellow 1	05	1,000	Polyacrylate methacrylate copolymers	14	427,000
Pigment Yellow 2	05	1,500	Polyacrylate poly(hydroxypropylacrylate) copolymer	14	428,000
Pigment Yellow 3	05	2,000	Polyacrylic acid	15	570,000
Pigment Yellow 12	05	8,000	Polyacrylic acid	14	430,000
Pigment Yellow 13	05	9,000	Poly(acrylic acid, ethyl ester)	14	423,000
Pigment Yellow 14	05	10,000	Poly(acrylic acid, methyl ester/ethylene/1,1-dichlorosuccinic acid, methylene-) with ethyl acrylate	14	425,000
Pigment Yellow 17	05	6,372	Polyacrylic acid salts, all other	14	434,000
Pigment Yellow 42	05	6,460	Polyacrylic (ACM) type elastomers	10	13,000
Pigment Yellow 60	05	6,620	Polyacrylonitrile and acrylonitrile copolymers	14	391,000
Pigment Yellow 65	05	6,465	Polyacrylonitrile, hydrolyzed	14	435,000
Pigment Yellow 73	05	6,620	Polyacrylonitrile, hydrolyzed, sodium salt	13	234,000
Pigment Yellow 74	05	6,630	Polyacrylonitrile, starch hydrolyzed polymer	14	436,000
Pigment Yellow 83	05	11,660	Polyalcyclene polyamines and salts and quats	12	417,500
Pigment Yellow 97	05	6,697	Polyalkalene oxide	10	13,200
Pigment Yellow 98	05	6,698	Polyalkylene glycol oleate	12	719,050
Pigment Yellow 110	05	14,810	Polyalkylene glycol	12	87,000
Pigment Yellow 124	05	11,724	Polyamine polymethane phosphonic acid	14	88,000
Pigment Yellow 126	05	11,726	Polyamine polymethane phosphonic acid, magnesium salt	14	437,000
Pigment Yellow 139	05	14,839	Polyamines	12	413,400
Pigment Yellow 152	05	11,752	Polyamine/tail oil imridazole	10	13,300
Pigment yellow toners, all other	05	18,000	Polybutadiene emulsion-polymerized	10	14,000
Pinane	15	136,200	Polybutadiene resins	08	10,000
Pinane hydroperoxide	15	136,500	Polybutadiene, solution-polymerized	02	86,000
2-Pinanol (cis and trans)	15	136,800	Polybutene	08	30,020
α-Pinene	15	137,000	Polybutylene terephthalate (PBT)	08	28,000
β-Pinene	15	138,000	Polybutylene type resins	14	169,000
α-Pinene epoxide	15	139,000	Polybutylether carbamate	08	29,000
α-Pinene oxide	15	139,500	Polycarbonate resins	12	719,200
Pinene, sulfate	15	140,000	Polycarboxylic acid, alkylate	12	719,210
Pinene, wood	15	141,000	Polycarboxylic acid, alkylphenoxyalkoxyate	10	17,000
Pine oil, natural sulfate	15	141,195	Polychloroprene (Neoprene) (CR) type	14	438,000
Pine oil, synthetic	15	141,200	Polydextrose	14	439,000
Pine oil, synthetic	15	1412,000	Poly (diallyldimethylammonium chloride)	14	170,000
Pipcolic acid	03	1362,953	Poly (dimethylimino(2-hydroxytrimethylene)chloride)	12	762,400
Piperacillin	06	19,200	Polyester resins, saturated, all other	08	30,050
Piperazine	06	123,000	Polyester resins, unsaturated	12	334,400
Piperazine dihydrochloride	06	125,000	Polyether diols	12	762,730
Piperazine hexahydrate	06	126,000			
Piperazine hydrochloride	06	127,000			
Piperazine sulfate	06	129,000			
Piperidine	03	1365,000			
Piperidine sulfate	03	1365,500			

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Polyether and polyester polyols for urethanes	12 050	08
Polyether triols	762.750	12
Polyethoxy propoxy diethylene glycol ether	1180.500	15
Polyethylbenzene (80 percent diethylbenzene)	1369.000	03
Poly(ethylene-butylene) glycol	1181.050	15
Polyethylene glycol	1181.000	15
Polyethylene glycol butyl ether, propoxylated	1181.080	15
Polyethylene glycol dibenzoate	52.000	11
Polyethylene glycol diester of coconut oil and oleic acids	684.300	12
Polyethylene glycol diester of mixed liner acid/oleic acid	684.400	12
Polyethylene glycol diester of tall oil acids	684.500	12
Polyethylene glycol dilaurate	674.000	12
Polyethylene glycol dimethyl ether	1181.200	15
Polyethylene glycol dioleate	675.000	12
Polyethylene glycol distearate	676.000	12
Polyethylene glycol ester of mixed fatty acids	684.700	12
Polyethylene glycol esters of chemically defined acids, all other	684.000	12
Polyethylene glycol hydroxyacetate	676.500	12
Polyethylene glycol monocaprylate	677.500	12
Polyethylene glycol monoester of coconut oil acids	685.510	12
Polyethylene glycol monoester of soybean oil acids	685.000	12
Polyethylene glycol monoester of tall oil acids	685.700	12
Polyethylene glycol monoisostearate	677.600	12
Polyethylene glycol monolaurate	678.000	12
Polyethylene glycol mono-monomerate	678.500	12
Polyethylene glycol mono-oleate	679.000	12
Polyethylene glycol mono-oleate, ethoxylated	680.000	12
Polyethylene glycol monopalmitate	680.250	12
Polyethylene glycol monopelargonate, methoxylated	681.000	12
Polyethylene glycol monopelargonate	682.000	12
Polyethylene glycol monoricinoleate	681.000	12
Polyethylene glycol monostearate	682.000	12
Polyethylene glycol sesquiester of coconut oil acids	687.000	12
Polyethylene glycol sesquiester of tall oil acids	689.000	12
Polyethylene glycol sesquiester of tallow acids	690.000	12
Polyethylene glycol sesquinoate	683.200	12
Polyethylene glycol terephthalate	442.000	14
Polyethyleneimine	477.250	12
Polyethyleneimine methyl ammonium sulfate	334.000	12
Polyethylenepolyamine, alkoxylated	171.000	14
Polyethylenepolyamine polymer with 1,4-dihydroxy-2-butyne	390.000	14
Polyethylene terephthalate	30.040	08
Polyethylene terephthalate (PET)	692.500	12
Polyglycerol dicarboxylate	698.000	12
Polyglycerol esters, all other	696.000	12
Polyglycerol mono-oleate	697.000	12
Polyglycerol monostearate	1184.000	15
Polyglycols, ethylene glycol and glycol ether, mixed	144.600	15
Polyglycols-toluene diisocyanate reaction product	1268.900	15
Polyhexafluoropropylene oxide	1141.000	15
Polyhydric alcohol esters, all other	1196.000	15
Polyhydric alcohol ethers, all other	88.800	12
Polyhydric alcohol, ethoxylated and phosphated	1096.000	15
Polyhydric alcohols, all other	1096.000	15
Polyimides and amide-imide polymers	34.000	08
Polyimine, propoxylated	334.500	12
Polyisobuteryl succinic anhydride	288.000	14
Polyisoprene (IR) type	19.000	10
Polymeric phosphites	85.500	09
Polymerization regulators, acyclic, other	173.000	09
Polymers for fibers, all other	394.000	14
Polymers, water soluble, all other	452.000	14
Polymethacrylic acid, sodium salt	445.000	14
Polymethylene polyphenylisocyanate	1023.000	03
Poly(1,1'-(methylol)bis(3-chloro-2-propanol) tetrathymethylene diamine	446.000	14
Polymethyl methacrylate (PMMA)	20.040	08
Polymethylvinyl ether monoethylmaleate	1181.600	15
Poly(mixed ethylene, propylene) glycol	763.000	12
Poly(mixe ethylene/propylene glycol) capped with alkyl oxirane	763.050	12
Polymyxin B	56.000	06
Polyol aluminum chelate	1132.190	15
Poly- α -olefins	453.000	14
Poly- α -olefins, sulfurized	454.000	14
Polyol glycidyl ether	1317.700	15
Polyoxalkene silicones	1391.000	15
Polyoxyalkylated cyclic amines	468.000	14
Polyoxyalkylate (fatty alcohol), phosphate ester	112.650	12
