

UNITED STATES INTERNATIONAL TRADE COMMISSION

**SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1973**

ITC Publication 728



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**SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1973**

**UNDER THE PROVISIONS OF
SECTION 332 OF THE TARIFF
ACT OF 1930, AS AMENDED**

**U.S. GOVERNMENT PRINTING OFFICE
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ITC Publication 728

UNITED STATES INTERNATIONAL TRADE COMMISSION

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INTRODUCTION

This is the fifty-seventh annual report of the U.S. International Trade Commission (formerly the U.S. Tariff Commission) on domestic production and sales of synthetic organic chemicals and the raw materials from which they are made. It is authorized under the provisions of section 332 of the Tariff Act of 1930, as amended. The report consists of fourteen sections, each covering a specified group (based principally on use) of organic chemicals as follows: Tar and tar crudes; crude products from petroleum and natural gas; intermediates; dyes; pigments; medicinal chemicals; flavor and perfume materials; plastics and resin materials; rubber-processing chemicals; elastomers; plasticizers; surface-active agents; pesticides and related products; and miscellaneous organic chemicals. Data have been supplied by approximately 800 producers.

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 exceeds 1,000 pounds or the value of sales exceeds \$1,000. They are usually given in terms of undiluted materials; however, products of 95 percent or more purity are considered to be 100 percent pure. Commercial concentrations are applied to 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 which 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. Table 1 of the Appendix is a directory, alphabetized by the names of the manufacturers reporting in all sections and includes their office addresses.

Information on the 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* (2d edition), published by the Society of Dyers and Colourists.

Table 2 of the Appendix summarizes and gives the competitive status of U.S. general imports in 1973 of benzenoid intermediates and finished benzenoid products, entered under schedule 4, parts 1B and 1C, of the Tariff Schedules of the United States.

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. 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 when it is isolated from the reaction system and/or when it is weighed, analyzed, or otherwise measured. This includes byproducts and coproducts that are not classifiable as waste materials;

Produced and transferred to other plants or establishments of the same firm;

Produced and sold to other firms, including production for another under a toll agreement (i.e., an agreement, under which one firm furnishes the raw materials and pays the processing costs and the other firm prepares the finished product and returns it to the first firm).

Produced and held in stock.

¹ Title 18, U.S.C. 1905 and Title 44, U.S.C. 3508

INTRODUCTION

PRODUCTION EXCLUDES:

Purification of a commodity, 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;

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 and for export, or segregation in a warehouse when title has passed to the purchaser in a bona fide sale;

Shipments of a commodity produced by others under toll agreements;

Shipments to subsidiary or affiliated companies.

SALES EXCLUDE:

All intra-company transfers within a corporate entity;

All sales of purchased commodities;

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

VALUE OF SALES is the net selling value f.o.b. plant or warehouse, or delivered value, whichever represents the normal industry practice.

SUMMARY

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Combined production of all synthetic organic chemicals, tars, tar crudes, and crude products from petroleum and natural gas in 1973 was 286,092 million pounds--an increase of 7.4 percent over the output in 1972 (see table 1). Sales of these materials in 1973, which totaled 164,312 million pounds valued at \$19,260 million, were 8.9 percent larger than in 1972 in terms of quantity and 20.2 percent larger 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.

In 1973, production of all synthetic organic chemicals, including cyclic intermediates and finished chemical products, totaled 179,717 million pounds, or 9.4 percent more than the output in 1972. Production increased in 1973 compared to 1972 for all subgroups of products except one. Among the groups with large volumes of production, elastomers (synthetic rubbers) (5,990 million pounds) lead with an increase of 21.9 percent and plastics and resins materials (30,251 million pounds) followed with an increase of 16.7 percent. Other groups in the large volume production category increased as follows: Pesticides and related products (1,289 million pounds) and rubber processing chemicals (401 million pounds) both rose by 11 percent, and plasticizers and miscellaneous chemicals increased by slightly less than 10 percent. Medicinal chemicals (234 million pounds), fell 0.3 percent below the 1972 production level.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS AND THEIR RAW MATERIALS:
U.S. PRODUCTION AND SALES, 1972 AND 1973

Chemical	Production			Sales					
				Quantity			Value		
	1972	1973	Increase or decrease (-), 1973 over 1972 ¹	1972	1973	Increase or decrease (-), 1973 over 1972 ¹	1972	1973	Increase or decrease (-), 1973 over 1972 ¹
	Million pounds	Million pounds	Percent	Million pounds	Million pounds	Percent	Million dollars	Million dollars	Percent
Grand total ² -----	266,419	286,092	7.4	150,818	164,312	8.9	16,028	19,260	20.2
Tar -----	7,472	7,325	-2.0	3,409	3,363	-1.3	40	42	5.0
Tar crudes ³ -----	7,937	7,802	-1.7	5,304	5,151	-2.9	126	128	2.3
Crude products from petroleum and natural gas-----	86,792	91,250	5.1	47,900	49,625	3.6	1,177	1,451	23.3
Synthetic organic chemicals, total ² -----	164,218	179,717	9.4	94,205	106,173	12.7	14,686	17,638	20.1
Cyclic intermediates-----	34,967	35,863	2.6	16,196	17,915	10.6	1,434	1,899	32.4
Dyes-----	263	284	7.9	255	266	4.6	480	519	8.1
Organic pigments-----	66	69	5.3	53	61	15.5	149	182	22.0
Medicinal chemicals-----	234	234	-0.3	163	179	9.8	490	582	18.8
Flavor and perfume materials--	110	117	5.9	104	108	4.2	88	108	22.7
Plastics and resin materials--	25,921	30,251	16.7	22,946	27,018	17.7	4,258	5,347	25.6
Rubber-processing chemicals---	361	401	11.1	280	312	11.3	178	199	12.3
Elastomers (synthetic rubbers)-----	4,914	5,990	21.9	4,136	5,159	24.7	1,095	1,297	18.5
Plasticizers-----	1,708	1,873	9.7	1,637	1,708	4.3	291	341	17.5
Surface-active agents-----	4,039	4,372	8.3	2,258	2,580	14.3	451	532	18.0
Pesticides and related products-----	1,158	1,289	11.3	1,022	1,199	17.3	1,092	1,344	23.1
Miscellaneous chemicals-----	90,476	98,974	9.4	45,155	49,667	10.0	4,680	5,287	13.0

¹ Percentages calculated from figures rounded to thousands.

² Because of rounding, figures may not add to the totals shown.

³ Estimated in part to avoid disclosing individual company operations.

SYNTHETIC ORGANIC CHEMICALS, 1973

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 materials, elastomers, plasticizers, surface-active agents, pesticides and related products and miscellaneous chemicals (acyclic intermediates and acyclic and cyclic finished products). Most of these groups are further subdivided either by use or by chemical composition. As intermediate 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 1973 was 179,717 million pounds or 9.4 percent more than the output of 164,218 million pounds reported for 1972 and 71.6 percent more than the output of 104,711 million pounds reported for 1967 (see table 2). Sales of synthetic organic chemicals in 1973 amounted to 106,173 million pounds, valued at \$17,638 million, compared with 94,205 million pounds, valued at \$14,686 million in 1972 and 55,177 million pounds, valued at \$10,438 million in 1967. Production of all cyclic products (intermediates and finished products combined) in 1973 totaled 57,513 million pounds or 7.2 percent more than the 53,637 million pounds reported for 1972 and 71.8 percent more than the 33,479 million pounds reported for 1967. Production of all acyclic products in 1973 totaled 122,204 million pounds, or 10.5 percent more than the 110,580 million pounds reported for 1972 and 71.6 percent more than the 71,232 million pounds reported for 1967.

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1972, AND 1973

[Production and sales in thousands of pounds; sales value in thousands of dollars]

Chemical	1967 ¹	1972	1973	Increase, or decrease (-)	
				1973 over 1967	1973 over 1972
				Percent	Percent
Organic chemicals, cyclic and acyclic, grand total:					
Production-----	104,711,357	164,217,690	179,717,077	71.6	9.4
Sales-----	55,176,823	94,205,254	106,173,335	92.4	12.7
Sales value-----	10,438,453	14,685,582	17,638,472	69.0	20.1
Cyclic, total:					
Production-----	33,479,469	53,637,371	57,512,673	71.8	7.2
Sales-----	19,328,628	31,082,064	35,389,938	83.1	13.9
Sales value-----	4,610,293	6,516,824	7,885,278	71.0	21.0
Acyclic, total:					
Production-----	71,231,888	110,580,319	122,204,404	71.6	10.5
Sales-----	35,848,195	63,123,190	70,783,397	97.5	12.1
Sales value-----	5,828,160	8,168,758	9,753,194	67.3	19.4
1. Cyclic Intermediates					
Production-----	20,793,132	34,967,181	35,863,052	72.5	2.6
Sales-----	9,461,180	16,195,641	17,915,149	89.4	10.6
Sales value-----	1,000,359	1,433,855	1,898,756	89.8	32.4
2. Dyes					
Production-----	206,240	263,304	284,226	37.8	7.9
Sales-----	198,592	254,536	266,199	34.0	4.6
Sales value-----	332,049	479,688	518,621	56.2	8.1
3. Organic Pigments					
Production-----	53,322	65,897	69,395	30.1	5.3
Sales-----	42,867	53,215	61,464	43.4	15.5
Sales value-----	108,354	149,343	182,166	68.1	22.0
4. Medicinal Chemicals					
Cyclic:					
Production-----	110,129	132,586	134,065	21.7	1.1
Sales-----	70,120	81,082	87,129	24.3	7.5
Sales value-----	348,873	433,259	510,677	46.4	17.9
Acyclic:					
Production-----	69,941	101,747	99,518	42.3	-2.2
Sales-----	56,804	82,128	92,049	62.0	12.1
Sales value-----	36,402	56,878	71,675	96.9	26.0

See footnotes at end of table.

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1972, AND 1973--CONTINUED

[Production and sales in thousands of pounds; sales value in thousands of dollars]

Chemical	1967 ¹	1972	1973	Increase, or decrease (-)	
				1973 over 1967	1973 over 1972
				Percent	Percent
<i>5. Flavor and Perfume Materials</i>					
Cyclic:					
Production-----	57,978	51,868	52,928	-8.7	2.0
Sales-----	47,285	48,212	45,553	-3.7	-5.5
Sales value-----	52,866	54,168	66,150	25.1	22.1
Acyclic:					
Production-----	53,558	58,605	64,072	19.6	9.3
Sales-----	49,311	55,780	62,774	27.3	12.5
Sales value-----	40,495	34,234	42,339	4.6	23.7
<i>6. Plastics and Resin Materials</i>					
Cyclic:					
Production-----	5,033,497	8,946,517	9,903,150	96.7	10.7
Sales-----	4,224,121	7,807,933	8,813,959	108.7	12.9
Sales value-----	1,036,940	1,715,579	2,179,687	110.2	27.1
Acyclic:					
Production-----	8,759,452	16,973,665	20,347,467	132.3	19.9
Sales-----	7,753,242	15,138,142	18,204,270	134.8	20.3
Sales value-----	1,635,690	2,542,861	3,167,741	93.7	24.6
<i>7. Rubber-Processing Chemicals</i>					
Cyclic:					
Production-----	220,139	309,930	338,368	53.7	9.2
Sales-----	169,970	240,044	263,833	55.2	9.9
Sales value-----	116,318	157,944	175,825	51.2	11.3
Acyclic:					
Production-----	43,994	51,091	62,557	42.2	22.4
Sales-----	30,878	40,199	48,136	55.9	19.7
Sales value-----	15,477	19,705	23,664	52.9	20.1
<i>8. Elastomers (Synthetic Rubbers)</i>					
Cyclic:					
Production-----	2,297,637	2,705,599	3,517,739	53.1	30.0
Sales-----	1,940,099	2,177,303	3,018,006	55.6	38.6
Sales value-----	439,580	470,549	571,902	30.1	21.5
Acyclic:					
Production-----	1,524,908	2,208,360	2,472,272	62.1	12.0
Sales-----	1,321,945	1,958,960	2,141,245	62.0	9.3
Sales value-----	434,657	624,257	725,535	66.9	16.2
<i>9. Plasticizers</i>					
Cyclic:					
Production-----	929,871	1,301,955	1,502,160	61.5	15.4
Sales-----	865,084	1,273,191	1,389,714	60.6	9.2
Sales value-----	167,827	180,051	233,556	39.2	29.7
Acyclic:					
Production-----	332,908	406,358	371,223	11.5	-8.6
Sales-----	296,767	364,306	318,699	7.4	-12.5
Sales value-----	93,142	110,513	107,829	15.8	-2.4

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1972, AND 1973--CONTINUED

[Production and sales in thousands of pounds; sales value in thousands of dollars]

Chemical	1967 ¹	1972	1973	Increase, or decrease (-)	
				1973 over 1967	1973 over 1972
10. Surface-Active Agents				Percent	Percent
Cyclic: ²					
Production-----	1,418,444	1,641,552	1,872,378	32.0	14.1
Sales-----	852,238	1,053,240	1,368,796	60.6	30.0
Sales value-----	95,810	129,792	161,829	68.9	24.7
Acyclic:					
Production-----	2,060,851	2,397,235	2,500,038	21.3	4.3
Sales-----	897,786	1,204,306	1,210,868	34.9	.5
Sales value-----	220,877	320,976	370,011	67.5	15.3
11. Pesticides and Related Products					
Cyclic:					
Production-----	823,158	839,360	750,829	-8.8	-10.5
Sales-----	681,532	719,707	681,344	(³)	-5.3
Sales value-----	627,742	889,613	862,753	37.4	-3.0
Acyclic:					
Production-----	226,505	318,338	538,123	137.6	69.0
Sales-----	215,831	301,858	517,224	139.6	71.3
Sales value-----	159,301	202,095	480,828	201.8	137.9
12. Miscellaneous Chemicals					
Cyclic:					
Production-----	1,535,922	2,411,142	3,224,383	109.9	33.7
Sales-----	775,540	1,177,960	1,478,792	90.7	25.5
Sales value-----	283,575	422,983	523,356	84.6	23.7
Acyclic:					
Production-----	58,159,771	88,064,920	95,749,134	64.6	8.7
Sales-----	25,225,631	43,977,511	48,188,132	91.0	9.6
Sales value-----	3,192,119	4,257,239	4,763,572	49.2	11.9

¹ Standard reference base period for Federal Government general-purpose index numbers.² Includes ligninsulfonates.³ Less than 0.05 percent.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1973 of one or more of the chemicals included in the groups listed in table 2:

Chemical group	Number of companies	Chemical group	Number of companies
Cyclic intermediates-----	191	Rubber-processing chemicals-----	30
Dyes-----	42	Elastomers (synthetic rubbers)-----	41
Organic pigments-----	32	Plasticizers-----	55
Medicinal chemicals-----	96	Surface-active-----	185
Flavor and perfume materials-----	48	Pesticides and related products-----	81
Plastics and resin materials-----	230	Miscellaneous chemicals-----	304

Tar

Coal tar is produced chiefly by the steel industry as a byproduct 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 tars. Petroleum asphalts are not usually considered to be raw materials for chemicals.

The quantity of tar produced in the United States in 1973 was almost entirely coal tar which amounted to 732 million gallons (see table 1¹). Production in 1973 was 2 percent less than the 747 million gallons of coal tar produced in 1972. Sales of coal tar in 1973 amounted to 336 million gallons, valued at \$42 million, compared with 341 million gallons, valued at \$40 million, in 1972. U.S. production of water-gas and oil-gas tars was not reported to the Commission for 1972 or 1973; production of these tars in 1968 amounted to 21 million gallons, according to trade publications.

Consumption of tar in 1973 amounted to an estimated 721 million gallons, of which 77 percent was consumed in distillation. Estimates of tar used by the producers as fuel amounted to 140 million gallons; a lesser amount, 3.0 million gallons, was consumed by coke-oven operators in miscellaneous uses (see table 1A).

Tar Crudes

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 1 and 1B.

Domestic production of industrial and specification grades of benzene reported by coke-oven operators and petroleum refinery operators² in 1973 amounted to 1,453 million gallons--16.1 percent more than the

¹ See also table 2 of this section which lists the products in table 1 and identifies the manufacturers by code. These codes are given in table 3.

² Statistics on production and sales of benzene, toluene, and xylene by tar distillers cannot be shown because publication would reveal the operations of individual companies.

1252 million gallons reported for 1972. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum refiners in 1973 amounted to 719 million gallons, valued at \$207 million, compared with 679 million gallons, valued at \$138 million, in 1972. In 1973 the output of toluene² (including material produced for use in blending in aviation fuel) amounted to 958 million gallons--4.6 percent more than the 916 million gallons reported for 1972. Sales of toluene in 1973 were 513 million gallons, valued at \$115 million, compared with 546 million gallons, valued at \$92 million, in 1972. The output of xylene² in 1973 (including that produced for blending in motor fuels) was 785 million gallons, compared with 739 million gallons in 1972. Over 99 percent of the 785 million gallons of xylene produced in 1973 was obtained from petroleum sources.

Production (or sales) figures on crude naphthalene from coal-tar oils in 1973, could not be published without disclosing the operations of individual companies. Production of petroleum-derived naphthalene in 1973 amounted to 240 million pounds, compared with 231 million pounds in 1972. In 1973 the output of creosote oil for wood preservation was 111 million gallons (100 percent creosote basis), compared with 139 million gallons in 1972. Production figures on road tar for 1973 cannot be published; in 1972 production amounted to 30 million gallons.

Some of the products obtained from tar and included in the statistics in table 1 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. After duplication has been eliminated insofar as possible, the estimated net value of the output (from all sources) of these products and of tar burned as fuel was \$962 million in 1973, compared with \$698 million in 1972. The total value of sales of those products obtained from coke-oven gas and tars shown in table 1 (exclusive of coal tar itself), amounted to \$128 million in 1973, compared with \$126 million in 1972.

Data for 1973 tar crudes were supplied by 12 companies and company divisions.

See footnote 2 on page 1.

TAR AND TAR CRUDES

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TABLE 1.--TAR AND TAR CRUDES: U.S. PRODUCTION AND SALES, 1973

[Listed below are all tar crudes for which any reported data on production or sales may be published. (Leaders...) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists separately all products for which data on production or sales were reported and identifies the manufacturers reporting to the U.S. International Trade Commission]

Product	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value ¹
				<i>1,000 dollars</i>	
Tar: ² Coke-oven operators-----	1,000 gal--	732,455	336,342	41,705	\$0.124
Crude light oil: ³ Coke-oven operators-----	1,000 gal--	226,109	93,819	13,183	.141
Intermediate light oil: Coke-oven operators-----	1,000 gal--	5,118	1,029	100	.097
Light-oil distillates:					
Benzene, specification and industrial grades, total ^{3 4} -----	1,000 gal--	1,453,261	719,343	206,752	.287
Coke-oven operators-----	1,000 gal--	85,876	76,823	20,504	.267
Petroleum refiners-----	1,000 gal--	1,367,385	642,520	186,248	.290
Toluene, all grades, total ^{3 4} -----	1,000 gal--	958,195	512,803	115,176	.225
Coke-oven operators-----	1,000 gal--	14,496	14,127	3,160	.224
Petroleum refiners-----	1,000 gal--	943,699	498,676	112,016	.225
Xylene, all grades ^{3 4} -----	1,000 gal--	785,132	564,452	116,759	.207
Coke-oven operators-----	1,000 gal--	3,104	3,040	689	.227
Petroleum refiners-----	1,000 gal--	782,028	561,412	116,070	.207
Solvent naphtha: Coke-oven operators-----	1,000 gal--	2,806	2,514	513	.204
Crude tar-acid oils ³ Coke-oven operators-----	1,000 gal--	7,065	7,027	1,199	.171
Creosote oil (Dead Oil) (tar distillers and coke-oven operators) (100% creosote basis), total ⁵ -----	1,000 gal--	110,612	86,572	20,192	...
Distillate as such (100% creosote basis)-----	1,000 gal--	87,679	65,050	13,232	.204
Creosote content of coal tar solution (100% creosote basis) ⁶ -----	1,000 gal--	22,933	21,522	⁶ 6,960	(¢)
All other distillates, total-----	1,000 gal--	139,759	75,326	13,485	.179
Coke-oven operators, total-----	1,000 gal--	7,219	5,721	979	.171
From light oil-----	1,000 gal--	4,297	3,005	777	.259
Other ⁷ -----	1,000 gal--	2,922	2,716	202	.075
Tar distillers ⁸ -----	1,000 gal--	132,540	69,605	11,527	.166
Tar, refined, for uses other than road tar-----	1,000 gal--	14,741	13,248	3,702	.280
Pitch of tar (tar distillers and coke-oven operators), total-----	1,000 tons	1,386	1,001	50,845	50.794
Soft (water softening point less than 100° F.): Coke-oven operators---	1,000 tons	218	13	527	40.539
Other ⁹ -----	1,000 tons	1,168	988	50,318	50.929

¹ Unit value per gallon, pound, or ton, as specified.

² Includes only data for coal tar reported to the Division of Fossil Fuels, U.S. Bureau of Mines. Data on U.S. production of water-gas tar and oil-gas tar are not collected by the International Trade Commission, but according to trade publications, production of these tars amounted to 21 million gallons in 1968.

³ Data reported by tar distillers are not included because publication would disclose the operations of individual companies. Production of benzene, toluene, and xylene by tar distillers decreased in 1973, compared with 1972. 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.

SYNTHETIC ORGANIC CHEMICALS, 1973

Footnotes for table 1--Continued

⁴ Includes data for material produced for use in blending motor fuels.

⁵ Statistics include data only for creosote oil sold for, or used in, wood preserving.

⁶ In 1973, production of coal-tar solution containing creosote (100% solution basis) amounted to 38,388 thousand gallons; sales were 36,167 thousand gallons, valued at 6,960 thousand dollars, with a unit value of \$0.193 per gallon.

⁷ Includes data for crude sodium phenolate.

⁸ Includes data for crude light oil, benzene, toluene, solvent naphtha, rubber-reclaiming oils, pyridine crude bases, crude tar-acid oils, crude cresylic acid, neutral oils, methylnaphthalene, crude tar for other uses, unspecified tar distillates, road tar, and a small amount of ethylbenzene. U.S. production and sales of two other distillates could not be published without disclosing the operations of individual companies; combined sales of crude naphthalene and soft pitch of tar in 1973 amounted to over \$4.5 million.

⁹ Includes hard pitch and pitch emulsion, along with a small amount of medium pitch produced by coke-oven operators.

Note.--Statistics for materials produced in coke and gas-retort ovens are compiled by the Division of Fossil Fuels, U.S. Bureau of Mines, Department of the Interior. Statistics for materials produced in tar and petroleum refineries are compiled by the U.S. International Trade Commission.

TABLE 1A.--TAR: U.S. PRODUCTION AND CONSUMPTION, 1972 AND 1973

(In thousands of gallons)		
Product	1972	1973
PRODUCTION		
Coal tar from coke-oven byproduct plants, total ¹ -----	747,186	732,455
CONSUMPTION		
Total-----	715,823	(E) 720,773
Tar consumed by distillation, total-----	592,507	(E) 577,773
Coal tar distilled or topped by coke-oven operators ¹ -----	273,388	(E) 250,000
Coal tar and water-gas tar distilled by tar distillers ² -----	319,119	327,773
Tar consumed by the producers chiefly as fuel ¹ -----	119,030	(E) 140,000
Coal tar consumed at coke-oven plants in miscellaneous uses ¹ -----	4,286	(E) 3,000

¹ Reported to the Division of Fossil Fuels, U.S. Bureau of Mines. Consumption of tar by the producers in 1973 has been estimated by the U.S. International Trade Commission. Statistics on actual consumption of these items are published by the U.S. Bureau of Mines.

² Reported to the U.S. International Trade Commission. Represents tar purchased from companies operating coke ovens and gas-retort plants and distilled by companies operating tar-distillation plants. Statistics also include tar consumed other than by distillation by tar distillers.

TAR AND TAR CRUDES

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TABLE 1B.--TAR AND TAR CRUDES: SUMMARY OF U.S. PRODUCTION OF SPECIFIED PRODUCTS
1967, 1972, AND 1973

[Leaders (...) are used where the reported data are accepted in confidence and may not be published or where no data were reported]

Product	Unit of quantity	1967 ¹	1972	1973	Increase, or decrease (-)	
					1973 over 1967	1973 over 1972
					Percent	Percent
Tar ² -----	1,000 gal--	780,334	747,186	732,455	-6.1	-2.0
Benzene: ³						
Coke-oven operators-----	1,000 gal--	90,642	79,849	85,876	-5.3	7.5
Petroleum refiners-----	1,000 gal--	878,704	1,172,593	1,367,385	55.6	16.6
Total-----	1,000 gal--	969,346	1,252,442	1,453,261	49.9	16.0
Toluene: ³						
Coke-oven operators-----	1,000 gal--	19,357	14,571	14,496	-25.1	-0.5
Petroleum refiners-----	1,000 gal--	⁴ 624,454	⁴ 901,301	⁴ 943,699	51.1	4.7
Total-----	1,000 gal--	643,811	915,872	958,195	48.8	4.6
Xylene: ³						
Coke-oven operators-----	1,000 gal--	5,488	3,351	3,104	-43.4	-7.4
Petroleum refiners-----	1,000 gal--	⁴ 449,349	⁴ 735,981	⁴ 782,028	74.0	6.3
Total-----	1,000 gal--	454,837	739,332	785,132	72.6	6.2
Naphthalene:						
Crude ⁵ -----	1,000 lb---	520,991	410,075	⁶	...	...
Petroleum naphthalene, all grades-----	1,000 lb---	376,679	230,643	240,486	-36.2	4.3
Total-----	1,000 lb---	897,670	640,718	...	...	...
Creosote oil (Dead oil): ⁷						
Distillate as such (100% creosote basis)-----	1,000 gal--	108,832	114,095	87,679	-19.4	-23.2
Creosote content of coal tar solution (100% creosote basis)-----	1,000 gal--	17,402	25,213	22,933	31.8	-9.0
Total-----	1,000 gal--	126,234	139,308	110,610	-12.4	-20.6

¹ Standard reference base period for Federal Government general-purpose index numbers.² Includes only data for coal tar reported to the Division of Fossil Fuels, U.S. Bureau of Mines.³ Data reported by tar distillers are not included because publication would disclose the operations of individual companies.⁴ Includes data for material produced for use in blending motor fuels. Statistics are not comparable with monthly figures which included some o-xylene.⁵ Naphthalene solidifying at less than 79° C. Figures include production by tar distillers and coke-oven operators and represent combined data for the commercial grades of naphthalene. Because of conversion between grades, the figures may include some duplication. Statistics on naphthalene refined from domestic crudes are reported in the section on cyclic intermediates.⁶ Statistics on crude naphthalene cannot be published; to do so would disclose the operations of individual companies. Production of crude naphthalene in 1973, however, did not equal the low of 360 million pounds in 1971.⁷ Includes data for creosote oil produced by tar distillers and coke-oven operators and used only in wood preserving.

TABLE 2.--TAR CRUDES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Tar crudes for which separate statistics are given in table 1 are marked with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. Table 3 identifies all U.S. producers of tar crudes (except producers that report to the Division of Fossil Fuels, U.S. Bureau of Mines)]

Product	Manufacturers' identification codes (according to list in table 3)
*Crude light oil ¹ -----	CBT.
Light-oil distillates: ¹	
Benzene, specification grades-----	KPP.
Toluene, specification grades-----	KPP.
*Solvent naphtha-----	NEV, PAI.
All other light-oil distillates-----	KPT, PAI.
Pyridine crude bases ¹ -----	KPT.
Naphthalene, crude, solidifying at: ¹	
Less than 74° C-----	COP, KPT.
74° C. to less than 79° C:	
74° C. to less than 76° C-----	KPT.
76° C. to less than 79° C-----	ASC.
Methylnaphthalene-----	KPT.
*Crude tar-acid oils: ¹	
Tar-acid content 5% to less than 24%-----	KPT.
Tar-acid content 24% to 50%-----	ASC.
Cresylic acid, crude-----	KPT.
*Creosote oil (Dead oil): ¹	
*Distillate as such-----	ASC, CBT, COP, HUS, KPT, RIL, WTC.
*Creosote in coal tar solution-----	ASC, KPT, RIL, WTC.
*All other distillate products ¹ -----	ASC, KPT, PAI, WTC.
Tar, road-----	ASC, KPT RIL.
Tar for other uses:	
Crude-----	KPT, RIL.
*Refined ¹ -----	ASC, KPT, RIL.
*Pitch of tar: ¹	
*Soft (Water softening point less than 110° F.)-----	ASC, CBT, KPT.
Medium (water softening point 110° F. to 160° F.)-----	ASC, COP, KPT, RIL.
Hard (water softening point above 160° F.)-----	ASC, HUS, KPT, RIL, WTC.
Pitch emulsion-----	JEN.

¹ Does not include manufacturers' identification codes for producers who report to the Division of Fossil Fuels, U.S. Bureau of Mines. Those producers are listed in the U.S. Bureau of Mines Mineral Industry Survey, September 23, 1974, entitled "Coke Producers in the U.S. in 1973".

TABLE 3.--TAR AND TAR CRUDES: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of tar and tar crudes to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ASC	Allied Chemical Corp.	KPT	Koppers Co., Inc.: Organic Materials Div. Roads Materials Div.
CBT	Samuel Cabot, Inc.		
COP	Coopers Creek Chemical Corp.	NEV	Neville Chemical Co.
HUS	Husky Industries, Inc.	PAI	Pennsylvania Industrial Chemical Corp.
JEN	Jennison-Wright Corp.	RIL	Reilly Tar & Chemical Corp.
KPP	Arco/Polymers, Inc.	WTC	Witco Chemical Co., Inc.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

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Crude Products From Petroleum and Natural Gas For Chemical Conversion

Crude products that are derived from petroleum and natural gas¹ are related to the intermediates and finished products made from such crudes in much the same way that crude products derived from the distillation of coal tar are related to their intermediates and finished products. Many of the crude products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and xylene). Considerable duplication exists in the statistics on the production and sales of petroleum crudes because some of these crude chemicals are converted to other crude 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 crude products for which data are included in the statistics may be used either as fuel or as basic materials from which to derive other chemicals. 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 xylene which are used in blending aviation and motor fuel.

The output of crude products derived from petroleum and natural gas as a group amounted to 91,250 million pounds in 1973, or 5.1 percent more than the 86,792 million pounds reported for 1972 (table 1).² The larger output in 1973 is accounted for chiefly by increased production of ethylene, propylene and benzene. Sales of crude chemicals from petroleum in 1973 amounted to 49,625 million pounds, valued at \$1,451 million, compared with 47,900 million pounds, valued at \$1,177 million, in 1972.

The output of aromatic and naphthenic products from petroleum amounted to 24,774 million pounds in 1973 compared with 23,753 million pounds in 1972. Sales amounted to \$458 million in 1973, and \$351 million in 1972. The output of 1° and 2° benzene from petroleum in 1973 (10,009 million pounds) was 15.7 percent more than the 8,654 million pounds produced in 1972.

Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 66,475 million pounds in 1973, compared with 63,039 million pounds in 1972. Sales of these products were valued at \$993 million in 1973 compared with \$825 million in 1972. Production of ethylene was 22,329 million pounds in 1973--7.1 percent more than the 20,852 million pounds produced in 1972. The output of 1,3-butadiene in 1973 (3,644 million pounds) was the largest on record.

Data for 1973 crude products from petroleum and natural gas for chemical conversion was supplied by 74 companies and company divisions.

¹ Statistics on aromatic chemicals from coal tar are given in the report on "Tar and Tar Crudes".

² See also table 2 which lists these products and identifies the manufacturers by codes. These codes are given in table 3.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

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TABLE 1.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
U.S. PRODUCTION AND SALES, 1973

[Listed below are the crude products from petroleum and natural gas for chemical conversion for which any reported data on production or sales may be published. (Leaders (...)) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists separately all products from petroleum and natural gas for chemical conversion for which data on production or sales were reported and identifies the manufacturers of each]

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	91,249,511	49,624,589	1,450,922	\$0.029
AROMATICS AND NAPHTHENES ²				
Total-----	24,774,479	14,447,985	458,393	.032
Benzene (1° and 2°)-----	10,009,258	4,703,246	186,248	.040
Naphthalene, all grades-----	240,486	158,036	7,884	.050
Naphthenic acid-----	101,729	27,150	2,003	.074
Toluene, all grades, total-----	6,804,071	3,595,454	112,016	.031
Nitration grade, 1°-----	5,082,149	2,640,944	83,269	.032
Pure commercial grade, 2°-----	338,964	...	...	...
Solvent grade, 90%-----	144,387	...	...	...
All other-----	1,238,571	954,510	28,747	.030
Xylenes, mixed, total-----	5,943,413	4,266,731	116,070	.027
3° grade-----	994,065	639,662	23,470	.037
5° grade-----	1,061,279	944,460	26,389	.028
All other ³ -----	3,888,069	2,682,609	66,211	.025
All other aromatics and naphthenes ⁴ -----	1,675,522	1,697,368	34,172	.020
ALIPHATIC HYDROCARBONS				
Total-----	66,475,032	35,176,604	992,529	.028
C ₂ hydrocarbons, total-----	28,103,948	...	...	...
Acetylene ⁵ -----	289,755	...	...	...
Ethane-----	5,484,728	4,580,659	47,610	.010
Ethylene-----	22,329,465	6,832,783	226,305	.033
C ₃ hydrocarbons, total-----	18,952,121	11,929,503	242,230	.020
Propane-----	9,068,048	7,568,522	120,883	.016
Propylene ⁶ -----	9,884,073	4,360,981	121,347	.028
C ₄ hydrocarbons, total-----	10,970,124	6,580,274	288,914	.044
1,3-Butadiene, grade for rubbers (elastomers)-----	3,643,541	2,416,505	196,552	.081
Butadiene and butylene fractions-----	535,174	450,294	12,310	.027
n-Butane-----	2,802,139	1,082,577	14,731	.014
1-Butene and 2-butene mixtures ⁷ -----	839,010	572,017	16,556	.029
Isobutane-----	1,092,032	288,458	5,288	.018
Isobutylene-----	771,056	496,683	14,390	.029
All other ⁸ -----	1,287,172	1,273,745	29,087	.023
C ₅ hydrocarbons, total-----	1,270,282	804,542	28,318	.035
Isoprene (2-Methyl-1,3-butadiene)-----	366,818	131,847	8,368	.063
Pentenenes, mixed-----	420,782	...	...	...
All other ⁹ -----	482,682	672,695	19,950	.030

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
U.S. PRODUCTION AND SALES, 1973--CONTINUED

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
ALIPHATIC HYDROCARBONS--Continued				
All other aliphatic hydrocarbons, derivatives, and mixtures, total-----	7,178,557	4,448,843	159,152	\$0.036
Alpha olefins, total-----	414,835	355,248	24,797	.070
Molecular weight ranges, C ₆ -C ₇ -----	52,077	39,693	1,752	.044
All other ¹⁰ -----	362,758	315,555	23,045	.073
Heptenes, mixed-----	116,846	77,327	2,565	.033
Hexanes and other C ₆ hydrocarbons-----	386,542	357,334	12,368	.035
Nonene (Tripropylene)-----	450,811	300,882	11,004	.037
n-Paraffins, total-----	1,002,845	660,585	22,895	.035
Carbon chain length, C ₉ -C ₁₅ -----	250,590	241,343	5,443	.023
Other-----	752,255	419,242	17,452	.042
Polybutene ¹¹ -----	227,507	...	...	...
Tetrapropylene-----	278,298	120,818	4,257	.035
Hydrocarbon derivatives ¹² -----	71,483	63,808	8,878	.139
All other ¹³ -----	4,229,390	2,512,841	72,388	.029

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 related only to such materials as are derived from petroleum and natural gas. Statistics on production or sales of benzene, toluene, and xylene from all sources are given in tables 1 and 1 B of the report "Tar and Tar Crudes, 1973."³ Includes toluene and xylene used as solvents, as well as that which is blended in aviation and motor gasolines.⁴ Includes data for crude cresylic acid, alkyl aromatics, distillates, solvents, and miscellaneous cyclic hydrocarbons.⁵ Production figures on acetylene from calcium carbide for chemical synthesis are collected by the U.S. Bureau of the Census.⁶ Includes data for propane-propylene mixture.⁷ The statistics represent principally the butene content of crude refinery gases from which butadiene is manufactured.⁸ Includes data for mixed butanes, 1-butene, 2-butene, mixed butylene, and mixed olefins.⁹ Includes data for isopentane, pentenes, and C₅ hydrocarbon mixtures.¹⁰ Includes data for the following molecular weight ranges: C₈-C₁₀; C₁₁-C₁₅; C₁₂-C₁₄; C₁₅-C₂₀; and C₁₆-C₃₀.¹¹ Includes compounds having a molecular weight of 3,000 or less.¹² Includes data for butyl, ethyl, methyl, and miscellaneous mercaptans and other hydrocarbon derivatives. The decrease in output in 1973 compared to 1972 is due to a decrease in production of most of the items grouped here in both years. In addition, several items were produced in quantities too low to be reported by the companies for 1973.¹³ Includes data for di-isobutylene, methane-ethane-ethylene mixture, heptane, methane, octanes, mixtures of C₂ and C₃ hydrocarbons and of other hydrocarbons, and sales of acetylene and of polybutene.

TABLE 2.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Crude products from petroleum and natural gas for chemical conversion for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Product	Manufacturers' identification codes (according to list in table 3)
AROMATICS AND NAPHTHENES	
*Benzene (except motor grade):	
*Benzene, 1°-----	ACU, AMO, APF, APR, ASH, ATR, CCP, CSD, CSO, CSP, EKX, ENJ, GOC, GRS, HES, MOC, MON, PLC, PPR, SHC, SHO, SKO, SM, SNT, SOG, SUN, TOC, TX, UCC, UOC, x.
*Benzene, 2°-----	CPI, DOW, SOC.
Cresylic acid, crude-----	PRD.
*Naphthalene, all grades-----	ASH, COL, MON, SUN, TID.
*Naphthenic acids:	
Acid number lower than 150-----	ATR, SUN, TX.
Acid number 150-199-----	ATR, PRD, SOC, SUN.
Acid number 200-224-----	ATR, PRD, SOC.
Sodium carbolate and phenate, crude-----	ATR.
*Toluene:	
*Nitration grade, 1°-----	APF, ASH, ATR, CCP, CSD, CSP, ENJ, GOC, GRS, HES, MOC, MON, PLC, PPR, SHC, SHO, SNT, SOG, SUN, TOC, TX, UCC, UOC.
*Pure commercial grade, 2°-----	ATR, CPI, DOW, ENJ, MON, UCC.
*Solvent grade, 90%-----	ACC, FG, SKO.
All other-----	ATR, CCP, CPI, ELP, GOC, GRS, PLC, SHO, SM, SOC.
*Xylenes, mixed:	
Aviation grade-----	CSO.
*3° grade-----	APF, CSD, MOC, PPR, SHO, SUN, UOC.
*5° grade-----	ASH, ATR, GOC, HES, SOG.
All other-----	AMO, CCP, CPI, CSD, CSP, ENJ, HCR, MON, PPR, SHC, SNT, SOC, STY, SUN, TOC, UCC.
All other aromatics, naphthenes, distillates and solvents-----	ACC, ACU, ATR, CBN, CPX, DUP, EKX, ENJ, FG, GOC, JCC, MOC, MON, NWP, OMC, PLC, PRD, PUE, SHC, SOC, SOG, TX, UCC.
ALIPHATIC HYDROCARBONS	
C ₁ hydrocarbon: Methane-----	MON, NWP.
*C ₂ hydrocarbons:	
*Acetylene-----	DOW, MNO, RH, UCC.
*Ethane-----	ACU, ATR, DOW, ENJ, MON, OMC, PAN, PLC, PUE, SM, TX, USI.
*Ethylene-----	ACU, ATR, BAS, BFG, CBN, CO, CPX, DOW, DUP, EKX, ELP, ENJ, FRO, GOC, JCC, KPP, MON, NWP, OMC, PLC, PUE, SHC, SM, SNO, UCC, USI.
C ₂ and C ₃ hydrocarbons, mixed-----	ATR, CO, CSO.
*C ₃ hydrocarbons:	
*Propane-----	AMO, ASH, ATR, CCP, COR, CPI, CSD, CSO, CSP, ENJ, GRS, MOC, OMC, PAN, PLC, PUE, SHO, SM, SNT, SOG, SUN, TX, UOC, USI.
*Propylene-----	ACC, ACU, AMO, ASH, ATR, BFG, CBN, CPX, CSO, DOW, DUP, EKX, ELP, ENJ, GOC, JCC, MOC, MON, NWP, PLC, PUE, SHC, SHO, SIO, SM, SOG, SUN, TX, UCC.
*C ₄ hydrocarbons:	
*1,3-Butadiene, grade for rubbers (elastomers)-----	ATR, BFG, CPY, DOW, ELP, ENJ, FRS, MON, PLC, PTT, PUE, SBI, SHC, SM, TID, TUS, UCC.
*Butadiene and butylene fractions-----	ACU, ATR, CO, CPX, DOW, EKX, GOC, GYR, KPP, NWP, SHO, UCC.
*n-Butane-----	ATR, BFG, COR, CSP, OMC, PAN, PLC, SHO, SM, SNT, SUN, USI.
1-Butene-----	GOC, PLC, PTT.
2-Butene-----	MON, PLC.

TABLE 2.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH
U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Product	Manufacturers' identification codes (according to list in table 3)
ALIPHATIC HYDROCARBONS--Continued	
*C ₄ hydrocarbons--Continued	
*1-Butene and 2-butene mixture-----	AMO, ATR, BFG, CSO, DOW, ENJ, GOC, PLC, PTT, TX.
*Isobutane-----	ATR, BFG, CSP, ELP, OMC, PAN, PLC, SHO, SUN, USI.
*Isobutylene-----	ENJ, OCC, PTT, SHC, SHO.
All other-----	APR, ATR, BFG, CBN, ENJ, JCC, MON, PLC, PUE, SM.
*C ₅ hydrocarbons:	
Isopentane (2-Methylbutane)-----	PAN, PLC.
*Isoprene (2-Methyl-1,3-butadiene)-----	BFG, ENJ, GYR, MON, SHC, x.
n-Pentane-----	APR, PLC.
*Pentenes, mixed-----	GYR, MON, TX.
All other-----	CBN, MON, PLC, SHC, UCC.
*C ₆ hydrocarbons:	
*Hexane-----	APR, ENJ, PLC, SOG, UOC.
Neohexane (2,2-Dimethylbutane)-----	PLC.
All other-----	HMY, PLC, SWC.
C ₇ hydrocarbons:	
n-Heptane-----	EKX, PLC, SOG.
*Heptenes, mixed-----	AIP, ENJ, GOC, SOI, TID.
All other-----	ENJ, HCR, UOC.
C ₈ hydrocarbons:	
Diisobutylene (Diisobutene)-----	BFG, PTT, TX.
n-Octane-----	SOG.
All other-----	ENJ, HMY, PLC.
Hydrocarbons, C ₉ and above:	
*Nonene (Tripropylene)-----	AIP, AMO, ATR, CSD, ENJ, PLC, SUN, UOC.
*Polybutene-----	ACC, CSD, SOC.
*Tetrapropylene-----	ATR, CO, ENJ, SOC, SUN, TX, UOC.
Triisobutylene-----	TX, x.
All other-----	ACC, ATR, CO, CPI, ENJ, HMY, KPP, PPR, PUE, SOC, TID, TNA, UOC, UCC.
*All other aliphatic hydrocarbons, derivatives and mixtures:	
Hydrocarbons:	
*Alpha olefins--Molecular weight ranges:	
*C ₆ -C ₇ -----	GOC, GYR, SOC.
C ₈ -C ₁₀ -----	GOC, SOC.
C ₁₁ -C ₁₅ -----	GOC, SOC.
All other-----	GOC, SOC, TNA.
*n-Paraffins--Carbon chain length:	
C ₆ -C ₉ -----	SOG.
*C ₉ -C ₁₅ -----	BFG, HCR, SOG.
C ₁₀ -C ₁₄ -----	ENJ, SOG, UCC.
C ₁₀ -C ₁₆ -----	CO.
All other-----	CO, ENJ, PUE, UCC.
*Hydrocarbon derivatives:	
1-Butanethiol-----	PLC.
tert-Butyl-mercaptan (2-Methyl-2-propanethiol)-----	PAS.
Cyclohexyl mercaptan-----	PAS.
Di-tert-butyl disulfide-----	PLC.
Ethyl mercaptan (Ethanethiol)-----	PAS.
n-Hexadecyl mercaptan-----	PAS.
Isopropyl mercaptan-----	PAS.
Methyl mercaptan (Methanethiol)-----	ACC, DOW, PAS.
tert-Nonyl mercaptan-----	PAS.
n-Octyl mercaptan-----	PLC.
n-Propyl mercaptan (1-Propanethiol)-----	PAS, PLC.
All other-----	PAS, PLC.
Mixtures, not elsewhere classified-----	GYR, MON.

TABLE 3.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of crude products from petroleum and natural gas for chemical conversion to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACC	Amoco Chemicals Corp.	KPP	Arco/Polymers, Inc.
ACU	Allied Chemical Corp., Union Texas Petroleum Div.	MNO	Monochem, Inc.
AIP	Air Products & Chemicals, Inc.	MOC	Marathon Oil Co., Texas Refining Div.
AMO	American Oil Co. (Texas)	MON	Monsanto Co.
APF	American Petrofina Co. of Texas		
APR	Atlas Processing Co.	NWP	Northern Petrochemical Co.
ASH	Ashland Oil, Inc.		
ATR	Atlantic Richfield Co.	OCC	Oxirane Chemical Co.
		QMC	Olin Corp.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PAN	Amoco Production Co.
		PAS	Pennwalt Corp.
CBN	Cities Service Co., Petrochemical Div.	PLC	Phillips Petroleum Co.
CCP	Crown Central Petroleum Corp.	PPR	Phillips Puerto Rico Core, Inc.
CO	Continental Oil Co.	PRD	Productol Chemical Co., Inc.
COL	Collier Carbon & Chemical Corp.	PTT	Petro-Tex Chemical Corp.
COR	Commonwealth Oil & Refining Co., Inc.	PUE	Puerto Rico Olefins
CPI	Commonwealth Petrochemicals, Inc.		
CPX	Chemplex Co.	RH	Rohm & Haas Co.
CPY	Copolymer Rubber & Chemical Corp.		
CSD	Cosden Oil & Chemical Corp.	SBI	Standard Brands Chemical Industries, Inc.
CSO	Cities Service Oil Co.	SHC	Shell Oil Co., Shell Chemical Co. Div.
CSP	Coastal States Petrochemical Co.	SHO	Shell Oil Co.
		SIO	Standard Oil Co. of Ohio
DLH	Hess Oil Virgin Islands Corp.	SKO	Skelly Oil Co.
DOW	Dow Chemical Co.	SM	Mobil Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc.	SM	Mobil Oil Corp.
		SHO	SunOlin Chemical Co.
EKX	Eastman Kodak Co., Texas Eastman Co. Div.	SNT	Suntide Refining Co.
ELP	El Paso Products Co.	SOC	Standard Oil Co. of California, Chevron Chemical Co.
ENJ	Exxon Chemical Co. U.S.A.	SOG	Charter International Oil Co.
		SOI	Amoco Oil Co. (Maryland)
FG	Foster Grant Co., Inc.	STY	Styrochem Corp.
FRO	Vulcan Materials Co., Chemicals Div.	SUN	Sun Oil Co.
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.	SWC	Corco Cyclohexane, Inc.
GOC	Gulf Oil Corp., Gulf Oil Chemicals Co. - United States	TID	Getty Oil Co.
GRS	Champlin Petroleum Co.	TNA	Ethyl Corp.
GYR	Goodyear Tire & Rubber Co.	TOC	Tenneco Oil Co.
		TUS	Texas-U.S. Chemical Co.
HCR	Hercor Chemical Corp.	TX	Texaco, Inc.
HMY	Humphrey Chemical Co.		
		UCC	Union Carbide Corp.
JCC	Jefferson Chemical Co., Inc.	UOC	Union Oil Co. of California
		USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

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 rubbers), 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 it may be packaged and sold as a moth repellent or as a deodorant. In 1973 about 50 percent of the total output of cyclic intermediates was sold; the rest was consumed chiefly by the producing plants in the manufacture of more advanced intermediates and finished products.