Polyoxyalkylene glycol	1181.800	15
Poly(oxy-1,2-ethanediyl), ω -(2-carboxyethoxy)- ω' -hydroxy- α,α' -(iminodi-2,1-ethanediyl) bis-, N-tallow alkyl derivs., potassium salt	47.490	12
Poly(oxy-1,2-ethanediyl)- α -carboxy-methyl, omega-(tri- ω -(tri-decyloxy), potassium salt	47.500	12
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, C ₁₂	457.000	06
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, C ₁₅ alkyl ethers	763.450	12
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, ethoxylated nonylphenol alkyl ether	763.500	12
Poly(oxyethylene (dimethylol) ethylene (dimethylol) ethylene dichloride)	195.013	13
Poly(oxypropylene) diamine	297.720	15
Polyoxypropylene polyoxyethylene glycol, mixed	1185.000	15
Polyphenolic phosphites, polyalkylated	86.000	09
Polyphenyl aromatic ester resins	34.500	08
Poly-p-phenylene isophthalamide	392.000	14
Polyphenylene oxide type resins	35.000	08
Polyphenylene sulfide resins	35.500	08
Poly-p-phenylene terephthalamide	393.000	14
Poly(propoxy)butyl ether, ethoxylated	1182.005	15
Polypropoxy diethylmethyl ammonium chloride	465.650	12
Polypropylene glycol	1186.000	15
Polypropylene glycol dioleate	1719.400	12
Polypropylene glycol, ethoxylated	764.000	12
Polypropylene polymer and copolymer resins	36.000	08
Poly sulfide (T) type elastomers	20.000	10

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Polyterpene resins	08	38,000	1,2-Propanediol mono-oleate	12	702,000
Polytetrafluoroethylene (PTFE)	08	38,100	1,2-Propanediol monostearate	12	703,000
Polytetrafluoroethylene ethyl iodide	15	1269,000	3-Propanoic acid, cocarmino, sodium salt	12	31,500
Polytetramethylene glycol ether	15	1187,000	3-Propanolpyridine	03	485,550
Polythiazide	06	725,000	3-Propanonitrate methylphenyl ether	12	764,200
Polyurethane elastomers	08	13,040	Propantheline bromide	06	293,000
Polyurethane resins	08	13,080	p-Propenylanisole (Anethole)	07	81,000
Polyvinyl acetate resins	08	47,000	Propionaldehyde	15	802,000
Polyvinyl alcohol resins	08	48,000	Propionic acid	15	572,000
Polyvinyl butyral resins	08	49,000	Propionic anhydride	15	573,000
Polyvinyl chloride copolymer resins, all other	08	49,020	Propionitrile	15	450,500
Polyvinyl chloride homopolymer resins	08	49,010	Propionyl chloride	15	573,050
Polyvinyl formal resin	08	49,050	Propiophenone	03	1374,000
Polyvinylidene fluoride resin	08	49,150	Propoxyethanol (Ethylene glycol monopropyl ether)	15	1187,750
Polyvinyl octadecyl carbamate	15	468,300	Propoxylated corn starch	12	764,500
Poly(vinyl-o-sulfobenzal)	14	379,000	Propoxylated starches	14	496,000
Potassium acetate	15	602,000	Propoxyphene hydrochloride	06	413,000
Potassium aminobenzoate	06	395,000	Propoxyphene napsylate	06	414,000
Potassium benzoate	15	10,800	Propranolol hydrochloride	06	381,500
Potassium citrate	15	625,000	Propyl acetate	15	1050,000
Potassium dihexyl phosphorodithioate	15	730,500	Propyl alcohol (Propanol)	15	868,000
Potassium formate	15	641,000	Propylamine, mono-	15	301,000
Potassium gluconate	06	766,000	p-Propylanisol (Dihydroanethole)	07	81,200
Potassium glutamate	14	9,000	S-Propyl butylethylthiocarbamate (Pebulate)	13	206,000
Potassium 2-methyl-2-butanol	15	1411,400	n-Propyl chloroformate	15	1050,300
Potassium 2-methyl-2-propanol	15	1411,600	S-Propyl dipropylthiocarbamate (Vernolate)	13	207,000
Potassium oxalate	15	725,000	Propylene	02	42,000
Potassium salicylate	06	387,000	Propylene glycol (1,2-Propanediol)	15	1093,000
Potassium and sodium salts of fatty, rosin, and tall oil acids, all other	12	74,000	Propylene glycol dibenzoate	15	147,800
Potassium sodium tartrate	15	768,000	Propylene glycol esters of hydrogenated palm oil	12	719,500
Potassium stearate	15	761,500	Propylene glycol, mixed ethers	15	1188,000
Potassium warfarin	06	629,000	Propylene glycol monochloroleate	11	110,500
Povidone - iodine	06	271,000	Propylene glycol sebacate	11	115,500
Pramoxine hydrochloride	06	710,000	Propylene oxide	15	1323,000
Prazepam	06	508,000	Propyl furylacrylate	07	115,400
Prazosin hydrochloride	06	359,700	Propyl gallate	15	148,000
Prednisolone	06	664,000	Propylhexedrine	06	344,000
Prednisolone acetate	06	665,000	n-Propyl mercaptan (1-Propanethiol)	02	96,000
Priming and refractory oil	01	21,040	n-Propyl oleate	11	95,000
Probencid	06	740,000	Propyl oleate, sulfated, sodium salt	12	262,000
Probucol	06	616,000	Protease (bacterial)	15	869,000
Procainamide hydrochloride	06	380,000	Proteases, all other	14	108,000
Procabazine hydrochloride	06	279,400	Protein hydrolysates	14	17,000
Prochlorperazine maleate	06	488,000	Pseudoephedrine hydrochloride	06	346,000
Progesterone	06	683,000	Pseudoephedrine sulfate	06	347,000
1-Propanamine, 3-(C ₁₂ -C ₁₅ alkoxy derivatives)	12	413,500	Pseudoionone	15	836,000
1-Propanaminium, N-ethyl-N,N-dimethyl-3-[(1-oxooctadecyl)amino]-, ethyl sulfate	12	477,280	Pseudo linyl acetate (Neobergamate)	07	166,700
Prépane (Commercial and hd-5)	02	41,000	Pyralent pamoate	06	129,300
1,2-Propanediol dicitrateoate/decanoate	12	699,080	1,3,6,8-Pyrenetetrasulfonic acid	03	1377,200
1,2-Propanediol dipelargonate	12	699,140	Pyridine hydrochloride	03	1382,000
1,2-Propanediol di-2-ethyl mexanoate	12	698,900	3-Pyridinemethanol	03	1383,000
1,2-Propanediol monolaurate	12	701,000	2° Pyridine, refined	03	1378,000
			Pyridine, refined all other grades	03	1379,000
			2 Pyridinethiol-1-oxide, sodium salt	03	1380,003
			2 Pyridinethiol-1-oxide, zinc salt	03	1380,053

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Pyridostigmine bromide	06	Reactive Orange 12	04
4-Pyridylacetone	03	Reactive Orange 13	04
2-(4-Pyridyl)ethylsulfonic acid	03	Reactive Orange 14	04
Pyrimine maleate	06	Reactive Orange 16	04
Pyrimine tannate	06	Reactive Orange 20	04
2,4(1H,3H)Pyrimidinedione	15	Reactive Orange 78	04
2-Pyrimidinol	03	Reactive Orange 84	04
Pyromellitic dianhydride	03	Reactive Orange 86	04
2-Pyrrolidinone (2-Pyrrolidone)	03	Reactive orange dyes, all other	04
4-N-(1-Pyrroliidyl)-m-toluenediazonium chloride	03	Reactive Red 2	04
Pyvinium pamoate	14	Reactive Red 11	04
Quaternary ammonium salts having amide linkages, all other	03	Reactive Red 21	04
Quaternary ammonium salts, not containing oxygen, acyclic, all other	12	Reactive Red 29	04
Quaternary ammonium salts not containing oxygen, cyclic, all other	12	Reactive Red 31	04
Quinidine	12	Reactive Red 33	04
Quinoline-2,3-dicarboxylic acid	03	Reactive Red 41	04
Quinoline, other grades	03	Reactive Red 43	04
8-Quinolol	03	Reactive Red 49	04
8-Quinolol, copper salt	03	Reactive Red 94	04
8-Quinolol, sulfate salt	13	Reactive Red 120	04
p-Quinone	15	Reactive Red 141	04
Quinone dioxime	14	Reactive Red 147	04