Total production of cyclic intermediates in 1973--35,863 million pounds--was the largest on record, and was 2.6 percent larger than the output of 34,967 million pounds reported for 1972. The larger output of cyclic intermediates in 1973 reflects the increased demand by the chemical products industries, particularly those industries that produce plastics materials, dyes, pigments, and plasticizers. Sales of cyclic intermediates in 1973 were 17,915 million pounds, valued at \$1,899 million, compared with 16,196 million pounds, valued at \$1,434 million, in 1972.

Production of styrene in 1973 was 5,975 million pounds, or 0.6 percent more than the 5,941 million pounds produced in 1972. Output of ethylbenzene was 5,688 million pounds, a small increase over the 5,676 million pounds produced in 1972. Other intermediates whose production exceeded 1 billion pounds in 1973 were cumene (2,665 million pounds), dimethyl terephthalate (2,564 million pounds), p-xylene (2,326 million pounds), phenol (2,276 million pounds), cyclohexane (2,123 million pounds), o-xylene (1,068 million pounds) and phthalic anhydride (1,023 million pounds). Other large volume intermediates produced in 1973 were isocyanates (871 million pounds), cyclohexanone (638 million pounds), straight-chain alkylbenzenes (498 million pounds), 2,4 (and 2,6)-dinitrotoluenes (471 million pounds), aniline (458 million pounds), monochlorobenzene (397 million pounds), Bisphenol A (320 million pounds) and nitrobenzene (309 million pounds). The above 17 chemicals accounted for 83 percent of the total output of intermediates in 1973. Production of 12 of the above chemicals increased in 1973 compared with 1972. The output of five, however, decreased in 1973 from that in 1972, as follows: nitrobenzene (44 percent), cyclohexanone (18 percent), cyclohexane (8 percent), alkylbenzenes (5 percent), and monochlorobenzene (2 percent).

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1973

[Listed below are all cyclic intermediates for which any reported data on production and/or sales may be published. (Leaders (...) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists alphabetically all cyclic intermediates for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total-----	35,863,052	17,915,149	1,898,756	\$0.11
Acetanilide, tech-----	3,967	420	131	.31
Acetophenone, tech-----	2,246	1,752	491	.28
Alkylbenzenes ² -----	498,241	455,680	49,021	.11
1-Aminoanthraquinone and salt-----	599	...	...	...
7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid--	23	...	...	...
1-Amino-2-bromo-4-hydroxyanthraquinone-----	869	...	...	...
1-Amino-2,4-dibromoanthraquinone-----	1,194	...	...	...
1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfonamido-2-anthracenesulfonic acid, sodium salt-----	28	...	...	...
N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide-----	16	...	...	...
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid-----	1,140	...	...	...
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid-----	245	...	...	...
p-[(p-Aminophenyl)azo]benzenesulfonic acid-----	541	...	...	...
Aniline (Aniline oil)-----	457,643	255,883	22,406	.09
Anilinomethanesulfonic acid and salt-----	565	...	...	...
o-Anisidine-----	2,027	...	...	...
o-Anisidinomethanesulfonic acid-----	745	...	...	...
Benzaldehyde, tech-----	...	4,863	1,709	.35
7H-Benz[de]anthracen-7-one (Benzanthrone)-----	1,086	...	...	...
Benzoic acid, tech-----	...	28,130	3,273	.12
2-Benzothiazolethiol, sodium salt-----	11,944	5,849	2,225	.38
[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	179	...	...	...
Biphenyl-----	77,928	34,075	3,208	.09
1,4-Bis[1-anthraquinonylamino]anthraquinone-----	66	...	...	...
3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone)---	100	...	...	...
2-Bromo-4,6-dinitroaniline-----	944	...	...	...
Chlorobenzene, mono-----	397,481	125,735	8,237	.07
4-Chloro-3-nitrobenzenesulfonamide-----	743	...	...	...
Cresols, total ³ -----	115,436	127,025	24,654	.19
o-Cresol-----	24,741	24,053	3,367	.14
(m,p)-Cresol-----	31,377	...	...	...
All other ⁴ -----	59,318	102,972	21,287	.21
Cresylic acid, refined ³ -----	57,524	64,819	9,122	.14
Cumene-----	2,665,408	1,400,824	52,510	.04
Cyclohexane-----	2,122,598	1,984,664	89,680	.05
Cyclohexanone-----	638,156	45,937	6,607	.14
1,4-Diaminoanthraquinone-----	82	...	...	...
1,4-Diamino-2,3-dihydroanthraquinone-----	890	...	...	...
4,4'-Diamino-2,2'-stilbenedisulfonic acid-----	8,371	...	...	...
o-Dichlorobenzene-----	66,035	67,055	8,659	.13
p-Dichlorobenzene-----	62,743	69,398	6,436	.09
Dicyclopentadiene (includes cyclopentadiene)-----	96,430	70,142	3,142	.04
N,N-Diethylaniline-----	2,774	2,380	1,223	.51

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracene-sulfonic acid-----	32	...	...	...
9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt)-----	810	...	...	...
1,4-Dihydroxyanthraquinone (Quinizarin)-----	2,142	297	330	\$1.10
1,8-Dihydroxyanthraquinone (Chrysazin)-----	155	...	...	...
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)-----	167	...	...	...
p-(Dimethylamino)benzaldehyde-----	16	...	...	...
N,N-Dimethylaniline-----	15,689	10,093	2,083	.21
N,N-Dimethylbenzylamine-----	148	101	148	1.47
2,2-Dimethyl-1,1'-bianthraquinone-----	68	...	...	...
2,4 (and 2,6)-Dinitrotoluene-----	471,237	...	...	...
Diphenylamine-----	34,655	18,146	4,479	.25
N-Ethylaniline, refined-----	1,911	1,176	517	.44
2-(N-Ethylanilino)ethanol-----	205	...	...	...
Ethylbenzene ⁵ -----	5,687,594	415,094	20,873	.05
N-Ethyl-N-phenylbenzylamine-----	727	...	...	...
3-(N-Ethyl-m-toluidino)propionitrile-----	93	104	140	1.35
Hydroquinone, tech-----	17,897	12,630	10,348	.82
6-Hydroxy-2-naphthalenesulfonic acid, and sodium salt----	571	...	...	...
Isocyanic acid derivatives, total-----	871,163	720,938	220,715	.31
Polymethylene polyphenylisocyanate-----	282,262	223,468	59,536	.27
Toluene-2,4- and 2,6-diisocyanate (80/20 mixture)-----	505,975	438,219	126,261	.29
Other isocyanic acid derivatives-----	82,926	59,251	34,918	.59
4,4'-Isopropylidenediphenol (Bisphenol A)-----	319,737	115,703	18,637	.16
Isoviolanthrone-----	22	...	...	...
Leuco quinizarin (1,4,9,10-Anthratetrol)-----	126	...	...	...
Melamine-----	118,637	83,472	14,551	.17
Metanilic acid (m-Aminobenzenesulfonic acid)-----	1,403	...	...	...
3-(N-Methylanilino)propionitrile-----	233	46	62	1.34
4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)----	1,164	...	...	...
4,4'-Methylenedianiline-----	...	2,068	981	.47
3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)-----	48	42	61	1.45
α-Methylstyrene-----	52,451	36,503	2,206	.06
Nitrobenzene-----	308,667	...	...	...
5-Nitro-o-toluenesulfonic acid [SO ₃ H=1]-----	7,955	...	...	...
5-Nitro-o-toluidine [NH ₂ =1]-----	353	312	420	1.35
Nonylphenol-----	108,026	48,183	6,206	.13
1[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone-----	220	...	...	...
Phenol, total ³ -----	2,275,790	1,312,284	100,508	.08
Natural, from coal tar and petroleum-----	34,595	23,283	1,887	.08
Synthetic, total-----	2,241,195	1,289,001	98,621	.08
From cumene-----	2,016,424	...	...	...
Other synthetic-----	224,771	1,289,001	98,621	.08
p-Phenylazoaniline (C.I. Solvent Yellow 1) and hydrochloride-----	462	...	...	...
Phthalic anhydride-----	1,022,556	641,146	61,326	.10
Picolines ³ -----	6,118	3,355	1,767	.53

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars..	Per pound
Piperidine-----	731	...	...	...
Propiophenone-----	585	...	...	...
Salicylaldehyde-----	4,790	3,744	3,907	\$1.04
Salicylic acid, tech-----	41,507	14,004	5,661	.40
Styrene, all grades-----	5,975,299	2,839,476	199,141	.07
Terephthalic acid, dimethyl ester-----	2,563,593	1,311,592	165,875	.13
1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative-----	108	...	...	...
3,3'-Thiobis[7H-benz[de]anthracen-7-one]-----	24	...	...	...
Toluene-2,4-diamine (4-m-Tolylenediamine)-----	192,995	...	...	...
4-(o-Tolyazo)-o-toluidine (C.I. Solvent Yellow 3)-----	453	...	...	...
2,2'-(m-Tolylimino)diethanol-----	159	163	158	.97
1,2,4-Trichlorobenzene-----	28,268	26,198	3,607	.14
1,3,3-Trimethyl- Δ^2 , α -indolineacetaldehyde-----	357	...	...	...
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea)-----	259	...	...	...
Violanthrone (Dibenzanthrone)-----	507	...	...	...
o-Xylene-----	1,067,872	774,929	37,998	.05
p-Xylene-----	2,325,775	1,569,340	100,635	.06
All other cyclic intermediates-----	5,033,515	3,209,379	622,682	.19