Rapeseed acids (ratio = 1/1)	03	Reactive Red 180	04
Rare earths 2-ethylhexanoate	12	Reactive red dyes, all other	04
Rare earths naphthenate	15	Reactive Violet 5	04
Rare earths neodecanoate	14	Reactive violet dyes, all other	04
Reactive Black 5	04	Reactive Yellow 7	04
Reactive Black 9	04	Reactive Yellow 15	04
Reactive Blue 3	04	Reactive Yellow 17	04
Reactive Blue 4	04	Reactive Yellow 18	04
Reactive Blue 5	04	Reactive Yellow 37	04
Reactive Blue 7	04	Reactive Yellow 42	04
Reactive Blue 13	04	Reactive Yellow 57	04
Reactive Blue 19	04	Reactive Yellow 86	04
Reactive Blue 21	04	Reactive Yellow 125	04
Reactive Blue 38	04	Reactive Yellow 133	04
Reactive Blue 41	04	Reactive Yellow 135	04
Reactive Blue 71	04	Reactive Yellow 160	04
Reactive Blue 89	04	Reactive yellow dyes, all other	04
Reactive Blue 173	04	Reactive Red 35	04
Reactive Blue 174	04	Remnin	14
Reactive Blue 199	04	Resorcinol	06
Reactive Blue 203	04	Resorcinol diglycidyl ether	15
Reactive blue dyes, all other	04	Resorcinol, dimethyl ether	03
Reactive Brown 1	04	Resorcinol, monobenzoate	15
Reactive Brown 17	04	Resorcinol, tech,	03
Reactive Brown 18	04	β-Resorcylic acid, lead salt	03
Reactive Green 12	04	Rhodinol	07
Reactive Green 19	04	Rhodinol acetate	07
Reactive green dyes, all other	04	Riboflavin (animal feed grade)	06
Reactive Orange 1	04	Riboflavin (medicinal grade)	06
Reactive Orange 4	04	Rimantidine hydrochloride	06
		Rodenticides, acyclic, all other	13
		Rodenticides, cyclic, all other	13
		Rose oxide	07
			115.500
			914.000
			915.000
			916.000
			917.000
			917.020
			917.078
			917.084
			917.086
			918.000
			920.000
			924.000
			925.000
			926.000
			927.000
			928.000
			930.000
			930.043
			930.049
			931.094
			931.120
			931.141
			931.147
			931.180
			932.000
			936.000
			937.000
			904.000
			905.000
			906.000
			907.000
			910.000
			910.042
			910.057
			910.086
			910.125
			910.133
			910.135
			910.160
			911.000
			928.035
			106.000
			272.000
			151.500
			1399.500
			151.000
			1399.000
			1403.000
			167.000
			168.000
			801.000
			802.000
			188.600
			233.000
			171.000
			115.500
			319.000
			1383.100
			1383.500
			105.000
			107.000
			148.990
			1387.000
			1392.000
			1391.000
			380.000
			797.200
			479.000
			507.000
			528.000
			1393.000
			1395.500
			1395.000
			1397.000
			30.000
			30.300
			14.000
			1397.500
			549.200
			642.000
			312.000
			709.750
			952.000
			953.000
			954.000
			939.000
			940.000
			941.000
			942.000
			942.013
			943.000
			944.000
			946.000
			946.041
			946.071
			946.089
			946.173
			946.174
			946.199
			946.203
			947.000
			949.000
			949.017
			949.018
			948.012
			948.019
			948.999
			912.000
			913.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Rosin acids, potassium salt	12	65,000	Sodium 5-[2-chloro-4-(trifluoromethyl)-phenoxy]-2-nitrobenzoate	13	118,042
Rosin acids, sodium salt	12	66,000	Sodium citrate	15	626,000
Rosin acids, triethanolamine salt	12	32,000	Sodium cresylate	01	18,050
Rosin alcohol, ethoxylated	12	765,000	Sodium diacetate	15	604,000
Rosin amine, ethoxylated	12	355,000	Sodium di-sec-butyl/diethyl phosphorodithioate	15	731,000
Rosin amines	14	136,000	Sodium di-sec-butyl phosphorodithioate	15	732,000
Rosin esters, unmodified (Ester gums)	08	39,000	Sodium di-2-ethylhexyl sulfosuccinate	15	742,900
Roxarsone	06	159,000	Sodium diethyl phosphorodithioate	15	733,000
Roxarsone, sodium	06	160,000	Sodium dihexyl phosphorodithioate	15	734,000
Rubber modified polystyrene	08	44,020	Sodium dihydrobis(2-methoxyethoxy)aluminum hydride	15	1363,900
Rubber-processing chemicals, cyclic, all other	09	127,000	Sodium diisobutyl phosphorodithioate	15	734,500
Rust preventing additives	14	172,000	Sodium diisopropyl phosphorodithioate	15	735,000
Saccharin (1,2-Benzisothiazolin-3-one,-1,1-dioxide)	07	85,000	Sodium ethoxide	15	1415,000
Saccharin, sodium salt	07	87,000	Sodium fluoroacetate	13	232,000
Salicylaldehyde	03	1404,000	Sodium formaldehyde bisulfite	15	743,250
Salicylaldehyde oxime	03	1404,502	Sodium formate, technical	15	655,000
Salicylanilide	03	1405,000	Sodium gluconate	15	662,000
Salicylic acid	06	557,000	Sodium heparin	06	630,000
Salicylic acid, ammonium salt	15	161,500	Sodium lactate (Nalac)	15	674,000
Salicylic acid, lead salt	15	162,000	Sodium mercaptoacetate	15	697,000
Salicylic acid magnesium salt	15	162,200	Sodium methoxide (Sodium methylate)	15	1418,000
Salicylic acid, tech.	03	1406,000	Sodium-N-methyl-N-oley taurate	15	743,550
Salsalate	06	389,000	Sodium nitroprusside	06	359,800
Salts of organic acids, all other	15	781,000	Sodium oleate	15	719,500
α-Santalyl acetate	07	116,100	Sodium oxalate	15	726,000
Sarcosine	14	18,000	Sodium polyacrylate	14	433,000
Sebacic acid	15	574,000	Sodium/potassium rosin acid salts	15	158,500
Sebacoyl chloride	15	575,000	Sodium propionate	15	738,000
Secobarbital, sodium	06	461,000	Sodium salicylate	06	390,000
Semicarbazide hydrochloride	15	473,000	Sodium stearate	15	762,100
Silicone fluids	15	1392,000	Sodium tetrachloroborate	03	1410,100
Silicone greases	14	462,000	Sodium trichlorobenzenesulfate	03	1410,500
Silicone resins	08	14,000	Solid type polyvinylidene chloride resins	08	50,020
Silicone resins for mold release agents	15	1480,000	Solubilized Sulfur Black 2	04	1111,000
Silicone (Q) type elastomers	10	21,000	Solvent Black 7	04	1053,000
Silver trifluoroacetate	15	742,700	Solvent Black 13	04	1055,000
Sisomycin	06	56,700	Solvent Black 26	04	1057,046
Sodium acetate	15	603,000	Solvent Black 46	04	1057,047
Sodium aminobenzoate	06	396,000	Solvent Black 47	04	1057,049
Sodium aminosulicylate	06	148,000	Solvent Black 49	04	1020,000
Sodium ammonium polyacrylate and copolymers	14	431,000	Solvent Blue 3	04	1022,000
Sodium ascorbate	06	809,000	Solvent Blue 5	04	1028,035
Sodium benzoate, U.S.P.	15	12,000	Solvent Blue 35	04	1028,035
Sodium benzoate, tech.	15	11,000	Solvent Blue 36	04	1029,000
Sodium n-butylxanthate	14	142,000	Solvent Blue 38	04	1031,000
Sodium caprylate	06	137,000	Solvent Blue 58	04	1033,000
1-(Sodium carboxyethylene)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(tall oil fatty acids)-2-imidazolium hydroxide	12	27,100	Solvent Blue 59	04	1034,000
Sodium carboxymethyl amylose	14	432,000	Solvent Blue 98	04	1037,000
Sodium carboxymethyl cellulose (100%)	14	412,000	Solvent Blue 99	04	1037,099
1-[(Sodium carboxymethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(coconut oil fatty acids)-2-imidazolium lauryl sulfate	12	27,200	Solvent Blue 100	04	1038,000
Sodium carboxymethyl starch	14	432,200	Solvent Blue 102	04	1038,102
			Solvent Blue 128	04	1038,128
			Solvent Blue 129	04	1038,129
			Solvent blue dyes, all other	04	1039,000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Solvent Brown 12	1045.000	Solvent Yellow 94	974.094
Solvent Brown 20	1047.000	Solvent Yellow 107	975.000
Solvent Brown 22	1048.000	Solvent Yellow 131	975.131
Solvent Brown 52	1049.052	Solvent Yellow 135	975.135
Solvent Green 3	1042.000	Solvent Yellow 143	975.143
Solvent Orange 2	977.000	Solvent Yellow 160	975.160
Solvent Orange 3	978.000	Solvent Yellow 161	975.161
Solvent Orange 7	980.000	Solvent Yellow 163	975.163
Solvent Orange 20	981.000	Solvent yellow dyes, all other	976.000
Solvent Orange 23	982.000	Sorbic acid (2,4-Hexadienoic acid)	576.000
Solvent Orange 25	984.000	Sorbitol (70% by weight)	15
Solvent Orange 31	985.000	Sorbitol, alkoxylated	15
Solvent Orange 60	987.060	Sorbitol, ethoxylated	15
Solvent Orange 74	987.074	Sorbitol monooleate	15
Solvent Orange 77	987.077	Sorbitol monostearate	15
Solvent Orange 97	987.097	Sorbitol, propoxylated	15
Solvent orange dyes, all other	988.000	Soya fatty acids, reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	12
Solvent Red 1	989.000	Soya fatty acids, reaction products with chloromethane and diethylenetriamine, propoxylated, quaternized	12
Solvent Red 22	991.000	Soya sterols, ethoxylated	12
Solvent Red 23	991.023	Soybean oil acids (Ratio = 2/1)	12
Solvent Red 24	992.000	Soybean oil acids (Ratio = 1/1)	12
Solvent Red 26	993.000	Soybean oil acids (Ratio = 1/1)	12
Solvent Red 27	994.000	(Soybean oil alkyl) amine	12
Solvent Red 42	995.042	(Soybean oil alkyl) amine, ethoxylated	12
Solvent Red 49	999.000	N-(Soybean oil alkyl) trimethylenediamine	12
Solvent Red 68	1001.000	Soybean oil, sulfated, sodium salt	12
Solvent Red 74	1003.000	Specific gravity 0.940 and below	12
Solvent Red 111	1008.000	Specific gravity 0.940 and below	08
Solvent Red 164	1011.000	Specific gravity over 0.940	08
Solvent Red 165	1011.165	Spectinomycin (animal feed grade)	06
Solvent Red 166	1012.000	Spirinolactone	06
Solvent Red 168	1012.168	Stannous 2-ethylhexanoate	06
Solvent Red 169	1012.169	Stannous octyl phthalate	15
Solvent Red 175	1012.175	Stanzolol	15
Solvent Red 207	1012.207	Stearamide (Octadecane amide)	06
Solvent Red 208	1012.208	Stearamidoethyldiethylamine	15
Solvent Red 210	1012.210	Stearamidoethylethanolamine	12
Solvent Red 222	1012.222	Stearamidoethylethanolamine acetate	12
Solvent red dyes, all other	1013.000	Stearamidoethyl-2-heptadecyl imidazolone	12
Solvent Violet 8	1014.000	Stearamidopropyltrimethylcetyl ammonium tosylate and propylene glycol	12
Solvent Violet 9	1015.000	Stearic acid (Ratio = 2/1)	12
Solvent Violet 13	1016.000	Stearic acid (Ratio = 1/1)	12
Solvent Violet 14	1017.000	Stearic acid (Ratio = 2/1)	12
Solvent Violet 38	1018.038	Stearic acid (Ratio = 1/1)	12
Solvent violet dyes, all other	1019.000	Stearic acid aminoethanolamine (amine acid ratio = 1.0/1.65)	12
Solvent Yellow 3	957.000	Stearic acid-aminoethyl ethanolamine (amine/acid ratio=1.75/1.0)	12
Solvent Yellow 13	958.000	Stearic acid-N-aminoethyl ethanolamine condensate	12
Solvent Yellow 14	958.000	Stearic acid, ammonium salt	12
Solvent Yellow 16	959.000	Stearic acid diethanolamine (amine acid ratio = 1.0/11.6)	12
Solvent Yellow 33	959.016	Stearic acid, diethanolamine condensate, methyl sulfate	12
Solvent Yellow 40	963.000	Stearic acid-dithylenetriamine condensate	12
Solvent Yellow 42	965.000		
Solvent Yellow 43	966.000		
Solvent Yellow 44	967.000		
Solvent Yellow 45	968.000		
Solvent Yellow 56	971.000		
Solvent Yellow 72	973.000		

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	No.	Chemical name	Sect. Item No.	No.
Stearic acid—diethylenetriamine condensate, ethyl sulfate	12	367.500	Succinylcholine chloride	06	480.000
Stearic acid, N,N-dimethylamino-propylamine condensate	12	369.600	Succinyl peroxide	15	1296.500
Stearic acid esters, all other	11	125.000	Sucrose acetate isobutyrate	11	126.000
Stearic acid—ethylenediamine condensate	12	368.290	Sucrose benzoate	15	166.000
Stearic acid—ethylenediamine condensate (amine/acid ratio = 1/2)	12	566.000	Sulfabenzamide	06	208.000
Stearic acid—ethylenediamine condensate, monoethoxylated	12	382.000	Sulfacetamide, sodium	06	212.000
Stearic acid—ethylenediamine condensate, monoethoxylated, ethyl sulfate	12	368.300	Sulfadiazine	06	215.000
Stearic acid ethylene diamine methyl ammonium sulfate	12	501.500	Sulfadiazine, silver	06	215.200
Stearic acid mixed amine condensate	12	369.500	Sulfadimethoxine	03	1412.200
Stearic acid monoethanolamine condensate	12	581.500	Sulfaguanidine	06	221.000
Stearic acid, potassium salt	12	68.000	Sulfamethazine	06	222.000
Stearic acid, sodium salt	12	69.000	Sulfamethazine, sodium	06	223.000
Stearic acid—tetraethylenepentamine condensate	12	370.000	Sulfamethizole	06	224.000
Stearic acid,N,N,N',N'-tetrakis(2-hydroxyethyl)-ethylenediamine salt	12	33.000	Sulfamethoxazole	06	227.000
Stearic acid, triethanolamine salt	12	34.000	Sulfantran	06	232.000
Stearonitrile (Octadecane nitrile)	15	451.000	Sulfasalazine	12	297.000
N-Stearoyl-p-aminophenol	09	104.000	Sulfated animal fats and oils, all other	12	304.000
Stearyl acid phosphate	15	1035.300	Sulfated fish and marine fat oils, all other	12	304.000
Stearyl alcoholand ethoxylated cetaryl alcohol	12	754.800	Sulfathiazole, sodium	06	234.000
Stearyl alcohol, propoxylated	12	733.310	Sulfisoxazole	06	235.000
Stearyl alcohol, propoxylated	12	738.700	Sulfisoxazole, acetyl	06	201.000
Stearylamidopropyl dimethyl amine	12	388.200	5-Sulfoisophthalic acid, 1,3-dimethyl ester	03	1417.000
Stearylamidopropyl dimethylamine lactate	12	474.120	5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt	03	1417.100
Stearylamidopropyl dimethyl myristyl acetate ammonium chloride	15	477.400	5-Sulfoisophthalic acid, lithium salt	03	1417.300
Stearyl amine polyphosphoric acid, ethoxylated	12	112.810	5-Sulfoisophthalic acid, sodium salt	03	1417.500
Stearylureamide	15	284.000	Sulfonic acids having amide linkages, all other	12	215.000
Stearyl methacrylate	15	1053.000	Sulfonic acids with ether linkages, all other	12	189.000
Stearyl pyridium chloride	12	501.550	4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenyl sulfone)	03	1420.000
Stearyl stearamide	15	254.200	4-Sulfoisophthalic acid	03	1421.000
Straight polystyrene	08	44.030	5-Sulfosalicylic acid, sodium salt	03	1421.300
Streptomycin	06	76.000	Sulfosuccinamic acid derivatives, all other	12	181.000
Streptozocin	06	279.500	Sulfosuccinic acid, bis(disisobutyl) ester, amidodisodium salt	12	190.000
Strontium naphthenate	14	313.000	Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl) ester, sodium salt	12	191.000