¹ Calculated from rounded figures.² Includes straight-chain dodecylbenzene, tridecylbenzene and other straight-chain alkylbenzenes. Branched-chain alkylbenzenes are included in all other cyclic intermediates.³ Includes data for coke ovens and gas-retort ovens, reported to the Division of Fossil Fuels, U.S. Bureau of Mines and for tar and petroleum refineries and other producers, reported to the International Trade Commission.⁴ Figures include (o,m,p)-cresol from coal tar and some m-cresol and p-cresol.⁵ Does not include ethylbenzene produced and consumed in continuous-process styrene manufacture.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Cyclic intermediates for which separate statistics are given in table 1 are marked with an asterisk (*); cyclic intermediates not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
3-[(2-Acetamido-4-aminophenyl)azo]-1,5-naphthalene- disulfonic acid.	TRC.
α -Acetamido-p-toluenesulfonamide-----	SDW.
2,2'-[(5-Acetamido-2-ethoxyphenyl)imino] diethanol-----	TCH.
2,2'-[(5-Acetamido-2-methoxyphenyl)imino] diethanol-----	TCH.
*Acetanilide, tech-----	CTN, EKT, MRK, SAL.
Acetanilide, N.F.-----	SAL.
Acetic acid, phenyl ester-----	UCC.
Acetoacetanilide-----	FMP, HST.
o-Acetoacetanilide-----	FMP, HST.
Acetoacet-2,5-dimethoxy-4-chloroanilide-----	FMP.
o-Acetoacetotoluidide-----	FMP, HST.
2',4'-Acetoacetoxylidide-----	HST.
1'-Acetonaphthone-----	GIV.
Acetone phenylhydrazone-----	DUP.
*Acetophenone, tech-----	ACP, CLK, SKO, UCC.
p-Acetotoluidide-----	EK.
p-Acetylaminophenol-----	PD.
p-Acetylbenzenesulfonamide-----	LIL.
p-Acetylbenzenesulfonic acid, sodium salt-----	LIL.
p-Acetylbenzenesulfonylurethane-----	LIL.
N-Acetylsulfanilyl chloride-----	ACY, CTN, MRK, SAL.
Acyloln-----	ARA.
*Alkylbenzenes:	
Dodecylbenzene (including tridecylbenzene):	
*Straight chain-----	APF, BRP, CO, MON, UCC, WTC.
Other-----	CO, SOC, UCC.
Alkylpyridines, mixed-----	UCC.
α -dl-5-Allyl-6-imino-1-methyl-5-(1-methyl-2-pentynyl) barbituric acid.	LIL.
α -dl-5-Allyl-5-(1-methyl-2-pentynyl)-1-methylbarbituric acid.	LIL.
3'-Aminoacetanilide-----	AC, DUP, GAF, TRC.
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)-----	GAF, TRC.
2'-Aminoacetophenone-----	EK.
3'-Aminoacetophenone-----	CTN, SDH.
4'-Aminoacetophenone-----	EK.
5'-Amino-2-(p-aminoanilino)benzenesulfonic acid-----	TRC, YAW.
1-Amino-4-(4-amino-3-sulfoanilino)-9,10-dihydro-9,10- dioxo-2-anthracenesulfonic acid.	TRC.
2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid-----	TRC.
3-Amino-p-anisanilide-----	PCW.
*1-Aminoanthraquinone and salt-----	AC, ACY, MAY, SDC, TRC.
2-Aminoanthraquinone and salt-----	ACY, GAF, TRC.
5(and 8)-Amino-1-anthraquinonesulfonic acid-----	TRC.
N-(4-Amino-1-anthraquinonyl)anthranilic acid-----	GAF.
N-(5-Amino-1-anthraquinonyl)anthranilic acid-----	DUP.
4-Aminoantipyrene hydrochloride-----	EK.
6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9).	ACY.
p-Aminobenzamide-----	SDH.
1-Amino-4-benzamidoanthraquinone-----	ACY, MAY, TRC.
1-Amino-5-benzamidoanthraquinone-----	TRC.
*7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid.	GAF, TRC, VPC.
3'-Aminobenzanilide-----	x.
3'-Aminobenzanilide-4-sulfonic acid-----	TRC.
2-Amino-p-benzenedisulfonic acid [SO ₃ H=1]-----	DUP.
o-Aminobenzenethiol-----	ASH, FMT.
4-Aminobenzenethiosulfonic acid, sodium salt-----	SDC.
p-Aminobenzoic acid, tech-----	PD.
4-Aminobenzophenone-----	DUP.
2-Amino-6-benzothiazolecarboxylic acid-----	DUP.
2-(m-Aminobenzoyl)-o-acetanilide-----	GAF.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
N-(4-Amino-3-bromo-1-anthraquinonyl)-p-toluidine sulfonic acid.	TRC.
*1-Amino-2-bromo-4-hydroxyanthraquinone-----	AC, DUP, HN, VPC.
1-Amino-2-bromo-4-p-toluidinoanthraquinone-----	ACS, TRC.
7-Aminocephalosporanic acid-----	LIL.
1-Amino-5-chloroanthraquinone-----	ACY, TRC.
2-Amino-1-chloroanthraquinone-----	DUP.
4-Amino-6-chloro-m-benzenedisulfonamide-----	ABB.
4-Amino-6-chloro-m-benzenedisulfonamide hydrochloride----	ABB.
2-Amino-6-chlorobenzothiazole hydrochloride-----	DUP.
5-Amino-2-chlorobenzotrifluoride-----	SW.
2-Amino-5-chloro-4-ethylbenzenesulfonic acid-----	ACY.
1-Amino-2-chloro-4-hydroxyanthraquinone-----	TRC.
3-Amino-5-chloro-2-hydroxybenzenesulfonic acid-----	TRC.
2-Amino-4-chlorophenol-----	SW.
1-(2-Amino-5-chlorophenyl)-1-phenylmethylenimine-----	ABB.
3-Amino-6-chloropyridazine-----	ACY.
2-Amino-5-chloro-p-toluenesulfonic acid [SO ₃ H=1]-----	ACY, HSC.
6-Amino-4-chloro-m-toluenesulfonic acid [SO ₃ H=1]-----	DUP, HSC.
2-Amino-p-cresol-----	TRC.
*1-Amino-2,4-dibromoanthraquinone-----	AC, DUP, HN, TRC, VPC.
1-Amino-2,4-dichloroanthraquinone-----	TRC.
2-Amino-4,6-dichloro-5-cresol-----	EK.
4'-Amino-2',5'-diethoxybenzamide-----	ALL.
*1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfonamido- 2-anthracenesulfonic acid, sodium salt.	AC, GAF, x.
5-Amino-4,5'-dihydroxy-3,4'-[(2-methoxy-5-methyl-p- phenylene)bis(azo)]-di-2,7-naphthalenedisulfonic acid, 5'-benzenesulfonate.	TRC.
2-Amino-4-(α,α -dimethylbenzylphenol)-----	TRC.
3-Amino-9-ethylcarbazole-----	SDC.
3-Amino- α -ethylhydrocinnamic acid-----	SDW.
4-Amino-N-ethyl-N-(β -methylsulfonamidoethyl)-m- toluidine phosphate.	WAY.
4-Amino-N-ethyl-N-(β -methylsulfonamidoethyl)-m- toluidine, sesqui:sulfate monohydrate.	WAY.
p-Amino-N-ethyl-N-1-naphthylbenzamide-----	GAF.
N-Aminohexamethyleneimine-----	FMP.
2-Amino-3-hydroxyanthraquinone-----	GAF.
5-Amino-4-hydroxy-m-benzenedisulfonic acid-----	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (H acid), monosodium salt.	ACS.
4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4- acid).	ACY, TRC.
6-Amino-4-hydroxy-2-naphthalenesulfonic acid (Gamma acid), sodium salt.	TRC.
7-Amino-4-hydroxy-2-naphthalenesulfonic acid (J acid), sodium salt.	HN, TRC.
2-(2-Amino-5-hydroxy-7-sulfo-1-naphthylazo)-5-nitro- benzoic acid.	TRC.
3-Amino-2-mercaptobenzoic acid-----	x.
4-Amino-3-(β -methanesulfonamidoethyl)-N,N-diethylaniline hydrochloride.	EKT.
*N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfon- amide.	AC, DUP, GAF.
5-Amino-6-methoxy-2-naphthalenesulfonic acid-----	TRC.
*m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid-----	DUP, HN, TRC.
4-[(4-Amino-5-methoxy-o-tolyl)azo]-4-hydroxy-2,7- naphthalenedisulfonic acid, benzenesulfonate.	TRC.
3-[(4-Amino-5-methoxy-o-tolyl)azo]-1,5-naphthalenedisul- fonic acid.	TRC.
7-[(4-Amino-5-methoxy-o-tolyl)azo]-1,3-naphthalenedi- sulfonic acid.	TRC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stilbenedisulfonic acid.	TRC.
4'-(4'-Amino-2'-methylphenylazo)-7-phenylazonaphthalene-1,3-disulfonic acid, disodium salt.	ACS.
2-Amino-5-methylpyridine-----	RIL.
2-Amino-6-methylpyridine-----	RIL.
2-Amino-4-methylpyrimidine (2-Amino-4-methyl-1,3-diazine).	ACY.
2-Amino-4-(methylsulfonyl)phenol-----	TRC.
2-Amino-5-methyl-1,3,4-thiadiazole-----	ACY.
7-Amino-3-[1-(5-methyl-1,3,4-thiodiazol-2-yl)thiomethyl]-3-cephem-4-carboxylic acid.	LIL.
4-Aminonaphth[2,3-c]acridan-5,8,14-trione-----	DUP.
6-Aminonaphth[2,3-c]acridan-5,8,14-trione-----	GAF.
2-Amino-1,5-naphthalenedisulfonic acid-----	ACY, SDH.
3-Amino-1,5-naphthalenedisulfonic acid (C acid)-----	TRC.
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)---	HN, TRC.
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)---	DUP, TRC.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid)--	DUP.
2-Amino-1-naphthalenesulfonic acid (Tobias acid)-----	ACY, SW.
4-Amino-1-naphthalenesulfonic acid, sodium salt-----	ACY, DUP.
5-Amino-1-naphthalenesulfonic acid (Laurent's acid)-----	DUP.
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)-----	TRC.
7-Amino-1,3,6-naphthalenetrisulfonic acid-----	DUP, TRC.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid)--	ACS.
8-Amino-2-naphthol-----	TRC.
2-(4-Amino-1-naphthylazo)-4-(1,1,3,3-tetramethylbutyl)phenol.	GAF.
2-Amino-4-nitroacetanilide-----	SDC.
2-Amino-5-nitrobenzenesulfonic acid [SO ₃ H=1]-----	TRC.
2-Amino-1-(p-nitrophenyl)-1,3-propanediol-----	PD.
*4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid-----	ACS, GAF, HN, TRC.
2-Amino-5-nitrothiazole-----	PCW.
3'-Aminooxanilic acid-----	TRC.
4'-Aminooxanilic acid-----	DUP.
5-Amino-2-[(2-oxo-5-benzimidazolyl)amino]benzenesulfonic acid.	NOR.
6-Aminopenicillanic acid-----	ALD, TRD.
o-Aminophenol-----	TRC.
p-Aminophenol-----	MAL.
2-(p-Aminophenoxy)ethanol hydrochloride-----	GAF.
m-[(p-Aminophenyl)azo]benzenesulfonic acid-----	TRC.
*p-[(p-Aminophenyl)azo]benzenesulfonic acid-----	ACS, ACY, DUP, TRC.
7-[(4-Aminophenyl)azo]-1,3-naphthalenedisulfonic acid---	TRC.
8-Amino-5-(phenylazo)-2-naphthol-----	ALL.
5-[(p-Aminophenyl)azo]salicylic acid-----	TRC.
2,2'-(m-Aminophenylimino)diethanol, diacetate ester----	DUP.
2-(p-Aminophenyl)-6-methylbenzothiazole-----	DUP.
2-(p-Aminophenyl)-6-methyl-7-benzothiazolesulfonic acid and salt.	DUP, TRC.
1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid---	TRC, VPC.
3-(Aminopropyl)cyclohexylamine-----	ABB.
4'-Aminopropiophenone-----	EK.
2-Aminopyridine-----	NEP, RIL.
4-Aminopyridine-----	RIL.
2-Aminopyrimidine-----	ACY.
5-Aminosalicylic acid-----	TRC.
N-(4-Amino-3-sulfo-1-anthraquinonyl)anthranilic acid----	GAF.
2-Amino-4-(1,1,3,3-tetramethylbutyl)phenol-----	GAF.
2-Aminothiazole-----	MRK.
3-Amino-p-toluamide-----	SDH.
α-Amino-p-toluenesulfonamide-----	SDW.
4-Amino-m-toluenesulfonic acid [SO ₃ H=1]-----	ACY, DUP.
6-Amino-m-toluenesulfonic acid [SO ₃ H=1]-----	DUP.
5-Amino-o-toluenesulfonic acid [SO ₃ H=1]-----	HSC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
5-Amino-2-p-toluidinobenzenesulfonic acid-----	TRC.
m-(4-Amino-3-tolylazo)benzenesulfonic acid-----	TRC.
3-[(4-Amino-o-tolyl)azo]-1,5-naphthalenedisulfonic acid--	TRC.
7-[(4-Amino-o-tolyl)azo]-1,3-naphthalenedisulfonic acid--	TRC.
2-Amino-3,5-xylenesulfonic acid [SO ₃ H=1]-----	DUP.
3-Amino-4,6-xylenesulfonic acid-----	WJ.
5-Amino-2,4-xylenesulfonic acid-----	DUP.
*Aniline (Aniline oil)-----	ACY, DUP, FST, MAL, MOB, RUC, USR.
Aniline hydrochloride-----	ACY, EK.
2'-Anilino-6-diethylamino-3-methylfluoran-----	x.
2-Anilinoethanol-----	TCH.
7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid).	TRC.
*Anilinomethanesulfonic acid and salt-----	ACS, ACY, DUP, TRC, VPC.
8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)--	DUP, EK, SDC.
p-Anilinophenol-----	SDC.
3-Anilinopropionitrile-----	TCH.
o-Anisaldehyde-----	ASL.
o-Anisic acid-----	BJL.
*o-Anisidine-----	AC, DUP, x.
p-Anisidine-----	DUP, MON.
*o-Anisidinomethanesulfonic acid-----	AC, DUP, GAF, TRC, VPC.
m-Anisil-----	DUP.
Anisoin-----	DUP.
Anisole, tech-----	CTN, DUP, GIV.
3-(o-Anisylazo)benzenesulfonic acid, sodium salt-----	ACS.
Anthracene-----	EK.
Anthranilic acid (o-Aminobenzoic acid) ¹ -----	DUP, SW.
Anthra[1,9-cd]pyrazol-6(2H)-one (Pyrazoleanthrone)-----	GAF, TRC.
Anthraquinone, 100%-----	TRC.
1,1'-[1,5-(and 1,8)-Anthraquinonylenediamino]bis- naphth[2,3-c]acridan-5,8,14-trione.	DUP.
N,N'-(1,5-Anthraquinonylene)dianthranilic acid-----	GAF, DUP, TRC.
N,N'-(1,5-Anthraquinonylene)dioxamic acid-----	SW.
4',4'''-Azobis[4-biphenylcarboxylic acid]-----	DUP.
Barbituric acid, sodium derivative-----	ABB.
*Benzaldehyde, tech-----	BPC, HN, MNR, UOP, VEL.
Benzamide hydrochloride (p-Nitro-n-2-diethylaminoethyl)--	PD.
1-Benzamido-4-bromoanthraquinone-----	AC.
1-Benzamido-5-chloroanthraquinone-----	TRC.
4-Benzamido-5-hydroxy-2,7-naphthalenedisulfonic acid----	TRC.
7-Benzamido-4-hydroxy-2-naphthalenesulfonic acid-----	TRC.
Benzanilide-----	DUP.
*7H-Benz[de]anthracen-7-one (Benzanthrone)-----	AC, ACY, DUP, GAF, MAY, SDC, TRC.
m-Benzenedisulfonic acid-----	KPT, UPF.
Benzenesulfinic acid, sodium salt-----	EK.
Benzenesulfonamide-----	NES.
Benzenesulfonic acid-----	NES, UPF.
Benzenesulfonyl chloride-----	ALD, NES, USR.
1,2,4,5-Benzenetetracarboxylic-1,2,4,5-dianhydride-----	DUP, PCR.
1,2,4-Benzenetricarboxylic acid, 1,2-anhydride (Tri- mellitic anhydride).	ACC.
Benzhydrol (Diphenylmethanol)-----	PD, UOP.
Benzidine base-----	ACS.
Benzidine hydrochloride and sulfate-----	LAK.
Benzilic acid, methyl ester-----	LEM.
*Benzoic acid, tech ¹ -----	HN, KLM, PFZ, VEL.
Benzoic acid, butyl ester-----	SYL.
Benzoin-----	BPC.
Benzoinisobutyl ether-----	BPC.
α-Benzoin oxime-----	RSA.
Benzonitrile-----	VEL.
2-Benzothiazolethiol-----	USR.
*2-Benzothiazolethiol sodium salt-----	ACY, GYR, USR, x.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Benzoquinonedioxime-----	SDC.
1H-Benzotriazole-----	SW.
2H-3,1-Benzoxazine-2,4(1H)-dione-----	SW.
o-Benzoylbenzoic acid-----	ACY, GAF.
Benzoyl chloride-----	HK, GAF, VEL.
N-Benzylacetamide-----	SDW.
Benzylamine-----	ARS, MLS.
4-(Benzylamino)-6-chloro-m-benzenedisulfonic acid-----	ABB.
p-(Benzylamino)phenol-----	EK.
4-Benzyl-6-chloro-3-keto-7-sulfamyl-1,2,4-benzylthia- diazine-1,1-dioxide.	ABB.
1-Benzyl-4,5-dimethyl-6-(p-methoxybenzyl)-1,2,3,6-tetra- hydropyridine oxalate.	SDW.
Benzyl disulfide-----	CCW.
Benzyl ether (Dibenzyl ether)-----	UOP.
N-Benzyl-N-ethyl-m-toluidine-----	DUP.
3-Benzyl-1,2,3,4,5,6-hexahydro-8-hydroxy-cis-6,11- dimethyl-2,6-methano-3-benzazocine hydrobromide.	SDW.
6-Benzylideneaminopenicillanic acid, tertiary octylamine salt.	TRD.
4,4'-Benzylidenedi-o-toluidine-----	ACY.
Benzylidene phthalide-----	LIL.
p-(Benzylloxy)phenol-----	EK.
1-Benzyl-4-phenylisonipecotic acid-----	SDW.
1-Benzyl-4-phenylisonipecotonitrile-----	SDW.
Benzyltrimethylammonium chloride-----	MLS.
Benzyltrimethylammonium hydroxide-----	MLS.
Benzyltrimethylammonium methoxide-----	MLS.
[3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow).	DUP, GAF, TRC.
[3,3'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	DUP.
*[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	ACY, DUP, MAY.
*Biphenyl-----	CHL, DOW, GOC, MON, SNT.
2,2'-Biquinoline-----	EK.
3'-[Bis(2-acetoxyethyl)amino]-p-acetoaniside-----	TCH.
Bis(p-aminocyclohexyl)methane-----	DUP.
Bis(2-aminophenyl)disulfide-----	SDC.
*1,4-Bis[1-anthraquinonylamino]anthraquinone-----	ACY, GAF, MAY, TRC.
1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-Bis [5-chloro-1-anthraquinonylamino]anthraquinone (mixed).	TRC.
2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone-----	WAY.
α^2, α^6 -Bis[5-tert-butyl-6-hydroxy-m-tolyl]mesitol-----	ACY.
4,4'-Bis[diethylamino]benzhydrol, 2,6-naphthalene- disulfonate.	GAF.
4,4'-Bis[diethylamino]benzhydrol salt, 2,7-naphthalene- disulfonic acid, mixture.	TRC.
4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base)---	DSC, SDH.
4-Bis[(p-diethylaminophenyl)methyl]-2,7-naphthalene- disulfonic acid, leuco form.	TRC.
4,4'-Bis[diethylamino]benzhydrol (Michler's hydrol)----	SDH.
4,4'-Bis[diethylamino]benzophenone (Michler's ketone)---	DSC, DUP, SDH.
3,3'-Bis[3',3'-(1'-ethyl-2'-methyl)indolyl]phthalide-----	x.
3'-[Bis(2-hydroxyethyl)amino]acetanilide-----	GAF.
5-[Bis(2-hydroxyethyl)amino]-2,2'-chloro-4-nitro- phenylazobenzanilide.	DUP.
3'-[Bis(2-hydroxyethyl)amino]methanesulfoanilide, diacetate ester.	DUP.
4,4'-Bis[(p-hydroxyphenyl)azo]-2,2'-stibenedisulfonic acid (C.I. Direct Yellow 4).	TRC.
1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene (Dimethyl POPOP).	ARA.
Bis-(o-nitrophenyl)sulfide-----	x.
1,4-Bis[2-(5-phenyloxazolyl)]benzene (POPOP)-----	ARA.
2-Bromoacetophenone-----	EK.
p-Bromoaniline-----	EK.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Bromoanisole-----	OPC.
*3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone)-	ACY, DUP, GAF, MAY, TRC.
Bromobenzene, mono-----	DOW.
p-Bromobenzhydrol-----	PD.
o-Bromobenzoic acid-----	PD.
4-Bromobenzophenone-----	PD.
Bromochlorobenzene-----	DOW.
6-Bromo-5-chlorobenzoxazolone-----	SW.
2-Bromo-6-chloro-4-nitroaniline-----	AC, SDC.
*2-Bromo-4,6-dinitroaniline-----	AC, HST, SDC, TRC.
3-Bromo-2-hydroxy-4,4,5,5-tetramethyl-2-cyclopentene- 1-one.	x.
1-Bromo-4-(methylamino)anthraquinone-----	AC, BDO.
3-(Bromomethyl)thiophene-----	SDW.
1-Bromonaphthalene-----	EK, RSA.
2-Bromo-4'-nitroacetophenone-----	GAF.
α-Bromo-p-nitrotoluene (p-Nitrobenzyl bromide)-----	BPC.
p-Bromophenol-----	EK.
(p-Bromophenyl)acetoni trile-----	BPC.
4-Bromo-1-phthalamido pentane-----	PD.
p-Bromotoluene-----	BPC, EK.
2-Bromo-1,3,5-triethylbenzene-----	DUP.
p-Butoxyphenol-----	ABB.
N-Butylaniline-----	DUP.
p-Butylaniline-----	DUP.
2-(N-Butylanilino)propioni trile-----	SYL.
3-(N-Butylanilino)propioni trile-----	TCH.
2-tert-Butylanthraquinone-----	DUP.
p-tert-Butylbenzaldehyde-----	GIV.
n-Butylbenzene-----	EK, PLC.
sec-Butylbenzene-----	PLC.
tert-Butylbenzene-----	EK, PLC, UOP.
p-tert-Butylbenzoic acid-----	SHC.
o-(p-tert-Butylbenzoyl)benzoic acid-----	DUP.
2-tert-Butyl-p-cresol-----	ACY.
6-tert-Butyl-m-cresol-----	KPT, PIT, PRD.
(n-Butylcyclopentadienyl)cyclopentadienyli ron (n-Butylferrocene).	ARA.
2'-tert-Butyl-4',6'-dimethylacetophenone-----	GIV.
Butyl dimethylcresol-----	RH.
2-tert-Butyl-4-ethylphenol-----	ACY.
tert-Butylhydroquinone-----	x.
N ¹ -Butyl-4-methoxymetani lamide-----	ALL.
2-tert-Butyl-5-methylanisole-----	GIV.
o-sec-Butylphenol-----	TNA.
p-sec-Butylphenol-----	DOW.
o-tert-Butylphenol-----	TNA.
p-tert-Butylphenol-----	DOW, PRD, SCN, UCC.
Butylphenols, mixed-----	DOW, SCN.
p-tert-Butyltoluene-----	GIV, SHC.
5-tert-Butyl-1,2,3-trimethylbenzene-----	GIV.
5-tert-Butyl-m-xylene-----	GIV.
6-tert-Butyl-2,4-xylene-----	PIT.
d-10-Camphorsulfonic acid-----	OTC.
Camphosulfonic acid-----	KF.
Carbazole, refined-----	SDC.
4,4'-Carbonylbis[phthalic anhydride]-----	PCR.
6-Carboxyfluorescein-----	EK.
[(o-Carboxyphenyl)thio]ethylmercury-----	LIL.
Cedrene-----	GIV.
2'-Chloroacetoacetanilide-----	HST.
2'-Chloroacetophenone-----	EK.
3'-Chloroacetophenone-----	EK.
4'-Chloroacetophenone-----	LIL.
4'-(Chloroacetyl)acetanilide-----	DUP.
9-Chloroacridine-----	EK.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
m-Chloroaniline-----	DUP, GAF.
o-Chloroaniline-----	DUP, MON.
p-Chloroaniline-----	DUP, MON.
2-(m-Chloroanilino)diethanol-----	SYL.
3-(o-Chloroanilino)propionitrile-----	DUP, TCH.
5-Chloro-o-anisidine [NH ₂ =1] (4-Chloro-o-anisidine [OCH ₃ =1]).	ALL.
5-Chloro-o-anisidine hydrochloride-----	ALL, GAF.
1-Chloroanthraquinone-----	ACY, MAY, TRC.
2-Chloroanthraquinone-----	ACY.
o-Chlorobenzaldehyde-----	HN.
p-Chlorobenzaldehyde-----	HN.
o-Chlorobenzamide-----	PD.
4-(p-Chlorobenzamido)anthraquinone-1,2-acridone-----	GAF.
Chloro-7H-benz[de]anthracen-7-one (Chlorobenzanthrone)---	ACY, TRC.
*Chlorobenzene, mono-----	ACS, DOW, DVC, HK, MON, MTO, PPG, SCC.
p-Chlorobenzenesulfinic acid-----	TRC.
p-Chlorobenzenesulfonic acid-----	MTR.
o-Chlorobenzoic acid-----	HN.
2-Chlorobenzoxazole-----	EK.
5-Chloro-2-benzoxazolinone-----	SW.
o-(p-Chlorobenzoyl)benzoic acid-----	ACY.
o-Chlorobenzoyl chloride-----	PD.
p-Chlorobenzoyl chloride-----	HN.
4,4'-(o-Chlorobenzylidene)di-2,5-xylylidene-----	GAF.
α-(p-Chlorobenzyl)-α-phenyl-1-pyrrolidine propanol hydrochloride.	LIL.
Chloro(p-chlorophenyl)phenylmethane-----	OPC.
4-Chloro-m-cresol-----	FER.
Chlorocyclohexane-----	ACY.
4-Chloro-2-cyclopentylphenol-----	DOW.
1-Chloro-2,5-diethoxy-4-nitrobenzene-----	GAF.
2-Chloro-N,N-diethyl-4-nitroaniline-----	DUP.
2-Chloro-3',4'-dihydroxyacetophenone-----	SDW.
2-Chloro-1,4-dihydroxyanthraquinone-----	HSB.
4'-Chloro-2',5'-dimethoxyacetoacetanilide-----	PCW.
5-Chloro-2,4-dimethoxyaniline-----	PCW.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)-----	SDC.
3-Chloro-4,6-dinitrobenzenesulfonic acid-----	TRC.
4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt.	x.
3-Chlorodiphenylamine-----	SK.
Chlorodiphenylmethane-----	UOP.
5-Chloro-2,4-disulfamylaniline-----	MRK.
4-[(2-Chloroethyl)ethylamino]-o-tolualdehyde-----	GAF.
p-[(2-Chloroethyl)methylamino]benzaldehyde-----	ACS, GAF.
Chloroformic acid, benzyl ester-----	CTN.
Chloroformic acid, phenyl ester-----	CTN.
7-Chloro-4-hydroxyquinidine hydrochloride-----	PD.
3-Chloro-4-hydroxyquinoline-3,4-carbonic acid-----	SDH.
4-Chloro-N-isopropyl-3-nitrobenzenesulfonamide-----	TRC.
4-Chlorometanilic acid-----	ACS, DUP.
6-Chlorometanilic acid-----	AC, ACS.
2-Chloro-6-methoxy-4-methylphenol-----	EK.
p-(Chloromethyl)anisole-----	SDW.
1-Chloro-2-methylanthraquinone-----	ACY, DUP, TRC.
6-Chloro-4-methylbenzo[b]thiophene-2-ol-----	ACY.
α-Chloromethylnaphthalene, crude-----	BPC.
4-Chloro-N-methyl-3-nitrobenzenesulfonamide-----	TRC.
Chloromethylphenyl ether-----	BPC.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide-----	ABB.
5-Chloro-2-(N-methylsulfonyl)-4-sulfamyl-N-benzylaniline--	ABB.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Chloronaphthalenes-----	KPT.
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)-----	DUP.
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)-----	DUP.
1-Chloro-5-nitroanthraquinone-----	TRC.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)-----	DUP, MON.
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)-----	DUP.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)-----	DUP, MON.
2-Chloro-5-nitrobenzenesulfinic acid-----	TRC.
*4-Chloro-3-nitrobenzenesulfonamide-----	AC, DUP, GAF, ICC, TRC.
4-Chloro-3-nitrobenzenesulfonanilide-----	TRC.
2-Chloro-5-nitrobenzenesulfonic acid-----	ACS, TRC.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt-----	DUP.
4-Chloro-3-nitrobenzenesulfonic acid-----	ACS.
4-Chloro-3-nitrobenzenesulfonyl chloride-----	AC, SDC.
2-Chloro-4-nitrobenzoic acid-----	RSA, SAL.
2-Chloro-5-nitrobenzoic acid-----	TRC.
4-Chloro-2-nitrophenol-----	SW.
2-Chloro-5-nitrophenyl methyl sulfone-----	TRC.
4-Chloro-3-nitrophenyl methyl sulfone-----	TRC.
2-Chloro-4-nitrotoluene-----	DUP.
2-Chloro-6-nitrotoluene-----	DUP.
4-Chloro-2-nitrotoluene-----	DUP.
4-Chloro-3-nitrotoluene-----	BUC.
o-Chlorophenol-----	DOW, MON.
p-Chlorophenol-----	DOW, MON.
2-Chlorophenothiazine-----	SK.
(p-Chlorophenyl)acetone nitrile-----	OPC, UOP.
4-Chloro- α -phenyl-o-cresol-----	MON.
4-Chloro-o-phenylenediamine-----	FMT.
(o-Chlorophenyl)hydrazine-----	GAF.
2,2'-[(m-Chlorophenyl)imino]diethanol-----	TCH.
2,2'-[(m-Chlorophenyl)imino]diethanol, diacetate ester--	SDC.
3-(o-Chlorophenyl)-5-methyl-4-isoxazole carboxylic acid chloride.	ARS.
1-(o-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	HST.
1-(p-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	HST.
p-Chlorophenyl methyl sulfone-----	TRC.
1-(o-Chlorophenyl)-2-nitroethanol-----	LIL.
1-[4-(p-Chlorophenyl)-3-phenyl-2-butenyl] pyrrolidine hydrobromide.	LIL.
2-Chloro-4-phenylphenol-----	DOW.
4-Chlorophthalic acid-----	SW.
3-Chloropropenylbenzene (Cinnamyl chloride)-----	SDW.
1-(3-Chloropropyl)-4-methylpiperazine-----	SK.
7-Chloro-4-quinolinol-----	SDW.
4-Chlororesorcinol-----	AC, GAF.
5-Chlorosalicylaldehyde-----	EK.
Chlorostyrene, mono-----	DOW.
2-Chloro-5-sulfamoylbenzoic acid-----	TRC.
p-Chlorothiophenol-----	SFA.
m-Chlorotoluene-----	HK, HN.
p-Chlorotoluene-----	HN.
α -Chlorotoluene (Benzyl chloride)-----	BPC, MON, VEL.
3-Chloro-o-toluidine [NH ₂ =1]-----	DUP.
3-Chloro-p-toluidine [NH ₂ =1]-----	DUP.
5-Chloro-o-toluidine [NH ₂ =1] (4-Chloro-o-toluidine [CH ₃ =1]).	DUP.
5-Chloro-o-toluidine hydrochloride [NH ₂ =1]-----	SDH.
N-[(5-Chloro-o-tolyl)azo]sarcosine-----	ALL.
1-(6-Chloro-o-tolyl)-3-methyl-2-pyrazolin-5-one-----	HST.
[(4-Chloro-o-tolyl)thio]acetic acid-----	GAF.
p-Chloro- α,α,α -trifluorotoluene-----	HK.
Chlorotriphenylmethane-----	EK.
α -Chloro-o-xylene-----	BPC.
α -Chloro-p-xylene-----	BPC.
2-Chloro-p-xylene-----	DUP.
4-Chloro-3,5-xyleneol-----	FER.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Cholesteryl nonanoate-----	EK.
Cholestyrimine resin-----	MRK.
Cholic acid-----	WIL.
Cinnamic acid-----	BPC.
Cinnamoyl chloride-----	UOP, x.
*Cresols: ²	
m-Cresol-----	KPT.
*o-Cresol:	
From coal tar-----	KPT.
From petroleum-----	MER, PRD, SW.
p-Cresol-----	SW.
Cresols, mixed: ²	
*(m,p)-Cresol:	
From coal tar-----	KPT.
From petroleum-----	MER, NPC, PRD.
(o,m,p)-Cresol:	
From coal tar-----	KPT.
From petroleum-----	NPC.
Other-----	PIT.
*Cresylic acid, refined: ³	
From coal tar-----	KPT.
From petroleum-----	MER, NPC, PRD.
*Cumene-----	ASH, CLK, CSP, DOW, GOC, MOC, MON, SHC, SKO, SNT, SQC, TX, UCC.
2-[p-(Cyanoacetamido)phenyl]-6-methyl-7-benzothiazole- sulfonic acid.	DUP.
Cyanoacetic acid, 2-ethylhexyl ester-----	GAF.
4-[(2-Cyanoethyl)ethylamino]-o-tolualdehyde-----	DUP, GAF.
p-[(2-Cyanoethyl)methylamino]benzaldehyde-----	ACS, DUP, GAF.
*Cyclohexane-----	ASH, CCP, CSD, ENJ, GOC, GRS, PLC, PPR, SWC, TX, UOC.
1,2-Cyclohexanedicarboxylic anhydride-----	ACS.
1,3-Cyclohexanedione-----	PD.
Cyclohexanol-----	ACP, CNP, DUP, MON.
*Cyclohexanone-----	ACP, CEL, CNP, DBC, DUP, MON.
Cyclohexanone oxime-----	CNP.
Cyclohexene-----	EK, PLC, USR.
3-Cyclohexene-1-carboxaldehyde-1,2,3,6-tetrahydrol- benzaldehyde.	UCC.
4-Cyclohexene-1,2-dicarboximide-----	SFC.
4-Cyclohexene-1,2-dicarboxylic anhydride-----	PTT.
Cyclohexene oxide-----	USR.
β-(1-Cyclohexenyl)ethylamine-----	x.
Cyclohexylamine-----	ABB, RBC, VGC.
Cyclohexyl-2-propanone-----	GIV.
N-Cyclohexyltaurine, sodium salt-----	GAF.
Cyclopentadienyliron-----	ARA.
Cyclopentamine base-----	LIL.
Cyclopentanol-----	LIL.
Cyclopentene-----	ARA.
(2-Cyclopenten-1-yl)-2-propanone-----	LIL.
p-Cymene-----	HN, HPC.
Deoxycholic acid-----	WIL.
Diacenaphtho[1,2-j:1,2'-k]fluoranthene (Decacyclene)----	SDC.
1,5(and 1,8)-Diacetamidoanthraquinone-----	AC.
3,5-Diacetamido-2,4,6-triiodobenzoic acid-----	SDW.
3'[[Di-(2-Acetoxyethyl)amino]-p-acetophenetidide-----	TRC.
N ² ,N ² -Diallylmelamine-----	ACY.
Diallylchloroendate-----	SAR.
*1,4-Diaminoanthraquinone-----	DUP, SDC, TRC.
1,5-Diaminoanthraquinone-----	TRC.
1,5(and 1,8)-Diaminoanthraquinone-----	TRC.
2,6-Diaminoanthraquinone-----	AC, TRC.
3,3'-Diaminobenzanilide-----	TRC.
2,4-Diaminobenzenesulfonic acid [SO ₃ H=1]-----	DUP, TRC.
2,5-Diaminobenzenesulfonic acid [SO ₃ H=1]-----	TRC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
4,4'-Diamino-2,2'-biphenyldisulfonic acid-----	ACY.
1,4-Diamino-2,3-dichloroanthraquinone-----	CMG, DUP, x.
*1,4-Diamino-2,3-dihydroanthraquinone-----	AC, ACY, DUP, GAF, HSH, ICC, MAY, TRC.
4,8-Diamino-9,10-dihydro-1,5-dihydroxy-9,10-dioxo-2,6-anthracenedisulfonic acid.	TRC.
1,4-Diamino-9,10-dihydro-9,10-dioxo-2,3-anthracenedi-carboximide.	DUP.
1,5-Diamino-4,8-dihydroxyanthraquinone-----	VPC.
2,4-Diamino-6-phenyl-s-triazine-----	RH, VEL.
2,6-Diaminopyridine-----	NEP, RIL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid-----	ACY, CGY, GAF, SDH, TRC.
3,5-Diamino-2,4,6-triiodobenzoic acid-----	SDW.
1,4:3,6-Dianhydroglucitol-----	ICI.
2,5-Dianilinoterephthalic acid-----	x, x.
Diarylguanidine-----	DUP.
1,5-Dibenzamidoanthraquinone-----	TRC.
6,11-Dibenzamido-16H-dinaphtho[2,3- α ,2',3'-i]carbazole-5,10,15,17-tetrone.	ICI.
4,5'-Dibenzamido-1,1'-iminodanthraquinone-----	ACY, GAF, TRC.
Dibenzothiophene-----	EK.
1,5-Dibenzoylnaphthalene-----	GAF, TRC.
2-(N,N-Dibenzyl)amino-4-acetamidoanisole-----	SDC.
Dibenzylazodicarboxylate-----	WTL.
N,N'-Dibenzylethylenediamine-----	WYT.
N,N'-Dibenzylethylenediamine diacetate-----	WYT.
N,N'-Dibenzylidenetoluene- α,α -diamine-----	SDH.
3,4-Dibenzylxybutyrophenone-----	SDW.
2,4'-Dibromoacetophenone-----	EK.
3,9-Dibromo-7H-benz[de]anthracen-7-one-----	DUP, GAF, MAY, TRC.
ar-Dibromoethylbenzene-----	DOW.
2,6-Dibromo-4-nitroaniline-----	SDC.
α,α -Dibromo-p-nitrotoluene-----	DUP.
5,13-Dibromo-8,16-pyranthredione-----	ICI.
3,5-Dibromo-3'-trifluoromethylsalicylanilide (Fluorophene).	PCW.
p-Dibutoxybenzene (DBB)-----	ALL.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate-----	ALL.
1,1'-Di-n-butylidicyclopentadienyliron(Di-n-butylferrocene)	ARA.
2,6-Di-tert-butyl-4-nonylphenol-----	GAF.
2,4-Di-tert-butylphenol-----	DUP, PIT.
2,4-Dichloroaniline-----	EK.
3,4-Dichloroaniline-----	DUP, MON.
2,5-Dichloroaniline and hydrochloride [NH ₂ =1]-----	BUC, DUP.
3-(2,4-Dichloroanilino)-1-(2,4,6-trichlorophenyl)-2-pyrazolin-5-one.	EK.
1,5-Dichloroanthraquinone-----	TRC.
1,8-Dichloroanthraquinone-----	AC.
2,6-Dichlorobenzal chloride-----	DUP.
Dichlorobenzanthrone-----	ACY.
*o-Dichlorobenzene-----	ACS, DOW, MON, PPG, SCC, SVT.
o(and p)-Dichlorobenzene-----	DVC.
*p-Dichlorobenzene-----	ACS, DOW, DVC, MON, PPG, SCC, SVT.
4,6-Dichloro-m-benzenedisulfonamide-----	ABB.
4,6-Dichloro-m-benzenedisulfonyl chloride-----	ABB.
3,3'-Dichlorobenzidine base and salts-----	ACS, CWN, LAK, UPJ.
2,2'-Dichlorobenzil-----	MTD.
2,4-Dichlorobenzoic acid-----	HN.
2,4-Dichlorobenzoyl chloride-----	HN.
Dichlorobenzyl chloride-----	BPC.
4,4-(2,6-Dichlorobenzylidene)di-2,6-xylidine-----	DUP.
2,4-Dichloro-3,5-dinitro- α,α,α -trifluorotoluene-----	GAF.
2,3-Dichloro-5,6-dicyanobenzoquinone-----	ARA.
Dichlorodiphenylsilane-----	DCC, UCC.
2',7'-Dichlorofluorescein-----	EK.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
2-(5,8-Dichloro-1-hydroxy-2-naphthylazo)-1-phenol-4-sulfonamide	TRC.
5,14-Dichloroisoviolanthrone-----	ICI.
Di(chloromethyl)diphenyl oxide-----	BPC.
2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzene-sulfonic acid.	ACY, HST, TRC.
Dichloromethylphenylsilane-----	DCC.
2,6-Dichloro-4-nitroaniline-----	CWN, SW.
1,2-Dichloro-4-nitrobenzene-----	DUP, MON.
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)---	DUP.
2,4-Dichlorophenol-----	DOW, MON.
3-(2',6'-Dichlorophenyl)-5-methyl-isoxazole-4-carbonyl chloride.	OTC.
3,6-Dichloropyridazine-----	ACY.
4,7-Dichloroquinoline-----	PD, SDW.
2,5-Dichlorosulfanilic acid [SO ₃ H=1]-----	DUP.
2,5-Dichloro-4-sulfobenzenediazonium sulfate-----	TRC.
p,α-Dichlorotoluene-----	HN.
α,α-Dichlorotoluene (Benzal chloride)-----	BPC.
Dicyclohexylamine-----	ABB, VGC.
N,N'-3-Dicyclohexyl-2-thiourea-----	ABB.
*Dicyclopentadiene (includes cyclopentadiene)-----	ENJ, GOC, MON, UCC, VEL.
Dicyclopentadiene dioxide-----	VEL.
Didodecylbenzene-----	CO.
p-Diethoxybenzene-----	ALL.
3-Diethylaminoacetanilide-----	DUP.
p-(Diethylamino)benzaldehyde-----	ACS, DUP, TRC.
p-(Diethylamino)benzenediazonium chloride, zinc chloride salt.	HST.
3'-[2-(Diethylamino)ethyl]-4'-hydroxyacetanilide-----	PD.
α-[2-(Diethylamino)ethyl]-α-phenylcyclohexanemethanol, hydrochloride.	ACY.
7'-Diethylamino-4-methylcoumarin-----	EK, GAF.
m-(Diethylamino)phenol (N,N-Diethyl-3-aminophenol)-----	ACY.
3-[(4'-N,N-Diethylamino)phenylazo]-1H-1,2,4-triazole----	TRC.
3-(Diethylamino)propiophenone-----	ACY.
4-(Diethylamino)-o-tolualdehyde-----	DUP.
*N,N-Diethylaniline-----	ACS, ACY, DSC, DUP, SDH.
N,N-Diethyl-m-anisidine-----	DUP.
Diethylbenzene-----	DOW, KPP.
N,N-Diethylcyclohexylamine-----	DUP.
1,1-Diethyl-3-(m-hydroxyphenyl)urea-----	CWN.
N,N-Diethylmetanilic acid-----	DUP.
N ¹ ,N ¹ -Diethyl-4-methoxymetanilamide-----	PCW.
N,N-Diethyl-6-methoxy-m-phenylenediamine-----	DUP.
N,N-Diethyl-5-nitro-o-anisidine [NH ₂ =1]-----	DUP.
N,N-Diethyl-4-nitroso-m-anisidine hydrochloride-----	DUP.
N,N-Diethyl-4-nitroso-m-phenetidine-----	GAF.
N,N-Diethyl-m-phenetidine-----	GAF.
N,N-Diethyl-m-toluidine-----	DUP.
N,N-Diethyl-p-toluidine-----	RSA.
Difurfurylidinepentaerythritol-----	SDC.
10,11-Dihydro-5H-dibenzo[a,d]cyclohepten-5-one-----	LIL.
2,3-Dihydro-1,4-dihydroxyanthraquinone-----	DUP.
*9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracene-sulfonic acid (2-Quinizarinsulfonic acid).	AC, HSH, PAT.
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid----	TRC.
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt.	TRC.
9,10-Dihydro-9,10-dioxo-1,5-(and 1,8)-anthracene-disulfonic acid and salt.	TRC.
9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt.	TRC.
9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt.	AC, TRC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt).	AC, ACY, MAY, TRC.
10,11-Dihydro-5-[3-(methylaminopropyl)]-5H-dibenzo[a,d]-cyclohepten-5-ol.	LIL.
9,10-Dihydro-5-nitro-9,10-dioxo-1-anthracenesulfonic acid.	TRC.
9,10-Dihydro-5(and 8)-nitro-9,10-dioxo-1-anthracenesulfonic acid.	TRC.
*1,4-Dihydroxyanthraquinone (Quinizarin)-----	AC, ACS, DUP, GAF, HSH, ICC, MAY, TRC.
1,5-Dihydroxyanthraquinone (Anthrarufin)-----	GAF, TRC.
1,5(and 1,8)-Dihydroxyanthraquinone-----	ACY, TRC.
*1,8-Dihydroxyanthraquinone (Chrysazin)-----	CMG, GAF, TRC.
2,6-Dihydroxyanthraquinone (Anthraflavic acid)-----	GAF, TRC.
2,4-Dihydroxybenzaldehyde-----	EK.
2,5-Dihydroxybenzenesulfonic acid, potassium salt-----	EK.
2,5-Dihydroxybenzoic acid-----	ARS.
2,4-Dihydroxybenzophenone-----	DUP, GAF.
3,4-Dihydroxybutyrophenone-----	SDW.
1,5-Dihydroxy-4,8-dinitroanthraquinone-----	TRC, VPC.
1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitro-chrysazin).	DUP, GAF, TRC.
3,4-Dihydroxy-(α -isopropylamino)acetophenone hydrochloride.	SDW.
2,5-Dihydroxybenzenesulfonic acid, potassium salt-----	NES.
6,7-Dihydroxy-2-naphthalenesulfonic acid-----	IDC.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalenedisulfonic acid, trisodium salt.	EK.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)----	ACY, DUP, MAY.
m-Diiodobenzene-----	EK.
Diisopropylbenzene-----	DOW.
m-Diisopropylbenzene-----	GYR.
2',5'-Dimethoxyacetacetanilide-----	HST.
2,5-Dimethoxyaniline-----	EKT, PCW.
1,5(and 1,8)-Dimethoxyanthraquinone-----	TRC.
2,5-Dimethoxybenzaldehyde-----	CWN, UPJ.
m-Dimethoxybenzene-----	ACY, ARS.
3,3'-Dimethoxybenzidine (o-Dianisidine)-----	SDH.
3,3'-Dimethoxybenzidine hydrochloride-----	CWN.
2,6-Dimethoxybenzoic acid-----	ARS.
2,6-Dimethoxybenzoyl chloride-----	x.
N,N'-[(3,3'-Dimethoxy-4,4'-biphenylene)bis(azo)]bis[N-methyltaurine].	GAF.
2,5-Dimethoxy-8-methyl-8-nitrostyrene-----	x.
2,5-Dimethoxy- α -methylphenethylamine-----	x.
N-(3,4-Dimethoxy- α -methylphenethyl)-2-(3-Methyl-4-ethoxyphenyl)acetamide.	LIL.
2,5-Dimethoxy-4'-nitrostilbene-----	x.
3,4-Dimethoxyphenethylamine (Homoveratrylamine)-----	LIL.
1-(3',4'-Dimethoxyphenyl)-2-nitropropene-----	LIL.
2,5-Dimethoxytetrahydrofuran-----	HEX.
2,5-Dimethoxytoluene-----	EK.
16,17-Dimethoxyviolanthrone-----	MAY.
*p-(Dimethylamino)benzaldehyde-----	DUP, GAF, TRC.
p-Dimethylaminobenzenediazonium chloride, zinc chloride salt.	HST.
m-(Dimethylamino)benzoic acid-----	SDH, SDW.
5-(p-Dimethylaminobenzylidene)rhodanine-----	EK.
6-Dimethylamino-2-[2-(2,5-dimethyl-1-phenyl-3-pyrryl)-vinyl]-1-methyl-1-quinolinium methyl sulfate.	x.
6-Dimethylamino-1-methylquinaldinium methyl sulfate-----	EK.
2-[[2-(Dimethylamino)ethyl]-2-thenylamine]-pyridine-----	ABB.
m-(Dimethylamino)phenol-----	ACY.
11-[3-(Dimethylamino)propyl]-11-hydroxy-dibenz(b,e)oxedin.	SK.
6-Dimethylaminoquinaldine-----	EK.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*N,N-Dimethylaniline-----	ACS, ACY, DSC, DUP, x.
7,12-Dimethylbenz[a]anthracene-----	EK.
3,3'-Dimethylbenzidine hydrochloride-----	CWN, EK.
*N,N-Dimethylbenzylamine-----	ARS, MLS, RH, SW.
α,α -Dimethylbenzyl hydroperoxide-----	CLK, USS.
4-(α,α -Dimethylbenzyl)-2-phenylazophenol-----	TRC.
*2,2'-Dimethyl-1,1'-bianthraquinone-----	ACY, DUP, TRC.
N,N-Dimethylcyclohexylamine-----	ABB, DUP, EKT, JCC.
N,N-Dimethyl-dibenz(b,c)oxepin- Δ'' (6H) α -propylamine-----	SK.
5,5-Dimethylhydantoin-----	GLY.
2,3-Dimethylindole-----	DUP.
D,L-cis, trans-2,2-Dimethyl-3-isobutenylcyclopropane- 1-carboxylic acid, ethyl ester.	BPC.
N,N-Dimethyl-1-naphthylamine-----	EK.
N,N-Dimethyl-p-nitrosoaniline-----	ACY, EK.
6,6-Dimethyl-2-norpinene-2-ethanol-----	RDA.
N,N-Dimethyl-p-phenylenediamine-----	EK, EKT.
N,N-Dimethyl-p-phenylenediamine monohydrochloride-----	EK.
N,N-Dimethyl-p-phenylenediamine sulfate-----	EK.
2,5-Dimethyl-1-phenylpyrrole-----	EK.
2,5-Dimethyl-1-phenyl-3-pyrrolicarboxaldehyde-----	EK.
1,4-Dimethylpiperazine-----	JCC.
N,N-Dimethyl-o-toluidine-----	RSA.
N,N-Dimethyl-p-toluidine-----	EK, RSA.
2,4-Dinitroacetanilide-----	SDC.
2,4-Dinitroaniline-----	AC, SDC.
p-(2,4-Dinitroanilino)phenol-----	GAF.
1,5-(and 1,8)-Dinitroanthraquinone-----	AC, TRC.
N,N'-(2,4-Dinitro-1,5-anthraquinonylene)dioxamic acid----	TRC.
3,3'-Dinitrobenzanilide-----	TRC.
m-Dinitrobenzene-----	DUP.
2,4-Dinitrobenzenesulfonic acid-----	EK, TRC.
2,4-Dinitrobenzenesulfonic acid, sodium salt-----	EK, NES.
3,5-Dinitrobenzoic acid-----	SAL.
3,5-Dinitrobenzoyl chloride-----	EK.
10,10'-Dinitro[3,3'-bi-7H-benz[de]anthracene]-7,7'- dione.	DUP, MAY.
Dinitrocaprylphenol-----	RH.
2,4-Dinitrocumene-----	DUP.
1-(3,5-Dinitro-2-hydroxyphenylazo)-2-hydroxynaphthalene----	TRC.
2,6-Dinitro-4-isopropylphenol-----	x.
2,4-Dinitrophenol, tech-----	SDC.
3,5-Dinitrosalicylic acid-----	EK.
4,4'-Dinitrostilbene-2,2'-disulfonic acid-----	CGY, DUP, GAF, HN, SDH, TRC.
2,4-Dinitrotoluene-----	ACS, DUP, RUC.
*2,4-(and 2,6)-Dinitrotoluene-----	AIP, DUP, MOB, UCC.
Dinonylphenol-----	GAF, JCC.
Di-tert-pentylphenol-----	PAS.
Di-tert-amyphenoxycetyl chloride-----	EK.
1,5-Diphenoxyanthraquinone-----	VPC.
Diphenylacetic acid-----	ARA.
Diphenylacetoneitrile, tech-----	ASH.
*Diphenylamine-----	ACY, DUP, ORO, RUC, USR.
2,8-Diphenylanthra[2,1-d:6,5-d']bisthiazole-6,12-dione----	GAF.
2,5-Diphenyl-p-benzoquinone-----	EK.
2,2'-Diphenyl-4-dimethylamine-----	LIL.
N,N'-Diphenylethylenediamine-----	RPC.
2,5-Diphenylhydroquinone-----	EK.
Diphenylmethane-----	PD.
2,5-Diphenyloxazole-----	ARA, EK.
4,7-Diphenyl-1,10-phenanthroline-----	EK.
1,3-Diphenyl-1,3-propanedione-----	EK.
2,4-Disulfonyl-5-chloro(N-benzyl)aniline-----	ABB.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
4,4'-Dithiodianiline-----	SDC.
2,2'-Dithiodibenzoic acid-----	LIL, SW.
1,4-Di-p-toluidinoanthraquinone-----	GAF, TRC.
2,5-Di-p-toluidinoterephthalic acid-----	x, x.
p-Ditolylmercapto-2,5-diethoxybenzenediazonium chloride, zinc chloride salt.	HST.
Divinylbenzene-----	DOW, FG.
Dodecylbenzene. (See Alkylbenzenes.)	
Dodecylbenzyl chloride-----	BPC.
Dodecylmethylbenzyl chloride-----	RH.
p-Dodecylphenol-----	GAF, MON, x.
1,2-Epoxy-3-phenoxypropane-----	DUP.
p-Ethoxybenzaldehyde-----	EK.
o-Ethoxybenzoic acid-----	ACY.
N-(p-Ethoxybenzylidene)-p-butylaniline-----	EK.
4-Ethoxy-3-methoxybenzaldehyde-----	LIL.
4-Ethoxy-3-methoxybenzyl alcohol-----	LIL.
1-(4-Ethoxy-3-methoxybenzyl)-6,7-dimethoxy-3-methyl- isoquinidine (Dioxylane base).	LIL.
(4-Ethoxy-3-methoxyphenyl)acetic acid-----	LIL.
2-Ethoxy-1-naphthoyl chloride-----	WYT.
4-Ethoxy-o-phenylenediamine-----	TRC.
N ¹ -(6-Ethoxy-3-pyridazinyl)sulfanilamide-----	ACY.
3-(Ethylamino)-p-cresol-----	DUP.
β-Ethyl-N-(β-aminoethyl)-m-toluidine-----	WAY.
3-(Ethylamino)-p-toluenesulfonic acid [SO ₃ H=1]-----	DUP.
*N-Ethylaniline, refined-----	ACS, ACY, DUP.
*2-(N-Ethylanilino)ethanol-----	DUP, EKT, SYL, TCH.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride-----	DUP.
3-(N-Ethylanilino)propionitrile-----	SYL, TCH.
α-(N-Ethylanilino)-m-toluenesulfonic acid-----	GAF, SDH.
α-(N-Ethylanilino)-p-toluenesulfonic acid-----	ACS, TRC.
*Ethylbenzene-----	ATR, CSD, DOW, ENJ, FG, KPP, MCB, MON, SKC, SNT, SOG, STY, TOC, UCC.
Ethylbenzyl chloride-----	BPC.
2-(N-Ethyl-N-β-cyanoethyl)-4-acetaminoanisole-----	SDC.
N-Ethylcyclohexylamine-----	ABB.
3,3'-Ethylenedioxydiphenol-----	IDC.
3-Ethyl-2-[5-(3-ethyl-2-benzothiazolinyldiene)-1, 3-pentadienyl]-benzothiazolium iodide.	EK.
2-[N-Ethyl-p-[(6-methoxy-2-benzothiazolyl)azo]anilino]- ethanol.	TRC.
N-Ethyl-N-(2-methylsulfonamidoethyl)-m-toluidine-----	WAY.
N-Ethyl-1-naphthylamine-----	DUP.
9-Ethyl-3-nitrocarbazole-----	SDC.
α-Ethyl-3-nitrocinnamic acid-----	SDW.
Ethylphenylmalonic acid, diethylester-----	MAL.
*N-Ethyl-N-phenylbenzylamine-----	ACS, DUP, SDH.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine) (MEP)-----	UCC.
6-Ethyl-1,2,3,4-tetrahydro-1,1,4,4-tetramethyl- naphthalene.	GIV.
N-Ethyl-p-toluenesulfonamide-----	EK.
N-Ethyl-m-toluidine-----	DUP.
N-Ethyl-o-toluidine-----	DUP.
2-(N-Ethyl-m-toluidino)ethanol-----	TCH.
*3-(N-Ethyl-m-toluidino)propionitrile-----	DUP, GAF, SYL, TCH.
α-(N-Ethyl-m-toluidino)-m-toluenesulfonic acid-----	ACS, GAF.
1-Ethynyl-1-cyclohexanol-----	EKT.
o-Fluorobenzoic acid-----	FIN.
1-Fluoro-2,4-dinitrobenzene-----	EK.
d-2-Formamido-1-phenyl-1,3-propanediol-----	PD.
4-Formyl-m-benzenedisulfonic acid-----	GAF.
o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)-----	SDH.
Furan-----	PLC, QKO.
Furfuryl alcohol-----	QKO.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Furfurylamine-----	MLS.
N-Glycolylarsanilic acid, sodium salt-----	SDW.
Glyoxanilide-2-oxime-----	DUP.
Hexabromobenzene-----	MCH, NES.
Hexabromobiphenyl-----	MCH.
Hexachlorobenzene-----	DVC.
Hexachlorocyclopentadiene-----	HK, VEL.
1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic acid.	HK.
1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride.	VEL.
Hexafluorobenzene-----	WHC.
1,2,3,4,5,6-Hexahydro-8-hydroxy-cis-6,11-dimethyl-2,6- methano-2-benzazocine.	SDW.
Hexahydro-1-methyl-4-phenyl-1H-azepine-4-carbonitrile----	WYT.
Hexamethylenimine (Hexahydroazopine)-----	CEL.
Hippuric acid-----	BPC.
p-Hydrazinobenzenesulfonic acid-----	GAF, STG, WJ.
Hydrazobenzene-----	LAK.
*Hydroquinone, tech-----	CRS, DA, EKT, GYR.
3'-Hydroxyacetophenone-----	CTN, SDH.
6'-Hydroxy-m-acetotoluidide-----	TRC.
p-Hydroxybenzaldehyde-----	DOW.
p-Hydroxybenzenesulfonic acid-----	PRD, UPF.
p-Hydroxybenzoic acid-----	HN.
3'-Hydroxy-2-(N-benzyl-N-methylamino)acetophenone hydrochloride.	SDW.
4-Hydroxycoumarin-----	ABB.
2-Hydroxy-3,5-diiodobenzoic acid-----	EK.
4-(2-Hydroxyethoxy)acetanilide-----	GAF.
m-(β-Hydroxyethoxy)phenol-----	BJL.
3-[N-(2-Hydroxyethyl)anilino]propionitrile-----	TCH.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, acetate-----	TCH.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, benzoate----	DUP, x.
N-(β-Hydroxyethyl)-2,4-dihydroxybenzamide-----	IDC.
N-(β-Hydroxyethyl)-2,5-dihydroxybenzamide-----	ARS.
N-(β-Hydroxyethyl)-3,5-dihydroxybenzamide-----	IDC.
N-β-Hydroxyethyl-3-hydroxy-2-naphthamide-----	IDC.
6'-Hydroxy-5'-[(2-hydroxy-5-nitrophenyl)azo]-m-aceto- toluidide.	TRC.
N-[7-Hydroxy-8-[(2-hydroxy-5-nitrophenyl)azo]-1- naphthyl]acetamide.	TRC.
7-Hydroxy-8-[(4'-[(p-hydroxyphenyl)azo]-3,3'-dimethyl- 4-biphenyl)azo]-1,3-naphthalenedisulfonic acid.	TRC.
4-Hydroxyacetanilide-----	TRC.
4-Hydroxy-4-isopropylmetanilamide-----	TRC.
4-Hydroxymetanilamide-----	DUP, TRC.
4-Hydroxymetanilanolide-----	TRC.
4-Hydroxymetanilic acid-----	TRC.
3'-Hydroxy-2-(methylamino)acetophenone-----	CTN.
3-Hydroxy-2-methylcinchoninic acid-----	DUP, GAF, ICC, TRC.
4-Hydroxy-N ¹ -methylmetanilamide-----	TRC.
5-Hydroxymethyl-2-norbornene-----	ARS.
N-(Hydroxymethyl)phthalimide-----	ACY.
3-Hydroxy-N-(3-N-morpholinopropyl)-2-naphthamide-----	IDC.
3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt--	ACY, TRC.
7-Hydroxy-1,3-naphthalenedisulfonic acid-----	DUP, TRC.
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt--	ACY.
4-Hydroxy-2-naphthalenesulfonamide-----	GAF.
4-Hydroxy-1-naphthalenesulfonic acid-----	DUP.
5-Hydroxy-1-naphthalenesulfonic acid-----	TRC.
8-Hydroxy-1-naphthalenesulfonic acid-----	VPC.
*6-Hydroxy-2-naphthalenesulfonic acid, and sodium salt----	ACY, TMS, TRC, WJ.
1-Hydroxy-2-naphthoic acid, methyl ester-----	x.
3-Hydroxy-2-naphthoic acid (B.O.N.)-----	PCW.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
N-(7-Hydroxy-1-naphthyl)acetamide-----	GAF, TRC.
1-(2-Hydroxy-1-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
4-Hydroxy-7-(p-nitrobenzamido)-2-naphthalenesulfonic acid.	GAF.
2-Hydroxy-5-nitrometanilic acid-----	TRC.
1-(2-Hydroxy-4-nitrophenylazo)-2-naphthol-----	TRC.
2-Hydroxy-4-n-octoxybenzophenone-----	ACY, CCW.
o-[(p-Hydroxyphenyl)azo]benzoic acid-----	EK.
3-[(4-(4-Hydroxyphenylazo)-2,5-dimethoxyphenylazo)]-benzenesulfamic acid.	TRC.
11 α -Hydroxyprogesterone-----	UPJ.
N-Hydroxysuccinimide-----	EK.
2-Hydroxy-4-sulfo-1-naphthalenediazonium hydroxide inner salt.	ACY.
1-Hydroxy-4-p-toluidinoanthraquinone-----	GAF.
2-Imidazolidinone-----	VAL.
2-Imidazolidinone modifications-----	RH.
1,1'-Iminobis[4-aminoanthraquinone]-----	ACY, GAF, TRC.
1,1'-Iminobis[4-benzamidoanthraquinone]-----	ACY.
1,1'-Iminobis[5-benzamidoanthraquinone]-----	GAF, TRC.
7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid]-----	GAF.
1,1'-Iminobis[4-nitroanthraquinone]-----	ACY, TRC.
1,1'-Iminodianthraquinone (1,1'-Dianthrimide)-----	ACY, GAF.
Indole-2,3-dione-----	DUP, TRC.
Indophenol, sodium salt-----	EK.
Isobutylbenzene-----	PLC, TNA.
*Isocyanic acid derivatives:	
Bitolylene diisocyanate (TODI)-----	CWN, UPJ.
p-Chlorophenyl isocyanate-----	MOB.
Dianisidine diisocyanate (DADI)-----	UPJ.
Diphenylmethane-4,4'-diisocyanate (MDI)-----	ACS, MOB, UPJ.
Phenylisocyanate-----	MOB, UPJ.
Polyisocyanates (complex)-----	MOB.
*Polymethylene polyphenylisocyanate-----	JCC, MOB, RUC, UPJ.
Toluene 2,4-diisocyanate-----	DUP, MOB.
Toluene 2,4- and 2,6-diisocyanate (65/35 mixture)-----	DUP, MOB.
*Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)-----	ACS, BAS, DUP, GNT, MOB, OMC, RUC, UCC.
p-Toluenesulfonyl isocyanate-----	CWN.
Other-----	MOB, x, x.
Isonicotinonitrile-----	RIL.
2-Isonitrosoacetanilide-----	TRC.
Isophthalic acid (Benzene-1,3-dicarboxylic acid)-----	ACC, ATR.
Isophthalic acid, diallyl ester-----	FMP.
Isophthalic acid, dimethyl ester-----	MTR.
Isophthalic acid, diphenyl ester-----	BJL.
Isophthalonitrile-----	SW.
Isophthaloyl chloride-----	DUP.
N-Isopropylaniline-----	USR.
4,4'-Isopropylidenebis[2,6-dibromophenol] (Tetrabromobisphenol A).	DOW.
5,5'-Isopropylidenebis(2-hydroxy-m-xylene, α,α' -diol)-----	ARK.
*4,4'-Isopropylidenediphenol (Bisphenol A)-----	DOW, GE, SHC, UCC.
4,4'-Isopropylidenediphenol, ethoxylated-----	ICI.
4,4'-Isopropylidenediphenol, propoxylated-----	ICI.
o-Isopropylphenol-----	PRD, TNA.
Isopropylphenols, mixed-----	FMP, KPT.
4-Isopropyl-m-phenylenediamine-----	DUP.
*Isoviolanthrone (Isodibenzanthrone)-----	GAF, MAY, TRC.
*Leuco quinizarin (1,4,9,10-Anthratetrol)-----	AC, EKT, HN, HSH, ICC, TRC.
2,4-Lutidine-----	KPT.
3,4-Lutidine-----	UCC.
Malonanilide-----	PCW.
Mandelonitrile-----	KF.
*Melamine-----	ACP, ACY, MLC, PPC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Mentha-1,4(8)-diene-----	GIV.
dl-p-Mentha-1,8-diene (Limonene)-----	ARZ, HN, HPC, NCI.
p-Menth-1-ene-----	GIV.
o-Mercaptobenzoic acid (Thiosalicylic acid)-----	AMB, LIL.
*Metanilic acid (m-Aminobenzenesulfonic acid)-----	ACY, DUP, TRC.
N-(p-Methoxybenzylidene)-p-butylaniline-----	EK.
6-Methoxymetanilic acid-----	GAF.
4'-Methoxy-2-(p-methoxyphenyl)acetophenone-----	CTN.
Methoxymethyldiphenyl oxide-----	BPC.
N-(2-Methoxy-1-naphthyl)acetamide-----	TRC.
(p-Methoxyphenyl)acetic acid-----	UOP.
m-Methoxyphenyl isocyanate-----	EK.
6-Methoxyquinoline-----	DUP.
1-(Methylamino)anthraquinone-----	AC, ACY.
1-(Methylamino)-4-p-toluidinoanthraquinone-----	BDO, GAF.
N-Methylaniline-----	ACY, DUP.
2-(N-Methylanilino)ethanol-----	TCH.
*3-(N-Methylanilino)propionitrile-----	DUP, SYL, TCH.
5-Methyl-o-anisidine [NH ₂ =1]-----	SW.
5-Methyl-o-anisidinesulfonic acid-----	ACS.
m-Methylanisole-----	GIV.
N-Methylantranilic acid-----	GIV.
2-Methylantraquinone-----	ACY.
3-Methylbenzo[f]quinoline-----	ACY.
2-Methylbenzothiazole-----	FMT.
N-Methylbenzylamine-----	ABB, MLS, SDW.
N-Methyl-N-carboxyantranilic anhydride-----	SW.
3-Methylcholanthrene-----	EK.
Methylcyclohexane-----	PLC.
4-Methylcyclohexanone-----	EK.
Methylcyclopentadiene-----	ENJ.
N-Methyldicyclohexylamine-----	ABB.
4-Methyl- α,α -diphenyl-1-piperazineethanol, dihydrochloride.	ABB.
N-Methyleneaniline-----	PCW.
5,5'-Methylenebis[anthranilic acid, dimethyl ester]-----	SW.
4,4'-Methylenebis[2-chloroaniline]-----	DUP.
4,4'-Methylenebis[N,N-diethylaniline]-----	ACY, GAF, TRC.
*4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)---	ACY, DUP, SDH.
4,4'-Methylenebis(3-hydroxy-2-naphthoic acid) disodium salt.	EK, PD.
2,2'-Methylenebis(4-methyl-6-nonyl-p-cresol)-----	ACY.
4,4'-Methylenediamine salt complex-----	DUP.
*4,4'-Methylenedianiline-----	ACS, DOW, MOB, RUC.
1,2-Methylenedioxybenzene-----	PD.
1,2-Methylenedioxy-4-nitrobenzene-----	PD.
5,5'-Methylenedisalicylic acid-----	HN.
Methylhydroquinone-----	EKT.
2-Methylindole-----	TRC.
2-Methylindole-3-carboxaldehyde-----	GAF.
Methyl mandelate-----	CTN.
6-Methyl-2-(2-methyl-6-quinolyl)-7-benzothiazolesulfonic acid.	DUP.
5-Methyl-4-nitro-o-anisidine-----	PCW.
4-Methyl-2-nitroanisole-----	SW.
2-Methyl-5-nitroimidazole-----	RDA.
N-Methyl-N-nitroso-p-toluenesulfonamide-----	EK.
2-Methyl-5-norbornene-2,3-dicarboxylic anhydride-----	VEL.
5-Methyl-5-norbornene-2,3-dicarboxylic anhydride-----	ACS.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide---	VPC.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid---	TRC.
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid---	ACY, GAF, TRC.
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO ₃ H=1].	TRC.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
2-Methyl-5-phenylbenzoxazole-----	FK.
1-Methyl-1-phenylhydrazine-----	EK.
1-Methyl-4-phenylisonipecotic acid-----	SDW.
4-Methyl-1-phenyl-3-pyrazolidinone-----	FK.
*3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)-----	ACY, DUP, GAF, SDH, VPC.
4-Methyl-1-piperazine acetic acid, methyl ester-----	ABB.
3-(α -Methylpiperidino)propanol-----	LIL.
3-Methyl-2-pyrazolin-5-one-----	DUP.
1-Methylpyrrole-----	DUP.
* α -Methylstyrene-----	ACP, CLK, DOW, GP, SKO, UCC, USS.
ar-Methylstyrene (Vinyltoluene)-----	DOW, FG.
2-(Methylsulfonyl)-4-nitroaniline-----	TRC.
3-Methylthiophene-----	SDW.
3-Methyl-1-p-tolyl-2-pyrazolin-5-one-----	HST.
16- α -Methyltriene carbethoxylate-----	SCH.
Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude).-----	KPT.
1,4-Naphthalenediol-----	EK.
2,7-Naphthalenedisulfonic acid-----	TRC.
1-Naphthalenesulfonic acid-----	TRC.
2-Naphthalenesulfonic acid-----	ACY, EK, HN.
1-Naphthalenesulfonic acid, sodium salt-----	TRC.
2-Naphthalenesulfonic acid, sodium salt-----	ACY.
2-Naphthalenesulfonyl chloride-----	DUP.
1,4,5,8-Naphthalenetetracarboxylic acid-----	TRC.
Naphthalimide-----	ACS.
1-Naphthol (α -Naphthol)-----	UCC.
2-Naphthol, tech. (β -Naphthol) ¹ -----	ACY.
p-Naphtholbenzein-----	EK.
1-Naphthol-2-sulfonic acid, potassium salt-----	EK.
1,2-Naphthoquinone-4-sulfonic acid, sodium salt-----	EK.
Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid-----	TRC.
2-(2H-Naphth[1,2-d]triazol-2-yl)-4-(1,1,3,3-tetramethyl- butyl)phenol.-----	x.
1-Naphthylamine (α -Naphthylamine)-----	DUP.
2-(1-Naphthylamino)ethanol-----	TCH.
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2- naphthylamine).-----	SDC.
(2-Naphthylthio)acetic acid-----	ACY.
Nicotinonitrile (3-Cyanopyridine)-----	NEP, RIL.
3'-Nitroacetanilide-----	GAF, TRC.
4'-Nitroacetanilide-----	GAF, TRC.
2'-Nitro-p-acetanilide-----	DUP.
4'-Nitro-o-acetanilide-----	DUP.
3'-Nitroacetophenone-----	CTN, SDH.
4'-Nitro-4-amino-3-methoxyazobenzene-----	SDC.
m-Nitroaniline-----	x.
o-Nitroaniline-----	MON.
p-Nitroaniline-----	AC, MON.
2-Nitro-p-anisidine [NH ₂ =1]-----	DUP.
4-Nitro-o-anisidine [NH ₂ =1]-----	DUP.
5-Nitro-o-anisidine [NH ₂ =1]-----	BUC.
o-Nitroanisole-----	DUP, x.
p-Nitroanisole-----	DUP.
5-Nitroanthranilic acid-----	TRC.
1-Nitroanthraquinone-----	ACY, TRC.
2-(4-Nitro-2-anthraquinonyl)anthra[2,3-d]-oxazole-5,10- dione.-----	GAF.
m-Nitrobenzaldehyde-----	SDH.
*Nitrobenzene-----	ACY, DUP, FST, MOB, MON, RUC.
m-Nitrobenzenesulfonic acid-----	ACY, DUP.
m-Nitrobenzenesulfonic acid, sodium salt-----	GAF, MON, MRA, SAL.
p-Nitrobenzenesulfonyl chloride-----	EK.
m-Nitrobenzoic acid-----	SAL.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
o-Nitrobenzoic acid-----	SAL.
p-Nitrobenzoic acid-----	DUP.
m-Nitrobenzoic acid, sodium salt-----	SAL.
2-(m-Nitrobenzoyl)-o-acetanisidide-----	GAF.
p-Nitrobenzoyl azide-----	EK.
m-Nitrobenzoyl chloride-----	ARS.
4-(p-Nitrobenzyl)pyridine-----	EK.
4'-Nitro-4-biphenylcarboxylic acid-----	DUP.
4-Nitro-sec-butylbenzene-----	WAY.
2-Nitro-p-cresol-----	SW.
2-Nitro-p-cymene-----	EK.
Nitrodiphenylamine-----	ACY, MON.
5-Nitro-2-furanmethanediol, diacetate-----	NOR.
5-Nitroisophthalic acid-----	MAL.
1-Nitronaphthalene-----	DUP.
3-Nitro-1,5-naphthalenedisulfonic acid-----	TRC.
7-(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid.	ACS, GAF, TRC.
p-Nitrophenethyl alcohol-----	PCW.
o-Nitrophenol-----	MON.
p-Nitrophenol-----	DUP, MON.
4'-(p-Nitrophenyl)acetophenone-----	ASH, DUP.
4-[(p-Nitrophenyl)azo]-o-anisidine-----	AC.
2-(o-Nitrophenylazo)-p-cresol (OH=1)-----	TRC.
2-(o-Nitrophenylazo)-4,6-di-tert-amylphenol (OH=1)-----	TRC.
2-Nitro-p-phenylenediamine-----	WAY.
4-Nitro-o-phenylenediamine-----	FMT.
(p-Nitrophenyl)hydrazine-----	EK.
2,2'-[(m-Nitrophenyl)imino]diethanol-----	DUP.
p-Nitrophenyl isocyanate-----	EK.
2-(p-Nitrophenyl)-2H-naphthol[1,2-d]triazole-6,8- disulfonic acid.	TRC.
1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.	VPC.
3-Nitrophthalic acid-----	EK.
3-Nitrophthalic anhydride-----	EK.
4-Nitrophthalimide-----	SDC.
5-Nitrosalicylaldehyde-----	EK.
4-Nitroso-2,6-di-tert-butylphenol-----	TRC.
4,-Nitroso-N-ethyl-N-(β-methylsulfonamidoethyl)-m- toluidine.	WAY.
1-Nitroso-2-naphthol-----	EK.
p-Nitrosophenol-----	ACY, SDC.
β-Nitrostyrene-----	CWN.
4-Nitro-4'-(5-sulfo-2H-naphtho[1,2-d]triazol-2-yl)- 2,2'-stilbenedisulfonic acid.	TRC.
3-Nitro-p-toluamide-----	SDH.
m-Nitrotoluene-----	DUP, FST.
o-Nitrotoluene-----	DUP, FST.
p-Nitrotoluene-----	DUP, FST.
Nitrotoluene mixtures-----	DUP, FST, HN.
p-Nitrotoluenesulfonic acid-----	CGY.
*5-Nitro-o-toluenesulfonic acid [SO ₃ H=1]-----	ACY, DUP, GAF, SDH.
2-Nitro-m-toluic acid-----	SAL.
3-Nitro-p-toluic acid, methyl ester-----	SDH.
*5-Nitro-o-toluidine [NH ₂ =1]-----	BUC, PCW, SDH.
2-Nitro-p-toluidine [NH ₂ =1]-----	SW.
5-Nitro-2-p-toluidinobenzenesulfonic acid-----	TRC.
16-Nitroviolanthrone-----	ICI.
4-Nitro-m-xylene-----	DUP.
*Nonylphenol-----	GAF, JCC, MON, RH, UCC.
Oxalacetic acid, diethylester, (p-sulfophenyl)- hydrazone.	TRC.
Oxanilide-----	EK.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone.	ACY, DUP, GAF, MAY, TRC.
1,1'-[(7-Oxo-7H-benz[de]anthracen-3,9-ylene)diimino]-dianthraquinone.	MAY, TRC.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester.	STG.
5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	STG.
4,4'-Oxydianiline-----	x.
Pentabromochlorocyclohexane-----	DOW.
Pentachloropyridine-----	DOW.
1,1,3,3,5-Pentamethylindan-----	GIV.
tert-Pentylbenzene-----	DUP.
o,p-tert-Pentylbenzoylbenzoic acid-----	DUP.
p-Pentyloxybenzoyl chloride-----	EK.
o-Pentylphenol (o-Amylphenol)-----	PAS.
p-Pentylphenol-----	EK.
p-tert-Pentylphenol-----	PAS.
Phenethylamine-----	MLS.
α-Phenethylamine-----	MLS.
Phenethylamine sulfate-----	MLS.
o-Phenethylbenzoic acid-----	LIL.
m-Phenetidine-----	EK.
o-Phenetidine-----	MON.
p-Phenetidine-----	MON.
*Phenol:	
*Natural:	
*From coal tar: ²	
39°C., m.p.-----	KPT, PRO.
All other-----	KPT.
*From petroleum-----	MER, NPC, SW.
*Synthetic:	
By caustic fusion: U.S.P-----	MAL, RCI.
From chlorobenzene by liquid-phase hydrolysis:	
U.S.P-----	DOW.
*From cumene by oxidation: U.S.P-----	ACP, CLK, DOW, GP, MON, SHC, SKO, SOC, UCC, USS.
Other-----	KLM.
Phenolsulfonaphthalein, sodium salt-----	EK.
Phenolsulfonic acid, lithium salt-----	SAL.
Phenoxyacetic acid, sodium salt-----	BPC, LIL.
3-Phenoxyacetophenone-----	LIL.
2-(Phenoxyethyl)benzoic acid-----	SK.
1-(3-Phenoxyphenyl)ethanol-----	LIL.
2-Phenoxypropionyl chloride-----	ARS.
Phenylacetic acid (α-Toluic acid)-----	BPC, GIV, MAL.
Phenylacetic acid, ethyl ester, tech-----	BPC, MAL.
Phenylacetic acid, methyl ester-----	BPC.
Phenylacetic acid, potassium salt-----	BPC, OPC.
Phenylacetic acid, sodium salt-----	OPC.
Phenylacetone nitrile (α-Tolunitrile)-----	BPC, SDW, UOP.
4'-Phenylacetophenone-----	DUP.
Phenylacetyl chloride-----	BJL.
N-Phenylantranilic acid-----	SDW.
2-Phenylantra[2,3-d]oxazole-5,10-dione-----	GAF.
Phenylarsine oxide-----	EK.
*p-Phenylazoaniline (C. I. Solvent Yellow 1) and hydrochloride.	ACS, ACY, DUP.
4-(Phenylazo)diphenylamine-----	EK.
4-(Phenylazo)-1-naphthylamine-----	DUP.
Phenyl-p-benzoquinone-----	EK.
4-Phenyl-3-buten-2-one-----	SDW.
Phenyl chloroformate-----	EK.
α-Phenyl-o-cresol-----	RBC.
1-Phenylcyclopentane-1-carboxylic acid-----	SK.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
m-Phenylenediamine-----	DUP, GAF.
o-Phenylenediamine-----	DUP, EK, SW, TRC.
p-Phenylenediamine-----	DUP, SDC.
p-Phenylenediamine dihydrochloride-----	EK.
d-Phenylephrine base-----	SDW.
dl-Phenylephrine-----	SDW.
1-Phenylethanol-----	UCC.
Phenyl ether (Diphenyl oxide)-----	DOW.
d(-)-Phenylglycine-----	OTC.
d(-)-2-Phenylglycine-----	BKL, KF, x.
dl-2-Phenylglycine (racemic)-----	KF, OTC.
N-Phenylglycine-----	EK.
N-Phenylglycine, sodium and potassium salts-----	ACS.
Phenylglycol ethers-----	UCC.
d(-)-2-Phenylglycylchloride hydrochloride-----	KF, OTC, x.
5-Phenylhydantoin-----	ABB.
Phenylhydrazine hydrochloride-----	EK.
2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine)---	EKT, TCH.
2,2'-[(Phenyl)imino]diethanol, diacetate ester-----	SDC.
3,3'-[(Phenyl)imino]dipropionitrile-----	DUP.
Phenylmalonic acid, diethyl ester-----	BPC.
3-Phenyl-5-methylisoxazole-4-carbonyl chloride-----	ARS.
Phenyl- α -naphthylamine-----	UCC.
N-Phenyl-2-naphthylamine-----	DUP.
o-Phenylphenol-----	DOW, RCI.
p-Phenylphenol-----	DOW.
o-Phenylphenol, alkylated-----	SYL.
o-Phenylphenol, chlorinated-----	DOW.
o-Phenylphenol, sodium salt-----	DOW.
N-Phenyl-p-phenylenediamine-----	USR.
Phenylphosphinic acid-----	x.
Phenylphosphonothioic dichloride-----	SFA.
Phenylphosphorous dichloride-----	SFA.
1-Phenylpiperazine-----	RSA.
1-Phenyl-1,2-propanedione, 2-oxime-----	NEP, ORT, PD.
Phenyl-2-propanone-----	ORT.
1-Phenyl-3-pyrazolidinone-----	EK.
dl-Phenylsuccinic acid-----	PD.
1-Phenyl-2-thiourea-----	EK.
1-Phenyl-1,3,8-triazaspiro(4-5)decan-4-one-----	ALD.
Phenylundecanoic acid-----	EK.
Phloroglucinol-----	MRT.
Phthalaldehyde-----	EK.
1(2H)-Phthalazinone-----	x.
Phthalic acid-----	EK, SW.
Phthalic acid, diallyl ester-----	FMP.
*Phthalic anhydride-----	ACP, BAS, ENJ, KPT, MON, PTO, RCI, SOC, STP, UCC, USS.
Phthalide-----	ACS, FMT.
Phthalimide-----	DUP, SW.
Phthalimide, potassium salt-----	EK.
[Phthalocyaninato(2-)]copper-----	GAF.
Phthalocyaninetetrasulfonyl chloride-copper derivative---	DUP.
Phthaloyl chloride (Phthalyl chloride)-----	DUP, MON.
*Picolines: ²	
*2-Picoline (α -Picoline)-----	KPT, NEP, RIL, UCC.
3-Picoline (β -Picoline)-----	NEP, RIL.
4-Picoline (γ -Picoline)-----	RIL, UCC.
Picoline (3,4-mixture)-----	KPT.
Picolinic acid, ethyl ester-----	NEP.
Picolinonitrile (2-Cyanopyridine)-----	NEP.
3-Picolylamine-----	RIL.
Picric acid (Trinitrophenol)-----	SDC.
2-Pipecoline-----	LIL.
*Piperidine-----	ABB, DUP, RIL.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
3-Piperidinopropiophenone hydrochloride-----	ACY, MRK, SDW.
Polychlorobenzene-----	DOW.
Polychlorobiphenyl-----	MON.
Polyethylbenzene-----	UCC.
Potassium cyclohexanecarboxylate-----	EK.
Potassium phthalimide-----	PD.
Primuline base-----	DUP.
Propargylbenzene sulfonate-----	ABB.
*Propiophenone-----	ORT, PD, UCC, UOP.
N-Propylaniline-----	EK.
8,16-Pyranthrene-1,10-dione-----	TRC.
Pyridine, refined: ²	
2° Pyridine-----	KPT, NEP.
Other grades-----	KPT, NEP.
Pyridine hydrochloride-----	EK.
3-Pyridinemethanol-----	RIL.
Pyridinium bromide perbromide-----	ARA.
2(1H)-Pyridone-----	FMT.
2-Pyrimidinol-----	CGY.
Pyrrolidine-----	DUP.
2-Pyrrolidinone-----	GAF.
3-(1-Pyrrolidinyl)propionophenone hydrochloride-----	LIL.
Quinaldine-----	ACY.
Quinoline:	
1° and 2° Quinoline-----	KPT.
Quinoline (synthetic)-----	EK.
Other grades-----	KPT.
2,4-Quinolinediol-----	PCW.
Quinophthalone (Quinoline yellow base)-----	ACS.
Resorcinol, tech ¹ -----	KPT.
Resorcinol, monoacetate (non-medicinal grade) ¹ -----	AC.
β-Resorcylic acid-----	KPT.
*Salicylaldehyde-----	DOW, MTR, RDA.
Salicylaldehyde oxime-----	EK.
*Salicylic acid, tech-----	DOW, HN, MON, SDH.
Salicylic acid, ammonium chromium complex-----	TRC.
Salicylic acid, phenyl ester-----	DOW.
Salicylic acid, sodium chromium complex-----	TRC.
*Styrene, all grades-----	ACC, CSD, DOW, ELP, FG, GOC, KPP, MCB, MON, SHC, SKC, SNT, UCC.
5-Sulfamoylanthranilic acid-----	TRC.
Sulfanilamide, tech-----	SAL.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt---	ACY, DUP, SAL.
o-Sulfobenzoic acid, cyclic anhydride-----	EK.
5-Sulfoisophthalic acid, 1,3-dimethyl ester-----	x.
5-Sulfoisophthalic acid, lithium salt-----	PCW.
5-Sulfoisophthalic acid, sodium salt-----	PCW.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)---	UPF.
4-Sulphophthalic acid-----	CWN, HSC.
Terephthalic acid-----	ACC, DUP, EKT, SM.
*Terephthalic acid, dimethyl ester-----	ACC, DUP, EKT, HPC.
Terephthaloyl chloride-----	DUP.
Terephthaloyldiacetic acid, diethyl ester-----	PCW.
Terphenyl (Phenylbiphenyl)-----	MON.
3,3',4,4'-Tetraaminobenzophenone-----	BJL.
[4,4',4'',4'''-Tetraaminophthalocyaninato(2)]copper-----	SDC.
3',3'',5'5'''-Tetrabromophenolphthalein, ethyl ester-----	EK.
Tetrabromophthalic anhydride-----	MCH.
1,4,5,8-Tetrachloroanthraquinone-----	DUP.
1,2,4,5-Tetrachlorobenzene-----	DOW, HK.
1,2,4,5-Tetrachloro-3-nitrobenzene-----	SDH.
Tetrachloroviolanthrone-----	GAF.
Tetrahydrofuran-----	DUP, QKO.
Tetrahydrofurfuryl methacrylate-----	SAR.
1,2,3,4-Tetrahydroquinoxaline-----	DUP.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative----- 1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone (Pentanthrimide). N,N,3,5-Tetramethylaniline----- 1,2,4,5-Tetramethylbenzene (Durene)----- p-(1,1,3,3-Tetramethylbutyl)phenol----- N,N,N',N'-Tetramethyl-p-phenylenediamine dihydro- chloride.	GAF, HN, TRC. GAF. EK. SNT. GAF, PRD, RH, SCN. EK.
*3,3'-Thiobis[7H-benz[de]anthracen-7-one]----- 2,2'-Thiobis[5-nitrobenzenesulfonic acid]----- 4,4'-Thiodianiline----- 6,6'-Thiodimetanilic acid----- 2-Thiopheneacetic acid----- 2-Thiopheneacetone nitrile----- 2-Thiopheneacetyl chloride----- 2-Thiophenecarboxaldehyde----- Thiophenol----- sym-Thymol-----	GAF, MAY, TRC. GAF. ACY. ACS, GAF. BPC. BPC. LIL. ABB. SFA. GIV, KPT.
*Toluene-2,4-diamine (4-m-Tolylenediamine)----- Toluene-2,4-disulfonic acid----- p-Toluenesulfinic acid, sodium salt----- p-Toluenesulfonamide----- o(and p)-Toluenesulfonic acid----- p-Toluenesulfonic acid----- p-Toluenesulfonic acid, monohydrate----- o-Toluenesulfonyl chloride----- p-Toluenesulfonyl chloride----- α-Toluenesulfonyl fluoride----- α-Toluenethiol----- m-Toluic acid----- o-Toluic acid----- m-Toluidine----- o-Toluidine----- p-Toluidine----- o-Toluidine hydrochloride----- p-Toluidine hydrochloride----- Toluidines, mixed----- 2-o-Toluidinoethanol----- m-Toluidinomethanesulfonic acid----- o-Toluidinomethanesulfonic acid----- o-(p-Toluoyl)benzoic acid----- N-(p-Tolylazo)sarcosine-----	ACS, ACY, DUP, OMC, RUC, UCC. GAF. EK, NES. MON. EK, MON, NES, UPF. TEN, UPF. NES. MON. MON. EK. EK. BPC, SM. BPC. DUP. DUP, FST. AC, DUP. ACY. EK. DUP. TCH. TRC, VPC. TRC. ACY. BUC, GAF.
*4-(o-Tolylazo)-o-toluidine (C. I. Solvent Yellow 3)----- 4-(o-Tolylazo)-o-toluidine hydrochloride----- 1-p-Tolyldodecane-----	ACS, ACY, ALL, DUP, GAF, SDH. GAF. x.
*2,2'-(m-Tolylimino)diethanol----- 2,2'-(o-Tolylimino)diethanol----- 2,2'-(m-Tolylimino)diethanol, diacetate ester----- Tolyltriazole----- N,N,N-Tribenzylamine----- 3,4',5-Tribromosalicylanilide----- 1,2,3(and 1,2,4)-Trichlorobenzene-----	EKT, SYL, TCH. TCH. SDC. SW. MLS. PCW, SW. DVC, SCC.
*1,2,4-Trichlorobenzene----- N,2,6-Trichloro-p-benzoquinoneimine----- 1,1,1-Trichloro-2,2-diphenylethane----- Trichloromelamine----- 1,2,4-Trichloro-5-nitrobenzene----- Trichlorophenylsilane----- α,α,α-Trichlorotoluene (Benzotrichloride)----- α,2,4-Trichlorotoluene----- 2,4,6-Trichloro-s-triazine (Cyanuric chloride)----- 1,3,5-Triethylbenzene----- α,α,α-Trifluorotoluene----- 1,2,4-Trihydroxyanthraquinone-----	DOW, HK, SCC, SVT. EK. CWN. WTH. ALL, PCW. DCC, UCC. HK, VEL. HN. CGY, NIL. DUP. HK. GAF.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Trimellitic anhydride, acid chloride-----	ARS.
1,2,4-Trimethylbenzene (Pseudocumene)-----	SNT.
1,3,5-Trimethylbenzene (Mesitylene)-----	SNT.
3,5,5-Trimethylcyclohexanol (Homomenthol)-----	ARS.
2,3,3-Trimethyl-3H-indole-----	GAF.
*1,3,3-Trimethyl- Δ^2 , δ -indolineacetaldehyde-----	ACS, DUP, GAF, TRC.
1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)-----	DUP, GAF.
N, α , α -Trimethylphenethylamine-----	ARA.
Trimethylphenylammonium chloride-----	x.
Trimethylphenylammonium iodide-----	TRC.
2,4,6-Trimethylpyridine-----	KPT.
2,4,6-Trinitrobenzenesulfonic acid-----	EK.
2,4,7-Trinitrofluoren-9-one-----	x.
Triphenylamine-----	EK.
Triphenylmethane-----	EK.
Triphenylmethanol-----	EK.
2,4,6-Triploxybenzaldehyde-----	x.
α , α ', α '-Tris(dimethylamino)mesitol-----	RH.
Tris(2-methyl-1-aziridinyl)phosphine oxide-----	ARS.
*7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea).	ACS, GAF, TRC.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)-----	GIV, SLV.
p-Vinylbenzenesulfonic acid, sodium salt-----	DUP.
2-Vinylcyclohexene-----	UCC.
5-Vinyl-2-picoline (MVP)-----	PLC.
2-Vinylpyridine-----	RIL.
4-Vinylpyridine-----	RIL.
*Violanthrone (Dibenzanthrone)-----	ACS, ACY, DUP, GAF, MAY, SDC, TRC.
Xanthene-9-carboxylic acid-----	MAL.
m-Xylene-----	SNT.
*o-Xylene-----	ATR, CCP, CPI, CSD, CSO, ENJ, MON, PPR, SHC, SHO, SNT, SOC, TOC.
*p-Xylene-----	ACC, ATR, CSO, ENJ, HCR, PPR, SHC, SHO, SNT, SOC, SOG, TOC.
2,4-Xylenesulfonic acid-----	NES.
2,6-Xylenol, synthetic-----	GE, KPT.
Xylidines:	
2,4-Xylidine (m-4-Xylidine)-----	DUP.
2,6-Xylidine (p-Xylidine)-----	DUP.
Original mixture-----	ACS, DUP.
4-(2,5-Xylylazo)-o-toluidine-----	ACY.
All other cyclic intermediates-----	ABB, ACC, ACS, ALD, ALL, BJL, BKL, BPC, CTN, DUP, EK, FMP, GAF, GIV, HSC, HST, ICI, KF, KPT, LIL, MRK, NEP, NES, PAS, PCW, PD, PRD, RH, SAR, SDC, SDW, SK, SW, TCH, TKL, TRD, UCC, UOP, VAL, WYT, x, x, x, x.