Strontium stearate	15	762.200	Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt	12	192.000
Styrenated-alkyds, or copolymer alkyds	08	3.500	Sulfosuccinic acid, dihexyl ester, sodium salt	12	194.210
Styrene (Vinylbenzene)	03	1411.000	Sulfosuccinic acid, diisobutyl ester, sodium salt	12	194.220
Styrene-acrylonitrile copolymer resins (SAN)	08	43.000	Sulfosuccinic acid, diisooctyl ester, sodium salt	12	194.300
Styrene-allyl alcohol copolymer resins	08	44.043	Sulfosuccinic acid, dioctyl ester, sodium salt	12	195.000
Styrene-butadiene, dry type	10	3.100	Sulfosuccinic acid, dipentyl ester, sodium salt	12	196.000
Styrene-butadiene latexes	08	44.060	Sulfosuccinic acid, dtridecyl ester, sodium salt	12	196.000
Styrene-butadiene, latex type	10	3.500	Sulfosuccinic acid, (lauryl polyethylene glycol ether) ester, disodium salt	12	196.450
Styrene-butadiene type elastomers, other	10	4.500	Sulfosuccinic acid esters, all other	12	197.000
Styrene-butadiene-vinylpyridine	10	4.000	Sulfosuccinic acid, (coconut oil alkyl)limincoisopropanol half-ester, sodium salt	12	193.400
Styrene copolymers, all other	08	44.049	Sulfosuccinic acid, mixed linear alcohols, ethoxylate ester, sodium salt	12	196.160
Styrene latexes, all other	08	44.080	Sulfosuccinic acid, monoiaureth ester, disodium salt	12	196.495
Styrene-maleic anhydride copolymer resins	08	44.045	Sulfosuccinic acid, monooleamidopolyethyleneglycol ester, disodium salt	12	196.515
Styrene-methyl methacrylate copolymer resins	08	44.047	Sulfosuccinic acid myristyl ester disodium monoethanolamine salt	12	196.580
Styrene oxide	15	165.000	Sulfosuccinic acid, nonoxynyl-to ester, disodium salt	12	196.570
Styrene type plastics materials, all other	08	45.500			
Succinaldehyde-sodium bisulfite complex	15	803.400			
Succinic anhydride	15	165.500			

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Sulfocinnic acid, oleamidopolyethyleneglycol, disodium salt	12	(Tallow alkyl) amine	12
Sulfoxone, sodium	06	(Tallow alkyl) amine acetate	12
Sulfur Black 1	04	(Tallow alkyl) amine, ethoxylated	12
Sulfur Black 11, 11:1	04	(Tallow alkyl) amine, ethoxylated, diethosulfate	12
Sulfur compounds, all other	14	(Tallow alkyl)-bis-(2-hydroxyethyl)methylammonium chloride	12
Sulfuric acid esters, all other	12	N-(Tallow alkyl)dipropylenetriamine	12
Sulfurized corn oil	15	N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	12
Sulfurized lard oil	14	Tallow alkyl-propylenediamine methylenammonium sulfate	12
Sulfurized sperm oil substitutes	04	N-(Tallow alkyl)trimethylenediamine	12
Sulfur orange dyes, all other	04	N-(Tallow alkyl)trimethylenediamine acetate	12
Sulfur Red 10	04	N-(Tallow alkyl)trimethylenediamine, ethoxylated	12
Sulfur yellow dyes, all other	04	N-(Tallow alkyl)-N,N'-trimethyl-1,3-propane diamine	12
Sulindac	06	Tallow amide, hydrogenated	12
Sympathomimetic (adrenergic) agents, all other	06	Tallow amine, ethoxylated, quarternary ammonium salt	15
Synthetic sweetener material, all other	07	Tallow, n-3-(dimethylamino)propyl (amine/acid ratio = 1/3)	12
Tail oil acids	12	[Tallow ethyl alkyl] amine, ethoxylated, sulfate	12
Tail oil acids	12	Tallow fatty acids-aminoethylethanolamine condensates	12
Tail oil acids/aminoethylpiperazine condensate	12	Tallow nitrite	15
Tail oil acids, diethanolamine salt (condensate)	12	Tallow, sulfated, sodium salt	12
Tail oil acids-diethylenetriamine condensate	12	Tannic acid, N.F.	15
Tail oil acids-dimethylamine condensate (ar... acid ratio = 1/1)	12	Tanning materials, synthetic, all other	14
Tail oil acids, ethoxylated	12	Tar bases: crude bases (dry basis)	01
Tail oil acids, ethoxylated and propoxylated	12	Tar distillates, all other	01
Tail oil acids-mixed polyamine condensate	12	Tar for other uses: crude	01
Tail oil acids-polyalkylenepolyamine condensate	12	Tar for other uses: refined	01
Tail oil acids-polyalkylene polyamine condensate, salts, with dodecylbenzene sulfonic acid and/or tall oil fatty acids	12	Tar, road	01
Tail oil acids, potassium salt	12	Tepyl acetate	07
Tail oil acids, sodium salt	12	Terazosin	169.000
Tail oil acids, sulfated, sodium salt	12	Terbutaline sulfate	359.900
Tail oil acids, triethanolamine salt	12	Terephthalic acid	347.500
Tail oil acyl chloride	15	Terephthalic acid, dimethyl ester	1422.000
(Tall oil alkyl) amine	12	Terephthaloyl chloride	1424.000
Tall oil alky amines, dimers	12	Terephthaloyldiacetic acid, diethyl ester	1424.500
3-(Tall oil amino)propyl amine	12	Terfenadine	1425.000
Tall oil, chemically modified	15	Terpineol	109.000
Tall oil fatty acids (Ratio = 1/2)	12	Terpene hydrocarbons, monocyclic (Solvenol)	182.000
Tall oil fatty acids (Ratio = 2.7/1)	12	Terphenyl (Phenylbiphenyl) (m-, o-, and p-isomers)	1426.000
Tall oil fatty acids (Ratio = 1.5/1)	12	Terpinene-ol	116.500
Tall oil fatty acids, polymerized	12	Terpinene-4-ol	1426.500
Tall oil fatty acids-triethanolamine condensate	15	Terpineol (α- and β-)	119.000
Tall oil, refined, ethoxylated	12	α-Terpineol	117.000
Tall oil salts, all other (Linoleic-rosin acid salts)	15	α-Terpinyl acetate	120.000
Tall oil, sulfated, ammonia salt	12	α-Terpinyl propionate	121.000
Tallow acids (Ratio = 2/1)	12	1-Tert-butyl-2,5-dimethoxybenzene	377.500
Tallow acids	12	Tertiary amyl per-2-ethylhexanoate	1283.200
Tallow acids (amine/acid ratio = 1.00/1.65)	12	Testosterone	641.800
Tallow acids, potassium salt	12	Testosterone cypionate	642.100
Tallow acids, sodium salt	12	Testosterone enanthate	642.300
Tallow acids, triethanolamine salt	12	Testosterone propionate	642.900
Tallow alcohol, ethoxylated	12	Tetrabromobisphenol A	184.000
		1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	1214.000
		Tetrabromophthalic anhydride	1429.000
		Tetrabutylammonium bromide	501.600

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Tetrabutyl titanate	15	N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated	12
2,4,5,6-Tetrachloroisophthalonitrile	31,200	Tetralol	339,000
1,2,4,5-Tetrachloro-3-nitrobenzene	1435,000	Tetra methyl ammonium bromide	07
Tetracycline	37,000	Tetramethylammonium chloride	12
n-Tetradecane	1348,500	1,2,4,5-Tetramethylbenzene (Durene)	03
1-Tetradecanol (Myristyl alcohol)	879,000	N,N,N',N'-Tetramethyl-1,3-butanediamine	15
Tetradecyl-4-ethyl pyridinium chloride	501,605	p-(1,1,3,3-Tetramethylbutyl)phenol	03
Tetradecyl mercaptan	171,200	Tetramethylthylenediamine	15
Tetra-(2,2-dialyloxymethylene)-1-butoxy titanium bis-(ditridecyl) phosphite	784,500	Tetra(methyl-ethyl)lead, (Tel-tml, reacted)	14
Tetraethylammonium bromide	501,610	Tetramethyl lead	14
Tetraethyl ammonium bromide	474,500	Tetramethyl, octahydro acetophenone	07
Tetraethylene glycol	1191,000	Tetramethyl octahydro acetyl naphthalene	07
Tetraethylene glycol diacrylate	1135,000	1,3,6,8-Tetranitro-9H-carbazole	03
Tetraethylene glycol di(2-ethylhexanoate)	126,100	Tetra octyloxy titanium (bis-tridecyl phosphite)	12
Tetraethylene pentamine	303,000	Tetraphenyltin chloride	15
Tetraethyl lead	186,000	Tetrapropyl silicate	15
O,O',O'-Tetraethyl S,S'-methylene bisphosphorodithioate (Ethlion)	227,000	Textile chemicals, other than surface active agents, all other	14
Tetraethyl orthosilicate (Tetraethyl silicate)	1054,000	Thebaine	06
Tetraethyl silicate, condensed	1055,000	Theophylline sodium glycinolate	06
Tetrafluoroethylene, monomer	1270,000	Therapeutic nutrients, all other	06
Tetrafluoromethane (F-14)	1271,000	Thermoplastic resins, benzenoid, all other	08
Tetraheptyl ammonium bromide	501,635	Thermosetting acrylate resins	08
Tetrahydro-allocimerol(50/50 mixture of tetrahydro-linalool and tetrahydro-myrcenol)	189,140	Thermosetting resins, benzenoid, all other	08
Tetrahydrobenzyl alcohol	1437,402	Thermosetting resins, nonbenzenoid, all other	08
Tetrahydro-3,5-dimethyl-4H-1,3,5-oxadiazine-4-thione	6,900	Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, and copolyester)	10
Tetrahydro-3,5-dimethyl-2(1H)-pyrimidinone [3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrozone	166,028	Thiabendazole	06
Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone-3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]-2-propenylidene]hydrozone	1439,000	1,3,4-Thiadiazole, 2,5-bis-bis(dialkylthio) derivatives	14
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (DMTT)	12,000	Thiamine hydrochloride	06
Tetrahydrofuran	1438,000	Thiamine mononitrate	06
Tetrahydrofurfuryl alcohol	83,000	Thiamylal, sodium	06
Tetrahydrofurfuryl oleate	53,000	Thiazole derivatives, cyclic, other	09
1,2,3,4-Tetrahydronaphthalene (Tetraalin)	186,000	Thindyne, ethoxylated	12
1,2,3,4-Tetrahydronaphthalene	1438,253	Thiocarbamide (Diphenylthiourea)	14
Tetrahydropyrimidine from tall oil fatty acids and propylenediamine	174,000	Thiocarbamide	09
Tetrahydrothiophene	187,000	Thiocyanic acid, methylene ester	13
Tetrahydrothiophene-1,1-dioxide (Sulfolane)	188,000	2-(Thiocyanomethylthio)benzothiazole	13
2,2',4,4'-Tetrahydrobenzophenone	497,000	2,2'-Thiodiethanol (Thiodiglycol)	15
Tetra-isopropoxy titanium (bis dioctyl) phosphite	784,550	Thiodiphenol	03
Tetraisopropyl titanate	1061,000	O,O'-(Thiodi-4,1-phenylene)bis(o,o-dimethyl phosphorothioate (Tempfos))	13
Tetrakis(2-chloroethyl)ethylene diphosphate	1035,500	3,3'-Thiodipropionic acid	15
Tetrakis(2-chloroisopropyl)ethylene diphosphate (T-RDT)	1035,550	3,3'-Thiodipropionitrile	15
Tetrakis(2-ethylhexyl) titanate	1082,000	Thiodisuccinic acid	15
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine, propoxylated	338,100	Thioethanol, sodium salt	15
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine, propoxylated	337,590	Thioethanol, sodium salt	15
N,N,N',N'-Tetrakis(2-hydroxypropyl) ethylene diamine		Thiolactic acid	15
		Thionicotinamide	03
		Thiopental, sodium	06
		Thiophane (Tetrahydrothiophene)	02
		Thiophene	15
		Thiophenol	03

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Thiosemicarbazide	15	m-Toluidine	03
Thiostrepton	06	p-Toluidine	03
Thiothixene hydrochloride	06	m-Toluidine, ethoxylated	03
Thiourea resins	08	m-Toluidinomethanesulfonic acid	12
Thyroglobulin	06	p-Toluoyl chloride	03
Thyroid	06	p-Tolylacetalddehyde	03
Ticarcillin, disodium	06	p-Tolyl acetate	07
Timolol maleate	06	2,2'-(m-Tolylimino) diethanol	07
Tin carboxylate	15	p-Tolyl isobutyrate	03
Tin laurate	15	p-Tolyl octanoate	07
Titanic acid esters, all other	15	p-Tolylphenylacetate	07
Titanium acetylacetonate	15	Tolytriazole	03
Titanium acetylacetonate N-2(C- _s to C- ₁₇)alkylamido-N-carboxyethyl,N-2-hydroxyethyl, 3-amino-2-methoxypropyl phosphate, disodium salt	15	Tretinoin (vitamin A acid)	03
Tobramycin	12	1,2,4-Triacetoxymethylene	06
Tocainide	06	1,2,4-Triacetoxymethylene	06
d-α Tocopherol	06	Trialkyl phosphite	03
dl-α Tocopherol	06	Trialkyl thiophosphate	15
dl-α Tocopheryl acetate	06	Triamcinolone	06
dl-α Tocopheryl acetate (animal feed grade)	06	Triamcinolone acetoneide	06
dl-α Tocopheryl acetate (medicinal grade)	06	Triamcinolone diacetate	06
d-α Tocopheryl acid succinate	06	2,4,6-Triamino-5-nitrosopyrimidine	03
Tolazamide	06	Triamterene	03
p-Tolualddehyde	06	Triaryl phosphites	06
Toluene-2,3-(and 3,4)-diamine (35/65 mixture)	07	Tribasic lead maleate	09
Toluene-2,4-diamine (4-m-Tolylenediamine)	03	N,N,N-Tribenzylamine	15
Toluene-2,4-(and 2,6)-diamine (80/20 mixture)	03	2,4,6-Tribromophenol	03
Toluene-3,4-diamine	03	3,4'-5-Tribromosalicylanilide	03
Toluene 2,4-diisocyanate	03	Tri(2-butoxyethyl) phosphate	11
Toluene 2,4-and 2,6-diisocyanate (80/20 mixture)	03	Tributyl acetylacrylate	11
Toluene 2,4-and 2,6-diisocyanate (65/35 mixture)	03	Tri-n-butylaluminum	15
Toluenedimaleimide	03	Tri-n-butylamine	15
Toluene high purity (98-100%)	02	Tributyl citrate	15
Toluene other	02	Tributylmethyammonium chloride	11
Toluenesulfonamide o-, p-mixtures	11	Tributyl phosphate	12
p-(p-Toluenesulfonamido) diphenylamine	09	S,S,S-Tributyl phosphorotrithioate	15
p-Toluenesulfonic acid	03	Tributyl phosphorotrithioate (Merphos)	13
p-toluenesulfonic acid, aniline salt	03	Tributyltin benzoate	209.000
p-toluenesulfonic acid, copper salt	03	Tributyltin chloride	202.500
Toluenesulfonic acid, potassium salt	12	Tributyltin fluoride	195.016
Toluenesulfonic acid, sodium salt	12	Tributyltin propylene glycol maleate	1406.000
o-Toluenesulfonyl chloride	03	Trichloromethazine	786.000
p-Toluenesulfonylhydrazide	09	Trichloroacetoneitrile	726.000
p-Toluenesulfonyl isocyanate	03	S-(1,2,3-Trichloroallyl) diisopropylthiocarbamate (Triallate)	455.400
p-Toluenesulfonylisocarbazine	09	1,2,3-(and 1,2,4)-Trichlorobenzene	211.000
Toluene xylene sulfonic acid	12	1,2,4-Trichlorobenzene	1490.000
m-Toluic acid	03	1,1,1-Trichloro-2-bis(p-methoxyphenyl)ethane (Methoxychlor)	1491.000
m-Toluic acid, 6-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl-2-yl)-, methyl ester and p-toluic acid, 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl-2-yl)-, methyl ester	03	3,4,4'-Trichlorocarbanilide	146.000
p-Toluic acid, methyl ester	03	1,1,1-Trichloro-2,2-diphenylethane	203.000
o-Toluidine	03	1,1,1-Trichloroethane (Methyl chloroform)	1492.200
		1,1,2-Trichloroethane (Vinyl trichloride)	1245.000
		Trichloroethylene	15
		Trichlorofluoromethane (F 11)	1247.000
		α-(Trichloromethyl)benzyl acetate (Fosetone)	1272.000
			91.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Sect. Item No.