¹ See report on Medicinal Chemicals for data on medicinal grade of this item.² Does not include manufacturers' identification codes for producers that report to the Division of Fossil Fuels, U.S. Bureau of Mines. These producers are listed in the U.S. Bureau of Mines Mineral Industry Survey *Coke Producers in the United States in 1973, September 23, 1974.*

CYCLIC INTERMEDIATES

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TABLE 3.--CYCLIC INTERMEDIATES: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of cyclic intermediates to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ABB	Abbott Laboratories	FIN	Fine Organics, Inc.
AC	American Color & Chemical Corp.	FMP	FMC Corp., Industrial Chemical Division
ACC	Amoco Chemical Corp.	FMT	Fairmount Chemical Co., Inc.
ACP	Allied Chemical Corp.: Plastics Division	FST	First Chemical Corp.
ACS	Specialty Chemicals Division	GAF	GAF Corp., Chemical Division
ACY	American Cyanamid Co.	GE	General Electric Co.
AIP	Air Products & Chemicals, Inc.	GIV	Givaudan Corp.
ALD	Aldrich Chemical Co., Inc.	GLY	Glyco Chemicals, Inc.
ALL	Alliance Chemical, Inc.	GNT	General Tire & Rubber Co.
AMB	American Bio-Synthetics Corp.	GOC	Gulf Oil Corp., Gulf Oil Co., Chemical Co.-U.S.
APF	American Petrofina Co. of Texas	GP	Georgia Pacific Corp., Chemical Division
ARA	Arapahoe Chemical, Inc. Sub/Syntex (U.S.A.), Inc.	GRS	Champlin Petroleum Co.
ARK	Armstrong Cork Co.	GYR	Goodyear Tire & Rubber Co.
ARS	Arsynco, Inc.	HCR	Hercor Chemical Corp.
ARZ	Arizona Chemical Co.	HEX	Hexagon Laboratories, Inc.
ASH	Ashland Oil, Inc. and Ashland Chemical Co.	HK	Hooker Chemicals & Plastics Corp.
ASL	Ansul Chemical Co.	HN	Tenneco Chemicals, Inc.
ATR	Atlantic Richfield Co.	HPC	Hercules, Inc.
BAS	BASF Wyandotte Corp.	HSC	Chemetron Corp., Pigments Division
BDO	Benzenoid Organics, Inc.	HSB	Harshaw Chemical Co. Div. of Kewanee Oil Co.
BJL	Burdick & Jackson Laboratories, Inc.	HST	American Hoechst Corp.
BKL	Millmaster Onyx Corp., Millmaster Chemical Division, Berkeley Chemical Dept.	ICC	Inmont Corp.
BPC	Stauffer Chemical Co., Specialty-Chemical Division, Benzol Products Dept.	ICI	ICI America, Inc.
BRP	BP Oil Corp.	IDC	Industrial Dyestuff Co.
BUC	Blackman-Uhler Chemical Co.	JCC	Jefferson Chemical Co., Inc.
CCP	Crown Central Petroleum Corp.	KF	Kay-Fries Chemicals, Inc.
CCW	Cincinnati Milacron Chemicals, Inc.	KLM	Kalama Chemical Co.
CEL	Celanese Corp., Celanese Chemical Co.	KPP	Arco/Polymers, Inc.
CGY	Ciba-Geigy Corp.	KPT	Koppers Co., Inc., Organic Materials Division
CHL	Chemol, Inc.	LAK	Lakeway Chemicals, Inc.
CLK	Clark Chemical Corp.	LEM	Napp Chemicals, Inc.
CMG	Nyanza, Inc.	LIL	Eli Lilly & Co. and Puerto Rico
CNP	Nipro, Inc.	MAL	Mallinckrodt Chemical Works
CO	Continental Oil Co.	MAY	Otto B. May, Inc.
CPI	Commonwealth Petrochemicals, Inc.	MCB	Borg-Warner Corp., Marbon Chemical Division
CRS	Carus Corp., Carus Chemical Co.	MCH	Michigan Chemical Corp.
CSD	Cosden Oil & Chemical Co.	MER	Merichem Co.
CSO	Cities Service Oil Co.	MLC	Melamine Chemicals Inc.
CSP	Coastal States Petrochemical Co.	MLS	Miles Laboratories, Inc., Marshall Division and Summer Division
CTN	Chemetron Corp., Organic Chemical Division	MNR	Monroe Chemical Co.
CWN	Upjohn Co., Fine Chemical Division	MOB	Mobay Chemical Co.
DA	Diamond Shamrock Corp.	MOC	Marathon Oil Co., Texas Refining Division
DBC	Dow Badische Co.	MON	Monsanto Co.
DCC	Dow Corning Corp.	MRA	Crown-Metro, Inc.
DOW	Dow Chemical Co.	MRK	Merck & Co., Inc.
DSC	Dye Specialties, Inc.	MRT	Morton Chemical Co. Div. of Morton-Norwich Products, Inc.
DUP	E.I. duPont de Nemours & Co., Inc.	MTO	Montrose Chemical Co.
DVC	Dover Chemical Corp.	MTR	Sobin Chemicals, Inc., Montrose Chemical Division
EK	Eastman Kodak Co.:	NCI	Union Camp Corp., Chemicals Division
EKT	Tennessee Eastman Co. Division	NEP	Nepera Chemical Co., Inc.
ELP	El Paso Products Co.	NES	Nease Chemical Co., Inc.
ENJ	Exxon Chemical Co. U.S.A.	NIL	Nilok Chemicals, Inc.
FER	Ferro Corp., Ottawa Chemical Div.	NOR	Norwich Pharmacal Co.
FG	Foster Grant Co., Inc.	NPC	Northwest Petrochemical Corp.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 3.--CYCLIC INTERMEDIATES: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of company	Code	Name of company
OMC	Olin Corp.	SM	Mobil Oil Corp., Mobil Chemical Co., Industrial Chemicals Division
OPC	Orbis Products Corp.	SNT	Suntide Refining Co.
ORO	Chevron Chemical Co.	SOC	Standard Oil Co. of California, Chevron Chemical Co.
ORT	Roehr Chemicals, Inc.	SOG	Charter International Oil Co.
OTC	Story Chemical Corp., Ott Division	STG	Stange Co.
PAS	Pennwalt Corp.	STP	Stepan Chemical Co.
PAT	Morton Chemical Co. Div. of Morton-Norwich Products, Inc.	STY	Styrochem Corp.
PCR	Princeton Chemical Research, Inc.	SVT	Solvent Chemical Co., Inc.
PCW	Pfister Chemical, Inc.	SW	Sherwin-Williams Co.
PD	Parke, Davis & Co.	SWC	Corco Cyclohexane, Inc.
PFZ	Pfizer, Inc.	SYL	Deering Milliken, Inc., Milliken Chemical Division
PII	Pitt-Consol Chemical Co.		
PLC	Phillips Petroleum Co.	TCH	Emery Industries, Inc., Tylon Chemical Division
PPC	Premier Petrochemical Co.	TEN	Cities Service Co., Copperhill Operations
PPG	PPG Industries, Inc.	TKL	Thiokol Chemical Corp.
PPR	Phillips Puerto Rico Core, Inc.	TMS	Sterling Drug, Inc., Thomasset Color Division
PRD	Productol Chemical Co., Inc.	TNA	Ethyl Corp.
PTO	Puerto Rico Chemical Co., Inc.	TOC	Tenneco Oil Co.
PTT	Petro-Tex Chemical Corp.	TRC	Toms River Chemical Corp.
QKO	Quaker Oats Co.	TRD	Manufacturing Enterprises, Inc., Squibb Manufacturing, Inc., Trade Enterprise, Inc.
RBC	Fike Chemicals, Inc.	TX	Texaco, Inc.
RCI	Reichhold Chemicals, Inc.	UCC	Union Carbide Corp.
RDA	Rhodia, Inc.	UOC	Union Oil Co. of California
RH	Rohm & Haas Co.	UOP	Universal Oil Products Co., UOP Chemical Division
RIL	Reilly Tar & Chemical Corp.	UPF	United States Pipe & Foundry Co.
RPC	Millmaster Onyx Corp., Refined-Onyx Division	UPJ	Upjohn Co.
RSA	R.S.A. Corp.	USR	Uniroyal, Inc., Chemical Division
RUC	Rubicon Chemicals, Inc.	USS	USS Chemicals Div. of U.S. Steel Corp.
SAL	Salsbury Laboratories	VAL	Valchem Corp.
SAR	Sartomer Industries, Inc.	VEL	Velsicol Chemical Corp.
SCC	Standard Chlorine of Delaware, Inc.	VGC	Virginia Chemicals, Inc.
SCH	Schering Corp.	VPC	Baychem Corp., Verona Division
SCN	Schenectady Chemicals, Inc.		
SDC	Martin-Marietta Corp., Sodyeco Division	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Division
SDH	Sterling Drug, Inc.:	WHC	Whittaker Corp., Research & Development Division
SDW	Hilton-Davis Chemical Co. Division	WIL	Inolex Corp., Inolex Pharmaceutical Division
	Winthrop Laboratories Division	WJ	Warner-Jenkinson Manufacturing Co.
	Stauffer Chemical Co.:	WTC	Witco Chemical Co., Inc.
SFA	Agricultural Division	WTH	Union Camp Corp., Harchem Division
SFC	Calhio Chemicals, Inc.	WTL	Pennwalt Corp., Lucidol Division
SFS	Specialty Chemical Division	WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.
SHC	Shell Oil Co., Shell Chemical Co. Division		
SHO	Shell Oil Co.	YAW	Y.S. Young Co., Young Aniline Works Division
SK	Smith, Klein & French Laboratories		
SKC	Sinclair-Koppers Chemical Co.		
SKO	Skelly Oil Co.		
SLV	Sterwin Chemicals, Inc.		
SM	Mobil Chemical Co.		

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

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 the dyeing of leather and plastics. Of the several thousand different synthetic dyes that are known, more than one thousand are manufactured by one or more domestic producers. 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 costs that a particular use can bear. Dyes are sold as pastes, powders, lumps, and solutions; concentrations vary from 6 percent to 100 percent. The concentration, form, and purity of a dye are determined largely by the use for which it is intended.

Total domestic production of dyes in 1973 amounted to 284 million pounds, or 7.9 percent more than the 263 million pounds produced in 1972 (table 1).¹ Sales of dyes in 1973 amounted to 266 million pounds, valued at \$519 million, compared with 255 million pounds, valued at \$480 million, in 1972. In terms of quantity, sales of dyes in 1973 were 4.6 percent larger than in 1972 and in terms of value, 8.1 percent larger. The average unit value of sales of all dyes in 1973 was \$1.95 per pound, compared with \$1.88 per pound in 1972.

For many important dyes, production was larger in 1973 than in 1972. Vat Yellow 2 production increased 13.0 percent from 3,304,000 pounds in 1972 to 3,732,000 pounds in 1973. Disperse Yellow 3 production increased by 33.3 percent from 2,810,000 pounds in 1972 to 3,748,000 pounds in 1973. Other important dyes whose production in 1973 was substantially larger than in 1972 were Direct Yellow 11 (10.1 percent increase), Vat Black 25, 12-1/2%, (69.9 percent increase), Acid Blue 9 (39.2 percent increase), Vat Green 1, 6%, (15.4 percent increase), and Disperse Red 60 (10.9 percent increase).

On the other hand, the production of several important dyes was smaller in 1973 than in 1972. Production of Vat Blue 6, 8-1/3%, was 1,957,000 pounds in 1973, or 32.8 percent less than the 2,911,000 pounds produced in 1972. Production of Basic Yellow 11 was 1,661,000 pounds in 1973, or 2.8 percent less than the 1,708,000 pounds produced in 1972. The production of Vat Green 3, 10%, was 5.2 percent less in 1973 than in 1972; Fluorescent Brightening Agent 28 was 28.2 percent less; Direct Yellow 44 was 9.6 percent less; and Acid Red 88 was 13.9 percent less.

Table 1A is a summary of production and sales of dyes in 1973 by class of application. Five application classes of dyes accounted for 73.9 percent of all dyes produced in 1973. Vat dyes accounted for 19.8

¹ See also table 2 of this report which lists these products and identifies the manufacturers by codes. These codes are given in table 3.

percent of total production; disperse dyes for 17.6 percent; direct dyes for 13.8 percent; acid dyes for 11.3 percent; and fluorescent brighteners for 11.4 percent. Of these five classes of dyes, the production of vat dyes was 2.2 percent larger in 1973 than in 1972; the production of disperse dyes was 25.4 percent larger; the production of acid dyes was 7.7 percent larger; the production of direct dyes was 4.5 percent larger; and the production of fluorescent brighteners was 18.8 percent larger.

As compared with the 1972 data, the 1973 production of the remaining dye classes changed in the following manner: Basic dyes increased by 18.7 percent; fiber-reactive dyes decreased by 0.1 percent; food, drug, and cosmetic colors increased by 12.9 percent; and solvent dyes increased by 12.2 percent.

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973

[Listed below are all dyes for which any reported data on production or sales may be published. (Leaders (...)) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all dyes for which data on production or sales were reported and identifies the manufacturer of each]

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	284,226	266,199	518,621	\$1.95
ACID DYES				
Total-----	32,034	30,508	78,031	2.56
Acid yellow dyes, total-----	9,011	8,616	21,991	2.55
Acid Yellow 11-----	73	46	100	2.17
Acid Yellow 17-----	327	330	778	2.36
Acid Yellow 19-----	438	385	765	1.99
Acid Yellow 23-----	631	428	1,096	2.56
Acid Yellow 34-----	88	74	191	2.58
Acid Yellow 36-----	197	189	344	1.82
Acid Yellow 38-----	121	80	244	3.05
Acid Yellow 40-----	258	200	645	3.23
Acid Yellow 42-----	65	62	114	1.84
Acid Yellow 54-----	58	40	80	2.00
Acid Yellow 65-----	53	55	204	3.71
Acid Yellow 99-----	93	78	224	2.87
Acid Yellow 124-----	...	35	95	2.71
Acid Yellow 151-----	1,799	1,950	3,934	2.02
Acid Yellow 159-----	505	546	1,540	2.82
All other-----	4,305	4,118	11,637	2.83
Acid orange dyes, total-----	4,360	4,141	8,704	2.10
Acid Orange 7-----	565	591	709	1.20
Acid Orange 8-----	275	295	434	1.47
Acid Orange 10-----	258	259	397	1.53
Acid Orange 24-----	461	499	785	1.57
Acid Orange 60-----	325	296	858	2.90
Acid Orange 74-----	88	62	162	2.61
Acid Orange 116-----	593	558	1,374	2.46
All other-----	1,795	1,581	3,985	2.52
Acid red dyes, total-----	6,687	6,376	15,952	2.50
Acid Red 1-----	455	388	396	1.02
Acid Red 4-----	153	174	335	1.93
Acid Red 14-----	132	109	199	1.83
Acid Red 17-----	34	...	...	...
Acid Red 18-----	140	116	158	1.36
Acid Red 37-----	63	68	273	4.02
Acid Red 73-----	261	240	801	3.34
Acid Red 85-----	169	126	298	2.37
Acid Red 88-----	1,008	...	...	...
Acid Red 89-----	...	17	25	1.47
Acid Red 99-----	135	135	261	1.93
Acid Red 114-----	560	491	1,215	2.48
Acid Red 115-----	52	34	89	2.62
Acid Red 137-----	130	151	580	3.84
Acid Red 151-----	1,166	1,070	2,179	2.04
Acid Red 182-----	92	84	300	3.57
Acid Red 266-----	295	275	1,255	4.56
Acid Red 299-----	132	94	228	2.43
Acid Red 337-----	279	250	999	4.00
All other-----	1,431	2,554	6,361	2.49

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
ACID DYES--Continued				
Acid violet dyes, total-----	338	370	984	\$2.66
Acid Violet 1-----	...	23	44	1.91
Acid Violet 3-----	39	80	159	1.99
Acid Violet 7-----	98	90	135	1.50
Acid Violet 12-----	...	20	38	1.90
Acid Violet 17-----	29	36	90	2.50
Acid Violet 49-----	58	84	259	5.08
All other-----	114	37	259	7.00
Acid blue dyes, total-----	6,257	5,442	17,309	3.18
Acid Blue 7-----	...	36	147	4.08
Acid Blue 9-----	2,136	1,685	2,175	1.29
Acid Blue 25-----	642	498	2,488	5.00
Acid Blue 27-----	149	142	637	4.49
Acid Blue 40-----	680	614	2,476	4.03
Acid Blue 41-----	34	23	120	5.22
Acid Blue 45-----	91	137	566	4.13
Acid Blue 62-----	48	...	...	...
Acid Blue 78-----	32	48	349	7.27
Acid Blue 92-----	78	76	192	2.53
Acid Blue 113-----	841	708	1,715	2.42
Acid Blue 118-----	103	84	192	2.29
Acid Blue 158 and 158A-----	88	143	337	2.36
All other-----	1,335	1,248	5,915	4.74
Acid green dyes, total-----	789	792	2,494	3.15
Acid Green 3-----	206	165	308	1.87
Acid Green 16-----	83	74	355	4.80
Acid Green 20-----	24	36	79	2.19
Acid Green 25-----	336	359	1,203	3.35
All other-----	140	158	549	3.47
Acid brown dyes, total-----	868	997	2,549	2.56
Acid Brown 14-----	280	342	659	1.93
All other-----	588	655	1,890	2.89
Acid black dyes, total-----	3,724	3,774	8,048	2.13
Acid Black 1-----	786	742	1,325	1.79
Acid Black 52-----	848	904	1,762	1.95
Acid Black 107-----	303	365	1,254	3.44
All other-----	1,787	1,763	3,707	2.10
AZOIC DYES AND COMPONENTS				
Azoic Compositions				
Total-----	2,080	1,668	2,861	1.72
Azoic yellow dyes, total-----	51	35	56	1.60
Azoic Yellow 2-----	20	10	12	1.20
All other-----	31	25	44	1.76
Azoic Orange 3-----	82	...	...	...

See footnotes at end of table.

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
AZOIC DYES AND COMPONENTS--Continued				
<i>Azoic Compositions--Continued</i>				
Azoic red dyes, total-----	726	543	615	\$1.13
Azoic Red 1-----	302	...	...	...
Azoic Red 6-----	170	...	...	...
All other-----	254	543	615	1.13
Azoic Blue 3-----	317	187	371	1.98
Azoic Brown 9-----	352	334	511	1.53
Azoic black dyes-----	368	358	745	2.08
All other azoic compositions ² -----	184	211	563	2.67
<i>Azoic Diazo Components, Bases</i> <i>(Fast Color Bases)</i>				
Total-----	744	722	1,284	1.78
Azoic Diazo Component 10, base-----	...	23	67	2.91
All other azoic diazo components, bases-----	744	699	1,217	1.74
<i>Azoic Diazo Components, Salts</i> <i>(Fast Color Salts)</i>				
Total-----	2,659	2,496	2,865	1.15
Azoic Diazo Component 1, salt-----	238	236	308	1.31
Azoic Diazo Component 3, salt-----	337	331	297	.90
Azoic Diazo Component 5, salt-----	336	282	402	1.43
Azoic Diazo Component 8, salt-----	99	85	90	1.06
Azoic Diazo Component 9, salt-----	214	198	164	.83
Azoic Diazo Component 10, salt-----	34	34	54	1.59
Azoic Diazo Component 11, salt-----	...	17	30	1.77
Azoic Diazo Component 12, salt-----	360	341	351	1.03
Azoic Diazo Component 13, salt-----	365	369	321	.87
Azoic Diazo Component 35, salt-----	...	4	12	3.00
Azoic Diazo Component 49, salt-----	59	54	170	3.15
All other azoic diazo components, salts-----	617	545	666	1.22
<i>Azoic Coupling Components</i> <i>(Naphthol AS and Derivatives)</i>				
Total-----	2,514	2,360	6,159	2.61
Azoic Coupling Component 19-----	20	19	114	6.00
Azoic Coupling Component 21-----	95	...	...	...
All other azoic coupling components-----	2,399	2,341	6,045	2.58
BASIC DYES				
Total-----	21,373	20,776	55,464	2.67
Basic yellow dyes, total-----	6,279	5,969	13,915	2.33
Basic Yellow 11-----	1,661	1,624	3,928	2.42
Basic Yellow 13-----	385	297	669	2.25
All other-----	4,233	4,048	9,318	2.30
Basic orange dyes, total-----	2,045	2,102	4,712	2.24
Basic Orange 1-----	313	393	576	1.47
Basic Orange 2-----	487	489	829	1.70
Basic Orange 21-----	939	934	2,282	2.44
All other-----	306	286	1,025	3.58

See footnotes at end of table.

TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
BASIC DYES--Continued				
Basic red dyes, total-----	3,438	3,265	10,225	\$3.13
Basic Red 13-----	30	33	114	3.45
Basic Red 14-----	793	757	1,581	2.09
Basic Red 18-----	559	503	1,264	2.51
All other-----	2,056	1,972	7,266	3.68
Basic violet dyes, total-----	3,861	3,875	10,096	2.61
Basic Violet 1-----	1,221	1,075	2,021	1.88
Basic Violet 10-----	315	339	1,666	4.91
Basic Violet 16-----	476	516	1,563	3.03
All other-----	1,849	1,945	4,846	2.49
Basic blue dyes, total-----	4,066	3,725	12,742	3.42
Basic Blue 3-----	750	706	2,259	3.20
Basic Blue 5-----	16	17	108	6.35
Basic Blue 7-----	172	169	722	4.27
Basic Blue 26-----	29	30	113	3.77
All other-----	3,099	2,803	9,540	3.40
Basic Green 1-----	84	96	367	3.82
Basic Green 4-----	686	847	1,727	2.04
Basic Brown 1-----	130	153	257	1.68
Basic Brown 4-----	518	535	872	1.63
Basic black dyes-----	179	166	458	2.76
All other basic dyes-----	87	43	93	2.16
DIRECT DYES				
Total-----	39,356	37,973	63,237	1.67
Direct yellow dyes, total-----	12,342	11,244	19,461	1.73
Direct Yellow 4-----	601	523	790	1.51
Direct Yellow 5-----	144	186	615	3.31
Direct Yellow 6-----	583	542	957	1.77
Direct Yellow 8-----	24	15	58	3.87
Direct Yellow 11-----	2,685	2,694	2,416	.90
Direct Yellow 12-----	201	169	540	3.20
Direct Yellow 28-----	205	227	677	2.98
Direct Yellow 29-----	...	23	82	3.57
Direct Yellow 44-----	1,009	832	1,700	2.04
Direct Yellow 50-----	248	251	565	2.25
Direct Yellow 84-----	852	727	1,165	1.60
Direct Yellow 105-----	262	224	513	2.29
Direct Yellow 106-----	739	906	1,518	1.68
Direct Yellow 107-----	685	703	1,313	1.87
All other-----	4,104	3,222	6,552	2.03
Direct orange dyes, total-----	1,912	1,756	4,163	2.37
Direct Orange 8-----	132	106	132	1.25
Direct Orange 15-----	342	299	392	1.31
Direct Orange 26-----	...	74	168	2.27
Direct Orange 29-----	95	...	...	...
Direct Orange 34-----	103	85	237	2.79
Direct Orange 37-----	26	18	48	2.67
Direct Orange 39-----	126	138	337	2.44
Direct Orange 72-----	325	281	619	2.20
Direct Orange 73-----	91	136	479	3.52
Direct Orange 102-----	258	237	640	2.70
All other-----	414	382	1,111	2.91
Direct red dyes, total-----	5,240	4,757	11,681	2.46
Direct Red 1-----	200	188	375	2.00
Direct Red 2-----	212	204	463	2.27
Direct Red 4-----	...	36	124	3.44
Direct Red 10-----	...	8	14	1.75

See footnotes at end of table.

DYES

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TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
DIRECT DYES--Continued				
Direct red dyes--Continued				
Direct Red 16-----	91	90	207	\$2.30
Direct Red 23-----	252	205	620	3.02
Direct Red 24-----	400	354	775	2.19
Direct Red 26-----	217	133	364	2.74
Direct Red 28-----	300	230	413	1.80
Direct Red 31-----	44	14	59	4.21
Direct Red 37-----	133	96	300	3.13
Direct Red 39-----	125	112	342	3.05
Direct Red 72-----	362	311	764	2.46
Direct Red 75-----	32	15	65	4.33
Direct Red 79-----	90	113	398	3.52
Direct Red 80-----	653	634	1,272	2.01
Direct Red 81-----	742	712	1,638	2.30
Direct Red 83-----	164	139	247	1.78
All other-----	1,223	1,163	3,241	2.78
Direct violet dyes, total-----	222	262	766	2.92
Direct Violet 9-----	150	149	372	2.50
Direct Violet 51-----	12	7	45	6.43
All other-----	60	106	349	3.29
Direct blue dyes, total-----	8,061	7,613	13,624	1.79
Direct Blue 1-----	258	309	726	2.35
Direct Blue 2-----	1,188	1,116	1,341	1.20
Direct Blue 6-----	...	327	286	.88
Direct Blue 8-----	44	31	76	2.45
Direct Blue 15-----	...	254	468	1.84
Direct Blue 25-----	49	56	174	3.11
Direct Blue 71-----	131	126	463	3.68
Direct Blue 76-----	79	80	129	1.61
Direct Blue 78-----	105	101	347	3.44
Direct Blue 80-----	526	521	987	1.89
Direct Blue 86-----	1,085	895	1,585	1.77
Direct Blue 98-----	334	311	600	1.93
Direct Blue 126-----	93	125	416	3.33
Direct Blue 191-----	116	106	184	1.74
Direct Blue 218-----	1,472	1,264	2,550	2.02
All other-----	2,581	1,991	3,292	1.65
Direct green dyes, total-----	858	880	2,429	2.76
Direct Green 1-----	189	215	257	1.20
Direct Green 6-----	...	389	728	1.87
All other-----	669	276	1,444	5.23
Direct brown dyes, total-----	1,779	1,746	2,397	1.37
Direct Brown 2-----	148	174	320	1.84
Direct Brown 31-----	87	...	...	...
Direct Brown 95-----	567	569	599	1.05
Direct Brown 111-----	39	38	168	4.42
All other-----	938	965	1,310	1.36
Direct black dyes, total-----	8,942	9,715	8,716	.90
Direct Black 4-----	165	99	139	1.40
Direct Black 9-----	...	37	67	1.81
Direct Black 22-----	475	703	412	.59
Direct Black 38-----	6,743	7,330	5,610	.76
Direct Black 51-----	...	52	186	3.58

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
DIRECT DYES--Continued				
Direct black dyes--Continued				
Direct Black 80-----	688	668	769	\$1.15
All other-----	871	826	1,533	1.86
DISPERSE DYES				
Total-----	50,072	45,738	123,485	2.70
Disperse yellow dyes, total-----	9,759	9,337	19,201	2.06
Disperse Yellow 3-----	3,748	3,828	5,547	1.45
Disperse Yellow 23-----	745	852	1,280	1.50
Disperse Yellow 33-----	285	287	526	1.83
Disperse Yellow 34-----	119	122	207	1.70
Disperse Yellow 42-----	889	816	1,564	1.92
Disperse Yellow 54-----	1,333	1,128	4,368	3.87
All other-----	2,640	2,304	5,709	2.48
Disperse orange dyes, total-----	5,276	5,041	9,739	1.92
Disperse Orange 3-----	118	90	167	1.86
Disperse Orange 17-----	113	118	148	1.25
Disperse Orange 25-----	685	515	1,104	2.14
All other-----	4,360	4,318	8,320	1.93
Disperse red dyes, total-----	11,174	9,789	31,116	3.18
Disperse Red 1-----	351	296	545	1.84
Disperse Red 5-----	102	73	113	1.55
Disperse Red 11-----	...	54	368	6.82
Disperse Red 15-----	156	103	299	2.90
Disperse Red 17-----	270	218	341	1.56
Disperse Red 55-----	319	330	2,071	6.28
Disperse Red 60-----	2,047	2,141	7,168	3.35
Disperse Red 65-----	301	265	621	2.34
All other-----	7,628	6,309	19,590	3.11
Disperse violet dyes, total-----	1,020	801	3,182	3.97
Disperse Violet 1-----	103	60	215	3.58
Disperse Violet 27-----	190	117	263	2.25
All other-----	727	624	2,704	4.33
Disperse blue dyes, total-----	20,132	18,388	55,998	3.05
Disperse Blue 1-----	228	233	1,151	4.94
Disperse Blue 3-----	1,361	1,303	2,351	1.80
Disperse Blue 7-----	359	405	3,040	7.51
Disperse Blue 64-----	471	604	1,203	1.99
Disperse Blue 73-----	...	509	2,484	4.88
Disperse Blue 79-----	3,619	2,991	7,277	2.43
All other-----	14,094	12,343	38,492	3.12
Disperse black dyes, total-----	1,931	1,713	2,689	1.57
Disperse Black 1-----	...	149	286	1.92
All other-----	1,931	1,564	2,403	1.54
All other disperse dyes-----	780	669	1,560	2.33

See footnotes at end of table.

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
FIBER-REACTIVE DYES				
Fiber-reactive dyes, total-----	3,694	3,445	15,465	\$4.49
Reactive yellow dyes-----	586	496	2,379	4.80
Reactive blue dyes-----	739	719	4,126	5.74
Reactive black dyes-----	...	132	447	3.39
All other reactive dyes ³ -----	2,369	2,098	8,513	4.06
FLUORESCENT BRIGHTENING AGENTS				
Total-----	32,449	31,990	43,068	1.35
Fluorescent Brightening Agent 28-----	1,151	1,442	2,064	1.43
All other fluorescent brightening agents-----	31,298	30,548	41,004	1.34
FOOD, DRUG, AND COSMETIC COLORS				
Total-----	5,244	5,050	22,405	4.44
<i>Food, Drug, and Cosmetic Dyes</i>				
Total-----	4,830	4,718	19,695	4.17
FD&C Blue No. 1-----	183	156	1,308	8.38
FD&C Blue No. 2-----	83	82	692	8.44
FD&C Red No. 2-----	1,267	1,120	2,943	2.63
FD&C Red No. 3-----	340	344	3,045	8.85
FD&C Yellow No. 5-----	1,378	1,328	3,675	2.77
FD&C Yellow No. 6-----	1,040	1,046	2,631	2.52
All other food, drug, and cosmetic dyes-----	539	642	5,401	8.41
<i>Drug and Cosmetic and External Drug and Cosmetic Dyes</i>				
Total-----	414	332	2,710	8.16
D&C green dyes-----	39	31	534	17.23
D&C Orange No. 4-----	5	4	42	10.50
D&C red dyes, total-----	272	203	1,188	5.85
D&C Red No. 7-----	60	32	160	5.00
D&C Red No. 12-----	4	...	...	...
D&C Red No. 19-----	...	13	118	9.08
D&C Red No. 22-----	...	4	30	7.50
D&C Red No. 36-----	11	9	50	5.56
All other-----	197	145	830	5.72
All other drug & cosmetic and external drug & cosmetic dyes ⁴ -----	98	94	946	10.06
MORDANT DYES				
Mordant yellow dyes-----	81	79	158	2.00
Mordant orange dyes, total-----	166	151	271	1.79
Mordant Orange 6-----	128	112	175	1.56
All other-----	38	39	96	2.46
Mordant red dyes-----	66	81	430	5.31
Mordant brown dyes, total-----	127	147	376	2.56
Mordant Brown 1-----	32	37	88	2.38
Mordant Brown 33-----	...	28	66	2.36
All other-----	95	82	222	2.71

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
SOLVENT DYES				
Total-----	13,988	11,741	24,267	\$2.07
Solvent yellow dyes, total-----	1,381	1,336	3,541	2.65
Solvent Yellow 14-----	564	590	890	1.51
Solvent Yellow 33-----	...	66	280	4.24
Solvent Yellow 56-----	87	78	150	1.92
All other-----	730	602	2,221	3.69
Solvent orange dyes, total-----	646	583	1,449	2.49
Solvent Orange 3-----	87	68	128	1.88
Solvent Orange 7-----	78	72	136	1.89
All other-----	481	443	1,185	2.67
Solvent red dyes, total-----	2,243	2,226	4,443	2.00
Solvent Red 24-----	213	244	636	2.61
Solvent Red 26-----	206	178	432	2.43
All other-----	1,824	1,804	3,375	1.87
Solvent blue dyes, total-----	4,003	1,972	7,987	4.05
Solvent Blue 38-----	157	...	...	...
All other-----	3,846	1,972	7,987	4.05
Solvent Green 3-----	217	114	335	2.94
Solvent brown dyes, total-----	88	89	376	4.22
Solvent Brown 12-----	20	20	68	3.40
All other-----	68	69	308	4.46
All other solvent dyes ⁵ -----	5,410	5,421	6,136	1.13
VAT DYES				
Total-----	56,333	51,293	62,485	1.22
Vat yellow dyes, total-----	5,024	5,072	9,835	1.94
Vat Yellow 2, 8-1/2%-----	3,732	3,331	4,012	1.20
Vat Yellow 4, 12-1/2%-----	98	130	617	4.75
All other-----	1,194	1,611	5,206	3.23
Vat orange dyes, total-----	3,436	3,287	10,538	3.21
Vat Orange 1, 20%-----	1,303	1,099	3,803	3.46
Vat Orange 2, 12%-----	458	471	1,042	2.21
Vat Orange 9, 12%-----	283	301	797	2.65
Vat Orange 15, 10%-----	739	687	1,983	2.89
All other-----	653	729	2,913	4.00
Vat red dyes, total-----	824	754	2,598	3.45
Vat Red 1, 13%-----	311	303	849	2.80
Vat Red 13, 11%-----	280	165	574	3.48
All other-----	233	286	1,175	4.11
Vat violet dyes, total-----	1,249	851	2,570	3.02
Vat Violet 1, 11%-----	287	270	979	3.63
Vat Violet 9, 12%-----	...	112	569	5.08
Vat Violet 13, 6-1/4%-----	608	318	442	1.39
All other-----	354	151	580	3.84
Vat blue dyes, total-----	31,724	26,599	17,514	.66
Vat Blue 6, 8-1/3%-----	1,957	3,085	3,480	1.13
Vat Blue 14, 8-1/3%-----	...	191	254	1.33
Vat Blue 18, 13%-----	939	...	...	...
All other-----	28,828	23,323	13,780	.59

See footnotes at end of table.

TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
VAT DYES--Continued				
Vat green dyes, total-----	5,826	6,997	6,666	\$0.95
Vat Green 1, 6%-----	2,077	2,709	2,055	.76
Vat Green 3, 10%-----	1,329	1,646	1,877	1.14
Vat Green 8, 8-1/2%-----	224	...	...	...
All other-----	2,196	2,642	2,734	1.03
Vat brown dyes, total-----	4,106	3,912	8,028	2.05
Vat Brown 1, 11%-----	792	766	1,369	1.79
Vat Brown 3, 11%-----	577	757	1,705	2.25
All other-----	2,737	2,389	4,954	2.07
Vat black dyes, total-----	4,144	3,821	4,736	1.24
Vat Black 25, 12-1/2%-----	2,346	1,957	1,864	.95
Vat Black 27, 12-1/2%-----	377	548	828	1.51
All other-----	1,421	1,316	2,044	1.55
All other dyes ⁶ -----	21,246	19,981	16,310	.82

¹ Calculated from rounded figures.² The data include. Azoic Orange 3 (sales only), azoic violet, azoic green, "all other" azoic orange, "all other" azoic blue, and "all other" azoic brown dyes.³ The data include. reactive orange, red, violet, green, brown, and black (production only) dyes.⁴ The data include D&C blue, D&C violet, D&C yellow, "all other" D&C orange, and all external drug and cosmetic dyes.⁵ The data include solvent violet, black, and "all other" green dyes.⁶ The data include oxidation bases, "all other" mordant dyes, ingrain dyes, sulfur dyes, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

TABLE 1A.--Dyes: U.S. PRODUCTION AND SALES, BY CLASS OF APPLICATION, 1973

Class of application	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total-----	284,226	266,199	518,621	\$1.95
Acid-----	32,034	30,508	78,031	2.56
Azoic dyes and components:				
Azoic compositions-----	2,080	1,668	2,861	1.72
Azoic diazo components, bases (Fast color bases)-----	744	722	1,284	1.78
Azoic diazo components, salts (Fast color salts)-----	2,659	2,496	2,865	1.15
Azoic coupling components (Naphthol AS & derivatives)-----	2,514	2,360	6,159	2.61
Basic-----	21,373	20,776	55,464	2.67
Direct-----	39,356	37,973	63,237	1.67
Disperse-----	50,072	45,738	123,485	2.70
Fiber-reactive-----	3,694	3,445	15,465	4.49
Fluorescent brightening agents-----	32,449	31,990	43,068	1.35
Food, drug, and cosmetic colors-----	5,244	5,050	22,405	4.44
Solvent-----	13,988	11,741	24,267	2.07
Vat-----	56,333	51,293	62,485	1.22
All other ² -----	21,686	20,439	17,545	.86

¹ Calculated from rounded figures.² The data include. oxidation bases, mordant dyes, ingrain dyes, sulfur dyes, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973

[Dyes for which separate statistics are given in table 1 are marked below with an asterisk (*); dyes not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES	
*Acid yellow dyes:	
Acid Yellow 1-----	ACY.
Acid Yellow 3-----	ACS, ACY.
*Acid Yellow 11-----	ATL, BDO, CMG, VPC.
Acid Yellow 14-----	TRC.
*Acid Yellow 17-----	ACS, BDO, CMG, DUP, HN, PDC, SDH, TRC, VPC.
*Acid Yellow 19-----	ALT, BAS, CMG, VPC, YAW.
*Acid Yellow 23-----	AC, ACS, ACY, ALT, GAF, MRX, PDC, TRC, VPC, WJ, YAW.
Acid Yellow 25-----	GAF.
Acid Yellow 29-----	GAF, TRC.
*Acid Yellow 34-----	ACS, ATL, HN, PDC.
*Acid Yellow 36-----	ACS, DUP, GAF, TRC.
*Acid Yellow 38-----	ACS, ATL, GAF.
*Acid Yellow 40-----	ACS, ALT, ATL, TRC, VPC.
*Acid Yellow 42-----	AC, ACY, GAF, VPC.
Acid Yellow 44-----	AC, GAF.
Acid Yellow 49-----	DUP, VPC.
*Acid Yellow 54-----	ACS, HN, TRC, VPC.
Acid Yellow 59-----	VPC.
Acid Yellow 63-----	AC, ACS.
*Acid Yellow 65-----	ALT, ATL, FAB, TRC, YAW.
Acid Yellow 73-----	ACS, SDH.
Acid Yellow 76-----	GAF, TRC.
Acid Yellow 79-----	VPC.
*Acid Yellow 99-----	CMG, GAF, TRC, VPC.
Acid Yellow 114-----	TRC.
Acid Yellow 121-----	GAF.
*Acid Yellow 124-----	ACS, DUP, HN.
Acid Yellow 127-----	TRC.
Acid Yellow 128-----	TRC.
Acid Yellow 129-----	TRC.
Acid Yellow 135-----	GAF.
*Acid Yellow 151-----	ACY, ALT, DUP, GAF, HN, TRC, VPC.
Acid Yellow 152-----	ACY.
*Acid Yellow 159-----	ACS, ALT, GAF, HN, TRC, VPC.
Acid Yellow 174-----	DUP, VPC.
Acid Yellow 175-----	DUP.
Acid Yellow 179-----	TRC.
Acid Yellow 190-----	HST.
Acid Yellow 198-----	DUP.
Other acid yellow dyes-----	ACY, ALT, ATL, CMG, DUP, GAF, TRC, VPC, YAW.
*Acid orange dyes:	
Acid Orange 1-----	GAF, HN.
Acid Orange 2-----	ACS.
Acid Orange 5-----	ACY.
Acid Orange 6-----	ACS.
*Acid Orange 7-----	ACS, ACY, ATL, GAF, HN, PDC, TRC, VPC, YAW.
*Acid Orange 8-----	ACS, ACY, ATL, DUP, GAF, HN, PDC, TRC, VPC.
*Acid Orange 10-----	ACS, ACY, ATL, DUP, GAF, PDC, TRC, VPC, YAW.
Acid Orange 12-----	PSC.
*Acid Orange 24-----	ACS, ACY, DUP, GAF, TRC, YAW.
Acid Orange 31-----	AC.
Acid Orange 45-----	ACS, YAW.
Acid Orange 50-----	AC.
Acid Orange 51-----	TRC.
Acid Orange 56-----	GAF.
*Acid Orange 60-----	ATL, CMG, DUP, GAF, HN, TRC, VPC.
Acid Orange 62-----	TRC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (According to list in table 3)
ACID DYES--Continued	
*Acid orange dyes--Continued	
Acid Orange 63-----	ATL, GAF, TRC.
Acid Orange 64-----	ACS, ACY, DUP.
Acid Orange 69-----	ACY.
*Acid Orange 74-----	CMG, GAF, TRC.
Acid Orange 76-----	TRC.
Acid Orange 86-----	ACS, ALT, TRC.
*Acid Orange 116-----	ACS, ALT, ATL, CMG, FAB, GAF, HN, TRC, YAW.
Acid Orange 119-----	TRC.
Acid Orange 128-----	DUP.
Acid Orange 132-----	DUP.
Acid Orange 136-----	DUP.
Other acid orange dyes-----	ALT, ATL, GAF, TRC, VPC.
*Acid red dyes:	
*Acid Red 1-----	ACS, ACY, ATL, BDO, DUP, GAF, SDH, TRC, VPC, YAW.
*Acid Red 4-----	AC, ATL, BDO, CMG, GAF, PDC, TRC, VPC, YAW.
*Acid Red 14-----	ACS, ATL, GAF, PDC, YAW.
*Acid Red 17-----	ACS, ATL, TRC.
*Acid Red 18-----	ACS, ATL, GAF, PDC, TRC.
Acid Red 26-----	ACY, ATL, CPC, PDC.
Acid Red 27-----	ACS.
Acid Red 32-----	GAF.
Acid Red 33-----	YAW.
Acid Red 35-----	GAF.
*Acid Red 37-----	ACS, ATL, DUP, GAF, HN, TRC.
Acid Red 52-----	GAF.
Acid Red 57-----	ATL, CMG, TRC.
Acid Red 66-----	AC, ATL.
*Acid Red 73-----	ACS, ACY, ATL, DUP, GAF, PSC, TRC, VPC, YAW.
Acid Red 80-----	ICI.
*Acid Red 85-----	ACS, GAF, YAW.
Acid Red 87-----	SDH.
*Acid Red 88-----	ACS, ACY, ATL, DUP, GAF, PDC, TRC, SDH, YAW.
*Acid Red 89-----	AC, BDO, GAF.
Acid Red 97-----	ATL, GAF.
*Acid Red 99-----	ATL, FAB, HN, YAW.
Acid Red 100-----	DUP.
Acid Red 106-----	YAW.
*Acid Red 114-----	ACS, ALT, ATL, DUP, GAF, TRC, VPC.
*Acid Red 115-----	ACS, ATL, GAF.
Acid Red 119-----	ACS, ALT, ATL.
Acid Red 133-----	DUP, GAF.
Acid Red 134-----	TRC.
*Acid Red 137-----	ACS, ATL, DUP, GAF, HN, TRC.
Acid Red 138-----	ALT.
*Acid Red 151-----	AC, ACY, ATL, CMG, DUP, HN, TRC, VPC, YAW.
Acid Red 167-----	ATL, DUP, TRC.
Acid Red 178-----	DUP.
*Acid Red 182-----	ACS, ATL, BDO, CMG, DUP, GAF, HN.
Acid Red 183-----	TRC.
Acid Red 186-----	CMG, GAF, VPC.
Acid Red 191-----	TRC.
Acid Red 194-----	TRC.
Acid Red 201-----	TRC.
Acid Red 211-----	DUP.
Acid Red 212-----	TRC.
Acid Red 213-----	TRC.
Acid Red 225-----	VPC.
*Acid Red 266-----	DUP, TRC, VPC.
Acid Red 277-----	VPC.
Acid Red 278-----	VPC.
*Acid Red 299-----	ALT, FAB, TRC.
Acid Red 309-----	TRC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid red dyes--Continued	
*Acid Red 337-----	DUP, TRC, VPC.
Acid Red 350-----	GAF.
Other acid red dyes-----	ACY, ALT, ATL, CMG, DUP, GAF, HN, TRC, VPC.
*Acid violet dyes:	
*Acid Violet 1-----	BDO, CMG, GAF.
*Acid Violet 3-----	ACS, ACY, TRC, YAW.
*Acid Violet 7-----	AC, ACS, ATL, BDO, CMG, GAF, TRC, VPC.
*Acid Violet 12-----	BDO, CMG, GAF.
*Acid Violet 17-----	DUP, GAF, SDH.
Acid Violet 29-----	HSH.
Acid Violet 34-----	ATL.
Acid Violet 41-----	CMG.
Acid Violet 43-----	ATL, CMG, HSH, ICI.
*Acid Violet 49-----	ACS, ACY, HSH, SDH, TRC.
Acid Violet 56-----	GAF.
Acid Violet 76-----	ACS.
Other acid violet dyes-----	CMG.
*Acid blue dyes:	
Acid Blue 1-----	ACS, GAF.
*Acid Blue 7-----	ACS, ACY, GAF, SDH.
*Acid Blue 9-----	ACS, GAF, SDH.
Acid Blue 15-----	GAF.
Acid Blue 20-----	ACS.
Acid Blue 23-----	TRC.
*Acid Blue 25-----	ACS, ATL, BDO, CMG, DUP, FAB, GAF, HN, ICI, TRC, VPC.
*Acid Blue 27-----	ATL, BDO, CMG, GAF, VPC.
Acid Blue 29-----	PDC, YAW.
Acid Blue 34-----	ACS.
*Acid Blue 40-----	ACS, ALT, ATL, BDO, CMG, DUP, GAF, ICI, TRC, VPC.
*Acid Blue 41-----	ATL, BDO, CMG, GAF.
Acid Blue 43-----	TRC.
*Acid Blue 45-----	ACS, ACY, ATL, CMG, GAF, HN, TRC.
Acid Blue 47-----	ICI.
*Acid Blue 62-----	ALT, BDO, CMG, GAF.
Acid Blue 69-----	GAF.
Acid Blue 74-----	ACS, DUP.
*Acid Blue 78-----	ACS, ATL, BDO, DUP, GAF, ICI, TRC.
Acid Blue 80-----	ATL, TRC.
Acid Blue 81-----	ICI.
Acid Blue 83-----	GAF.
*Acid Blue 92-----	ACS, ATL, YAW.
Acid Blue 93-----	HSC.
Acid Blue 104-----	ACS, GAF.
*Acid Blue 113-----	ACS, ALT, ATL, BDO, CMG, DUP, FAB, GAF, HN, PDC, TRC, YAW.
*Acid Blue 118-----	ACS, ATL, HN.
Acid Blue 120-----	ACS, ATL, GAF.
Acid Blue 122-----	DUP.
Acid Blue 127-----	CMG.
Acid Blue 145-----	ACS, DUP.
*Acid Blue 158 and 158A-----	BDO, CMG, GAF, HN, TRC, VPC.
Acid Blue 165-----	DUP.
Acid Blue 179-----	GAF.
Acid Blue 203-----	VPC.
Acid Blue 215-----	HST.
Acid Blue 221-----	VPC.
Acid Blue 230-----	ACS, DUP, TRC.
Acid Blue 231-----	TRC.
Acid Blue 298-----	DUP.
Other acid blue dyes-----	ALT, ATL, GAF, HN, TRC, YAW.

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TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid green dyes:	
Acid Green 1-----	ACS, ACY, DUP.
*Acid Green 3-----	ACS, ACY, GAF, TRC.
Acid Green 9-----	ACS, ACY, GAF.
Acid Green 12-----	ACS, GAF.
*Acid Green 16-----	ACS, GAF, SDH, TRC.
Acid Green 19-----	ALT.
*Acid Green 20-----	ATL, BDO, GAF, PDC, TRC.
Acid Green 22-----	GAF.
*Acid Green 25-----	ACS, ATL, GAF, HSH, ICI, TRC, VPC.
Acid Green 35-----	TRC.
Acid Green 41-----	ICI, VPC.
Acid Green 50-----	ACY, GAF.
Acid Green 58-----	TRC.
Acid Green 70-----	TRC.
Acid Green 84-----	VPC.
Other acid green dyes-----	ALT, HN, VPC.
*Acid brown dyes:	
Acid Brown 1-----	GAF.
Acid Brown 6-----	GAF.
*Acid Brown 14-----	AC, ACS, ACY, DUP, GAF, TRC, YAW.
Acid Brown 19-----	TRC.
Acid Brown 22-----	DUP.
Acid Brown 28-----	TRC.
Acid Brown 31-----	GAF.
Acid Brown 45-----	TRC.
Acid Brown 51-----	CMG.
Acid Brown 58-----	YAW.
Acid Brown 96-----	ACY.
Acid Brown 97-----	ACY.
Acid Brown 98-----	ACY, TRC, YAW.
Acid Brown 152-----	GAF.
Acid Brown 158-----	GAF.
Acid Brown 239-----	ALT.
Acid Brown 354-----	ACY.
Other acid brown dyes-----	ALT, DUP, GAF, VPC.
*Acid black dyes:	
*Acid Black 1-----	AC, ACS, ACY, ATL, DUP, GAF, HN, PDC, TRC, YAW.
Acid Black 2-----	ACS, ACY.
Acid Black 24-----	ACS, DUP, GAF.
Acid Black 26, 26A and 26B-----	ATL, DUP, TRC.
Acid Black 29-----	GAF, YAW.
Acid Black 41-----	YAW.
Acid Black 48-----	ICI, TRC.
*Acid Black 52-----	ACS, DUP, FAB, GAF, HN, TRC, VPC.
Acid Black 53-----	PSC.
Acid Black 58-----	CMG, TRC.
Acid Black 60-----	BDO, TRC.
Acid Black 92-----	ACY.
*Acid Black 107-----	ACS, ALT, DUP, TRC.
Acid Black 108-----	GAF.
Acid Black 139-----	VPC.
Acid Black 140-----	CMG.
Acid Black 172-----	VPC.
Other acid black dyes-----	ALT, ATL, DUP, HN, PDC, VPC.
AZOIC DYES AND COMPONENTS	
Azoic Compositions	
*Azoic yellow dyes:	
Azoic Yellow 1-----	ATL, SDH.
*Azoic Yellow 2-----	ALL, ATL, BUC, x.
Azoic Yellow 3-----	ATL, BUC.
Other azoic yellow dyes-----	ALL.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
Azoic Dyes and Components--Continued	
Azoic Compositions--Continued	
Azoic orange dyes:	
*Azoic Orange 3-----	ALL, ATL, BUC, x.
Azoic Orange 10-----	BUC.
Other azoic orange dyes-----	ALL.
*Azoic red dyes:	
*Azoic Red 1-----	ALL, ATL, BUC, SDH, x.
Azoic Red 2-----	ALL, ATL, BUC, GAF, x.
*Azoic Red 6-----	ATL, BUC, SDH, x.
Azoic Red 12-----	ATL.
Azoic Red 16-----	ATL.
Azoic Red 73-----	GAF.
Azoic Red 74-----	GAF.
Other azoic red dyes-----	ALL, x.
Azoic Violet dyes: Azoic Violet 1-----	ATL, BUC.
Azoic blue dyes:	
Azoic Blue 2-----	ATL.
*Azoic Blue 3-----	ALL, ATL, BUC, GAF, HST, SDH, x.
Azoic Blue 6-----	ATL.
Azoic Blue 7-----	ATL.
Other azoic blue dyes-----	ALL, ATL, GAF.
Azoic green dyes:	
Azoic Green 1-----	ATL.
Other azoic green dyes-----	ALL, BUC.
Azoic brown dyes:	
Azoic Brown 3-----	x.
Azoic Brown 7-----	ATL, BUC.
*Azoic Brown 9-----	ALL, ATL, BUC, GAF, HST, VPC, x.
Azoic Brown 10-----	ATL, BUC.
Azoic Brown 26-----	GAF.
Other azoic brown dyes-----	ATL, GAF.
*Azoic black dyes:	
Azoic Black 1-----	HST.
Azoic Black 4-----	ATL, BUC, GAF.
Azoic Black 15-----	GAF.
Other azoic black dyes-----	ALL, ATL, GAF, VPC.
Azoic Diazo Components, Bases (Fast Color Bases)	
Azoic Diazo Component 2, base-----	ATL, BUC.
Azoic Diazo Component 3, base-----	BUC.
Azoic Diazo Component 4, base-----	ATL, BUC, GAF, SDH.
Azoic Diazo Component 5, base-----	ATL, GAF.
Azoic Diazo Component 8, base-----	SDH.
*Azoic Diazo Component 10, base-----	ATL, BUC, GAF.
Azoic Diazo Component 11, base-----	ATL.
Azoic Diazo Component 12, base-----	BUC, SDH.
Azoic Diazo Component 13, base-----	ATL, BUC.
Azoic Diazo Component 14, base-----	AC.
Azoic Diazo Component 28, base-----	BUC.
Azoic Diazo Component 32, base-----	ALL, ATL, BUC.
Azoic Diazo Component 44, base-----	BUC.
Azoic Diazo Component 48, base-----	GAF.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
AZOIC DYES AND COMPONENTS--Continued	
<i>Azoic Diazo Components, Salts (Fast Color Salts)</i>	
*Azoic Diazo Component 1, salt-----	AC, ALL, BUC, GAF, SDH.
Azoic Diazo Component 2, salt-----	BUC.
*Azoic Diazo Component 3, salt-----	AC, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 5, salt-----	AC, ALL, BUC, GAF, SDH.
Azoic Diazo Component 6, salt-----	AC, BUC, GAF.
*Azoic Diazo Component 8, salt-----	AC, ALL, BUC, GAF.
*Azoic Diazo Component 9, salt-----	AC, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 10, salt-----	ALL, BUC, GAF.
*Azoic Diazo Component 11, salt-----	AC, ALL, BUC.
*Azoic Diazo Component 12, salt-----	AC, ALL, BUC, SDH.
*Azoic Diazo Component 13, salt-----	AC, ALL, BUC, GAF, SDH.
Azoic Diazo Component 14, salt-----	AC.
Azoic Diazo Component 20, salt-----	ALL.
Azoic Diazo Component 28, salt-----	ALL, BUC, GAF, SDH.
Azoic Diazo Component 32, salt-----	ALL.
Azoic Diazo Component 34, salt-----	ALL, GAF.
*Azoic Diazo Component 35, salt-----	ALL, BUC, GAF.
Azoic Diazo Component 36, salt-----	GAF.
Azoic Diazo Component 41, salt-----	ALL, BUC.
Azoic Diazo Component 42, salt-----	ALL.
Azoic Diazo Component 44, salt-----	ALL, BUC.
*Azoic Diazo Component 49, salt-----	AC, ALL, BUC, GAF.
Azoic Diazo Component 121, salt-----	GAF.
Other azoic diazo components, salts-----	ALL.
<i>Azoic Coupling Components (Naphthol AS and Derivatives)</i>	
Azoic Coupling Component 2-----	ATL, BUC, PCW.
Azoic Coupling Component 3-----	BUC, PCW.
Azoic Coupling Component 4-----	ATL, BUC.
Azoic Coupling Component 5-----	BUC.
Azoic Coupling Component 7-----	BUC, PCW, SDH.
Azoic Coupling Component 8-----	ATL, BUC, PCW.
Azoic Coupling Component 10-----	ATL, PCW.
Azoic Coupling Component 11-----	BUC, PCW.
Azoic Coupling Component 12-----	ATL, BUC, PCW.
Azoic Coupling Component 13-----	GAF, HST.
Azoic Coupling Component 14-----	ATL, BUC, PCW.
Azoic Coupling Component 15-----	BUC, GAF.
Azoic Coupling Component 16-----	BUC.
Azoic Coupling Component 17-----	ATL, BUC, PCW.
Azoic Coupling Component 18-----	ATL, BUC, GAF, PCW.
*Azoic Coupling Component 19-----	BUC, GAF, PCW.
Azoic Coupling Component 20-----	ATL, BUC, GAF, PCW.
*Azoic Coupling Component 21-----	ATL, BUC, PCW.
Azoic Coupling Component 24-----	PCW.
Azoic Coupling Component 29-----	ATL, BUC, PCW.
Azoic Coupling Component 34-----	ATL, BUC, PCW.
Azoic Coupling Component 35-----	BUC, HST, PCW.
Azoic Coupling Component 43-----	ATL, BUC, GAF.
Other azoic coupling components-----	ATL, VPC.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
BASIC DYES	
*Basic yellow dyes:	
Basic Yellow 1-----	DUP.
Basic Yellow 2-----	ACS, ACY.
*Basic Yellow 11-----	ACS, ACY, ALT, ATL, DUP, GAF, TRC, VPC.
*Basic Yellow 13-----	ACS, ALT, ATL, BAS, DUP, GAF, VPC.
Basic Yellow 15-----	DUP.
Basic Yellow 21-----	VPC.
Basic Yellow 23-----	BAS.
Basic Yellow 24-----	ACY, BAS.
Basic Yellow 25-----	BAS.
Basic Yellow 28-----	VPC.
Basic Yellow 29-----	DUP, VPC.
Basic Yellow 31-----	DUP.
Basic Yellow 37-----	ACY, DUP.
Basic Yellow 41-----	ACY.
Basic Yellow 52-----	DUP.
Basic Yellow 53-----	DUP.
Basic Yellow 58-----	DUP.
Other basic yellow dyes-----	ACY, ALT, ATL, DUP, EKT, GAF.
*Basic orange dyes:	
*Basic Orange 1-----	ACS, ACY, GAF, PSC, TRC.
*Basic Orange 2-----	ACS, ACY, DSC, DUP, GAF, PSC, TRC.
Basic Orange 14-----	GAF.
*Basic Orange 21-----	ACS, ACY, ALT, ATL, DUP, GAF, TRC, VPC.
Basic Orange 22-----	GAF.
Basic Orange 24-----	DUP.
Basic Orange 25-----	DUP.
Basic Orange 26-----	DUP.
Basic Orange 28-----	VPC.
Basic Orange 31-----	ACY.
Basic Orange 39-----	DUP.
Basic Orange 40-----	BAS.
Basic Orange 41-----	BAS.
Other basic orange dyes-----	DUP.
*Basic red dyes:	
Basic Red 1-----	BAS, DUP.
Basic Red 2-----	ACS, DUP.
Basic Red 9-----	DSC, HSC.
Basic Red 12-----	ACY, DUP.
*Basic Red 13-----	ACS, ATL, GAF, TRC, VPC.
*Basic Red 14-----	ACS, ACY, ALT, ATL, DUP, GAF, VPC.
Basic Red 15-----	ATL, DUP, GAF, TRC.
Basic Red 16-----	DUP.
Basic Red 17-----	DUP.
*Basic Red 18-----	ATL, DUP, GAF, VPC.
Basic Red 22-----	ACY, TRC.
Basic Red 23-----	VPC.
Basic Red 29-----	BAS.
Basic Red 30-----	ACY.
Basic Red 46-----	TRC.
Basic Red 49-----	DUP, GAF.
Basic Red 51-----	BAS.
Basic Red 73-----	DUP.
Other basic red dyes-----	ATL, BAS, DUP, EKT, VPC.
*Basic violet dyes:	
*Basic Violet 1-----	ACS, ACY, DSC, HSC.
Basic Violet 2-----	DSC.
Basic Violet 3-----	DSC, DUP, SDH.
Basic Violet 4-----	DSC, DUP.
Basic Violet 7-----	ATL, GAF.
*Basic Violet 10-----	ACY, DUP, GAF.
Basic Violet 11-----	ACY, DUP.
Basic Violet 13-----	DSC.
Basic Violet 14-----	DSC.
Basic Violet 15-----	DUP.
*Basic Violet 16-----	ALT, ATL, DUP, GAF, TRC, VPC.
Basic Violet 18-----	ACY.
Basic Violet 24-----	DUP.
Other basic violet dyes-----	ACY, DUP.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
BASIC DYES--Continued	
*Basic blue dyes:	
Basic Blue 1-----	DSC, GAF, SDH, VPC.
Basic Blue 2-----	DSC.
*Basic Blue 3-----	ACY, ALT, DUP, GAF, HST.
Basic Blue 4-----	DUP.
*Basic Blue 5-----	DSC, SDH, VPC.
Basic Blue 6-----	ACY.
*Basic Blue 7-----	DSC, DUP, SDH.
Basic Blue 9-----	ACS, ACY.
Basic Blue 11-----	DSC, SDH.
Basic Blue 21-----	ACS, ALT, DUP.
Basic Blue 22-----	ACS, DUP.
*Basic Blue 26-----	DSC, DUP, SDH.
Basic Blue 35-----	DUP.
Basic Blue 41-----	BAS, TRC.
Basic Blue 45-----	VPC.
Basic Blue 47-----	VPC.
Basic Blue 54-----	ACY, BAS.
Basic Blue 60-----	GAF.
Basic Blue 69-----	VPC.
Basic Blue 75-----	EKT.
Basic Blue 76-----	ACY.
Basic Blue 77-----	DUP.
Basic Blue 82-----	DUP.
Basic Blue 87-----	DUP.
Basic Blue 94-----	DUP.
Basic Blue 97-----	DUP.
Other basic blue dyes-----	ACS, ALT, ATL, BAS, DUP, EKT, VPC.
Basic green dyes:	
*Basic Green 1-----	ACS, ACY, DSC, DUP.
Basic Green 3-----	DUP.
*Basic Green 4-----	ACS, ACY, DSC, DUP, VPC.
Basic Green 7-----	DSC.
Basic brown dyes:	
*Basic Brown 1-----	ACS, ACY, DUP, GAF, PSC, TRC.
Basic Brown 2-----	GAF.
*Basic Brown 4-----	ACS, ACY, DSC, DUP, GAF, PSC, TRC.
Other basic brown dyes-----	DUP.
*Basic black dyes:	
Basic Black 9-----	VPC.
Other basic black dyes-----	ALT, DSC, EKT, VPC.
DIRECT DYES	
*Direct yellow dyes:	
*Direct Yellow 4-----	ACS, ACY, ATL, DUP, GAF, HN, TRC, VPC.
*Direct Yellow 5-----	ACS, ACY, GAF.
*Direct Yellow 6-----	ACS, ACY, DUP, GAF, TRC.
Direct Yellow 7-----	ATL.
*Direct Yellow 8-----	ACS, ATL, GAF.
Direct Yellow 9-----	ATL.
*Direct Yellow 11-----	ACS, ACY, DUP, GAF, HN, SDH, TRC, VPC.
*Direct Yellow 12-----	ACS, ACY, ATL, CMG, DUP, FAB, GAF, TRC, YAW.
Direct Yellow 21-----	HN.
Direct Yellow 23-----	DUP.
Direct Yellow 26-----	ATL, HN, HSH.
*Direct Yellow 28-----	ACS, ATL, DUP, GAF, PDC, TRC.
*Direct Yellow 29-----	ATL, DUP, GAF.
Direct Yellow 34-----	ALT, HN.
Direct Yellow 39-----	TRC.
Direct Yellow 41-----	ATL.
*Direct Yellow 44-----	ACS, ATL, DUP, FAB, GAF, HN, HSH, TRC, VPC.
*Direct Yellow 50-----	ALT, ATL, FAB, GAF, HN, HSH, TRC, VPC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' Identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct yellow dyes--Continued	
Direct Yellow 81-----	ATL.
*Direct Yellow 84-----	ACS, ATL, DUP, FAB, GAF, HN, TRC, VPC.
Direct Yellow 103-----	ACS.
*Direct Yellow 105-----	ALT, HN, TRC.
*Direct Yellow 106-----	ACS, ALT, FAB, GAF, HN, TRC.
*Direct Yellow 107-----	ACS, ATL, GAF, TRC.
Direct Yellow 114-----	ACY.
Direct Yellow 117-----	TRC.
Direct Yellow 118-----	TRC.
Direct Yellow 119-----	DUP.
Direct Yellow 120-----	DUP.
Direct Yellow 127-----	DUP, TRC.
Direct Yellow 131-----	DUP.
Direct Yellow 132-----	TRC, VPC.
Direct Yellow 133-----	TRC.
Direct Yellow 137-----	DUP.
Other direct yellow dyes-----	AC, ACY, ALT, ATL, DUP, FAB, GAF, HSH, TRC, VPC.
*Direct orange dyes:	
Direct Orange 1-----	ACS, BDO.
Direct Orange 6-----	ACS.
*Direct Orange 8-----	ACS, FAB, GAF, YAW.
Direct Orange 10-----	AC.
Direct Orange 11-----	GAF.
*Direct Orange 15-----	ACS, ACY, DUP, GAF, HN, TRC.
*Direct Orange 26-----	ACS, ATL, GAF, HSH, TRC.
*Direct Orange 29-----	FAB, HN, TRC, VPC.
*Direct Orange 34-----	ACS, ATL, CMG, DUP, GAF.
*Direct Orange 37-----	ACY, ATL, CMG, GAF.
*Direct Orange 39-----	ACY, ALT, CMG, DUP, FAB, GAF, HN.
Direct Orange 59-----	DUP, GAF.
Direct Orange 61-----	TRC.
Direct Orange 67-----	VPC.
*Direct Orange 72-----	ACS, ATL, FAB, HN, HSH, TRC, VPC.
*Direct Orange 73-----	DUP, GAF, TRC, VPC.
Direct Orange 74-----	DUP, HSH.
Direct Orange 78-----	VPC.
Direct Orange 80-----	VPC.
Direct Orange 81-----	DUP, GAF, VPC.
Direct Orange 83-----	GAF.
Direct Orange 88-----	DUP.
*Direct Orange 102-----	ACS, ACY, ATL, DUP, GAF.
Other direct orange dyes-----	ALT, ATL, TRC.
*Direct red dyes:	
*Direct Red 1-----	ACS, DUP, GAF, YAW.
*Direct Red 2-----	ACS, ATL, DUP, FAB, HN, TRC.
*Direct Red 4-----	ACS, ATL, TRC, VPC.
Direct Red 7-----	ATL.
*Direct Red 10-----	AC, ATL, YAW.
Direct Red 13-----	ACS, YAW.
*Direct Red 16-----	ACS, ATL, DUP, TRC.
Direct Red 20-----	GAF.
*Direct Red 23-----	ACS, ATL, DUP, FAB, GAF, HN, TRC, VPC.
*Direct Red 24-----	AC, ACS, ATL, FAB, HN, HSH, TRC, VPC.
*Direct Red 26-----	ACS, ATL, FAB, GAF, HN, HSH, TRC, VPC.
*Direct Red 28-----	ACS, DUP, FAB, YAW.
*Direct Red 31-----	ACS, ATL, GAF, HSH, TRC.
*Direct Red 37-----	ACS, GAF, YAW.

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TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct red dyes--Continued	
*Direct Red 39-----	ATL, GAF, TRC, YAW.
Direct Red 46-----	ATL.
Direct Red 62-----	ATL, TRC.
*Direct Red 72-----	ACS, ATL, DUP, GAF, TRC.
Direct Red 73-----	ACS, ATL.
*Direct Red 75-----	ATL, CMG, GAF.
Direct Red 76-----	GAF.
*Direct Red 79-----	ATL, CMG, HN, TRC, VPC.
*Direct Red 80-----	AC, ACS, ALT, ATL, BDO, CMG, FAB, HN, HSH, SDH, TRC, VPC.
*Direct Red 81-----	ACS, ACY, ATL, BDO, CMG, DUP, GAF, HN, HSH, TRC, VPC, YAW.
*Direct Red 83-----	ACS, ALT, ATL, FAB, HN, HSH, TRC.
Direct Red 84-----	ATL.
Direct Red 95-----	VPC.
Direct Red 100-----	ATL.
Direct Red 111-----	GAF.
Direct Red 117-----	DUP.
Direct Red 120-----	CMG.
Direct Red 122-----	TRC, VPC.
Direct Red 123-----	GAF.
Direct Red 127 and 127A-----	ATL, CMG.
Direct Red 139-----	ATL.
Direct Red 149-----	ATL, CMG.
Direct Red 152-----	CMG.
Direct Red 153-----	ATL, CMG.
Direct Red 209-----	TRC, VPC.
Direct Red 212-----	VPC.
Direct Red 236-----	DUP.
Direct Red 238-----	DUP.
Other direct red dyes-----	ALT, ATL, GAF, HN, HSH, TRC.
*Direct violet dyes:	
Direct Violet 1-----	ATL.
Direct Violet 7-----	ACS, ATL.
*Direct Violet 9-----	ACS, ATL, DUP, GAF, TRC.
Direct Violet 14-----	ATL.
Direct Violet 22-----	DUP.
Direct Violet 27-----	ACY.
Direct Violet 47-----	GAF.
Direct Violet 48-----	ACS.
*Direct Violet 51-----	ACS, ATL, DUP.
Direct Violet 62-----	ACY.
Direct Violet 66-----	ATL, TRC.
Direct Violet 67-----	DUP.
Direct Violet 99-----	DUP.
Other direct violet dyes-----	ALT.
*Direct blue dyes:	
*Direct Blue 1-----	AC, ACS, ACY, ATL, CMG, DUP, GAF, HN, TRC, VPC, YAW.
*Direct Blue 2-----	AC, ACS, FAB, GAF, HN, HSH, YAW.
*Direct Blue 6-----	AC, ACS, ACY, DUP, GAF, HN, YAW.
*Direct Blue 8-----	ACS, ATL, DUP, GAF.
Direct Blue 14-----	ACS, ATL, TRC.
*Direct Blue 15-----	ACS, ATL, DUP, GAF, VPC, YAW.
Direct Blue 22-----	ACS, ATL, CMG.
Direct Blue 24-----	ATL, YAW.
*Direct Blue 25-----	ACS, ATL, GAF, TRC, YAW.
Direct Blue 26-----	ATL.
Direct Blue 67-----	ATL, TRC.
*Direct Blue 71-----	ACS, ATL, GAF, TRC.
Direct Blue 75-----	TRC.
*Direct Blue 76-----	ACS, ALT, ATL, FAB, GAF, HN, HSH, TRC, VPC, YAW.
*Direct Blue 78-----	ACS, ATL, CMG, DUP, TRC.
*Direct Blue 80-----	ACS, ALT, ATL, DUP, FAB, GAF, HN, HSH, TRC, VPC.
Direct Blue 81-----	ATL.
*Direct Blue 86-----	ALT, ATL, DUP, FAB, GAF, HN, ICC, TRC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct blue dyes--Continued	
Direct Blue 87-----	ICI.
Direct Blue 91-----	TRC.
*Direct Blue 98-----	ALT, ATL, GAF, TRC, VPC.
Direct Blue 100-----	ALT, FAB, HN.
Direct Blue 104-----	DUP.
Direct Blue 106-----	ATL.
Direct Blue 108-----	ATL.
Direct Blue 120 and 120A-----	ATL, DUP, FAB, HN, TRC.
*Direct Blue 126-----	ATL, HSH, TRC, VPC.
Direct Blue 136-----	GAF.
Direct Blue 143-----	DUP.
Direct Blue 151-----	ATL, TRC.
Direct Blue 160-----	TRC.
Direct Blue 189-----	FAB, TRC.
*Direct Blue 191-----	AC, ALT, ACS, GAF.
Direct Blue 199-----	DUP, GAF.
*Direct Blue 218-----	ACS, ALT, ATL, DUP, FAB, GAF, HN, TRC, VPC.
Direct Blue 263-----	DUP.
Other direct blue dyes-----	ALT, DUP, GAF, HN, TRC.
*Direct green dyes:	
*Direct Green 1-----	AC, ACS, DUP, FAB, GAF, HN, YAW.
*Direct Green 6-----	AC, ACS, DUP, FAB, GAF, HN, YAW.
Direct Green 26-----	DUP, TRC.
Direct Green 27-----	TRC.
Direct Green 28-----	TRC.
Direct Green 38-----	GAF.
Direct Green 45-----	ATL, VPC.
Direct Green 47-----	ATL, DUP, GAF.
Direct Green 51-----	TRC.
Direct Green 69-----	TRC.
Other direct green dyes-----	ALT, DUP, TRC.
*Direct brown dyes:	
Direct Brown 1-----	ACY, HN.
Direct Brown 1A-----	GAF, YAW.
*Direct Brown 2-----	AC, ACS, DUP, FAB, GAF, YAW.
Direct Brown 6-----	YAW.
*Direct Brown 31-----	AC, ACS, GAF, YAW.
Direct Brown 32-----	GAF.
Direct Brown 40-----	AC.
Direct Brown 44-----	GAF, YAW.
Direct Brown 48-----	AC.
Direct Brown 59-----	YAW.
Direct Brown 74-----	ACS.
*Direct Brown 95-----	ACS, DUP, FAB, GAF, HN, YAW.
Direct Brown 106-----	GAF.
*Direct Brown 111-----	DUP, GAF, TRC, VPC.
Direct Brown 112-----	ATL.
Direct Brown 154-----	ACS, DUP, FAB, YAW.
Direct Brown 218-----	ACS.
Other direct brown dyes-----	ALT, ATL, HN, VPC.
*Direct black dyes:	
Direct Black 2-----	ACS, ACY.
*Direct Black 4-----	ACS, FAB, GAF, HN, YAW.
Direct Black 8-----	YAW.
*Direct Black 9-----	ACS, ATL, DUP, HN.
Direct Black 17-----	GAF.
Direct Black 19-----	ATL, TRC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct black dyes--Continued	
*Direct Black 22-----	ALT, ATL, GAF, HN, TRC, VPC, YAW.
*Direct Black 38-----	ACS, ACY, ALT, FAB, GAF, HN, YAW.
*Direct Black 51-----	AC, ACS, DUP, GAF, TRC.
Direct Black 56-----	ACS, TRC.
Direct Black 75-----	GAF.
Direct Black 78-----	ACS, HN.
*Direct Black 80-----	ACS, ATL, FAB, HN, HSH, YAW.
Direct Black 95-----	ACS.
Direct Black 190-----	ACS, HN.
Other direct black dyes-----	ALT, ATL, DUP, HSH, TRC, VPC, YAW.
DISPERSE DYES	
*Disperse yellow dyes:	
Disperse Yellow 1-----	GAF.
*Disperse Yellow 3-----	AC, ALT, ATL, DUP, FAB, GAF, HN, ICC, TRC, YAW.
Disperse Yellow 5-----	GAF, ICC.
Disperse Yellow 8-----	ATL, TRC.
*Disperse Yellow 23-----	AC, ALT, DUP, EKT, FAB, GAF, HN, ICC, TRC.
Disperse Yellow 31-----	GAF.
*Disperse Yellow 33-----	AC, EKT, GAF, ICC, TRC.
*Disperse Yellow 34-----	AC, EXT, ICC.
*Disperse Yellow 42-----	AC, BUC, DUP, EKT, FAB, GAF, HN, ICC, SDC, TRC.
Disperse Yellow 50-----	TRC.
*Disperse Yellow 54-----	AC, ALT, ATL, DUP, FAB, GAF, ICC, SDC, TRC.
Disperse Yellow 56-----	BAS.
Disperse Yellow 58-----	HST.
Disperse Yellow 64-----	BAS, BUC, DUP.
Disperse Yellow 67-----	ACY, DUP.
Disperse Yellow 68-----	HST.
Disperse Yellow 74-----	VPC.
Disperse Yellow 77-----	VPC.
Disperse Yellow 85-----	EKT.
Disperse Yellow 86-----	AC, EKT.
Disperse Yellow 87-----	EKT.
Disperse Yellow 88-----	EKT.
Disperse Yellow 89-----	EKT.
Disperse Yellow 93-----	VPC.
Disperse Yellow 95-----	VPC.
Disperse Yellow 96-----	VPC.
Disperse Yellow 118-----	AC.
Disperse Yellow 125-----	SDC.
Disperse Yellow 131-----	DUP.
Other disperse yellow dyes-----	ATL, BUC, EKT, GAF, MAY, SDC, VPC.
*Disperse orange dyes:	
*Disperse Orange 3-----	AC, EKT, FAB, GAF, HN, TRC.
Disperse Orange 5-----	AC, ATL, BUC, EKT, GAF.
Disperse Orange 16-----	AC.
*Disperse Orange 17-----	AC, EKT, GAF, HN, ICC.
Disperse Orange 21-----	TRC.
*Disperse Orange 25-----	ATL, DUP, EKT, TRC.
Disperse Orange 29-----	AC, GAF.
Disperse Orange 30-----	ICC, TRC.
Disperse Orange 37-----	TRC.
Disperse Orange 38-----	TRC.
Disperse Orange 41-----	DUP.
Disperse Orange 42-----	HST.
Disperse Orange 44-----	DUP.
Disperse Orange 57-----	EKT.

TABLE 2.--DYES FOR WHICH U. S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse orange dyes--Continued	
Disperse Orange 58-----	AC, EKT.
Disperse Orange 59-----	EKT, ICC.
Disperse Orange 62-----	BUC, DUP.
Disperse Orange 65-----	VPC.
Disperse Orange 66-----	VPC.
Disperse Orange 67-----	VPC.
Disperse Orange 75-----	DUP.
Disperse Orange 77-----	MAY.
Disperse Orange 78-----	MAY, TRC.
Disperse Orange 79-----	MAY.
Disperse Orange 80-----	MAY.
Disperse Orange 89-----	AC.
Disperse Orange 90-----	AC.
Disperse Orange 91-----	AC.
Disperse Orange 94-----	SDC.
Disperse Orange 98-----	DUP.
Other disperse orange dyes-----	ATL, BUC, EKT, GAF, SDC.
*Disperse red dyes:	
*Disperse Red 1-----	AC, DUP, EKT, GAF, HN, ICC, TRC.
Disperse Red 4-----	BUC, GAF, TRC.
*Disperse Red 5-----	AC, EKT, GAF, ICC, YAW.
Disperse Red 7-----	AC.
Disperse Red 9-----	ATL.
*Disperse Red 11-----	AC, DUP, GAF.
Disperse Red 13-----	AC, DUP, GAF.
*Disperse Red 15-----	CMG, GAF, HSH, ICC, TRC.
*Disperse Red 17-----	AC, DUP, EKT, GAF, ICC, TRC.
Disperse Red 21-----	EKT.
Disperse Red 30-----	EKT, TRC.
Disperse Red 31-----	ICC.
Disperse Red 35-----	EKT.
*Disperse Red 55-----	DUP, GAF, HN, TRC, VPC.
Disperse Red 59-----	ACY, DUP, GAF.
*Disperse Red 60-----	AC, ALT, ATL, BAS, DUP, EKT, GAF, HN, SDC, TRC, VPC.
*Disperse Red 65-----	ALT, DUP, EKT, ICC, TRC.
Disperse Red 73-----	TRC.
Disperse Red 78-----	ICC, TRC.
Disperse Red 82-----	VPC.
Disperse Red 86-----	EKT, GAF.
Disperse Red 88-----	EKT.
Disperse Red 90-----	VPC.
Disperse Red 91-----	BAS.
Disperse Red 96-----	ACY.
Disperse Red 105-----	VPC.
Disperse Red 117-----	EKT.
Disperse Red 133-----	VPC.
Disperse Red 135-----	AC, DUP.
Disperse Red 136-----	EKT.
Disperse Red 137-----	EKT.
Disperse Red 138-----	EKT.
Disperse Red 139-----	VPC.
Disperse Red 140-----	AC, DUP.
Disperse Red 159-----	VPC.
Disperse Red 161-----	DUP.
Disperse Red 162-----	DUP.
Disperse Red 167-----	GAF.
Disperse Red 177-----	ALT, ICC, SDC.
Disperse Red 178-----	ICC.
Disperse Red 179-----	ICC.
Disperse Red 180-----	ICC.
Disperse Red 211-----	DUP.
Other disperse red dyes-----	ALT, BUC, DUP, EKT, FAB, GAF, HST, ICC, MAY, SDC, TRC, VPC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
*DISPERSE DYES--Continued	
*Disperse violet dyes:	
*Disperse Violet 1-----	AC, GAF, HSH, ICC, TRC.
Disperse Violet 4-----	AC, GAF.
Disperse Violet 8-----	GAF.
Disperse Violet 17-----	DUP.
Disperse Violet 26-----	DUP.
*Disperse Violet 27-----	AC, DUP, EKT, ICC, TRC.
Disperse Violet 28-----	ALT, DUP, TRC.
Disperse Violet 40-----	VPC.
Disperse Violet 41-----	EKT.
Disperse Violet 42-----	EKT.
Disperse Violet 44-----	EKT.
Disperse Violet 57-----	TRC.
Other disperse violet dyes-----	GAF, SDC.
*Disperse blue dyes:	
*Disperse Blue 1-----	AC, GAF, ICC, TRC.
*Disperse Blue 3-----	AC, EKT, GAF, HN, HSH, ICC, TRC.
*Disperse Blue 7-----	DUP, GAF, HN, HSH, ICC, TRC.
Disperse Blue 14-----	EKT.
Disperse Blue 27-----	EKT.
Disperse Blue 35-----	ICI.
Disperse Blue 55-----	TRC.
Disperse Blue 56-----	ALT, DUP, ICC, TRC, VPC.
Disperse Blue 60-----	DUP.
Disperse Blue 62-----	DUP, EKT, GAF.
*Disperse Blue 64-----	AC, ATL, DUP, EKT, GAF, TRC.
Disperse Blue 71-----	VPC.
*Disperse Blue 73-----	ACS, ACY, TRC.
*Disperse Blue 79-----	EKT, HN, HST, MAY, TRC.
Disperse Blue 81-----	VPC.
Disperse Blue 85-----	TRC.
Disperse Blue 87-----	BAS.
Disperse Blue 94-----	BAS.
Disperse Blue 95-----	GAF.
Disperse Blue 102-----	EKT.
Disperse Blue 109-----	DUP, MAY.
Disperse Blue 112-----	EKT.
Disperse Blue 117-----	EKT.
Disperse Blue 118-----	EKT.
Disperse Blue 119-----	EKT.
Disperse Blue 120-----	EKT, GAF.
Disperse Blue 121-----	EKT.
Disperse Blue 123-----	EKT.
Disperse Blue 125-----	TRC.
Disperse Blue 132-----	DUP.
Disperse Blue 133-----	DUP.
Disperse Blue 138-----	VPC.
Disperse Blue 139-----	VPC.
Disperse Blue 148-----	BAS.
Disperse Blue 150-----	DUP.
Disperse Blue 152-----	HST.
Disperse Blue 156-----	MAY.
Disperse Blue 165-----	DUP, VPC.
Disperse Blue 172-----	DUP.
Disperse Blue 173-----	AC.
Other disperse blue dyes-----	ALT, ATL, DUP, EKT, GAF, HSH, MAY, SDC, TRC, VPC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
Disperse green dyes-----	GAF, VPC.
Disperse brown dyes:	
Disperse Brown 1-----	AC, SDC, TRC.
Disperse Brown 2-----	DUP, EKT, GAF.
Disperse Brown 5-----	EKT.
Disperse Brown 8-----	VPC.
Disperse Brown 11-----	AC.
Disperse Brown 14-----	DUP.
Other disperse brown dyes-----	ALT, DUP, GAF, ICC, SDC.
*Disperse black dyes:	
*Disperse Black 1-----	AC, ATL, DUP, GAF, TRC.
Disperse Black 2-----	ATL, TRC.
Disperse Black 6-----	ATL.
Disperse Black 9-----	AC, EKT.
Disperse Black 33-----	EKT.
Disperse Black 34-----	EKT.
Other disperse black dyes-----	ALT, ATL, BUC, DUP, GAF, ICC, SDC, VPC.
FIBER-REACTIVE DYES	
*Reactive yellow dyes:	
Reactive Yellow 1-----	ICI.
Reactive Yellow 2-----	TRC.
Reactive Yellow 3-----	TRC.
Reactive Yellow 4-----	ICI.
Reactive Yellow 7-----	ICI.
Reactive Yellow 13-----	HST.
Reactive Yellow 15-----	HST.
Reactive Yellow 17-----	HST.
Reactive Yellow 18-----	ICI.
Reactive Yellow 24-----	HST.
Reactive Yellow 25-----	VPC.
Reactive Yellow 31-----	HST.
Reactive Yellow 37-----	HST.
Reactive Yellow 42-----	ICI, HST.
Reactive Yellow 86-----	ICI.
Other reactive yellow dyes-----	HST.
Reactive orange dyes:	
Reactive Orange 1-----	ICI.
Reactive Orange 4-----	ICI.
Reactive Orange 5-----	TRC.
Reactive Orange 11-----	TRC.
Reactive Orange 12-----	ICI.
Reactive Orange 13-----	ICI.
Reactive Orange 14-----	ICI.
Reactive Orange 16-----	HST.
Reactive Orange 50-----	HST.
Other reactive orange dyes-----	HST.
Reactive red dyes:	
Reactive Red 1-----	ICI.
Reactive Red 2-----	ICI.
Reactive Red 3-----	ICI.
Reactive Red 4-----	TRC.
Reactive Red 5-----	ICI.
Reactive Red 8-----	ICI.
Reactive Red 11-----	ICI.
Reactive Red 21-----	HST.
Reactive Red 29-----	ICI.
Reactive Red 31-----	ICI.
Reactive Red 33-----	ICI.
Reactive Red 40-----	VPC.
Reactive Red 41-----	VPC.
Reactive Red 43-----	ICI.
Reactive Red 55-----	TRC.
Reactive Red 58-----	ICI.
Reactive Red 86-----	TRC.
Reactive Red 94-----	HST.
Reactive Red 105-----	HST.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FIBER-REACTIVE DYES--Continued	
Reactive violet dyes:	
Reactive Violet 1-----	ICI.
Reactive Violet 4-----	HST.
Reactive Violet 5-----	HST.
Other reactive violet dyes-----	HST.
*Reactive blue dyes:	
Reactive Blue 2-----	TRC.
Reactive Blue 3-----	ICI.
Reactive Blue 4-----	ICI.
Reactive Blue 5-----	ICI, TRC.
Reactive Blue 7-----	TRC.
Reactive Blue 19-----	HST.
Reactive Blue 21-----	HST.
Reactive Blue 25-----	ICI.
Reactive Blue 29-----	VPC.
Reactive Blue 38-----	HST.
Reactive Blue 71-----	ICI.
Reactive Blue 89-----	HST.
Reactive Blue 90-----	HST.
Other reactive blue dyes-----	HST.
Reactive green dyes-----	HST.
Reactive brown dyes:	
Reactive Brown 9-----	ICI.
Reactive Brown 10-----	ICI.
Reactive Brown 17-----	ICI.
Other reactive brown dyes-----	HST.
*Reactive black dyes:	
Reactive Black 1-----	TRC.
Reactive Black 5-----	HST.
Reactive Black 9-----	ICI.
FLUORESCENT BRIGHTENING AGENTS	
Fluorescent Brightening Agent 1-----	CGY.
Fluorescent Brightening Agent 6-----	ACY.
Fluorescent Brightening Agent 8-----	ACY.
Fluorescent Brightening Agent 9-----	GAF, SDH.
Fluorescent Brightening Agent 22-----	CGY.
Fluorescent Brightening Agent 24-----	CGY.
Fluorescent Brightening Agent 25-----	GAF.
*Fluorescent Brightening Agent 28-----	ACY, CCW, DUP, SDH, VPC.
Fluorescent Brightening Agent 30-----	GAF.
Fluorescent Brightening Agent 33-----	GAF.
Fluorescent Brightening Agent 45-----	TRC.
Fluorescent Brightening Agent 46-----	CGY.
Fluorescent Brightening Agent 49-----	S.
Fluorescent Brightening Agent 52-----	S.
Fluorescent Brightening Agent 54-----	CGY.
Fluorescent Brightening Agent 59-----	CGY.
Fluorescent Brightening Agent 61-----	ACY.
Fluorescent Brightening Agent 68-----	CCW, GAF.
Fluorescent Brightening Agent 71-----	ACY, CGY, GAF.
Fluorescent Brightening Agent 75-----	GAF.
Fluorescent Brightening Agent 102-----	DUP, VPC.
Fluorescent Brightening Agent 108-----	GAF.
Fluorescent Brightening Agent 109-----	GAF.
Fluorescent Brightening Agent 114-----	VPC.
Fluorescent Brightening Agent 125-----	ACY.
Fluorescent Brightening Agent 126-----	SDH.
Fluorescent Brightening Agent 128-----	SDH.
Fluorescent Brightening Agent 130-----	ACY, SDH.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FLUORESCENT BRIGHTENING AGENTS--Continued	
Fluorescent Brightening Agent 134-----	CGY.
Fluorescent Brightening Agent 159-----	ACY.
Other fluorescent brightening agents-----	ACY, CCW, CGY, GAF, PCW, S, VPC.
FOOD, DRUG, AND COSMETIC COLORS	
<i>Food, Drug, and Cosmetic Dyes</i>	
*FD&C Blue No. 1-----	ACS, ALT, KON, SDH, WJ.
*FD&C Blue No. 2-----	ACS, ALT, KON, SDH, WJ.
FD&C Green No. 3-----	WJ.
*FD&C Red No. 2-----	ACS, ALT, KON, SDH, STG, WJ.
*FD&C Red No. 3-----	ACS, ALT, KON, SDH, STG, WJ.
FD&C Red No. 4-----	ALT, KON, STG.
FD&C Red No. 40-----	ACS, KON, WJ.
FD&C Violet No. 1-----	ACS, SDH, WJ.
*FD&C Yellow No. 5-----	ACS, ALT, KON, STG, WJ.
*FD&C Yellow No. 6-----	ACS, ALT, KON, SDH, STG, WJ.
Other food, drug, and cosmetic dyes-----	STG.
<i>Drug and Cosmetic Dyes</i>	
D&C Blue No. 1-----	KON.
D&C Blue No. 6-----	ACS, KON.
D&C Green No. 5-----	ACS, ALT, KON.
D&C Green No. 6-----	ACS, KON.
D&C Green No. 8-----	KON, SDH.
*D&C Orange No. 4-----	ACS, KON, TMS.
D&C Orange No. 5-----	SNA, TMS.
D&C Orange No. 10-----	TMS.
D&C Orange No. 17-----	SNA.
D&C Red No. 2-----	KON.
D&C Red No. 3-----	KON, TMS.
D&C Red No. 6-----	KON, SNA, TMS.
*D&C Red No. 7-----	KON, SNA, TMS.
D&C Red No. 8-----	KON, SNA.
D&C Red No. 9-----	KON, SNA, TMS.
D&C Red No. 10-----	KON, SNA.
D&C Red No. 11-----	KON, SNA.
*D&C Red No. 12-----	KON, SNA, TMS.
D&C Red No. 13-----	SNA, TMS.
D&C Red No. 17-----	KON.
*D&C Red No. 19-----	ACS, KON, SNA, TMS.
D&C Red No. 21-----	KON, SNA, TMS.
*D&C Red No. 22-----	ACS, KON, SDH.
D&C Red No. 27-----	TMS.
D&C Red No. 28-----	ACS.
D&C Red No. 30-----	KON, TMS.
D&C Red No. 31-----	KON.
D&C Red No. 33-----	ACS, KON.
D&C Red No. 34-----	KON, SNA.
*D&C Red No. 36-----	ALT, KON, TMS.
D&C Red No. 37-----	ACS.
D&C Violet No. 2-----	ACS.
D&C Yellow No. 5-----	KON, TMS.
D&C Yellow No. 6-----	KON.
D&C Yellow No. 7-----	ALT, KON.
D&C Yellow No. 8-----	KON.
D&C Yellow No. 10-----	KON.
D&C Yellow No. 11-----	ACS, KON.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FOOD, DRUG, AND COSMETIC COLORS--Continued	
<i>Drug and Cosmetic Dyes, External</i>	
Ext. D&C Green No. 1-----	ACS.
Ext. D&C Yellow No. 1-----	ACS, KON.
Ext. D&C Yellow No. 7-----	KON.
INGRAIN DYES	
Ingrain blue dyes:	
Ingrain Blue 1-----	ICI.
Ingrain Blue 2-----	VPC.
Ingrain Blue 3-----	ICI.
MORDANT DYES	
*Mordant yellow dyes:	
Mordant Yellow 1-----	GAF, PDC.
Mordant Yellow 5-----	TRC.
Mordant Yellow 8-----	ACS, PDC.
Mordant Yellow 14-----	ACS, PDC.
Mordant Yellow 16-----	ACY.
Mordant Yellow 20-----	ACS.
Mordant Yellow 26-----	PDC, VPC.
Mordant Yellow 29-----	GAF.
Mordant Yellow 30-----	TRC, VPC.
Mordant Yellow 36-----	PDC.
*Mordant orange dyes:	
Mordant Orange 1-----	ACY, PDC, TRC.
Mordant Orange 4-----	GAF.
*Mordant Orange 6-----	ATL, GAF, PDC, TRC.
Mordant Orange 8-----	TRC.
*Mordant red dyes:	
Mordant Red 3-----	ACY.
Mordant Red 7-----	ACY, BDO, CMG, GAF, PDC, TRC.
Mordant Red 9-----	MRX, PDC.
Mordant Red 11-----	ACY.
Mordant Red 27-----	DUP.
Mordant violet dyes: Mordant Violet 5-----	PDC.
Mordant blue dyes:	
Mordant Blue 1-----	GAF.
Mordant Blue 3-----	GAF.
Mordant Blue 9-----	GAF, PDC.
Mordant Blue 19-----	CMG.
Mordant green dyes: Mordant Green 36-----	PDC.
*Mordant brown dyes:	
*Mordant Brown 1-----	ACS, CMG, DUP, GAF, TRC, YAW.
Mordant Brown 12-----	PDC.
Mordant Brown 13-----	ACS.
Mordant Brown 15-----	GAF.
Mordant Brown 18-----	ACS, DUP, PDC.
Mordant Brown 19-----	GAF.
Mordant Brown 21-----	GAF, VPC.
*Mordant Brown 33-----	ACS, GAF, PDC, TRC.
Mordant Brown 40-----	CMG, GAF.
Mordant Brown 70-----	DUP, PDC.
Mordant black dyes:	
Mordant Black 3-----	TRC.
Mordant Black 8-----	VPC.
Mordant Black 9-----	ACS, ATL, VPC.
Mordant Black 11-----	ACS, GAF, TRC, VPC.
Mordant Black 13-----	HSB.
Mordant Black 17-----	ACY, GAF, TRC.
Mordant Black 19-----	PDC.
Mordant Black 26-----	TRC.
Mordant Black 38-----	PDC.
Other mordant black dyes-----	CMG.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
OXIDATION BASES	
Oxidation Base 8 and 8A-----	ACY.
Oxidation Base 21-----	PDC.
SOLVENT DYES	
*Solvent yellow dyes:	
Solvent Yellow 2-----	GAF.
Solvent Yellow 3-----	ACS, PSC.
Solvent Yellow 13-----	ACY, GAF.
*Solvent Yellow 14-----	AC, ACS, ACY, DUP, GAF, PSC.
Solvent Yellow 19-----	GAF.
Solvent Yellow 29-----	GAF.
Solvent Yellow 30-----	ACS, PSC.
*Solvent Yellow 33-----	AC, ACS, ACY.
Solvent Yellow 34-----	ACY, DSC.
Solvent Yellow 40-----	ACS.
Solvent Yellow 42-----	ACS.
Solvent Yellow 43-----	GAF.
Solvent Yellow 44-----	ACS.
Solvent Yellow 45-----	ACS.
Solvent Yellow 47-----	ACY, DUP, GAF.
*Solvent Yellow 56-----	AC, ACS, ACY, PSC.
Solvent Yellow 71-----	ACY.
Solvent Yellow 72-----	ACY.
Solvent Yellow 87-----	ACY.
Solvent Yellow 107-----	PAT.
Other solvent yellow dyes-----	AC, ATL, DSC, PAT.
*Solvent orange dyes:	
Solvent Orange 2-----	PSC.
*Solvent Orange 3-----	ACS, ACY, DSC, GAF, PSC.
Solvent Orange 5-----	GAF.
*Solvent Orange 7-----	ACS, ACY, ATL, GAF, PSC.
Solvent Orange 20-----	ACY, GAF.
Solvent Orange 23-----	ACS.
Solvent Orange 24-----	DUP.
Solvent Orange 25-----	ACY, DUP.
Solvent Orange 31-----	ACS.
Solvent Orange 48-----	ACY.
Solvent Orange 51-----	ACY.
Other solvent orange dyes-----	AC, ACY, DSC, DUP.
*Solvent red dyes:	
Solvent Red 1-----	PSC.
Solvent Red 8-----	GAF.
Solvent Red 22-----	GAF.
*Solvent Red 24-----	ACS, ACY, DUP, GAF, PSC.
*Solvent Red 26-----	AC, ACS, ACY, PSC.
Solvent Red 27-----	ACS, PSC.
Solvent Red 33-----	DUP, GAF.
Solvent Red 35-----	GAF.
Solvent Red 40-----	GAF.
Solvent Red 41-----	DSC.
Solvent Red 49-----	ACY, DSC, DUP, GAF.
Solvent Red 52-----	AC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
SOLVENT DYES--Continued	
*Solvent red dyes--Continued	
Solvent Red 68-----	ACS.
Solvent Red 69-----	DSC, DUP.
Solvent Red 74-----	ACS.
Solvent Red 75-----	ACS.
Solvent Red 105-----	ACY.
Solvent Red 108-----	ACY.
Solvent Red 111-----	ACY.
Solvent Red 115-----	ACY.
Solvent Red 126-----	ACY.
Solvent Red 164-----	PAT.
Solvent Red 166-----	PAT.
Other solvent red dyes-----	AC, ACY, ATL, DSC, DUP, PAT.
Solvent violet dyes:	
Solvent Violet 8-----	ACY, DSC.
Solvent Violet 9-----	DSC.
Solvent Violet 13-----	AC, ATL, HSH, PAT.
Solvent Violet 14-----	AC, PAT.
Other solvent violet dyes-----	AC, DSC.
*Solvent blue dyes:	
Solvent Blue 3-----	ACY, SW.
Solvent Blue 4-----	DSC, DUP.
Solvent Blue 5-----	DSC.
Solvent Blue 6-----	DSC.
Solvent Blue 7-----	ACS, ACY.
Solvent Blue 9-----	GAF.
Solvent Blue 11-----	BDO, GAF.
Solvent Blue 12-----	ACS, BDO.
Solvent Blue 14-----	ACY.
Solvent Blue 16-----	ACS.
Solvent Blue 36-----	AC, DUP.
Solvent Blue 37-----	DUP.
*Solvent Blue 38-----	ACS, ACY, ATL, DUP, GAF.
Solvent Blue 43-----	ACS.
Solvent Blue 57-----	DUP.
Solvent Blue 58-----	ACY.
Solvent Blue 59-----	ACY.
Solvent Blue 60-----	ACY.
Solvent Blue 74-----	ACS.
Solvent Blue 89-----	ACY.
Solvent Blue 98-----	PAT.
Solvent Blue 100-----	PAT.
Other solvent blue dyes-----	ACY, DSC, GAF, SDH.
Solvent green dyes:	
Solvent Green 1-----	ACY, DSC.
Solvent Green 2-----	GAF.
*Solvent Green 3-----	AC, ACS, ATL, GAF, HSH, PAT.
Other solvent green dyes-----	ACY, DSC, GAF.
*Solvent brown dyes:	
Solvent Brown 11-----	GAF.
*Solvent Brown 12-----	ACY, DSC, GAF, PSC.
Solvent Brown 19-----	DUP.
Solvent Brown 20-----	ACY, DUP.
Solvent Brown 22-----	DUP, PSC.
Solvent Brown 38-----	ACY.
Other solvent brown dyes-----	DSC.
Solvent black dyes:	
Solvent Black 3-----	ACS.
Solvent Black 5-----	ACS, ACY, DSC, DUP.
Solvent Black 7-----	ACS, ACY, DSC, PSC.
Solvent Black 12-----	ACS.
Solvent Black 13-----	ACS.
Solvent Black 17-----	DUP.
Solvent Black 26-----	ACY.
Other solvent black dyes-----	ATL, DSC, GAF.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
SULFUR DYES	
Sulfur yellow dyes:	
Leuco Sulfur Yellow 1-----	SDC.
Leuco Sulfur Yellow 2-----	ACY, SDC.
Sulfur Yellow 4-----	SDC.
Leuco Sulfur Yellow 4-----	SDC.
Leuco Sulfur Yellow 9-----	STC.
Other sulfur yellow dyes-----	ACY, SDC.
Sulfur Orange 1-----	STC.
Sulfur red dyes:	
Sulfur Red 5-----	STC.
Leuco Sulfur Red 10-----	SDC.
Other sulfur red dyes-----	SDC.
Sulfur blue dyes:	
Sulfur Blue 7-----	ACY, SDC.
Leuco Sulfur Blue 7-----	ACY, SDC.
Solubilized Sulfur Blue 7-----	SDC.
Sulfur Blue 8-----	SDC.
Leuco Sulfur Blue 8-----	SDC.
Leuco Sulfur Blue 11-----	SDC.
Leuco Sulfur Blue 13-----	ACY.
Other sulfur blue dyes-----	SDC.
Sulfur green dyes:	
Sulfur Green 2-----	SDC.
Leuco Sulfur Green 2-----	SDC.
Leuco Sulfur Green 3-----	SDC.
Sulfur Green 14-----	SDC.
Leuco Sulfur Green 16-----	SDC.
Other sulfur green dyes-----	SDC.
Sulfur brown dyes:	
Leuco Sulfur Brown 1-----	STC.
Solubilized Sulfur Brown 1-----	STC.
Leuco Sulfur Brown 3-----	SDC.
Leuco Sulfur Brown 10-----	SDC, STC.
Solubilized Sulfur Brown 10-----	SDC.
Sulfur Brown 14-----	SDC.
Leuco Sulfur Brown 14-----	SDC.
Leuco Sulfur Brown 20-----	STC.
Sulfur Brown 26-----	ACY, STC.
Leuco Sulfur Brown 37-----	SDC.
Sulfur Brown 52-----	SDC.
Leuco Sulfur Brown 81-----	ACY.
Leuco Sulfur Brown 82-----	ACY.
Other sulfur brown dyes-----	ACY, SDC.
Sulfur black dyes:	
Sulfur Black 1-----	SDC.
Leuco Sulfur Black 1-----	ACY, SDC, STC.
Solubilized Sulfur Black 1-----	ACY, STC.
Sulfur Black 2-----	SDC.
Leuco Sulfur Black 2-----	ACY, SDC.
Solubilized Sulfur Black 2-----	SDC.
Leuco Sulfur Black 10-----	SDC.
Sulfur Black 11-----	SDC.
Leuco Sulfur Black 11-----	SDC.
Other sulfur black dyes-----	SDC.

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TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES	
*Vat yellow dyes:	
Vat Yellow 1, 12-1/2%-----	ACS.
*Vat Yellow 2, 8-1/2%-----	AC, ATL, GAF, ICI, TRC, VPC.
Vat Yellow 3, 12-1/2%-----	DUP.
*Vat Yellow 4, 12-1/2%-----	ATL, GAF, HST, VPC.
Vat Yellow 10, 10%-----	GAF.
Vat Yellow 14, 12-1/2%-----	TRC.
Vat Yellow 15, 11-1/2%-----	ACY.
Vat Yellow 22, 10%-----	DUP.
Vat Yellow 33, 15%-----	TRC, VPC.
Other vat yellow dyes-----	MAY, VPC.
*Vat orange dyes:	
*Vat Orange 1, 20%-----	ACY, ATL, GAF, HST, TRC, VPC.
*Vat Orange 2, 12%-----	ACY, DUP, GAF, ICI, TRC.
Vat Orange 3, 13-1/2%-----	DUP, GAF, HST.
Vat Orange 4, 6%-----	DUP.
Vat Orange 5, 10%-----	HST.
Solubilized Vat Orange 5, 30%-----	HST.
Vat Orange 7, 11%-----	HST, TRC.
*Vat Orange 9, 12%-----	ACY, DUP, GAF, ICI, TRC.
Vat Orange 11, 6%-----	DUP.
*Vat Orange 15, 10%-----	AC, ATL, ACY, GAF, ICI, TRC, VPC.
Other vat orange dyes-----	SDC.
*Vat red dyes:	
*Vat Red 1, 13%-----	AC, ATL, ACY, HST, ICI.
Solubilized Vat Red 1, 37%-----	HST.
Vat Red 10, 18%-----	GAF.
Vat Red 12, 8-1/2%-----	DUP.
*Vat Red 13, 11%-----	DUP, GAF, TRC.
Vat Red 14, 10%-----	GAF, HST.
Vat Red 15, 10%-----	HST, TRC.
Vat Red 16, 11%-----	DUP.
Vat Red 29, 18%-----	GAF.
Vat Red 32, 20%-----	DUP, GAF.
Vat Red 41, 20%-----	HST.
Vat Red 52, 10%-----	DUP.
*Vat violet dyes:	
*Vat Violet 1, 11%-----	ACY, ATL, DUP, GAF, ICI, TRC.
Vat Violet 2, 20%-----	ACY, HST.
Vat Violet 3, 15%-----	HST.
*Vat Violet 9, 12%-----	DUP, GAF, ICI, MAY, TRC.
*Vat Violet 13, 6-1/4%-----	ATL, DUP, GAF, HST, ICI, TRC.
Vat Violet 14, 12-1/2%-----	ATL.
Vat Violet 21-----	VPC.
Other vat violet dyes-----	GAF, MAY.
*Vat blue dyes:	
Vat Blue 1, 20%-----	ACS.
Vat Blue 4, 10%-----	ACY, DUP, GAF.
Vat Blue 5, 16%-----	ATL, HST.
*Vat Blue 6, 8-1/3%-----	ACY, DUP, GAF, ICI, TRC.
Solubilized Vat Blue 6, 17-1/2%-----	HST.
Vat Blue 12, 6-1/2%-----	DUP.
*Vat Blue 14, 8-1/3%-----	DUP, GAF, TRC.
Vat Blue 16, 16-1/2%-----	DUP, GAF.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED
BY MANUFACTURER, 1973--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES--Continued	
*Vat blue dyes--Continued	
*Vat Blue 18, 13%-----	AC, ACY, ATL, DUP, GAF, MAY, TRC.
Vat Blue 20, 14%-----	AC, ACS, ACY, ATL, DUP, GAF, MAY, SDC, TRC.
Vat Blue 26, 24%-----	GAF.
Vat Blue 29-----	GAF.
Vat Blue 39, 12%-----	GAF.
Vat Blue 43-----	SDC.
Vat Blue 60-----	DUP.
Vat Blue 67-----	HST.
Other vat blue dyes-----	GAF, MAY.
*Vat green dyes:	
*Vat Green 1, 6%-----	ACY, DUP, GAF, ICI, MAY.
*Vat Green 3, 10%-----	AC, ACY, ATL, DUP, GAF, ICI, MAY, TRC.
*Vat Green 8, 8-1/2%-----	ATL, DUP, GAF.
Vat Green 9, 12-1/2%-----	ATL, GAF, HST, MAY, SDC, TRC.
Vat Green 20, 6%-----	DUP.
Vat Green 32-----	VPC.
Other vat green dyes-----	ACY, GAF, SDC.
*Vat brown dyes:	
*Vat Brown 1, 11%-----	ACY, DUP, GAF, MAY, TRC.
Solubilized Vat Brown 1, 17%-----	GAF.
*Vat Brown 3, 11%-----	AC, ACY, DUP, GAF, ICI, TRC, VPC.
Vat Brown 5, 13%-----	ACY, HST.
Vat Brown 11, 12%-----	MAY, TRC.
Vat Brown 12, 12-1/2%-----	DUP.
Vat Brown 13, 17%-----	MAY.
Vat Brown 20, 10-1/2%-----	GAF.
Vat Brown 28, 22%-----	ICI.
Vat Brown 31, 28%-----	AC.
Vat Brown 40, 14%-----	DUP.
Vat Brown 57, 12.8%-----	HST, TRC.
Other vat brown dyes-----	GAF, SDC, VPC.
*Vat black dyes:	
Solubilized Vat Black 1, 27-1/2%-----	HST.
Vat Black 9, 16%-----	GAF, MAY.
Vat Black 13, 14%-----	DUP.
Vat Black 22, 19%-----	ACY, TRC.
*Vat Black 25, 12-1/2%-----	AC, ACY, DUP, GAF, MAY, TRC.
*Vat Black 27, 12-1/2%-----	ACY, BDO, DUP, GAF, ICI, MAY, TRC.
Vat Black 34, 16%-----	ICI.
Vat Black 38, 20%-----	GAF.
Other vat black dyes-----	ATL, GAF, MAY, SDC, TRC.
All other dyes-----	ACY, DUP, GAF, HSH, PAT, SDC.

TABLE 3.--DYES: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of dye manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
AC	American Color & Chemical Corp.	ICC	Inmont Corp.
ACS	Allied Chemical Corp., Specialty Chemicals Div.	ICI	ICI America, Inc.
ACY	American Cyanamid Co.		
ALL	Alliance Chemical, Inc.		
ALT	Crompton & Knowles Corp, Dyes & Chemicals Div.	KON	H. Kohnstamm & Co., Inc.
ATL	Atlantic Chemical Corp.		
		MAY	Otto B. May, Inc.
BAS	BASF Wyandotte Corp.	MRX	Max Marx Color & Chemical Co.
BDO	Benzenoid Organics, Inc.		
BUC	Blackman-Uhler Chemical Co.	PAT	Morton International, Inc., Morton Chemical Co. Div.
		PCW	Pfister Chemical Works
CCW	Cincinnati Milacron Chemicals, Inc.	PDC	Berncolors-Poughkeepsie, Inc.
CGY	Ciba-Geigy Corp.	PSC	Passaic Color & Chemical Co.
CNG	Nyanza, Inc.		
CPC	Childs Pulp Colors, Inc.		
		S	Sandoz, Inc., Sandoz Color & Chemicals Div.
DSC	Dye Specialties, Inc.	SDC	Martin-Marietta Corp., Sodyeco Div.
DUP	E. I. duPont de Nemours & Co., Inc.	SDH	Sterling Drug, Inc., Hilton-Davis Chemical Co. Div.
		SNA	Sun Chemical Corp.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.	STC	Sou-Tex Chemical Co., Inc.
		STG	Stange Co.
		SW	Sherwin-Williams Co.
FAB	Fabricolor Manufacturing Corp.		
		TMS	Sterling Drug, Inc., Thomasset Colors Div.
GAF	GAF Corp., Chemical Div.	TRC	Toms River Chemical Corp.
		VPC	Baychem Corp., Verona Div.
HN	Tenneco Chemicals, Inc.		
HSC	Chemetron Corp., Pigments Div.		
HSH	Harshaw Chemical Co., Div. of Kewanee Oil Co.	WJ	Warner-Jenkinson Manufacturing Co.
HST	American Hoechst Corp.		
		YAW	Y.S. Young Co., Young Aniline Works Div.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

Organic Pigments

As the terms are used in this report, organic pigments are toners and lakes derived in whole or in part from benzenoid chemicals and colors.

Statistics on production and sales of all organic pigments in 1973 are given in table 1.¹ Statistics on sales of a few selected pigments by commercial forms (dry full-strength form, dry extended form, dry dispersions, aqueous dispersions, and flushed colors) are given in table 1A. 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 1973 was 69.4 million pounds--5.3 percent more than the 65.9 million pounds produced in 1972 and 19.0 percent more than the 58.3 million pounds produced in 1971. Total sales of organic pigments in 1973 amounted to 61.5 million pounds, valued at \$182.2 million, compared with 53.2 million pounds, valued at \$149.3 million, in 1972 and 47.1 million pounds, valued at \$130.0 million, in 1971. In terms of quantity, sales of organic pigments in 1973 were 15.5 percent greater than in 1972 and 30.6 percent greater than in 1971; in terms of value, sales in 1973 were 22.0 percent greater than in 1972 and 40.1 percent greater than in 1971.

Production of toners in 1973 amounted to 66.9 million pounds--6.5 percent more than the 62.9 million pounds reported for 1972. Sales in 1973 were 59.0 million pounds, valued at \$178.6 million, compared with 50.5 million pounds, valued at \$145.9 million, in 1972. Sales in 1973 were 16.8 percent more than those in 1972 in terms of quantity, and 22.4 percent more in terms of value. The individual toners listed in the report which were produced in the largest quantities in 1973 were Pigment Yellow 12, 8.4 million pounds; Pigment Blue 15, beta form, 6.3 million pounds; Pigment Blue 15, alpha form, 4.5 million pounds; and Pigment Red 49, barium toner, 4.4 million pounds.

Production of lakes totaled 2.4 million pounds in 1973--19.0 percent less than the 3.0 million pounds reported for 1972. Sales of lakes in 1973 amounted to 2.5 million pounds, valued at \$3.6 million, compared with sales in 1972 of 2.7 million pounds, valued at \$3.4 million. Sales in 1973 were 8.7 percent less than those in 1972 in terms of quantity, and 5.3 percent more in terms of value.

For each of 10 selected pigments, or groups of pigments, table 1A gives data on sales by commercial forms. Pigment Yellow 12 and Pigment Red 53 were sold principally in the flushed form. The remaining 8 pigments, or groups of pigments, for which statistics are published were sold principally in the dry full-strength form. Statistics on sales by commercial forms could not be published for Pigment Red 49, calcium toner, Pigment Red 49, sodium toner, Pigment Red 90, Pigment Violet 3, fugitive, Pigment Blue 19, and Pigment Blue 24, without revealing the operations of individual companies.

¹ See also table 2 which lists these products and identifies the manufacturers by codes. These codes are listed in table 3.

ORGANIC PIGMENTS

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TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all organic pigments for which any reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all organic pigments for which data on production or sales were reported and identifies the manufacturers of each]

Pigment	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	69,395	61,464	182,166	\$2.96
TONERS				
Total-----	66,949	58,991	178,583	3.03
Yellow toners, total-----	17,434	13,620	38,269	2.81
Acetoacetarilide yellows:				
Pigment Yellow 1, C.I. 11 680-----	674	523	1,184	2.26
Pigment Yellow 3, C.I. 11 710-----	415	209	488	2.33
Pigment Yellow 73, C.I. 11 738-----	637	...	...	...
Pigment Yellow 74, C.I. 11 741-----	...	780	2,751	3.53
Benzidine yellows, total-----	13,547	10,215	24,320	2.38
Pigment Yellow 12, C.I. 21 090-----	8,398	5,781	10,670	1.85
Pigment Yellow 14, C.I. 21 095-----	2,964	2,589	5,989	2.31
Pigment Yellow 17, C.I. 21 105-----	574	459	1,416	3.08
Other benzidine yellows-----	1,611	1,386	6,245	4.51
All other ² -----	2,161	1,893	9,526	5.03
Orange toners, total-----	1,837	1,713	6,799	3.97
Pigment Orange 5, C.I. 12 075-----	800	745	1,523	2.04
Pigment Orange 13, C.I. 21 110-----	327	289	1,017	3.52
Pigment Orange 16, C.I. 21 160-----	377	378	1,049	2.78
Pigment Orange 34, C.I. 21 115-----	90	84	296	3.52
All other-----	243	217	2,914	13.43
Red toners, total-----	24,085	22,421	55,272	2.47
Naphthol reds, total-----	1,209	947	4,005	4.23
Pigment Red 2, C.I. 12 310-----	78	35	104	2.97
Pigment Red 5, C.I. 12 490-----	100	67	361	5.39
Pigment Red 17, C.I. 12 390-----	81	59	210	3.56
Pigment Red 22, C.I. 12 315-----	129	118	406	3.44
Pigment Red 23, C.I. 12 355-----	269	256	1,273	4.97
Other naphthol reds-----	552	412	1,651	4.01
Pigment Red 3, C.I. 12 120-----	1,790	1,771	3,436	1.94
Pigment Red 4, C.I. 12 085-----	296	277	493	1.78
Pigment Red 38, C.I. 21 120-----	...	169	876	5.18
Pigment Red 48, C.I. 15 865-----	3,312	3,178	6,926	2.18
Pigment Red 49, C.I. 15 630:				
Barium toner-----	4,393	4,354	5,312	1.22
Calcium toner-----	1,395	1,353	1,736	1.28
Sodium toner-----	15	17	16	.94
Pigment Red 52, C.I. 15 860-----	...	1,996	3,863	1.94
Pigment Red 53, C.I. 15 585, barium toner-----	3,179	2,807	4,761	1.70
Pigment Red 54, C.I. 14 830, calcium toner-----	76	80	206	2.58
Pigment Red 57, C.I. 15 850, calcium toner-----	1,578	1,291	2,601	2.01
Pigment Red 63, C.I. 15 880-----	46	55	98	1.78
Pigment Red 81, C.I. 45 160, PMA-----	646	585	3,749	6.41
Pigment Red 81, C.I. 45 160, PTA-----	94	100	728	7.28
Pigment Red 90, C.I. 45 380-----	1,583	1,309	2,442	1.87
Pigment Red 122-----	97	100	1,398	13.98
All other ³ -----	4,376	2,032	12,626	6.21

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Pigment	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
TONERS--Continued				
Violet toners, total-----	2,862	2,721	20,177	\$7.42
Pigment Violet 1, C.I. 45 170, PMA-----	82	86	582	6.77
Pigment Violet 1, C.I. 45 170, PTA-----	115	74	557	7.53
Pigment Violet 3, C.I. 42 535, fugitive-----	582	578	1,012	1.75
Pigment Violet 3, C.I. 42 535, PMA-----	421	402	1,400	3.48
Pigment Violet 3, C.I. 42 535, PTA-----	40	37	185	5.00
Pigment Violet 23, C.I. 51 319-----	280	315	3,848	12.22
All other-----	1,342	1,229	12,593	10.25
Blue toners, total-----	15,721	14,148	41,546	2.94
Pigment Blue 1, C.I. 42 595, PMA-----	101	103	636	6.17
Pigment Blue 15, C.I. 74 160, alpha form-----	4,472	4,474	13,308	2.97
Pigment Blue 15, C.I. 74 160, beta form-----	6,336	5,285	16,649	3.15
All other-----	4,812	4,286	10,953	2.56
Green toners, total-----	4,706	4,045	15,970	3.95
Pigment Green 1, C.I. 42 040, PMA-----	6	7	41	5.86
Pigment Green 2, C.I. 42 040 and 49 005, PMA-----	63	62	394	6.35
Pigment Green 7, C.I. 74 260-----	3,828	3,275	12,466	3.81
Pigment Green 8, C.I. 10 006-----	148	130	188	1.45
Pigment Green 36, C.I. 74 265-----	348	337	1,445	4.29
All other-----	313	234	1,436	6.14
Brown and black toners, total-----	304	323	550	1.70
Pigment Brown 5, C.I. 15 800-----	140	132	251	1.90
All other-----	164	191	299	1.57
LAKES				
Total-----	2,446	2,473	3,583	1.45
Red lakes:				
Pigment Red 60, C.I. 16 105-----	340	363	720	1.98
Pigment Red 83, C.I. 58 000-----	68	64	255	3.98
(Acid Red 26), C.I. 16 150-----	200	...	...	...
Violet lake: Pigment Violet 5, C.I. 58 055-----	154	157	426	2.71
All other lakes ⁴ -----	1,684	1,889	2,182	1.16

¹ Calculated from rounded figures.² Includes Pigment Yellow 73 (sales only), Pigment Yellow 74 (production only), and "all other" acetoacetarylide yellows.³ Includes production of Pigment Red 38 and Pigment Red 52.⁴ Includes all yellow, orange, blue, green, brown, black, "all other" red lakes, and sales of (Acid Red 26).

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

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

TABLE 1A.--U.S. SALES OF SELECTED DRY FULL-STRENGTH COLORS, DRY EXTENDED COLORS, DRY DISPERSIONS, AQUEOUS DISPERSIONS, AND FLUSHED COLORS, 1973

Selected pigments by commercial forms	Sales		
	Quantity ¹	Value	Unit value ²
	1,000 pounds	1,000 dollars	Per pound
Pigment Yellow 12, C.I. 21 090, total-----	5,781	11,206	\$1.94
Flushed color-----	4,393	8,289	1.89
Dry full-strength toner, aqueous dispersions, ³ and dry dispersion ⁴ -----	1,388	2,917	2.10
Pigment Yellow 13, C.I. 21 100; Pigment Yellow 14, C.I. 21 095; Pigment Yellow 17, C.I. 21 105; and other benzidine yellows, total-----	4,434	13,745	3.10
Dry full-strength toner-----	3,135	10,403	3.32
Aqueous dispersions ³ -----	666	1,822	2.74
Flushed color, dry extended toner, and dry dispersions ⁴ -----	633	1,520	2.40
Pigment Red 3, C.I. 12 120, total-----	1,771	3,635	2.05
Dry full-strength toner and dry extended toner ⁴ -----	1,145	2,249	1.96
Aqueous dispersions ³ and flushed color ⁴ -----	626	1,386	2.21
Pigment Red 48, C.I. 15 865, total-----	3,163	6,925	2.19
Dry full-strength toner, dry extended toner, and dry dispersions ⁴ -----	2,971	6,477	2.18
Aqueous dispersions ³ -----	35	85	2.43
Flushed color-----	157	363	2.31
Pigment Red 49, C.I. 15 630, barium toner, total-----	4,353	5,465	1.26
Dry full-strength toner, aqueous dispersions ³ and dry extended toner ⁴ -----	3,846	4,612	1.20
Flushed color-----	507	853	1.68
Pigment Red 53, C.I. 15 585, barium toner, total-----	2,808	4,823	1.72
Dry full-strength toner and dry dispersions ⁴ -----	1,071	1,697	1.58
Aqueous dispersions ³ and flushed color ⁴ -----	1,737	3,126	1.80
Pigment Violet 3, C.I. 42 535, PMA and PTA, total-----	440	1,605	3.65
Dry full-strength toner-----	340	1,275	3.75
Dry extended toner-----	8	67	8.38
Aqueous dispersion ³ and flushed color ⁴ -----	92	263	2.86
Pigment Blue 15, C.I. 74 160, alpha form, total-----	4,475	13,315	2.98
Dry full-strength toner-----	1,697	6,077	3.58
Dry dispersion-----	204	684	3.35
Aqueous dispersions ³ -----	1,008	2,249	2.23
Flushed color and dry extended toner ⁴ -----	1,566	4,305	2.75
Pigment Blue 15, C.I. 74 160, beta form, total-----	5,286	16,777	3.17
Dry full-strength toner-----	2,311	8,055	3.49
Dry extended toner and dry dispersions ⁴ -----	97	307	3.16
Aqueous dispersions ³ -----	1,278	3,266	2.56
Flushed color-----	1,600	5,149	3.22
Pigment Green 7, C.I. 74 260, total-----	3,276	12,464	3.80
Dry full-strength toner-----	1,633	6,469	3.96
Dry extended toner-----	321	1,308	4.07
Flushed color and dry dispersion ⁴ -----	318	1,264	3.97
Aqueous dispersions ³ -----	1,004	3,423	3.41

¹ Quantity of the various commercial forms is given in terms of dry full-strength toner (or dry lake) content.

² Calculated from rounded figures.

³ Includes presscake.

⁴ Separate data on these commercial forms may not be published without revealing the operations of individual companies.

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

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

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Organic pigments for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS	
*Yellow toners:	
Acetoacetarylide yellows:	
*Pigment Yellow 1, C.I. 11 680-----	ACS, ACY, AMS, DUP, HPC, HSC, HSH, HST, KON, S, SDH, SNA, SW.
*Pigment Yellow 3, C.I. 11 710-----	ACS, HPC, HSC, HSH, HST, KCW, KON, PPG, SW.
Pigment Yellow 4, C.I. 11 665-----	ACS.
Pigment Yellow 5, C.I. 11 660-----	HPC.
Pigment Yellow 6, C.I. 11 670-----	CIK, HPC.
Pigment Yellow 49, C.I. 11 765-----	HPC.
Pigment Yellow 65-----	ACS.
*Pigment Yellow 73, C.I. 11 738-----	ACS, CIK, HN, HPC, SNA.
*Pigment Yellow 74, C.I. 11 741-----	DUP, HPC, SDH, SNA, SW.
Pigment Yellow 75, C.I. 11 770-----	HPC.
All other acetoacetarylide yellows-----	DUP, KCW, KON.
*Benzidine yellows:	
*Pigment Yellow 12, C.I. 21 090-----	ACS, ACY, AMS, APO, CIK, HPC, HSC, HSH, HST, ICC, KON, LVY, ROM, S, SDH, SNA, SW.
Pigment Yellow 13, C.I. 21 100-----	APO, BUC, GAF, HPC, HSH, HST, ICC, ROM, SDH, SNA.
*Pigment Yellow 14, C.I. 21 095-----	ACS, ACY, AMS, APO, BUC, CIK, GAF, HPC, HSC, HSH, HST, ICC, KON, ROM, S, SDH, SNA, x, x.
*Pigment Yellow 17, C.I. 21 105-----	ACS, AMS, BUC, GAF, HPC, HSC, HST, ICC, ROM, SDH, SNA, SW.
Pigment Yellow 76-----	HPC.
Pigment Yellow 83-----	ACS, HST.
All other benzidine yellows-----	HSH, ICC, ROM, S.
Pigment Yellow 16, C.I. 20 040-----	HST.
Pigment Yellow 24, C.I. 70 600-----	ACS.
Pigment Yellow 97-----	HST.
Pigment Yellow 108, C.I. 68 420-----	ACS.
(Basic Yellow 2), C.I. 41 000 fugitive-----	LVR, MRX.
(Basic Yellow 37), C.I. 41 001-----	LVR.
(Direct Yellow 6), C.I. 40 001-----	LVR.
(Direct Yellow 11), C.I. 40 000-----	LVR.
All other-----	ICC, S, TRC.
*Orange toners:	
Pigment Orange 1, C.I. 11 725-----	ACS, KCW.
Pigment Orange 2, C.I. 12 060-----	HPC, UHL.
*Pigment Orange 5, C.I. 12 075-----	ACY, HPC, HSC, HST, SDH, SNA, SW.
*Pigment Orange 13, C.I. 21 110-----	ACS, ACY, AMS, HPC, HSC, ICC, KON, S, SNA.
Pigment Orange 15, C.I. 21 130-----	ACS.
*Pigment Orange 16, C.I. 21 160-----	ACS, GAF, HPC, HSC, HSH, HST, ICC, MRX, ROM, SDH, SNA.
*Pigment Orange 34, C.I. 21 115-----	BUC, ICC, ROM, SDH, SNA.
Pigment Orange 43, C.I. 71 105-----	ACS.
(Acid Orange 8), C.I. 15 575-----	LVR.
(Vat Orange 3), C.I. 59 300-----	HST.
(Vat Orange 4), C.I. 59 710-----	ACS.
(Vat Orange 7), C.I. 71 105-----	HST.
All other-----	KON, S, SNA.
*Red toners:	
*Naphthol reds:	
*Pigment Red 2, C.I. 12 310-----	ACS, HPC, HSH, KCW, KON.
*Pigment Red 5, C.I. 12 490-----	GAF, HPC, HSH, ICC, ROM, S, SDH.
Pigment Red 7, C.I. 12 420-----	HST, S.