Trichloromethylsilane	15	1394.000
3-Trichloromethyl-1,2,4-thiadiazole	03	1492.500
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan)	13	34.000
N-Trichloromethylthiophthalimide (Folpet)	13	35.000
1,2,4-Trichloro-5-nitrobenzene	03	1493.000
Trichloronitromethane (Chloropicrin)	13	242.000
Trichlorophenylsilane	03	1494.000
1,2,3-Trichloropropene	15	1249.000
Trichloropropylsilane	15	1395.000
α, α, α -Trichlorotoluene (Benzotrifluoride)	03	1495.000
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	03	1499.000
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric acid)	15	204.000
Trichlorotrifluoroethane	15	1273.000
Trichlorovinylsilane	15	1396.000
Tricresyl phosphate	11	14.000
Tricyclohexylin hydroxide	13	166.031
1-Tridecanol	15	880.000
Tridecyl alcohol, ethoxylated and phosphated, polyalkylene polyamine salt	12	90.010
Tridecyl alcohol, ethoxylated	12	769.000
Tridecyl alcohol, ethoxylated and carbonated, sodium salt	12	319.000
Tridecyl alcohol, ethoxylated and phosphated	12	90.000
Tridecyl alcohol ethoxylated and phosphated, potassium salt	12	90.020
Tridecyl alcohol, ethoxylated and sulfated, ammonium salt	12	281.000
Tridecyl alcohol, ethoxylated and sulfated, sodium salt	12	282.000
Tridecyl alcohol, propoxylated and ethoxylated	12	770.000
Tridecylbenzenesulfonic acid	12	139.100
Tridecylbenzenesulfonic acid, sodium salt	12	139.200
Tridecylxypoly(ethyleneoxy)acetic acid, sodium salt	12	50.000
Tridecylxypoly(ethyleneoxy)propionic acid, potassium salt	12	18.500
3-(3-Tridecylxy)propylaminopropyl amine	12	339.600
Tridecylphenol, ethoxylated	12	756.000
Tridecyl stearate	15	980.000
Tridecyl stearate	11	124.800
Tridecyl sulfate, sodium salt	12	246.000
Tridecyl-3-(trimethylamine) ether	12	339.660
Tridhexethyl chloride	06	293.900
Tri(dimethylaminomethyl)phenol	03	1499.208
Tri(2,4-ditertiarybutyl phenyl) phosphite	15	204.500
Triethanolamine	15	381.000
Triethanolamine, ethoxylated	12	340.000
Triethanolamine salicylate	12	340.100
Triethanolamine titanate	15	1062.500
Triethyl acetylacrylate	11	71.300
Triethylaluminum	15	1364.000
Triethylamine	15	279.000
Triethylborane	15	1368.800
Triethyl borate	15	1368.804
Triethylboron	15	1368.830
Triethyl citrate	15	1084.500
Triethyl citrate	11	71.400
Triethylene diamide	15	255.500
Triethylenediamine	15	305.600
Triethylene glycol	15	1194.000
Triethylene glycol dicaprylate	11	126.400
Triethylene glycol di(caprylate-caprate)	11	127.000
Triethylene glycol di(2-ethylbutyrate)	11	128.000
Triethylene glycol di(2-ethylhexanoate)	11	129.000
Triethylene glycol dipelargonate	11	101.800
Triethylenepentamine	15	305.700
Triethylenetetramine	15	306.000
Triethylenetetramine, propoxylated	15	482.500
Tri(2-ethylhexyl) trimellitate	11	54.750
Triethyl orthoacetate	15	1064.000
Triethyl orthoformate	15	1065.000
Triethyl orthopropionate	15	1066.000
Triethyl phosphate	11	103.000
Triethyl phosphite	15	1040.000
Triethyltrimethylenetriamine	09	7.000
Trifluoperazine	06	493.001
Trifluoperazine hydrochloride	06	491.000
Trifluoroacetic acid	15	584.009
Trifluoroacetic anhydride	15	584.010
α, α, α -Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin)	13	116.000
α, α, α -Trifluoro-2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-p-toluidine (Ethylfluralin)	13	116.100
Trifluoroethanol	15	1273.490
Trifluoroethyl methacrylate	15	1066.130
Trifluoropropene	15	1273.550
Tri-n-hexyl aluminum	15	1364.900
Tri-n-hexyltrimellitate	11	54.850
Trihexyphenidyl hydrochloride	06	305.000
Tri(hydrogenated tallow) amine	12	446.050
Trihydrogenated tallow ammonium chloride	12	501.800
Trisobutylaluminum	15	1365.000
Trisobutylene polysulfide	14	263.000
Trisodocylamine	12	444.300
Trisodocylphosphite	15	1040.500
Trisodocyl trimellitate	11	54.900
Trisononyl trimellitate	11	54.950
Triso-octyl phosphite	15	1041.000
Triso-octyl trimellitate	11	55.000
Trisopropanolamine	15	409.000
1,3,5-Tri(2-isopropanol)-s-triazine	13	40.150
Trisopropyl phosphite	15	1042.000
Trilaurylamine	12	444.600
All other trimellitic acid esters	11	57.000
Trimellitic anhydride, acid chloride	03	1509.100
Trimellitic trichloride	03	1509.300
Trimer dibasic acids	15	584.100
Trimesic acid	03	1510.000
Trimethobenzamide hydrochloride	06	82.000

Table D-1—Continued
Alphabetical chemical index

Chemical name	Sect. Item No.	Chemical name	Sect. Item No.
Trimethoprim	06	2, 4, 6-Trinitroresorcinol and lead derivative	15
Trimethoxyboroxine	15	Tri-n-octylaluminum	15
Tri(methoxymethyl) tri(stearoxymethyl) melamine	15	Triocetylamine	12
(Trimethoxysilyl propyl) didecyl methylammonium chloride	15	Tri-n-octyl n-decyl trimellitate	11
Trimethylaluminum	15	Triocetyl trimellitate	11
Trimethyl amine	15	s-Trioxane	15
Trimethylamine hydrochloride	15	Tri-oxaluminum tri-isopropoxide	15
Trimethylaminoethyl acrylate chloride polymer	14	Tripelennamine	06
2, 4, 6-Trimethylaniline (Mesidine)	03	Tripelennamine citrate	06
1, 2, 4-Trimethylbenzene (Pseudocumene)	03	Tripelennamine hydrochloride	06
1, 3, 5-Trimethylbenzene (Mesitylene)	03	Tripentylamine	15
Trimethyl benzyl dioxane	07	Tripentylmethane	03
Trimethyl-cyclododeca-trienyl ethanone	07	Triphenyl phosphate	11
Trimethyl-1-cyclohexane	15	Triphenylphosphine	03
3, 3, 5-Trimethylcyclohexanol (m-Hormomenthol)	15	Tripheyl phosphite	15
3, 3, 5-Trimethyl cyclohexanol (m-Hormomenthol)	15	Tripheyl phosphite	15
3, 5, 5-Trimethyl-2-cyclohexene-1-one (Isophorone)	07	Tripheylsulfonium chloride	03
Trimethyl cyclohexenyl butenone	15	Tripheyltin hydroxide	15
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl- α -ionone)	07	Tripollidine hydrochloride	06
Trimethylcyclohexyl salicylate	07	Tripopylamine	15
3, 5, 5-Trimethyl hexanal	07	Tripopylene glycol	15
1, 1, 3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane	09	Tripopylene glycol diacrylate	15
1, 3, 3-Trimethyl- δ_2 , α -indolinacetaldhyde	03	Tripopylene glycol monomethyl ether	15
N,N,N-Trimethyl methanaminium octahydrotriborate	15	Tris(2-chloroethyl) phosphite	15
Trimethyl-p-methylbenzyl ammonium chloride	12	Tris(chloroisopropyl)thionophosphate	15
Trimethyl (mixed alkyl) ammonium chloride	12	Tris-2-chloropropyl phosphate	15
2, 6, 8-Trimethyl-4-nonanone	15	$\alpha, \alpha', \alpha''$ -Tris (dimethylamino)mesitol	03