ORGANIC PIGMENTS

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TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Pigments	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Red toners--Continued	
*Naphthol reds--Continued	
Pigment Red 9, C.I. 12 460-----	HPC, HST, S.
Pigment Red 10, C.I. 12 440-----	KCW.
Pigment Red 13, C.I. 12 395-----	HPC, KCW, SW.
Pigment Red 15, C.I. 12 465-----	DUP.
*Pigment Red 17, C.I. 12 390-----	ACY, HPC, ICC, S, SNA, UHL.
Pigment Red 18, C.I. 12 350-----	ACS, HPC.
*Pigment Red 22, C.I. 12 315-----	ACY, DUP, GAF, HPC, MRX, ROM, SNA.
*Pigment Red 23, C.I. 12 355-----	ACY, BUC, DUP, HPC, ROM, SDH, SNA.
Pigment Red 31, C.I. 12 360-----	SNA.
Pigment Red 112, C.I. 12 370-----	HPC.
All other naphthol reds-----	ICC, KCW, ROM, S, SDH, SNA, x.
Pigment Red 1, C.I. 12 070, dark-----	AMS, HPC, HSH.
Pigment Red 1, C.I. 12 070, light-----	HPC, HSC, HSH, SDH.
*Pigment Red 3, C.I. 12 120-----	ACY, CIK, CPC, DUP, HPC, HSC, HSH, KCW, KON, PPG, SDH, SNA, SW, UHL.
*Pigment Red 4, C.I. 12 085-----	ACY, AMS, HPC, HSC, KON, MRX, SDH, UHL.
Pigment Red 6, C.I. 12 090-----	DUP, HSH, KCW, KON.
*Pigment Red 38, C.I. 21 120-----	ACS, GAF, ICC, SNA, SW.
Pigment Red 40, C.I. 12 170-----	HSH.
Pigment Red 41, C.I. 21 200-----	ACS.
*Pigment Red 48, C.I. 15 865-----	ACS, ACY, AMS, DUP, GAF, HPC, HSC, HSH, ICC, LVY, S, SNA, SW.
Pigment Red 49, C.I. 15 630:	
*Barium toner-----	ACY, AMS, APO, CIK, CPC, HSC, KON, LVY, PPG, SDH, SNA, SW, UHL.
*Calcium toner-----	ACY, AMS, HSC, LVY, SDH, SNA, SW.
*Sodium toner-----	HSC, KON, SDH, SW.
*Pigment Red 52, C.I. 15 860-----	CIK, HPC, HSC, HSH, SNA, SW.
*Pigment Red 53, C.I. 15 585, barium toner-----	ACY, AMS, APO, CIK, HPC, HSC, ICC, KON, LVY, MGR, MRX, SDH, SNA, SW.
*Pigment Red 54, C.I. 14 830, calcium toner-----	HPC, HSH, SDH.
Pigment Red 55, C.I. 15 820-----	HSH.
*Pigment Red 57, C.I. 15 850, calcium toner-----	AMS, CIK, DUP, HPC, HSC, KON, LVY, MGR, SDH, SNA.
Pigment Red 58, C.I. 15 825-----	DUP, HPC.
*Pigment Red 63, C.I. 15 880-----	HPC, HSH, KON, SNA, SW.
Pigment Red 64, C.I. 15 800-----	ACS.
Pigment Red 77, C.I. 15 826-----	SW.
Pigment Red 79, PMA-----	GAF.
Pigment Red 81, C.I. 45 160, fugitive-----	MGR.
*Pigment Red 81, C.I. 45 160, PMA-----	CPC, DUP, GAF, HPC, KON, LVR, LVY, MGR, MRX, SNA, UHL.
*Pigment Red 81, C.I. 45 160, PTA-----	AMS, DUP, GAF, HPC, KCW, KON, MGR, MRX, SDH, SNA, UHL.
Pigment Red 87, C.I. 73 310-----	ACS.
Pigment Red 88, C.I. 73 312-----	ACS, HST.
*Pigment Red 90, C.I. 45 380-----	AMS, HN, LVY, SDH.
Pigment Red 91-----	HN.
Pigment Red 112-----	HST.
*Pigment Red 122-----	ACS, HST, SNA, x.
Pigment Red 123, C.I. 71 145-----	ACS.
Pigment Red 146-----	HST.
Pigment Red 149-----	HST.
Pigment Red 168, C.I. 59 300-----	ACS.
Pigment Red 170-----	HST.
Pigment Red 176-----	HST.
Pigment Red 177-----	TRC.
Pigment Red 179, C.I. 71 130-----	ACS.
Pigment Red 181, C.I. 73 360-----	HST.
Pigment Red 190, C.I. 71 140-----	ACS, GAF.
Pigment Red 198, C.I. 73 390-----	ACS.
(Direct Red 81), C.I. 28 160-----	LVR.
(Vat Red 15), C.I. 71 100-----	HST.
All other-----	DUP, HSC, LVR, x.

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Violet toners:	
Pigment Violet 1, C.I. 45 170, fugitive-----	UHL.
*Pigment Violet 1, C.I. 45 170, PMA-----	GAF, HPC, MGR, MRX, SNA, UHL.
*Pigment Violet 1, C.I. 45 170, PTA-----	DUP, GAF, HPC, MGR, SNA.
*Pigment Violet 3, C.I. 42 535, fugitive-----	ACY, AMS, HSC, KON, MGR, UHL.
*Pigment Violet 3, C.I. 42 535, PMA-----	AMS, CIK, DUP, GAF, HPC, KON, MGR, MRX, SDH, SW, UHL.
*Pigment Violet 3, C.I. 42 535, PTA-----	ACY, HPC, KON, MRX.
Pigment Violet 4, C.I. 42 510, PMA-----	LVR.
Pigment Violet 19, C.I. 46 500-----	ACS, DUP, SNA.
*Pigment Violet 23, C.I. 51 319-----	ACS, ACY, BUC, GAF, HSC, HST, SDC, SNA.
Pigment Violet 31, C.I. 60 010-----	ACS, DUP.
Pigment Violet 36, C.I. 73 385-----	ACS, HST.
Pigment Violet 38, C.I. 73 395-----	ACS.
Pigment Violet 74-----	HST.
(Basic Violet 2), C.I. 42 520-----	HN.
All other-----	BUC, GAF, HPC, ICC, LVR, ROM.
*Blue toners:	
*Pigment Blue 1, C.I. 42 595, PMA-----	DUP, GAF, HN, HPC, KON, LVY, MGR, MRX, SW, UHL.
Pigment Blue 1, C.I. 42 595, PTA-----	HPC, MGR.
Pigment Blue 2, C.I. 44 045, PMA-----	GAF.
Pigment Blue 2, C.I. 44 045, PTA-----	KON.
Pigment Blue 7, PMA-----	LVR.
Pigment Blue 9, C.I. 42 025, PMA-----	KON, UHL.
Pigment Blue 9, C.I. 42 025, PTA-----	GAF, HPC, MGR.
Pigment Blue 10, C.I. 44 040, PMA-----	SDH.
Pigment Blue 10, C.I. 44 040, PTA-----	LVR.
Pigment Blue 14, C.I. 42 600, PMA-----	DUP, GAF, HPC.
Pigment Blue 14, C.I. 42 600, PTA-----	DUP, GAF.
*Pigment Blue 15, C.I. 74 160, alpha form-----	ACS, ACY, APO, DUP, GAF, HPC, HSC, HST, ICC, MGR, SNA, SW, TMS.
*Pigment Blue 15, C.I. 74 160, beta form-----	ACS, ACY, AMS, BAS, BUC, CIK, DUP, GAF, HPC, HSC, ICC, LVY, MGR, ROM, SDH, SNA, SW, TMS.
Pigment Blue 19, C.I. 42 750A-----	AMS, HN, HSC, SW.
Pigment Blue 22, C.I. 69 810-----	ACS, DUP.
Pigment Blue 23-----	HST.
Pigment Blue 25, C.I. 21 180-----	DUP, GAF, ICC, S.
Pigment Blue 27, C.I. 77 510-----	x.
(Basic Blue 1), C.I. 42 025-----	GAF.
All other-----	DUP, GAF, SDH, TNI.
*Green toners:	
*Pigment Green 1, C.I. 42 040, PMA-----	HPC, MRX, S, UHL.
Pigment Green 1, C.I. 42 040, PTA-----	MGR.
*Pigment Green 2, C.I. 42 040 and 49 005, PMA-----	GAF, HPC, KON, MGR, MRX, S, UHL.
Pigment Green 2, C.I. 42 040 and 49 005, PTA-----	ACY, DUP, HPC, KON, MRX.
Pigment Green 4, C.I. 42 000, fugitive-----	GAF.
Pigment Green 4, C.I. 42 000, PMA-----	MGR.
Pigment Green 4, C.I. 42 000, PTA-----	ACY, MGR.
*Pigment Green 7, C.I. 74 260-----	ACS, ACY, BAS, CIK, DUP, GAF, HPC, HSC, HST, SNA, TMS, TRC.
*Pigment Green 8, C.I. 10 006-----	HPC, HSH, KCW.
Pigment Green 10, C.I. 12 775-----	DUP, HPC.
*Pigment Green 36, C.I. 74 265-----	ACS, ACY, GAF, SNA.
Pigment Green 38-----	DUP.
Pigment Green 40-----	HST.
All other-----	HPC, SNA.
*Brown and Black toners:	
Pigment Brown 1, C.I. 12 480-----	S.
Pigment Brown 3, C.I. 21 010, PMA-----	KCW, KON.
*Pigment Brown 5, C.I. 15 800-----	ACS, BUC, HSH, ICC, ROM.
Pigment Brown 26, C.I. 71 129-----	ACS.
Pigment Brown 28, C.I. 69 015-----	GAF.

ORGANIC PIGMENTS

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TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Brown and Black toners--Continued	
Pigment Brown 32-----	HST.
(Acid Brown 14), C.I. 20195-----	LVR.
All other-----	DUP, GAF, SDH, UHL.
LAKES	
Yellow lakes: (Acid Yellow 23), C.I. 19 140-----	ACS, KON, MRX.
Orange lakes:	
Pigment Orange 7, C.I. 15 530-----	CPC.
Pigment Orange 17, C.I. 15 510-----	HPC, KCW.
Red lakes:	
*Pigment Red 60, C.I. 16 105-----	HSH, KON, MRX, SNA.
Pigment Red 81, C.I. 45 160-----	SNA.
*Pigment Red 83, C.I. 58 000-----	HPC, HSH, KON, MRX, UHL.
(Acid Red 17), C.I. 16 180-----	HPC.
*(Acid Red 26), C.I. 16 150-----	CPC, HPC, KCW.
All other-----	HPC.
Violet lakes: *Pigment Violet 5, C.I. 58 055-----	ACS, DUP, HPC, HSH, KON, S, UHL.
Blue lakes:	
Pigment Blue 17, C.I. 74 180-----	CPC.
Pigment Blue 24, C.I. 42 090-----	AMS, KON, LVY, SDH.
(Acid Blue 104), C.I. 42 735-----	KCW, LVR.
Green lakes-----	HPC.
Brown lakes-----	KON
Black lakes: (Natural Black 3), C.I. 75 291-----	CPC.

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

When the name of a color is enclosed in parentheses, it indicates that this name is that of the dye from which the pigment can be made and that no name for the pigment itself is given in the *Colour Index*.

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

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 3.--ORGANIC PIGMENTS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of organic pigment manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACS	Allied Chemical Corp., Specialty Chemicals Div.	KON	H. Kohnstamm & Co., Inc.
ACY	American Cyanamid Co.	LVR	C. Lever Co., Inc.
AMS	Ridgway Color & Chemical	LVY	Cities Service Co., Levey Div.
APO	Apollo Colors, Inc.		
BAS	BASF Wyandotte Corp.	MGR	Magruder Color Co., Inc.
BUC	Blackman-Uhler Chemical Co.	MRX	Max Marx Color & Chemical Co.
CIK	Tenneco Chemicals, Inc., Cal/Ink Div.		
CPC	Childs Pulp Colors, Inc.	PPG	PPG Industries, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.	ROM	United Merchants & Manufacturers, Inc., Roma Chemical Div.
GAF	GAF Corp., Chemical Div.	S	Sandoz, Inc., Sandoz Color & Chemicals Div.
HN	Tenneco Chemicals, Inc.	SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
HPC	Hercules, Inc.	SDH	Sterling Drug, Inc., Hilton-Davis Chemical Co. Div.
HSC	Chemetron Corp., Pigments Div.	SNA	Sun Chemical Corp.
HSB	Harshaw Chemical Co., Div. of Kewanee Oil Co.	SW	The Sherwin-Williams Co.
HST	American Hoechst Corp.		
ICC	Inmont Corp.	TMS	Sterling Drug, Inc., Thomasset Colors Div.
		TNI	Gillette Co., Gillette Chemical Co. Div.
		TRC	Toms River Chemical Corp.
KCW	Keystone Color Works, Inc.	UHL	Paul Uhlich & Co., Inc.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

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.

Table 1 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class, while table 2 lists separately each product for which data were reported and identifies the manufacturers.¹ The statistics shown in table 1 are for bulk chemicals only; finished pharmaceutical preparations and products put up in pills, capsules, tablets, or other measured doses are excluded.² 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 of medicinal grade products used as intermediates, e.g., penicillin G salts used as intermediates in the manufacture of semi-synthetic penicillins. All quantities are given in terms of 100-percent content of the pure bulk drug.

Total U.S. production of bulk medicinal chemicals in 1973 amounted to 233.6 million pounds, or 0.3 percent less than the 234.3 million pounds produced in 1972 and 4.6 percent more than the 223.2 million pounds produced in 1971. Total sales of bulk medicinal chemicals in 1973 amounted to 179 million pounds, valued at \$582 million, compared with sales in 1972 of 163 million pounds, valued at \$490 million, and sales in 1971 of 152 million pounds, valued at \$487 million. In terms of quantity, sales in 1973 were thus 9.8 percent larger than in 1972 and 17.7 percent larger than in 1971. In terms of value, sales in 1973 were 18.8 percent larger than in 1972 and 19.7 percent larger than in 1971.

Production of the more important groups of medicinal chemicals in 1973 was as follows: Antibiotics, 20.8 million pounds (25.2 percent larger than in 1972), of which 12.6 million pounds was for medicinal use and 8.2 million pounds was for other uses; anti-infective agents other than

¹ See table 3 for a list of manufacturers and their identification codes.

² 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 who report to the Bureau of the Census are excluded from the 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.

antibiotics, 33.2 million pounds (3.4 percent smaller than in 1972); central nervous system depressants and stimulants, 48.6 million pounds (7.2 percent smaller); and vitamins, 34.0 million pounds (13.3 percent larger).

Production of some of the more important individual products listed in table 1 was as follows: Choline chloride, 46.6 million pounds (14.4 percent smaller than in 1972); aspirin, 32.2 million pounds (8.2 percent smaller); ascorbic acid, 15.4 million pounds (25.2 percent larger); penicillins (except semi-synthetic), 4,945 trillion units (29.2 percent larger); tetracyclines, 2.3 million kilograms (28.3 percent larger); and vitamin E, 1,732 billion units (15.3 percent larger).

MEDICINAL CHEMICALS

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TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all synthetic organic medicinal chemicals for which any reported data on production or sales may be published. (Leaders (...)) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all medicinal chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	233,583	179,178	582,352	\$3.25
Acyclic-----	99,518	92,049	71,675	.78
Benzenoid ³ -----	110,517	71,875	363,081	5.05
Cyclic nonbenzenoid ⁴ -----	23,548	15,254	147,596	9.68
Antibiotics, total ⁵ -----	20,834	7,871	163,974	20.83
Antifungal and antitubercular antibiotics, for medicinal use-----	1,142	770	18,973	24.64
Neomycin, for medicinal use-----	...	213	2,482	11.65
Penicillins (except semisynthetic), total-----	7,404	3,842	34,372	8.95
Penicillin G, procaine, for all uses-----	1,771	1,243	9,326	7.50
All other, for medicinal use-----	5,633	2,599	25,046	9.64
Semisynthetic penicillins, for medicinal use, total-----	1,192	303	31,877	105.20
Ampicillin-----	934	263	28,358	107.83
Ampicillin, sodium-----	24	...	...	...
All other-----	234	40	3,519	87.98
Tetracyclines, for all uses-----	5,001	...	...	...
Other antibiotics, total-----	6,095	2,743	76,270	27.81
For medicinal use ⁶ -----	2,180	958	52,971	55.29
For nonmedicinal uses ⁷ -----	3,915	1,785	23,299	13.05
Antihistamines, total-----	421	232	5,713	24.62
Antinauseants-----	56	...	...	...
Chlorpheniramine maleate-----	32	10	338	33.80
All other-----	333	222	5,375	24.21
Anti-infective agents (except antibiotics), total-----	33,210	23,475	89,805	3.83
Anthelmintics, total-----	10,863	7,391	34,227	4.63
Piperazine-----	3,224	...	...	...
Piperazine dihydrochloride-----	2,096	1,970	1,395	.71
Piperazine hydrochloride-----	408	563	337	.60
All other-----	5,135	4,858	32,495	6.69
Antifungal agents-----	762	...	...	...
Antiprotozoan agents, total-----	10,761	10,364	36,224	3.50
Arsenic and bismuth compounds-----	6,086	...	...	...
All other-----	4,675	10,364	36,224	3.50
Mercury compounds-----	8	8	500	62.50
Oxyquinoline sulfate-----	8	10	44	4.40
Sulfonamides-----	⁸ 5,881	2,579	8,519	3.30
Urinary antiseptics-----	612	340	760	2.24
Other anti-infective agents ⁹ -----	4,315	2,783	9,531	3.42
Autonomic drugs, total-----	890	776	11,854	15.28
Parasympatholytic (anticholinergic) tertiary amines-----	48	35	2,086	59.60
Sympathomimetic (adrenergic) agents, total-----	782	716	8,073	11.28
Phenylephrine base, bitartrate, and tannate-----	59	...	...	...
Phenylephrine hydrochloride-----	102	92	3,108	33.78
Phenylpropanolamine hydrochloride-----	349	351	1,930	5.50
All other-----	272	273	3,035	11.12
Other autonomic drugs-----	60	25 ¹	1,695	67.80
Cardiovascular agents-----	2,150	580	16,945	29.22

See footnotes at end of table.

TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Central depressants and stimulants, total-----	48,640	35,572	71,077	\$2.00
Amphetamines-----	6	...	...	...
Analgesics and antipyretics, total-----	41,591	29,682	40,549	1.37
Acetanilide derivatives-----	6,786	7,433	8,125	1.09
Aspirin-----	32,152	...	...	...
Meperidine hydrochloride-----	34	...	...	...
Methadone hydrochloride-----	3	...	...	...
All other-----	2,616	22,249	32,424	1.46
Antidepressants-----	169	...	...	...
Barbiturates, total-----	525	351	2,002	5.70
Pentobarbital, sodium-----	63	29	215	7.41
All other-----	462	322	1,787	5.55
Hypnotics and sedatives (except barbiturates)-----	356	112	908	8.11
Skeletal muscle relaxants-----	101	...	...	...
Tranquilizers-----	538	...	...	...
Other central depressants and stimulants ¹⁰ -----	5,354	5,427	27,618	5.09
Dermatological agents (except salicylic acid) and local anesthetics-----	2,021	1,423	1,920	1.35
Diagnostic agents, total-----	878	...	...	...
Roentgenographic contrast media-----	877	...	...	...
All other (excludes quantity and value of sales of roentgenographic contrast media)-----	1	1	174	174.00
Expectorants and mucolytic agents, total-----	2,488	2,672	6,624	2.48
Ethylenediamine dihydriodide-----	1,574	1,482	4,123	2.78
All other-----	914	1,190	2,501	2.10
Gastrointestinal agents (except methionine, hydroxy analog) and therapeutic nutrients, total-----	49,092	45,346	14,648	.32
Amino acids and salts-----	632	659	2,194	3.33
Choline chloride (all grades)-----	46,613	42,660	8,433	.20
All other-----	1,847	2,027	4,021	1.98
Hematological agents, total-----	44	...	...	...
Sodium heparin-----	4	3	1,566	522.00
All other-----	40	...	...	...
Hormones and synthetic substitutes, total-----	...	121	43,742	361.50
Antithyroid agents-----	6	...	...	...
Corticosteroids-----	58	46	32,267	701.46
Estrogens-----	2	...	...	...
Synthetic hypoglycemic agents-----	...	42	309	7.36
All other-----	...	33	11,166	338.36
Renal-acting and edema-reducing agents, total-----	1,901	240	5,856	24.40
Benzothiadiazine derivatives-----	...	129	4,873	37.78
Mercurial diuretics-----	...	(¹¹)	19	111.76
Theophylline derivatives-----	104	...	...	...
All other-----	1,797	111	964	8.68
Vitamins, total-----	34,013	27,774	121,827	4.39
Niacin and niacinamide (all grades)-----	5,647	4,865	7,125	1.46
Pantothenic acid and derivatives, total-----	3,418	2,630	3,720	1.41
Calcium pantothenate (racemic)-calcium chloride complex (all grades)-----	2,256	...	...	...
All others-----	1,162	2,630	3,720	1.41
Riboflavin (all grades)-----	737	939	11,684	12.44
Vitamin C, total-----	18,714	14,472	27,883	1.93
Ascorbic acid-----	15,410	10,981	20,562	1.87
All other-----	3,304	3,491	7,321	2.10

See footnotes at end of table.

MEDICINAL CHEMICALS

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TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Vitamins--Continued				
Vitamin D ¹² -----	16	11	2,318	\$210.73
Vitamin E, total ¹² -----	3,421	2,957	39,297	13.29
d-and dl-Alpha tocopherol-----	436	463	11,505	24.85
d-and dl-Alpha tocopheryl acetate (medicinal grade)-----	1,929	1,756	20,069	11.43
All other-----	1,056	738	7,723	10.46
Vitamin K-----	...	75	554	7.39
All other vitamins-----	2,060	1,825	29,246	16.03
Miscellaneous medicinal chemicals ¹³ -----	36,935	33,092	26,627	.80

¹ The data on production and sales are for bulk medicinal chemicals only; they *exclude* finished preparations and dosage-form products, which are manufactured from bulk chemicals. All quantities are given in terms of 100% active ingredient.

² Calculated from rounded figures.

³ The term "benzenoid," as used in this report, describes any cyclic medicinal chemical whose molecule contains either a six-membered carbocyclic ring with conjugated double bonds (e.g., the benzene ring or the quinone ring) or a six-membered heterocyclic ring with 1 or 2 hetero atoms and conjugated double bonds, except the pyrimidine ring (e.g., the pyridine ring or the pyrazine ring.)

⁴ Includes antibiotics of unknown structure.

⁵ With the exception of bacitracin, the penicillins (except semisynthetic), and a few other antibiotics which were reported in terms of U.S.P. units, all quantities for antibiotics were reported as grams of antibiotic base. (Thus production of 480,900 grams of tetracycline hydrochloride, for example, would have been reported as 444,430 grams of tetracycline base.) For inclusion in the main statistical table, all quantities were converted from grams of antibiotic base to pounds of antibiotic base (453.6 grams = 1 pound) or from U.S.P. units to pounds (22.7 million units of bacitracin, 458 million units of procaine penicillin G, 723 million units of potassium penicillin G, etc. = 1 pound). The following tabulation shows statistics for all individually publishable antibiotics in terms of kilograms of antibiotic base (Kg) or billions of U.S.P. units (BU):

Antibiotic	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Antifungal and antitubercular antibiotics, for medicinal use-----	---Kg---	517,790	349,128	18,973	\$54.34
Neomycin, for medicinal use-----	---Kg---	...	96,628	2,482	25.69
Penicillins (except semisynthetic), total-----	---BU---	4,945,339	2,481,297	34,372	13.85
Penicillin G, procaine, for all uses-----	---BU---	811,050	569,266	9,326	16.38
All other, for medicinal use-----	---BU---	4,134,289	1,912,031	25,046	13.10
Semisynthetic penicillins, for medicinal use, total-----	---Kg---	540,614	137,221	31,877	232.30
Ampicillin-----	---Kg---	423,355	119,350	28,358	237.60
Ampicillin, sodium-----	---Kg---	10,977	...	...	...
All other-----	---Kg---	106,282	17,871	3,519	196.91
Tetracyclines, for all uses-----	---Kg---	2,268,502	...	...	...

⁶ Production of all antibiotics for medicinal use amounted to 12,622,000 pounds.

⁷ Production of all antibiotics for animal feeds and other nonmedicinal uses amounted to 8,212,000 pounds.

⁸ Production of sulfonamides in 1973 was considerably larger than the 4,509,000 pounds shown in the cumulative total of the monthly reports because of 2 companies which did not report monthly data. In order to avoid disclosure, some of the previously unreported production is included in the figure shown for production of "all other anti-infective agents".

⁹ Includes production of some sulfonamides (see footnote 8) and sales of antifungal agents.

¹⁰ Includes production and sales of anticonvulsants, antitussives, general anesthetics, and stimulants; also includes sales of amphetamines, antidepressants, skeletal muscle relaxants, and tranquilizers.

SYNTHETIC ORGANIC CHEMICALS, 1973

Footnotes for table 1--Continued

¹¹ Sales of mercurial diuretics amounted to 170 pounds.

¹² All quantities for vitamins A, B₁₂, D, and E were reported in terms of grams or units, but were converted to pounds for inclusion in the main statistical table (1.317 billion units of vitamin A acetate, 0.824 billion units of vitamin A palmitate, 453.6 grams of vitamins B₁₂, 18.14 billion units of vitamin D, 617,000 units of d-alpha tocopheryl acetate, 454,000 units of dl-alpha tocopheryl acetate, etc. = 1 pound). The following tabulation shows statistics for vitamins D and E (vitamins A and B₁₂ were not separately publishable) in terms of millions of international units (MU) or billions of U.S.P. units (BU), as appropriate:

Vitamin	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				<i>1,000 dollars</i>	
Vitamin D-----	----BU----	288,795	195,789	2,318	\$11.84
Vitamin E, total-----	----MU----	1,731,630	1,508,404	39,297	26.05
d-and dl-Alpha tocopherol-----	----MU----	275,475	291,050	11,505	39.53
d-and dl-Alpha tocopheryl acetate (medicinal grade)-----	----MU----	961,521	866,891	20,069	23.15
All other-----	----MU----	494,634	350,463	7,723	22.04

¹³ Includes production and sales of antineoplastic agents, methionine, hydroxy analog, calcium salt, salicylic acid, smooth muscle relaxants, and unclassified medicinal chemicals; also includes production of "all other" hormones and sales of roentgenographic contrast media and "all other" hematological agents.

MEDICINAL CHEMICALS

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Medicinal chemicals for which separate statistics are given in table 1 are marked below with an asterisk (*); medicinal chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
*Antibiotics: ¹	
*Antifungal and antitubercular antibiotics:	
Antifungal antibiotics:	
Amphotericin B-----	OMS, TRD.
Candididin-----	PEN.
Nystatin-----	ACY, OMS, TRD.
Antitubercular antibiotics:	
Cycloserine-----	COM.
Dihydrostreptomycin-----	MRK, PFZ.
Streptomycin-----	MRK, PFZ.
Viomycin-----	PFZ.
*Neomycin-----	OMS, PEN, PFZ, UPJ.
*Penicillins (except semisynthetic):	
Penicillin G, benzathine-----	WYT.
Penicillin G, potassium-----	OMS, PFZ, WYT.
*Penicillin G, procaine:	
For medicinal use-----	OMS, PFZ, WYT.
For nonmedicinal uses-----	MRK, OMS.
Penicillin G, sodium-----	OMS.
Penicillin O, sodium-----	PFZ.
Phenoxymethylpenicillin (Penicillin V)-----	BRS, LIL, OMS.
Phenoxymethylpenicillin, benzathine-----	WYT.
Phenoxymethylpenicillin, hydrabamine-----	ABB.
Phenoxymethylpenicillin, potassium-----	ABB, LIL.
*Semisynthetic penicillins:	
*Ampicillin-----	BEE, BOC, BRS, TRD, WYT.
*Ampicillin, sodium-----	BEE, OMS, WYT.
Amoxicillin-----	BEE.
Carbenicillin, disodium-----	BEE, PFZ.
Cloxacillin, sodium-----	BEE, BRS.
Dicloxacillin, sodium-----	BEE, BRS, WYT.
Hetacillin-----	BRS.
Methicillin, sodium-----	BEE, BRS.
Nafcillin, sodium-----	WYT.
Oxacillin, sodium-----	BEE, BRS.
Phenethicillin, potassium-----	BRS.
*Tetracyclines:	
Chlortetracycline-----	ACY, RLS.
Chlortetracycline, for nonmedicinal uses-----	ACY.
Demeclocycline-----	ACY.
Doxycycline-----	PFZ.
Methacycline-----	PFZ.
Minocycline-----	ACY.
Oxytetracycline-----	PFZ.
Oxytetracycline, for nonmedicinal uses-----	PFZ.
Tetracycline-----	ACY, BRS, PFZ, RLS.
*Other antibiotics:	
*For medicinal use:	
Bacitracin-----	COM, PEN.
Cefazolin-----	LIL.
Cephalexin-----	LIL.
Cephaloridine-----	LIL.
Cephalothin-----	LIL.
Chloramphenicol-----	PD, RLS.
Clindamycin-----	x.
Erythromycin-----	ABB, LIL, UPJ.
Fumagillin-----	ABB.
Gentamycin-----	SCH.
Gramicidin-----	PEN.
Kanamycin-----	BRS.
Lincomycin-----	UPJ.
Novobiocin-----	MRK, UPJ.
Oleandomycin-----	PFZ.
Paromomycin-----	MRK.
Polymyxin B-----	PFZ.
Spectinomycin-----	ABB, UPJ.

See footnotes at end of table.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Antibiotics ¹ --Continued	
*Other antibiotics--Continued	
*For medicinal use--Continued	
Thiostrepton-----	OMS.
Troleandomycin-----	PFZ.
Tyrothricin-----	PEN.
Vancomycin-----	LIL.
*For nonmedicinal uses:	
Bacitracin-----	COM, GPR, PEN, PMP.
Cycloheximide-----	UPJ.
Hygromycin B-----	LIL.
Lincomycin-----	UPJ.
Monensin, sodium-----	LIL.
Neomycin-----	PFZ.
Novobiocin-----	UPJ.
Nystatin-----	OMS.
Spectinomycin-----	UPJ.
Streptomycin-----	MRK, PFZ.
Tylosin-----	LIL.
*Antihistamines:	
*Antinauseants:	
Cyclizine hydrochloride-----	BUR.
Dimenhydrinate-----	HEX, SRL.
Meclizine hydrochloride-----	PFZ.
Trimethobenzamide hydrochloride-----	HOF.
Bromodiphenhydramine hydrochloride-----	PD.
Brompheniramine maleate-----	SCH.
Carbinoxamine-----	SCH.
Chlorcyclizine hydrochloride-----	ABB, BUR.
Chlorothen citrate-----	ACY.
*Chlorpheniramine maleate-----	HEX, HFT, SCH, SK.
Chlorpheniramine tannate-----	MAL.
Cyproheptadine hydrochloride-----	MRK.
Dexbrompheniramine maleate-----	SCH.
Dexchlorpheniramine maleate-----	SCH.
Dimethindene maleate-----	CGY.
Diphenhydramine hydrochloride-----	GAN, PD.
Doxylamine succinate-----	BJL, BKC.
Methapyrilene-----	LIL.
Methapyrilene fumarate-----	ABB.
Methapyrilene hydrochloride-----	ABB.
Methdilazine-----	BJL.
Phenindamine tartrate-----	HOF.
Pheniramine maleate-----	HEX, HFT, SCH.
Phenyltoloxamine citrate-----	BRs.
Pyrilamine maleate-----	HEX, MRK.
Pyrilamine resin adsorbate-----	MRK.
Pyrilamine tannate-----	MAL.
Pyrrobutamine phosphate-----	LIL.
Thenylidamine hydrochloride-----	SDW.
Thonzylamine hydrochloride-----	NEP.
Tripelennamine citrate-----	CGY.
Tripelennamine hydrochloride-----	CGY.
Triprolidine hydrochloride-----	BUR.
*Anti-infective agents (except antibiotics):	
*Anthelmintics:	
Dichlorvos-----	SHC.
Diethylcarbamazine citrate-----	ACY.
Gentian violet-----	SDH.
Hexylresorcinol-----	MRK.
Phenothiazine-----	WAG.
*Piperazine-----	DOW, JCC, UCC.
Piperazine citrate-----	BUR.
*Piperazine dihydrochloride-----	DOW, FLM, JCC, WHL.
Piperazine hexahydrate-----	JCC.
*Piperazine hydrochloride-----	DOW, FLM, JCC, UCC.
Piperazine phosphate-----	BUR, JCC.
Piperazine sulfate-----	JCC, SAL.

See footnotes at end of table.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Anthelmintics--Continued	
Pyrvinium pamoate-----	x.
Thiabendazole-----	MRK.
*Antifungal agents:	
Benzoic acid-----	MON.
Calcium undecylenate-----	WTL.
Sodium caprylate-----	LEM.
Sodium undecylenate-----	NTL.
Undecylenic acid-----	NTL, WTL.
Zinc undecylenate-----	NTL, WTL.
*Antipropozoan agents:	
Aklomide-----	SAL.
Amodiaquin hydrochloride-----	PD.
Amprolium-----	MRK.
*Arsenic and bismuth compounds:	
Arsanilic acid-----	ABB, FLM, WHL.
Bismuth dipropylacetate-----	x.
Bismuth subsalicylate-----	MAL, NOR, PEN.
Carbarsone-----	LIL, WHL.
Drocarbil-----	LIL.
Glycobiarsol-----	SDW.
Nitarsone-----	SAL.
Roxarsone-----	SAL.
Roxarsone, sodium-----	SAL.
Chloroquine phosphate-----	SDW.
Clopidol-----	DOW.
Dimetridazole-----	RDA.
Diiodoxyhydroxyquin-----	RSA, SRL.
3,5-Dinitro-o-toluamide-----	DOW.
Ethopabate-----	MRK.
Furazolidone-----	NOR.
Hydroxychloroquine-----	SDW.
Hydroxychloroquine sulfate-----	SDW.
Iodochlorhydroxyquin-----	CGY.
Metronidazole-----	RDA.
Nifuroxime-----	NOR.
Nifursol-----	LEM.
Nihydrazone-----	NOR.
Nitromide-----	SAL.
Nitrophenide-----	ACY.
Primaquine phosphate-----	PD, SDW.
Pyrimethamine-----	BUR.
*Mercury compounds:	
Merbromin-----	HYN.
Nitromersol-----	ABB.
Phenylmercuric acetate-----	WRC.
Phenylmercuric benzoate-----	WRC.
Phenylmercuric borate-----	WRC.
Phenylmercuric chloride-----	WRC.
Phenylmercuric nitrate-----	WRC.
Thimerosal-----	LIL.
*Oxyquinoline sulfate-----	ASH, LEM, MRK.
*Sulfonamides:	
Acetyl sulfamethoxypyridazine-----	ACY.
Acetyl sulfisoxazole-----	HOF.
Dinsed-----	SAL.
Mafenide acetate-----	SDW.
Mafenide hydrochloride-----	SDW.
Phthalylsulfacetamide-----	CTN, LEM.
Phthalylsulfathiazole-----	MRK.
Salicylazosulfapyridine-----	SAL.
Sulfabenzamide-----	ACY, LEM.
Sulfabenzamide, sodium-----	ACY.
Sulfabromomethazine, sodium-----	MRK.
Sulfacetamide-----	CTN, LEM.
Sulfacetamide, sodium-----	CTN, LEM.
Sulfachloropyrazine, sodium-----	ACY.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Sulfonamides--Continued	
Sulfachloropyridazine, sodium-----	ACY.
Sulfadiazine-----	ACY.
Sulfadiazine, sodium-----	ACY.
Sulfadimethoxine-----	HOF.
Sulfaguanidine-----	ACY, SAL.
Sulfamerazine-----	ACY.
Sulfamerazine, sodium-----	ACY.
Sulfamethazine-----	ACY, CTN, LEM.
Sulfamethazine, sodium-----	ACY, LEM.
Sulfamethizole-----	ACY, CTN.
Sulfamethoxazole-----	HOF.
Sulfamethoxypyridazine-----	ACY.
Sulfanilamide-----	MRK, SAL.
Sulfanitran-----	SAL.
Sulfapyridine-----	ACY, CTN.
Sulfapyridine, sodium-----	CTN.
Sulfaquinoxaline-----	LEM, MRK.
Sulfaquinoxaline, sodium-----	LEM.
Sulfathiazole-----	MRK.
Sulfathiazole, sodium-----	MRK, SAL.
Sulfisoxazole-----	HOF.
Sulfisoxazole, sodium-----	HOF.
*Urinary antiseptics:	
Mandelic acid-----	MAL.
Methenamine hippurate-----	RIL.
Methenamine mandelate-----	ARN, MAL, NEP.
Methylene blue-----	ACY.
Nitrofurantoin-----	NOR, RLS.
Phenazopyridine hydrochloride-----	HOF, NEP.
*Other anti-infective agents:	
Aminacrine-----	SDW.
Aminacrine hydrochloride-----	SDW.
Antileprotic and antitubercular agents:	
Aminosalicyclic acid-----	MLS.
Dapsone-----	SDW.
Isoniazid-----	RIL.
Sodium aminosalicylate-----	MLS.
Sodium sulfoxone-----	ABB.
Antiviral agents:	
Amantadine-----	ALD.
Amantadine hydrochloride-----	DUP.
Betanaphthol-----	ACY.
Bromoform-----	DOW.
Camphor, monobromated-----	PEN.
Cetalkonium chloride-----	FIN, SDW.
Cetylpyridinium chloride-----	FIN, HEX.
Chlorobutanol-----	BPC, PD.
Furamazone-----	NOR.
8-Hydroxy-5-quinolinesulfonic acid-----	MRK.
Iodoform ² -----	MAL, PEN.
Nalidixic acid-----	SDH.
Nitrofurathiazide-----	SCH.
Nitrofurazone-----	NOR.
Oxolinic acid-----	NEP.
Oxyquinoline-----	ASH, MRK.
Oxyquinoline benzoate-----	ASH, LEM.
Oxyquinoline citrate-----	ASH, MRK.
Povidine - iodine complex-----	GAF.
Resorcinol ³ -----	KPT.
Thymol-----	GIV.
Thymol iodide-----	MAL.
Trimethoprim-----	BUR.

See footnotes at end of table.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Autonomic drugs:	
*Parasympatholytic (anticholinergic) tertiary amines:	
Adiphenine hydrochloride-----	CGY
Cycrimine hydrochloride-----	LIL.
Dicyclomine hydrochloride-----	BJL, BKC.
Orphenadrine citrate-----	RIK.
Orphenadrine hydrochloride-----	RIK.
Oxyphenacylimine hydrochloride-----	PFZ.
Piperidolate hydrochloride-----	LKL.
Thiphenamil hydrochloride-----	CTN.
Trihexphenidyl hydrochloride-----	ACY, SDW.
*Sympathomimetic (adrenergic) agents:	
Cinnamedrine hydrochloride-----	SDW.
Clorprenaline-----	LIL.
Cyclopentamine hybenzate-----	LIL.
Cyclopentamine hydrochloride-----	LIL.
Ephedrine-----	UPJ.
Epinephrine bitartrate (levo)-----	SDW.
Epinephrine hydrochloride (racemic)-----	BLP, ECL, x.
l-Isoproterenol bitartrate-----	SDW.
Isoproterenol hydrochloride-----	SDW.
Isoproterenol sulfate-----	ABB.
Levarterenol bitartrate-----	SDW.
Methoxyphenamine hydrochloride-----	x.
Naphazoline hydrochloride-----	CGY.
Nordefrin hydrochloride-----	SDW.
Nylidrin hydrochloride-----	BKL.
*Phenylephrine base, bitartrate, and tannate:	
Phenylephrine-----	CTN, SDW.
Phenylephrine bitartrate-----	GAN, SDW.
Phenylephrine tannate-----	x.
*Phenylephrine hydrochloride-----	CTN, GAN, HEX, SDW.
*Phenylpropanolamine hydrochloride-----	ARS, GAN, HEX, NEP, ORT, PD.
Propylhexedrine-----	HEX, SK.
Protokylol hydrochloride-----	LKL.
Pseudoephedrine hydrochloride-----	BUR, GAN.
Pseudoephedrine sulfate-----	GAN.
Tetrahydrozoline hydrochloride-----	PFZ.
*Other autonomic drugs:	
Ganglionic blocking agents:	
Hexamethonium chloride-----	RSA.
Tetraethylammonium chloride-----	RSA.
Parasympatholytic (anticholinergic) quaternary ammonium compounds:	
Diphepanil methylsulfate-----	SCH.
Hexocyclium methylsulfate-----	ABB.
Isopropamide iodide-----	SK.
Mepenzolate bromide-----	LKL.
Pipenzolate bromide-----	LKL.
Tridihexethyl iodide-----	ACY.
Parasympatholytic (anticholinergic) tropane derivatives:	
Anisotropine methylbromide-----	x.
Benztropine mesylate-----	x.
Homatropine-----	CTN.
Homatropine hydrobromide-----	CTN.
Homatropine methylbromide-----	CTN.
Parasympathomimetic (cholinergic) agents:	
Neostigmine bromide-----	HEX, HOF.
Neostigmine methylsulfate-----	HOF.
Pyridostigmine bromide-----	HOF.
Sympatholytic (antiadrenergic) agent: Ergonovine maleate.	LIL.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Cardiovascular agents:	
Antihypertensive agents:	
Hydralazine hydrochloride-----	CGY.
Methyldopa-----	MRK.
Pargyline hydrochloride-----	ABB.
Rauwolfia and veratrum alkaloids:	
Alkavervir-----	RIK.
Alseroxylon-----	RIK.
Deserpidine-----	PEN.
Rauwolfia serpentina-----	PEN.
Reserpine-----	PEN.
Bioflavonoids:	
Hesperidin-----	SKG.
Lemon bioflavonoid complex-----	SKG.
Naringin-----	SKG.
Quercetin-----	RSA.
Vasodilators:	
Amyl nitrite-----	MAL.
Dioxyline phosphate-----	LIL.
Ethyl nitrite-----	MAL.
Nicotinyl alcohol tartrate-----	HOF.
Trolnitrate phosphate-----	PFZ.
Other cardiovascular agents:	
Colestipol hydrochloride-----	x.
Procainamide hydrochloride-----	OMS, PD.
Quinidine polygalacturonate-----	LEM.
*Central depressants and stimulants:	
*Amphetamines:	
Dextroamphetamine-----	ARN.
Dextroamphetamine sulfate-----	ARN, SK.
Dextroamphetamine tannate-----	ARN.
Methamphetamine (levo)-----	HEX.
Methamphetamine hydrochloride (dextro)-----	ARN.
*Analgesics and antipyretics:	
*Acetanilide derivatives:	
Acetaminophen-----	ATP, MAL, NEP, NOR, PEN.
Phenacetin-----	MON.
*Aspirin-----	DOW, MLS, MON, NOR, SDG.
*Meperidine hydrochloride-----	PEN, SDW, WYT.
*Methadone hydrochloride-----	LIL, MAL, PEN.
*Other analgesics and antipyretics:	
p-Aminobenzoic acid and salts:	
Aminobenzoic acid-----	LEM, PD.
Potassium aminobenzoate-----	GAN.
Sodium aminobenzoate-----	GAN.
Anileridine hydrochloride-----	MRK.
Aurothioglucose-----	SCH.
Calcium succinate-----	LEM.
Codeine-----	MRK.
Dextropropoxyphene napsylate-----	LIL.
Ethoheptazine citrate-----	WYT.
Indomethacin-----	MRK.
Mefenamic acid-----	PD.
Oxycodone hydrochloride-----	EN.
Oxyphenbutazone-----	CGY.
Pentazocine-----	SDW.
Pentazocine hydrochloride-----	SDW.
Phenylbutazone-----	CGY.
Propoxyphene hydrochloride-----	LEM, LIL, RLS.
Salicylates:	
Aluminum aspirin-----	ABB, SCH.
Phenyl salicylate-----	DOW.
Potassium salicylate-----	HN.
Salicylamide-----	PEN.
Salicylsalicylic acid-----	PD.
Sodium salicylate-----	HN.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Antidepressants:	
Amitriptyline-----	MRK.
Desipramine hydrochloride-----	CGY, LKL.
Doxepin hydrochloride-----	PFZ, SK.
Imipramine hydrochloride-----	CGY.
Isocarboxazid-----	HOF, MRK.
Nialamide-----	PFZ.
Nortriptyline-----	LIL.
Phenelzine sulfate-----	NEP.
*Barbiturates:	
Allylbarbituric acid-----	GAN.
Allylbarbituric acid, sodium-----	GAN.
Amobarbital-----	GAN, LIL.
Amobarbital, sodium-----	GAN, LIL.
Barbital-----	GAN.
Barbital, sodium-----	GAN.
Butabarbital-----	ABB, GAN.
Butabarbital, sodium-----	ABB, GAN.
5-sec-Butyl-5-ethyl-2-thiobarbituric acid, sodium derivative.	ABB.
Hexobarbital-----	SDW.
Mephobarbital-----	GAN, SDW.
Metharbital-----	ABB.
Methohexital, sodium-----	LIL.
Pentobarbital-----	ABB, GAN, PD.
*Pentobarbital, sodium-----	ABB, GAN, PD.
Phenobarbital-----	GAN, MAL.
Phenobarbital, sodium-----	GAN, MAL.
Secobarbital-----	GAN.
Secobarbital, sodium-----	GAN, LIL.
Thiamylal, sodium-----	GAN, PD.
Thiopental, sodium-----	ABB, GAN.
*Hypnotics and sedatives (except barbiturates):	
Carbromal-----	PD.
Ethchlorvynol-----	ABB.
Ethinamate-----	LIL.
Flurazepam hydrochloride-----	HOF.
Glutethimide-----	BKL, CGY.
Methaqualone-----	x.
Methaqualone hydrochloride-----	x.
Methypylon-----	HOF.
*Skeletal muscle relaxants:	
Carisoprodol-----	BKL.
Chlorphenesin carbamate-----	UPJ.
Mephenesin-----	HEX.
Methocarbamol-----	x.
Phenaglycodol-----	LIL.
Succinylcholine chloride-----	ABB, BUR.
Tubocurarine-----	ABB, OMS.
*Tranquilizers:	
Bucazine hydrochloride-----	PFZ.
Chlorazepate dipotassium-----	ABB.
Chlordiazepoxide hydrochloride-----	HOF.
Chlormezanone-----	SDW.
Chlorprothixene-----	HOF.
Diazepam-----	HOF.
Ethoxybutamoxane-----	LIL.
Hydroxyzine hydrochloride-----	PFZ.
Hydroxyzine pamoate-----	PFZ.
Meproamate-----	ABB, BKL.
Oxazepam-----	WYT.
Phenothiazine derivatives:	
Chlorpromazine hydrochloride-----	SK.
Fluphenazine hydrochloride-----	OMS, SCH.
Perphenazine-----	SCH.
Prochlorperazine edisylate-----	SK.
Prochlorperazine maleate-----	SK.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Tranquilizers--Continued	
Phenothiazine derivatives--Continued	
Promazine hydrochloride-----	WYT.
Promethazine hydrochloride-----	WYT.
Triflupromazine hydrochloride-----	OMS.
Prazepam-----	NEP.
Thiothixene hydrochloride-----	PFZ.
*Other central depressants and stimulants:	
Anticonvulsants:	
Diphenylhydantoin-----	PD.
Diphenylhydantoin, sodium-----	PD.
Ethosuximide-----	PD.
Ethotoin-----	ABB.
Methsuximide-----	PD.
Phenacemide-----	ABB.
Phensuximide-----	PD.
Antitussives:	
Benzonatate-----	CGY.
Caramiphehen edisylate-----	SK.
Carbetapentane citrate-----	PFZ.
Chlophedianol hydrochloride-----	RIK.
Dextromethorphan hydrobromide-----	HOF.
Ethylmorphine hydrochloride-----	MAL, MRK.
Hydrocodone bitartrate-----	MAL, PEN.
Thebaine-----	MRK.
General anesthetic: Ketamine hydrochloride-----	PD.
Stimulants:	
Benzphetamine hydrochloride-----	UPJ.
Caffeine:	
Natural-----	CPR, GNF.
Synthetic-----	PFZ.
Caffeine sodium benzoate-----	GAN.
Chlorphentermine hydrochloride-----	NEP.
Diethylpropion-----	BKC.
Fenfluramine hydrochloride-----	x.
Nikethamide-----	CGY.
Phendimetrazine tartrate-----	BAX, GAN.
Phentermine-----	HEX.
*Dermatological agents (except salicylic acid) and local anesthetics:	
Dermatological agents:	
Allantoin-----	HFT, LEM.
Aluminum phenolsulfonate-----	SAL.
Ammonium phenolsulfonate-----	SAL.
Bismuth subgallate-----	MAL, PEN.
Glycol salicylate-----	RDA.
Podophyllum resin-----	PEN.
Sodium phenolsulfonate-----	SAL.
Zinc phenolsulfonate-----	MAL, SAL.
Local anesthetics:	
Butacaine hydrochloride-----	ABB.
Butacaine sulfate-----	ABB.
Butamben picrate-----	ABB.
Butyl aminobenzoate (Butamben)-----	ABB.
Dibucaine-----	CGY.
Dibucaine hydrochloride-----	CGY.
Ethylaminobenzoate (Benzocaine)-----	PD.
Isobutyl aminobenzoate-----	RSA.
Lidocaine-----	AST, RLS, SDW.
Oxethazaine-----	WYT.
Phenacaine hydrochloride-----	SDW.
Pramoxine hydrochloride-----	ABB.
Procaine hydrochloride-----	PFZ, UOP.
Proparacaine hydrochloride-----	OMS.
Propoxycaine-----	SDW.
Tetracaine-----	SDW.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Diagnostic agents:	
*Roentgenographic contrast media:	
Acetrizoate, sodium-----	MAL.
Diatrizoate, meglumine-----	OMS, SDW.
Diatrizoate, sodium-----	OMS, SDW.
Iodipamide, meglumine-----	OMS.
Iodohippurate, sodium-----	MAL.
Iopanoic acid-----	SDW.
Iophendylate-----	x.
Iothalamate, meglumine-----	MAL.
Iothalamate, sodium-----	MAL.
Methiodal, sodium-----	SDW.
Tyropanoate, sodium-----	SDW.
*Other diagnostic agents:	
Evans blue (blood volume determination)-----	NEP.
Indocyanine green (cardiac output test)-----	x.
Metyrapone (pituitary function test)-----	CGY.
Phenolphthalein monophosphate, dicyclohexylamine salt--	NEP.
Phenolsulfonphthalein (kidney function test)-----	EK.
Sodium fluorescein (corneal trauma indicator)-----	SDH.
*Expectorants and mucolytic agents:	
*Ethylenediamine dihydriodide-----	HFT, MAL, WAG, WHL.
Glyceryl guaiacolate-----	GAN, HEX, PEN.
Guaiacol-----	MON.
Iodinated glycerol-----	x.
Lobeline sulfate-----	ABB.
Potassium guaiacolsulfonate-----	HN.
Terpin hydrate-----	PEN.
Thonzonium bromide-----	NEP.
*Gastrointestinal agents (except methionine, hydroxy analog) and therapeutic nutrients:	
*Amino acids and salts:	
Amino acid mixtures-----	MDJ.
Arginine aspartic acid-----	LEM.
Glutamic acid and salts:	
Glutamic acid-----	LEM.
Glutamic acid hydrochloride-----	LEM.
Potassium glutamate-----	LEM.
Lysine (feed grade)-----	MRK.
Lysine hydrochloride-----	MRK.
*Choline chloride:	
Feed grade-----	COM, DA, DOW, HFT, TMH.
Medicinal grade-----	HFT.
Technical grade-----	HFT.
*Other gastrointestinal agents and therapeutic nutrients:	
Gastrointestinal agents:	
Cathartics:	
Magnesium citrate-----	MAL.
Phenolphthalein-----	MON.
Podophyllin-----	ABB.
Sodium tartrate-----	MAL.
Choleretics and hydrocholeretics:	
Bile acids, oxidized-----	SRL, WIL.
Dehydrocholic acid-----	WIL.
Florantyrone-----	SRL.
Iron bile salts-----	LIL, WIL.
Ox bile extract-----	ABB, WIL.
Sodium dehydrocholate-----	WIL.
Tocamphyl-----	x.
Lipotropic agents:	
Betaine base-----	HFT, MAL.
Betaine hydrochloride-----	HFT.
Choline bicarbonate-----	COM.
Choline bitartrate-----	ACY, HFT.
Choline citrate (Tricholine citrate)-----	ACY, HFT.
Choline dihydrogen citrate-----	ACY, HFT.
Sitosterols-----	LIL, UPJ.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
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Chemical	Manufacturers' identification codes (according to list in table 3)
*Gastrointestinal agents (except methionine, hydroxy analog) and therapeutic nutrients--Continued	
*Other gastrointestinal agents and therapeutic nutrients--Continued	
Gastrointestinal agents--Continued	
Other gastrointestinal agents:	
Dihydroxyaluminum aminoacetate-----	BKC.
Pectin-----	SKG.
Therapeutic nutrients:	
Calcium glucoheptonate-----	PFN.
Calcium gluconate-----	PFZ.
Copper gluconate-----	PFZ.
Ferrous gluconate-----	PFZ, SDW.
Magnesium gluconate-----	PFZ.
Manganese gluconate-----	PFZ.
Potassium gluconate-----	PFZ.
Zinc glucoheptonate-----	PFN.
*Hematological agents:	
Anticoagulants:	
Ammonium heparin-----	ABB, RIK, WIL.
Anisindione-----	SCH.
Bishydroxycoumarin-----	ABB.
Diphenadione-----	UPJ.
Lithium heparin-----	RIK.
Potassium heparin-----	WIL.
*Sodium heparin-----	ABB, RIK, WIL.
Warfarin-----	SDW.
Other hematological agents:	
Cellulose, oxidized-----	EKT.
Dextran-----	PHR.
Protamine-----	LIL.
*Hormones and synthetic substitutes:	
*Antithyroid agents:	
Methimazole-----	LIL.
Propylthiouracil-----	CTN.
2-Thiouracil-----	ACY.
*Corticosteroids:	
Betamethasone-----	SCH.
Betamethasone phosphate-----	SCH.
Betamethasone valerate-----	SCH.
Cortisone-----	SCH.
Cortisone acetate-----	MRK, UPJ.
Dexamethasone-----	MRK, SCH.
Dexamethasone phosphate-----	MRK.
Fludrocortisone acetate-----	UPJ.
Fluorometholone-----	UPJ.
9 α -Fluoroprednisolone acetate-----	UPJ.
Fluprednisolone-----	UPJ.
Hydrocortisone-----	MRK, PFZ, UPJ.
Hydrocortisone acetate-----	MRK, UPJ.
Medrysone-----	UPJ.
Methylprednisolone-----	UPJ.
Prednisolone-----	MRK, UPJ.
Prednisolone acetate-----	UPJ.
Prednisone-----	MRK, UPJ.
Triamcinolone-----	TRD, x.
Triamcinolone acetonide-----	OMS.
Triamcinolone diacetate-----	OMS.
*Estrogens:	
Chlorotrianisene-----	BJL, BKC.
Diethylstilbestrol-----	CTN, LIL.
Diethylstilbestrol diphosphate-----	x.