2, 6, 8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	15	Tris(2-ethylhexyl)phosphite	15
Trimethylonyl alcohol, ethoxylated	12	Tris(2-methoxyethoxy)vinyl silane	15
Trimethyl norbornane methanol	07	Tris(2-methyl-1-aziridinyl)phosphine oxide	03
Trimethyl octadecylammonium chloride	12	Tris(pentamethyldisiloxanyl)-3-methacrylatopropylsilane	15
Trimethylpropane, alkoxyated	12	Tristearyl citrate	15
Trimethylolpropane ester	14	Tri- and tetraethylene glycol monoethyl ethers, borate esters	15
Trimethylolpropane ethoxylate triacrylate	15	Tri(tridecyl)amine	12
Trimethylolpropane triacrylate	15	Tubocurarine	06
Trimethylolpropane tri(2-mercaptopropionate)	15	Tylosin	06
Trimethylolpropane trioleate (TMP trioleate)	15	Undecanal	07
Trimethyl orthoformate	15	Undecanol (linear C ₁₁ alcohol)	15
2, 2, 4-Trimethylpentane (Iso-octane)	02	9-Undecenal	07
2, 2, 4-Trimethyl-1, 3-pentanediol	15	Urea, 2-[(2-aminoethyl)amino]ethanol polymer, stearate	14
2, 2, 4-Trimethyl-1, 3-pentanediol diisobutyrate	11	Urea-formaldehyde resins	08
2, 2, 3-Trimethyl-1, 3-pentanediol monoisobutyrate	15	Urea in feed compounds (100% basis)	14
Trimethylphenylammonium chloride	03	Urea in liquid fertilizer (100% basis)	14
Trimethyl phosphate	15	Urea in plastics (100% basis)	14
Trimethyl (soybean oil alkyl) ammonium chloride	12	Urea in solid fertilizer (100% basis)	14
Trimethylsulfonium iodide	15	Urea polymers with formaldehyde and methanol	14
Trimethyl (tallow alkyl) ammonium chloride	12	Urea, polymer with tetrakis [hydroxymethyl] phosphonium sulfate	14
Triglycyltetradecylammonium bromide	12	Urea, primary solution (Report on 100% urea-content basis)	14
trimethyl trimellitate	11	7, 7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid]	14
α, β -5-Trimethyl-5-vinyl-furfuryl alcohol and tetrahydro-2, 2, 6-trimethyl-6-vinyl-3-ol	07	Uricase	03
5-(2, 2, 3-Trimethyl(cyclopent-3-en-1-yl)-3-methylpentan-2-yl)amine	07	Valeraldehyde (Pentanal)	14
Tri(mixed alkyl) amine	12	Valeric acid	15
			585.000

Table D-1—Continued
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Chemical name	Sect. Item No.	Sect. Item No.
Valerol chloride	15	585.050
Valproate, sodium	06	423.850
Valproic acid	06	423.900
Vanadyl naphthenate	14	314.000
Vancornycin	06	61.000
Vat Black 16	04	1206.016
Vat Black 25, 12-1/2%	04	1209.000
Vat Blue 1, 20%	04	1164.000
Vat Blue 6, 8-1/3%	04	1167.000
Vat Blue 16, 16%	04	1171.000
Vat Blue 19	04	1172.019
Vat Blue 29	04	1173.029
Vat Blue 43	04	1175.000
Vat Blue 66	04	1175.066
Vat Brown 57, 12.8%	04	1200.000
Vat brown dyes, all other	04	1201.000
Vat Green 1, 6%	04	1178.000
Vat Green 3, 10%	04	1180.000
Vat Green 7	04	1180.007
Vat Orange 2, 12%	04	1131.000
Vat Orange 7, 11%	04	1136.000
Vat Red 1, 13%	04	1142.000
Vat Red 10, 18%	04	1144.000
Vat Red 15, 10%	04	1148.000
Vat Red 32, 20%	04	1151.000
Vat red dyes, all other	04	1154.000
Vat Violet 13, 6-1/4%	04	1159.000
Vat Yellow 22, 10%	04	1126.000
Vat Yellow 51	04	1127.051
Vegetable glycerides, hydrogenated	15	1330.400
Vegetable oils, sulfated, all other	12	313.000
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	03	1529.000
Very high molecular weight (>1000) hydrocarbons	14	292.000
Vetivanol	07	124.000
Vetiveryl acetate	07	125.000
Vincristine sulfate	06	282.000
Vinyl acetate-acrylate copolymers	08	50.080
Vinyl acetate, monomer	15	1059.000
Vinylacetonitrile	15	456.000
Vinyl bromide (Bromoethylene)	15	1215.000
Vinyl chloride-acetate copolymer resins	08	50.090
Vinyl chloride, monomer (Chloroethylene)	15	1250.000
Vinylcyclohexene monoxide	03	1531.503
Vinyl fluoride, monomer	15	1274.000
Vinylidene chloride, monomer (1,1-Dichloroethylene)	15	1251.000
Vinylidene fluoride, monomer	15	1275.000
2-Vinylpyridine	03	1555.000
4-Vinylpyridine	03	1536.000
1-Vinyl-2-pyrrolidone copolymers	15	216.000
1-Vinyl-2-pyrrolidone-maleic anhydride copolymer	15	216.100
1-Vinyl-2-pyrrolidone-methylacrylic acid,		
Dimethylamine ethyl ester, copolymer	15	214.000
1-Vinyl-2-pyrrolidone, monomer	15	215.000
1-Vinyl-2-pyrrolidone, polymers	14	460.000
1-Vinyl-2-pyrrolidonevinyl acetate copolymer	15	217.000
Vinyl resins, all other	08	51.000
Vinyl toluene alkyls	08	3.800
Vinyltriethoxysilane	15	1398.000
Vinyl trimethoxy silane	15	1398.300
Violet 5:1	05	220.000
Violet 27	05	93.227
Vitamin A, all other	06	776.000
Vitamin A acetate (animal feed grade)	06	771.000
Vitamin A acetate (medicinal grade)	06	772.000
Vitamin A alcohol	06	773.000
Vitamin A palmitate (medicinal grade)	06	775.000
Waxes and paraffinic products	09	178.800
Wool wax alcohols, ethoxylated	12	740.500
Xanthan gum	14	451.000
Xanthates and sulfides	14	146.000
o-Xylene (90-100% of o-xylene isomer)	03	1540.000
m-Xylene (90-100% of m-xylene isomer)	03	1539.000
p-Xylene (90-100% Of p-xylene isomer)	03	1541.000
Xylene (Xylol): 90-100%	01	6.000
Xylene high purity (98-100%)	02	30.500
Xylene other	02	31.500
2,4-Xylenesulfonic acid	03	1542.800
Xylenesulfonic acid, ammonium salt	12	148.000
Xylenesulfonic acid, mixed isomers	03	1543.502
Xylenesulfonic acid, sodium salt	12	150.000
2,6-Xylenol	03	1544.500
Xylenol, low boiling point	03	1545.000
Xylidine, original mixture	03	1550.000
Xylose (Intestinal malabsorption test)	06	581.500
Zeranol	06	643.000
Zinc acetate	15	606.000
Zinc acetylacetonate complex	15	1408.900
Zinc t- α -alkylcarboxylate	15	671.950
Zinc citrate	15	626.300
Zinc dialkyldithiophosphate	14	235.000
Zinc dialkylphenol dithiophosphate	14	236.000
Zinc dibutyl phosphorodithioate	14	239.000
Zinc diisodecyl phosphorodithioate	14	241.000
Zinc 2-ethylhexanoate	15	644.000
Zinc gluconate	15	767.300
Zinc hydrocarbon dithiophosphate	06	242.000
Zinc isopropyl xanthate	14	242.000
Zinc laurate (Activator, physical property improver, and processing auxiliary)	09	154.800
Zinc naphthenate	09	179.000
Zinc neodecanoate	14	315.000
Zinc phenolsulfonate	15	710.000
Zinc phenolsulfonate	06	560.000
Zinc salicylate	06	560.500
Zinc stearate	15	763.000
Zinc tallate	15	178.000
Zinc undecylenate	06	140.000
Zirconium acetate	15	607.000
Zirconium t- α -alkylcarboxylate	15	671.975
Zirconium 2-ethylhexanoate	15	645.000
Zirconium neodecanoate	15	711.000
Zirconium acetylacetonate complex	15	1409.500