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Hormones and synthetic substitutes--Continued	
*Estrogens--Continued	
Estrogenic substances, conjugated-----	ORG
Natural estrogenic substance-----	ORG.
Piperazine estrone sulfate-----	ABB.
Potassium estrone sulfate-----	PEN.
*Synthetic hypoglycemic agents:	
Acetohexamide-----	LIL.
Chlorpropamide-----	PFZ.
Phenformin hydrochloride-----	BKL.
Tolazamide-----	UPJ.
Tolbutamide-----	UPJ.
*Other hormones and synthetic substitutes:	
Anabolic agents and androgens:	
Fluoxymesterone-----	UPJ.
Testosterone cypionate-----	UPJ.
Zeranol-----	COM.
Corticotropin (ACTH)-----	ARP, ORG.
Glucagon-----	LIL.
Insulin-----	ARP, LIL.
Oxytocin-----	LIL.
Progestogens:	
Medroxyprogesterone acetate-----	UPJ.
Melengestrol acetate-----	UPJ.
Norgestrel-----	WYT.
Progesterone-----	UPJ.
Thyroid-----	LIL.
*Renal-acting and edema-reducing agents:	
*Benzothiadiazine derivatives:	
Bendroflumethiazide-----	QMS.
Benzthiazide-----	PFZ.
Chlorothiazide-----	MRK.
Flumethiazide-----	QMS.
Hydrochlorothiazide-----	ABB, CGY, MRK.
Hydroflumethiazide-----	x.
Methyclothiazide-----	ABB.
Polythiazide-----	PFZ.
Trichlormethiazide-----	SCH.
*Mercurial diuretics:	
Meralluride-----	LKL.
Mersalyl acid-----	SDW.
Sodium mercaptomerin-----	WYT.
*Theophylline derivatives:	
Aminophylline-----	GAN, SRL.
8-Bromotheophylline, 2-amino-2-methyl-1-propanol salt.	GAN.
Oxtriphylline-----	NEP.
Theophylline sodium glycinate-----	CHT.
*Other renal-acting and edema-reducing agents:	
Acetazolamide-----	ACY.
Chlorthalidone-----	CGY.
Dichlorphenamide-----	MRK.
Ethacrynic acid-----	MRK.
Probenecid-----	CTN, MRK.
Triamterene-----	ACY, SK.
*Vitamins:	
*Nicacin and niacinamide (all grades):	
Niacin (nicotinic acid) (feed grade)-----	MRK, NEP, RIL.
Niacin (nicotinic acid) (medicinal grade)-----	MRK, RIL, SCR.
Niacinamide-----	MRK, NEP, PD, RIL, SCR.
*Pantothenic acid and derivatives:	
Calcium pantothenate (dextro)-----	HFT.
Calcium pantothenate (racemic) (feed grade)-----	CKL, DA, HFT, TMH.
Calcium pantothenate (racemic) (medicinal grade)-----	HFT.
*Calcium pantothenate (racemic) - calcium chloride complex:	
Feed grade-----	CKL, DLI, HFT.
Medicinal grade-----	DA.
Dexpanthenol-----	HFT, HOF.
Panthenol (racemic)-----	HOF.
Pantothenic acid-----	PD.
Sodium pantothenate-----	PD

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Vitamins--Continued	
*Riboflavin (all grades):	
Riboflavin (feed grade)-----	GPR, HOF, MRK.
Riboflavin (medicinal grade)-----	HOF, MRK.
*Vitamin C:	
*Ascorbic acid-----	HOF, MRK, PFZ.
Calcium ascorbate-----	PFZ.
Sodium ascorbate-----	HOF, MRK, PFZ.
*Vitamin D:	
Cholecalciferol (Vitamin D ₃)-----	DA, DLI, TMH, VTM.
7-Dehydrocholesterol (Provitamin D ₃)-----	JUL.
Ergocalciferol (Vitamin D ₂)-----	SCR, VTM.
*Vitamin E:	
*d- and dl-Alpha tocopherol:	
d-Alpha tocopherol-----	EKT, GNM.
dl-Alpha tocopherol-----	GNM, HOF.
dl-Alpha tocopheryl acetate (feed grade)-----	HOF.
*d- and dl-Alpha tocopheryl acetate (medicinal grade):	
d-Alpha tocopheryl acetate-----	EKT, GNM.
dl-Alpha tocopheryl acetate-----	DA, EKT, GNM, HOF.
dl-Alpha tocopheryl acetate (technical grade)-----	DA.
d-Alpha tocopheryl acid succinate-----	EKT, GNM.
*Vitamin K:	
Menadiol sodium diphosphate-----	HOF.
Menadione-----	ABB, HET, WHL.
Menadione sodium bisulfite-----	ABB, DA, DLI, HET, HFT, WHL.
Phytonadione-----	MRK.
*Other Vitamins:	
Biotin-----	HOF.
Cyanocobalamin (feed grade)-----	MRK.
Cyanocobalamin (medicinal grade)-----	MRK.
Cyanocobalamin (U.S.P. crystalline)-----	MRK.
Cyanocobalamin with intrinsic factor concentrate----	WIL.
Inositol-----	STA.
Niacinamide hydrochloride-----	NEP.
Pyridoxine-----	HOF.
Riboflavin-5-phosphate, sodium-----	HOF.
Thiamine hydrochloride-----	HOF, MRK.
Thiamine mononitrate-----	HOF, MRK.
Vitamin A:	
Beta-carotene (Provitamin A)-----	EKT, HOF.
Vitamin A acetate:	
Feed grade-----	HOF.
Medicinal grade-----	HOF.
Vitamin A acid-----	EK.
Vitamin A alcohol-----	HOF.
Vitamin A palmitate:	
Feed grade-----	EKT, HOF.
Medicinal grade-----	EKT, HOF.
*Miscellaneous medicinal chemicals:	
Antineoplastic agents:	
Azathioprine-----	BUR.
Calusterone-----	UPJ.
Mercaptopurine-----	BUR.
Thioguanine-----	BUR.
Vinblastine sulfate-----	LIL.
Vincristine sulfate-----	LIL.
Methionine, hydroxy analog, calcium salt-----	DUP, MON.
Salicylic acid ¹ -----	DOW, HN, MON.
Smooth muscle relaxants:	
Alverine-----	x.
Alverine citrate-----	x.
Papaverine hydrochloride-----	LIL, MAL, MRK, PEN.
Unclassified medicinal chemicals:	
Allopurinol-----	BUR.
Berberine hydrochloride-----	PEN.
Etidronate, disodium-----	LEM.
Levodopa-----	BID, HOF.
Penicillamine-----	MRK.

¹ All antibiotics listed are for medicinal use unless otherwise specified.² Producers of technical grade are listed in "Miscellaneous chemicals."³ Producers of technical grade are listed in "Cyclic intermediates."

TABLE 3.--MEDICINAL CHEMICALS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of medicinal chemicals to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ABB	Abbott Laboratories	LKL	Lakeside Laboratories Div. of Colgate-Palmolive Co.
ACY	American Cyanamid Co.	MAL	Mallinckrodt Chemical Works
ALD	Aldrich Chemical Co.	MDJ	Mead Johnson & Co.
ARN	Arenol Chemical Corp.	MLS	Miles Laboratories, Inc., Marshall Div. and Summer Div.
ARP	Armour Pharmaceutical Co.	MON	Monsanto Co.
ARS	Arsynco, Inc.	MRK	Merck & Co., Inc.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	NEP	Nepera Chemical Co., Inc.
AST	Astra Pharmaceutical Products, Inc.	NES	Nease Chemical Co., Inc.
ATP	Northern Fine Chemicals, Inc.	NOR	Norwich Pharmacal Co.
BAX	Baxter Laboratories, Inc.	NTL	NL Industries, Inc.
BEE	Beecham, Inc.	OMS	E.R. Squibb & Sons, Inc.
BID	Bio-Derivatives Corp.	ORG	Organics, Inc.
BJL	Burdick & Jackson Laboratories, Inc.	ORT	Roehr Chemicals, Inc.
BKC	J.T. Baker Chemical Co.	PD	Parke, Davis & Co.
BKL	Millmaster Onyx Corp., Millmaster Chemical Div., Berkeley Chemical Dept.	PEN	CPC International, Inc., S.B. Penick Co.
BLP	Belpoint Co., Inc.	PFN	Pfanstiehl Laboratories, Inc.
BOC	Biocraft Laboratories, Inc.	PFZ	Pfizer, Inc.
BPC	Stauffer Chemical Co., Specialty Chemical Div., Benzol Products	PHR	Pharmachem Corp.
BRS	Bristol-Myers Co., Bristol Laboratories Div.	PHP	Premier Malt Products, Inc.
BUR	Burroughs-Wellcome Co.	RDA	Rhodia, Inc.
CGY	Ciba-Geigy Corp. and Ciba Pharmaceutical Co.	RIK	Riker Laboratories, Inc., Sub. of 3M Co.
CHT	Chattem Drug & Chemical Co., Chattem Chemicals Div.	RIL	Reilly Tar & Chemical Corp.
CKL	Chemlek Laboratories, Inc.	RLS	Rachelle Laboratories, Inc.
COM	Commercial Solvents Corp.	RSA	R.S.A. Corp.
CPR	Certified Processing Corp.	SAL	Salsbury Laboratories
CTN	Chemetron Corp., Organic Chemical Div.	SCH	Schering Corp.
DA	Diamond Shamrock Corp.	SCR	R.P. Scherer Corp.
DLI	Dawe's Laboratories, Inc.		Sterling Drug Corp.:
DOW	Dow Chemical Co.	SDG	Glenbrook Laboratories Div.
DUP	E.I. duPont de Nemours & Co., Inc.	SDH	Hilton-Davis Chemical Co. Div.
ECL	Eastside Chemical Laboratory	SDW	Winthrop Laboratories Div.
EK	Eastman Kodak Co.:	SHC	Shell Oil Co., Shell Chemical Co. Div.
EKT	Tennessee Eastman Co. Div.	SK	Smith, Kline & French Laboratories
EN	Endo Laboratories, Inc.	SKG	Sunkist Growers, Inc.
FIN	Fine Organics, Inc.	SRL	G.D. Searle & Co.
FLM	Fleming Laboratories, Inc.	STA	A.E. Staley Manufacturing Co.
GAF	GAF Corp., Chemical Div.	TMH	Thompson-Hayward Chemical Co.
GAN	Gane's Chemical Works, Inc.	TRD	Manufacturing Enterprises, Inc., Squibb Manufacturing Inc., Trade Enterprises, Inc.
GIV	Givaudan Corp.	UCC	Union Carbide Corp.
GNF	General Foods Corp., Maxwell House Div.	UOP	Universal Oil Products Co., UOP Chemical Div.
GNM	General Mills Chemicals, Inc.	UPJ	Upjohn Co.
GPR	Grain Processing Corp.	VTM	Vitamins, Inc.
HET	Heterochemical Corp.	WAG	West Agro-Chemicals, Inc.
HEX	Hexagon Laboratories, Inc.	WHL	Whitmoyer Laboratories, Inc.
HFT	Hoffman-Taff, Inc.	WIL	Inolex Corp., Inolex Pharmaceutical Div.
HN	Tenneco Chemicals, Inc.	WRC	Ventron Corp., Wood Ridge Chemical
HOF	Hoffmann-LaRoche, Inc.	WTL	Pennwalt Corp., Lucidol Div.
HYN	Hynson, Westcott & Dunning, Inc.	WYT	Wyeth Laboratories Div. of American Home Products Corp.
JCC	Jefferson Chemical Co., Inc.		
JUL	Julian Associates, Inc.		
KPT	Koppers Co., Inc., Organic Material Div.		
LEM	Napp Chemicals, Inc.		
LIL	Eli Lilly & Co. and Puerto Rico		

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

Flavor and Perfume Materials

Flavor and perfume materials are organic chemicals used to impart flavors and odors to foods, beverages, cosmetics and soaps. These aromatic 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 1973 amounted to 117.0 million pounds (table 1).¹ Sales of these materials in 1973 amounted to 108.3 million pounds, valued at \$108.5 million, compared with 90.5 million pounds, valued at \$84.5 million in 1972. These totals do not include benzyl alcohol, which was previously included in flavor and perfume materials but will be shown in the miscellaneous cyclic section of the 1973 report. U.S. production of flavor and perfume materials in 1973 increased 17.0 percent over 1972, and the quantity of sales rose 19.6 percent.²

Production of cyclic flavor and perfume materials in 1973 amounted to 52.9 million pounds; sales amounted to 45.6 million pounds, valued at \$66.2 million. The individual chemical in the cyclic group produced in the greatest volume in 1973 was methyl salicylate (6.8 million pounds).

U.S. output of acyclic flavor and perfume materials in 1973 amounted to 64.1 million pounds; sales of these materials amounted to 62.8 million pounds, valued at \$42.3 million. Monosodium glutamate was by far the most important of the acyclic chemicals, and the individual flavor and perfume chemical produced in the greatest volume.

The report for 1973 has eliminated the previously separate section for "Essential oils, chemically modified". Chemicals previously listed under this heading have been distributed throughout the cyclic and acyclic groups.

¹ See also table 2 which lists these materials and identifies the manufacturers by codes. These codes are given in table 3.

² Data for benzyl alcohol were excluded from both years.

FLAVOR AND PERFUME MATERIALS

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TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all synthetic organic flavor and perfume materials for which any reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all flavor and perfume materials for which data on production or sales were reported and identifies the manufacturers of each]

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	117,000	108,327	108,489	\$1.00
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total-----	52,928	45,553	66,150	1.45
<i>Benzenoid and Naphthalenoid</i>				
Total-----	42,685	36,397	46,920	1.29
4-Allyl-2-methoxyphenol (Eugenol)-----	429	389	1,191	3.07
Anisyl acetate-----	...	9	39	4.27
Benzophenone ² -----	741	426	591	1.39
Benzyl acetate-----	2,070	2,850	1,094	.38
Benzyl benzoate-----	...	1,553	731	.47
Benzyl butyrate-----	...	12	19	1.54
Benzyl cinnamate-----	...	11	43	4.12
Benzyl phenylacetate-----	4	3	9	2.87
Benzyl propionate-----	50	46	56	1.23
Benzyl salicylate-----	566	767	669	.87
Cinnamaldehyde ² -----	1,754	1,251	830	.66
Cinnamyl acetate-----	10	7	19	2.70
Cinnamyl alcohol-----	327	327	508	1.56
Cinnamyl anthranilate-----	...	1	16	13.36
Cinnamyl propionate-----	2	2	17	7.98
Ethyl phenylglycidate-----	16	...	...	...
Hydrocoumarin-----	36	...	...	...
Isobutyl phenylacetate-----	29	27	32	1.18
Isobutyl salicylate-----	...	18	16	.89
Isopentyl salicylate-----	761	841	511	.61
2-Methoxy-4-propenylphenol (Isoeugenol)-----	38	...	...	...
p-Methylanisole-----	61	17	18	1.02
Methyl anthranilate ² -----	...	309	445	1.44
α-Methylbenzyl acetate (Styralyl acetate)-----	121	106	95	.89
Methyl cinnamate-----	40	51	91	1.77
Methyl phenylacetate-----	28	23	46	1.98
Methyl salicylate-----	6,792	6,624	2,972	.45
α-Pentylcinnamaldehyde-----	659	618	783	1.27
Phenethyl acetate-----	97	79	108	1.37
Phenethyl isobutyrate-----	...	10	25	2.35
Phenethyl isovalerate-----	12	8	22	2.83
2-Phenethyl phenylacetate-----	31	22	52	2.37
3-Phenyl-1-propanol (Hydrocinnamic alcohol)-----	...	36	68	1.91
p-Propenylanisole (Anethole)-----	2,282	2,292	1,870	.82
p-Tolyl acetate-----	...	4	17	4.05
All other benzenoid and naphthalenoid materials-----	25,729	17,658	33,917	1.92

See footnotes at end of table.

TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued				
<i>Terpenoid, Heterocyclic, and Alicyclic</i>				
Total-----	10,243	9,156	19,230	\$2.10
Cedrol-----	147	...	...	...
Cedryl acetate-----	321	232	787	3.40
Guaiacwood acetate-----	40	40	136	3.36
α -Ionone-----	83	69	332	4.79
Ionone (α - and β -)-----	90	76	316	4.18
Menthol, synthetic, U.S.P.-----	318	344	1,271	3.70
Methylionones-----	672	546	2,044	3.75
Terpineols-----	3,561	3,244	1,324	.41
α -Terpinyl acetate-----	1,043	1,014	706	.70
Vetivenyl acetate-----	31	24	491	20.67
All other terpenoid, heterocyclic, and alicyclic materials-----	3,937	3,567	11,823	3.31
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total-----	64,072	62,774	42,339	.67
Allyl hexanoate-----	29	20	50	2.46
Butyl butyryl lactate-----	53	48	158	3.26
Citronellyl acetate-----	46	36	64	1.81
Citronellyl formate-----	27	25	113	4.58
Citronellyl isobutyrate-----	...	8	28	3.44
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)-----	48	41	181	4.45
3,7-Dimethyl-trans-2,6-octadienal (Citral a; Geranial)-----	87	56	210	3.78
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)-----	1,894	1,498	2,072	1.38
3,7-Dimethyl-6-octen-1-al (Citronellal)-----	640	68	256	3.75
3,7-Dimethyl-6-octen-1-ol (Citronellol)-----	1,183	1,147	1,799	1.57
Ethyl butyrate-----	469	471	307	.65
Ethyl heptanoate-----	...	17	26	1.51
Ethyl hexanoate (Ethyl caproate)-----	11	7	15	2.03
Ethyl nonanoate-----	7	5	16	2.98
Ethyl oxyhydrate-----	49	49	53	1.08
Geranyl acetate-----	114	106	209	1.98
Glutamic acid, monosodium salt (Monosodium glutamate)-----	46,526	51,882	23,656	.46
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)-----	685	616	3,966	6.44
Isopentyl butyrate-----	125	96	80	.83
Isopentyl formate-----	9	7	10	1.57
Isopentyl isovalerate-----	26	...	...	...
Rhodinol-----	13	...	...	...
All other acyclic materials-----	12,031	6,571	9,070	1.38

¹Calculated from the unrounded figures.²Includes significant quantities having other end uses.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Flavor and perfume materials for which separate statistics are given in table 1 are marked below with an asterisk (*); those not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
<i>Benzenoid and Naphthalenoid</i>	
2'-Acetonaphthone-----	GIV.
Acetophenone-----	GIV.
1-Acetoxy-2-sec-butyl-1-ethenylcyclohexane-----	GIV.
5-Acetyl-1,1,2,3,3,6-hexamethylindan-----	PFW.
p-Allylanisole-----	GIV, GLD.
Allyl cyclohexyl propionate-----	GIV.
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)-----	GIV, UOP.
*4-Allyl-2-methoxyphenol (Eugenol)-----	CI, FB, GIV, IFF, PEN, RT, UNG, UOP.
4-Allyl-2-methoxyphenol acetate (Eugenol acetate)-----	CI, GIV.
4-Allyl-1,2-(methylenedioxy)benzene (Safrole)-----	FB, GIV.
Allyl phenoxyacetate-----	GIV.
p-tert-Amylcyclohexanone (Orivone)-----	CI, IFF.
p-Anisaldehyde-----	GIV, OPC, UOP.
Anisole (Methyl phenyl ether)-----	GIV.
*Anisyl acetate-----	ELN, GIV, UOP.
Benzal glyceryl acetal-----	GIV.
*Benzophenone-----	GAF, NEO, PD, UOP.
*Benzyl acetate-----	GIV, LUE, MON, OPC, UOP.
*Benzyl benzoate-----	LUE, MON, OPC, UOP, VEL.
*Benzyl butyrate-----	ELN, FB, GIV.
*Benzyl cinnamate-----	FB, GIV, UOP.
Benzyl ether-----	VEL.
Benzyl formate-----	GIV, UOP.
Benzyl isobutyrate-----	GIV.
Benzyl isopentyl ether-----	GIV.
Benzyl isovalerate-----	FB.
1-(Benzyloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether).	GIV, UOP.
*Benzyl phenylacetate-----	ELN, GIV, RT.
*Benzyl propionate-----	ELN, FB, GIV, OPC.
*Benzyl salicylate-----	GIV, LUE, MON, UOP.
α-Bromostyrene-----	UOP.
2-sec-Butylcyclohexanone-----	GIV.
p-tert-Butylcyclohexanone-----	CI.
p-tert-Butylcyclohexyl acetate-----	CI, IFF.
4-tert-Butyl-2',6'-dimethyl-3',5'-dinitroacetophenone (Musk ketone).	GIV.
6-tert-Butyl-3-methyl-2,4-dinitroanisole (Musk ambrette)-	GIV.
p-tert-Butyl-α-methylhydrocinnamaldehyde-----	GIV, UOP.
Butyl phenylacetate-----	GIV.
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene (Musk Tibetene).	GIV, UOP.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)-----	GIV.
Carvacrol-----	GIV.
*Cinnamaldehyde-----	CI, FB, UOP.
*Cinnamyl acetate-----	ELN, FB, GIV.
*Cinnamyl alcohol-----	FB, GIV, NEO, UOP.
*Cinnamyl anthranilate-----	FEL, GIV, RT.
Cinnamyl butyrate-----	FB.
Cinnamyl cinnamate-----	FB.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
*Cinnamyl propionate-----	ELN, FB, GIV.
Cinnamyl tiglate-----	FB.
Coumarin-----	DOW, RDA.
Cuminy alcohol-----	GIV.
Cyclohexylcyclohexanone-----	GIV.
trans-Decahydro- β -naphthol-----	IFF.
2,4-Dibromo-6-nitro-meta-cresyl methyl ether-----	GIV.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrole)----	GIV, UOP.
3,7-Dimethyl-1,6-octadien-3-yl, anthranilate (Linalyl anthranilate).	FMT.
trans-3,7-Dimethyl-2,6-octadien-1-ol, benzoate (Geranyl benzoate).	GIV.
3,7-Dimethyl-1,6-octadien-3-ol, benzoate (Linalyl benzoate).	HOF.
3,7-Dimethyl-1,6-octadien-3-ol, cinnamate (Linalyl cinnamate).	HOF.
3,7-Dimethyl-2,6-octadienylphenylacetate (Geranyl phenylacetate).	GIV.
α,α -Dimethylphenethyl acetate-----	IFF.
α,α -Dimethylphenethyl alcohol-----	GIV, IFF.
α,α -Dimethylphenethyl butyrate-----	IFF.
α,α -Dimethylphenethyl alcohol, tech-----	IFF.
Diphenylmethane (Benzylbenzene)-----	UOP.
1,3-Diphenyl-2-propanone (Dibenzyl ketone)-----	GIV.
p-Ethoxybenzaldehyde-----	GIV.
2-Ethoxynaphthalene-----	GIV.
Ethyl anthranilate-----	FB.
Ethyl benzoate-----	ELN.
Ethyl butylcyclohexanol-----	HOF.
Ethyl cinnamate-----	ELN, GIV.
Ethyl α,β -epoxy- β -methylhydrocinnamate-----	ELN.
2-Ethylhexyl salicylate-----	FEL.
Ethyl phenylacetate-----	GIV.
*Ethyl phenylglycidate-----	GIV, PFW, UOP.
Ethyl salicylate-----	FB.
3'-Ethyl-5',6',7',8'-tetrahydro-5',5',8',8'-tetramethyl-2'-acetoneaphthone.	GIV, UOP.
1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl cyclopentagamma-2-benzopyran (Galaxolide).	IFF.
Hexyl benzoate-----	GIV.
α -Hexylcinnamaldehyde-----	CI, IFF.
Hydratropaldehyde-----	GIV, IFF.
Hydratropaldehyde, dimethyl acetal-----	GIV, IFF.
Hydrocinnamic acid-----	ARS.
*Hydrocoumarin-----	ARS, GIV, UOP.
Hydroxycitronellalmethyl anthranilate-----	GIV.
4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin)-----	MON, LUE, SLV.
3-Hydroxy-4-methoxybenzaldehyde (Isovanillin)-----	SLV.
4-Hydroxy-3-methoxybenzaldehyde (Vanillin)-----	LUE, MON, SLV.
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone-----	GIV.
Indole-----	GIV.
Isoamyl phenylacetate-----	GIV.
Isobutyl benzoate-----	ELN.
p-Isobutyl- α -methylhydrocinnamaldehyde-----	RDA.
*Isobutyl phenylacetate-----	ELN, FB, GIV.
Isobutylquinoline-----	IFF.
*Isobutyl salicylate-----	FB, GIV, UOP.
Isohexenyl tetrahydrobenzaldehyde-2,3,7,8 (Myrac aldehyde).	IFF.
Isononyl acetate-----	CI.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
Isopentyl benzoate-----	GIV.
*Isopentyl salicylate-----	FB, GIV, MON, OPC, UOP.
p-Isopropylbenzaldehyde (Cumaldehyde)-----	GIV.
p-Isopropylcyclohexanol-----	CI, GIV.
p-Isopropyl- α -methylhydrocinnamaldehyde (Cyclamenaldehyde).-----	GIV, RDA.
p-Isoproxyl methylhydrocinnamyl alcohol-----	GIV.
p-Mentha-1,8-diene (Limonene)-----	SKG.
Menthyl anthranilate-----	PFW.
4'-Methoxyacetophenone (Acetanisol)-----	GIV, UOP.
p-Methoxybenzyl alcohol (Anisyl alcohol)-----	GIV, UOP.
o-Methoxycinnamaldehyde-----	CI.
2-Methoxynaphthalene-----	GIV.
1-(p-Methoxyphenyl)-1-penten-3-one-----	GIV.
*2-Methoxy-4-propenylphenol (Isoeugenol)-----	FB, GIV, UOP.
2-Methoxy-4-propenylphenol, acetate-----	UOP.
4'-Methylacetophenone-----	GIV, UOP.
*p-Methylanisole-----	GIV, SW, UOP.
*Methyl anthranilate-----	FB, OPC, PFW, SW, UNG.
Methyl anthranilidene-p-isopropyl methylhydro- cinnamaldehyde (Orangeol N).-----	RDA.
Methyl benzoate-----	HN.
* α -Methylbenzyl acetate (Styralyl acetate)-----	CI, ELN, GIV.
α -Methylcinnamaldehyde-----	FB, GIV.
*Methyl cinnamate-----	CI, FB, UOP.
6-Methylcoumarin-----	GIV.
Methylcyclohexyl propionate-----	GIV.
1,2-(Methylenedioxy)-4-propenylbenzene (Isosafrole)-----	GIV.
p-Methylhydratropaldehyde-----	GIV.
1-Methyl-4-isohexyl-hexahydrobenzaldehyde (Vernaldehyde).-----	GIV.
Methyl-o-methoxybenzoate-----	GIV.
Methyl-n-methylanthranilate-----	GIV.
2-Methyl-6-(4-methyl-3-cyclohexamylidene)-2-heptene, and C ₁₅ hydrocarbon isomers.-----	HOF.
*Methyl phenylacetate-----	ELN, GIV, OPC.
*Methyl salicylate-----	DOW, HN, LUE, MON.
1H-Naphtho- [2,3-c]pyran-3,4,6,7,8,9-hexahydro-4,6,6,9,9- pentamethyl (Musk 89).-----	IFF.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan-----	GIV.
* α -Pentylcinnamaldehyde-----	CI, FB, GIV, IFF, UOP.
*Phenethyl acetate-----	GIV, IFF, NEO.
Phenethyl alcohol-----	IFF, NEO.
Phenethyl formate-----	ELN, IFF.
*Phenethyl isobutyrate-----	ELN, GIV, IFF.
*Phenethyl isovalerate-----	ELN, FB, GIV, OPC.
*2-Phenethyl phenylacetate-----	CI, ELN, GIV, IFF.
Phenethyl propionate-----	ELN, GIV, IFF.
Phenethyl salicylate-----	GIV.
2-Phenoxyethyl isobutyrate-----	ELN, GIV, IFF.
Phenylacetaldehyde-----	GIV.
Phenylacetaldehyde, dimethyl acetal-----	GIV, UOP.
o-Phenylanisole (2-Methoxybiphenyl)-----	GIV.
4-Phenyl-3-buten-2-one (Benzylideneacetone)-----	FB, UOP.
Phenylethyl acetal-----	GIV.
Phenylethyl tiglate-----	FB.
*3-Phenyl-1-propanol (Hydrocinnamic alcohol)-----	ELN, FB, GIV, UOP.
3-Phenylpropyl acetate-----	GIV.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
3-Phenylpropyl cinnamate-----	FB.
Piperonal (Heliotropin)-----	AMB, GIV.
Piperonal bisulfite (Heliotropin bisulfite)-----	AMB.
*p-Propenylanisole (Anethole)-----	ARZ, GLD, HN, HPC, NCI.
p-Propylanisole (Dihydroanethole)-----	FB, GIV.
N-Propylphenylethyl alcohol-----	GIV.
Sassafrass oil, hydrogenated-----	GIV.
Sweeteners, synthetic:	
Cyclohexanesulfamic acid-----	ABB.
Cyclohexanesulfamic acid, calcium salt-----	ABB.
Cyclohexanesulfamic acid, sodium salt-----	ABB.
Saccharin (1,2-Benzisothiazolin-3-one, 1,1-dioxide)----	SW.
Saccharin, ammonium salt-----	SW.
Saccharin, calcium salt-----	SW.
Saccharin, sodium salt-----	SW.
p-Tolualdehyde-----	GIV, HN, TCC.
p-Tolylacetaldehyde-----	GIV.
*p-Tolyl acetate-----	ELN, FB, GIV.
p-Tolyl phenylacetate-----	GIV.
α-(Trichloromethyl) benzyl acetate (Rosetone)-----	NEO.
<i>Terpenoid, Heterocyclic, and Alicyclic</i>	
Acetyl cedrene (Vertofix)-----	IFF.
Amyris acetate-----	GIV.
Bornyl acetate-----	GIV.
Cadinene-----	FB.
β-Caryophyllene-----	CI, GIV.
Caryophyllene acetate-----	CI.
Caryophyllene alcohol-----	FB.
L-Carvyl acetate-----	FB.
Caryophyllene oxide-----	GIV.
α-Cedrene epoxide (Andrane)-----	IFF.
Cedrene-8-ol-----	IFF.
Cedrenol-----	GIV.
*Cedrol-----	ELN, GIV, IFF, NEO.
*Cedryl acetate-----	ELN, GIV, IFF, NEO, UNG, UOP.
Cedryl formate-----	IFF.
Cedryl methyl ether (Cedramber)-----	IFF.
Chemically modified butter oil-----	RT.
Clove leaf oil terpenes-----	CI.
Cyclopentanone-----	ARA.
Dihydronordicyclobutyrate (Cyclabute)-----	IFF.
Dihydronordicyclopentadienyl acetate-----	IFF.
Dihydronordicyclopentadienyl propionate-----	GIV, IFF.
Dihydroterpinyl acetate-----	GIV.
Ethyl furoate-----	RT.
Furyl acrolein (furfural acrolein)-----	RT.
4-(2-Furyl)-3-buten-2-one (furfural acetone)-----	RT.
*Guaiacwood acetate-----	ELN, FB, GIV, NEO.
Guaiene-----	FB.
2-Heptylcyclopentanone-----	FB.
2-Hexyl-2-cyclopenten-1-one (Isojasnone)-----	FB.
3-Hydroxy-2-ethyl-4-pyrone (Ethyl maltol)-----	PFZ.
16-Hydroxyhexadecanoic acid, o-lactone (Hexadecanolide).	IFF.
4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-10- carboxaldehyde (Lyr1).	IFF.

FLAVOR AND PERFUME MATERIALS

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TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>	
3-Hydroxy-2-methyl-4-pyrone (Maltol)-----	PFZ.
4-Hydroxynonanoic acid, γ -lactone (γ -Nonalactone)-----	GIV, UOP.
4-Hydroxyoctanoic acid, γ -lactone (γ -Octalactone)-----	GIV, RT, UOP.
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)-----	ELN, FB.
Ionones:	
* α -Ionone-----	GIV, HOF, IFF, MYW.
β -Ionone-----	HOF, MYW.
*Ionone (α - and β -)-----	GIV, HOF, MYW, NEO.
Isobornyl acetate-----	FB, OPC, RDA.
Isobornyl propionate-----	GIV, OPC.
Isomenthone-----	GIV.
Jasmal-----	IFF.
Lavandin, acetylated-----	FEL, GIV, UNG.
p-Mentha-6,8-dien-2-ol (L-Carveol)-----	FB.
p-Mentha-6,8-dien-2-one (Carvone; Carvol)-----	FB, NEO.
p-Mentha-1,3-diene (α -Terpinene)-----	GLD.
p-Mentha-1,4-diene (γ -Terpinene)-----	GLD.
p-Menthan-3-one (Menthone)-----	GIV, NEO.
p-Menth-1-en-3-one-----	GIV.
p-Menth-4(8)-en-3-one (d-Pulegone)-----	GIV.
p-Menth-8-en-3-ol (Isopulegol)-----	GIV.
1,1-p-Menthen-6-yl-1-propanone-----	GIV.
Menthol, synthetic:	
Tech-----	GIV.
*U.S.P.-----	GIV, GLD, HN, NEO.
Menthyl acetate-----	GIV.
*Methylinones:	
6-Methyl- α -ionone-----	GIV, MYW.
Methylinone (α - and β -)-----	GIV, IFF, MYW, NEO.
Nopyl acetate-----	CI, FEL, NEO, RDA.
3-Pentyl-tetrahydro-4-pyranol (Jessemal)-----	IFF.
Rose oxide-----	FB.
Santalol-----	GIV, IFF.
Santalyl acetate-----	GIV.
Terpin hydrate, tech-----	HPC.
*Terpineols:	
α -Terpineol-----	GLD, HPC, NCI.
Terpineol (α - and β -)-----	GIV, NEO.
* α -Terpinyl acetate-----	GIV, NCI, NEO, PFW, UNG.
Terpinyl acetate (mixed α - and β -)-----	RDA.
α -Terpinyl propionate-----	ELN, GIV.
Tetrahydropseudo ionone-----	CI.
Tricyclononyl acetate-----	CI.
3,3,5-Trimethyl cyclohexanol (Homomenthol)-----	ARS.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl- α -ionone).-----	IFF.
4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-3-methyl-3-buten-2-one.-----	HOF.
Vetivenol-----	GIV, UOP.
*Vetivenyl acetate-----	ELN, FB, GIV, IFF, NEO, UOP.
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
Acetylbutyryl (2,3-Hexanedione)-----	FB.
Acetylisovaleryl-----	FB.
Acetylpropionyl-----	FB.
Allyl disulfide-----	RT.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Allyl heptanoate-----	FB, RT.
*Allyl hexanoate-----	ELN, FB, GIV, PFW.
Allyl isothiocyanate (Synthetic mustard oil)-----	MRT.
Allyl isovalerate-----	RT.
Allyl octanoate (Allyl caprylate)-----	RT.
Allyl sulfide-----	RT.
Amyl propionate-----	GIV.
Butyl butyrate-----	FB.
*Butyl butyryl lactate-----	ARS, BJI, RT.
Butyl undecylenate-----	CI, GIV.
Capric acid triglyceride-----	CI.
1-Chloro-3-methyl-butene-2-----	RDA.
Citral dimethyl acetal-----	GIV, IFF.
*Citronellyl acetate-----	ELN, GIV, IFF.
Citronellyl butyrate-----	GIV.
*Citronellyl formate-----	ELN, GIV, IFF, NEO.
*Citronellyl isobutyrate-----	ELN, GIV, IFF.
Citronellyl methyl acetal-----	IFF.
Citronellyl oxyacetaldehyde-----	IFF.
Citronellyl propionate-----	IFF.
Decanal (Capraldehyde)-----	CI, GIV, IFF.
Decen-9-ol-1 (Rosalva)-----	IFF.
Decyl acetate-----	GIV.
Diethyl acetal-----	FB.
Diethyl sebacate-----	ELN, FEL, UOP.
Diethyl succinate-----	ELN, UCC.
Dihydromyrcenol-----	IFF.
Dihydromyrcenyl formate (Dimyrcetol)-----	IFF.
Dihydro safrol-----	CI.
2,6-Dimethyl-5-hepten-1-al-----	GIV.
3,6-Dimethyl-5-hepten-2-ol and 7-Methyl-6-octen-3-ol (Brazinol).-----	RDA.
3,7-Dimethyl-1,6-nonadien-3-ol (Ethyl linolool)-----	HOF.
3,7-Dimethyl-1,6-nonadien-3-ol, acetate (Ethyl linalyl acetate).-----	HOF.
3,7-Dimethyl-2,6-nonadienenitrile-----	GIV.
3,7-Dimethyl-2,6-octadienal (Citral)-----	HOF, RDA.
*3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)-----	ELN, FB, GIV, GLD, IFF.
*3,7-Dimethyl-trans-2,6-octadienal (Citral a; Geranial)---	FB, FEL, GIV, NCI, UOP.
3,7-Dimethyl-trans-2,6-octadienal dimethyl acetate-----	CI.
*3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)-----	CI, ELN, FB, FEL, GIV, GLD, IFF, NCI, NEO, UOP.
3,7-Dimethyl-trans-2,6-octadien-1-ol Hp (Geraniol HP)---	GIV.
3,7-Dimethyl-1,6-octadien-3-ol (Linalool; Linalyl alcohol).-----	ELN, FB, FEL, GIV, GLD, HOF.
3,7-Dimethyl-1,6-octadien-3-ol acetate (Linalyl acetate).-----	ELN, FB, GIV, GLD, HOF, NEO.
3,7-Dimethyl-1,6-octadien-3-ol isobutyrate (Linalyl isobutyrate).-----	HOF.
3,7-Dimethyl-1,6-octadien-3-ol propionate (Linalyl propionate).-----	HOF.
3,7-Dimethyloctan-3-ol-----	HOF.
3,7-Dimethyl-1-octanol (Dihydrocitronellol)-----	GIV.
*3,7-Dimethyl-6-octen-1-al (Citronellal)-----	CI, ELN, FB, GIV, IFF, NCI, NEO, RDA, UOP.
*3,7-Dimethyl-6-octen-1-ol (Citronellol)-----	CI, ELN, FB, GIV, GLD, IFF, NCI, NEO.
2,6-Dimethyl-2-octene-7-yne-6-ol-----	RDA.
3,7-Dimethyl-7-octenol and 6-octenol isomer-----	GIV.
*Ethyl butyrate-----	FB, NW, UOP.
Ethyl caprate-----	FB.
Ethyl formate-----	FB.
*Ethyl heptanoate-----	ELN, FB, FEL, RT, UOP.

FLAVOR AND PERFUME MATERIALS

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TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
6-Ethyl-5 hepten-2-one-----	HOF.
*Ethyl hexanoate (Ethyl caproate)-----	ELN, FB, NW, PFW, RT.
Ethyl isohexanoate-----	PFW.
Ethyl isovalerate-----	FB, PFW.
Ethyl laurate-----	ELN.
Ethyl myristate-----	RT.
*Ethyl nonanoate-----	ELN, FB, FEL, GIV.
Ethyl octanoate-----	FB, RT.
*Ethyl oxyhydrate-----	FEL, FLO, LUE, PFW, RT, VND.
Ethyl propionate-----	FB, NW.
Ethyl valerate-----	PFW.
Geranic acid-----	FB.
Geranonitrile-----	IFF.
*Geranyl acetate-----	CI, FEL, GIV, IFF.
Geranyl butyrate-----	GIV.
Geranyl formate-----	CI, GIV.
Geranyl isobutyrate-----	IFF.
Geranyl isovalerate-----	FB.
Geranyl neryl formate-----	IFF.
Geranyl propionate (Geranyl dimethylacrylate)-----	FB, FMT.
Geranyl tiglate-----	FB.
*Glutamic acid, monosodium salt (Monosodium glutamate)----	COM, GRW, SFF, UDW.
γ-Heptalactone-----	FB.
α-Hexalactone-----	FB.
Heptyl alcohol (1-Heptanol)-----	NTL, UCC.
Hexanoic acid (Caproic acid)-----	FB.
2-Hexanol-----	FB.
3-Hexanol-----	HOF.
2-Hexenal-----	FB, GIV.
cis-3-Hexen-1-ol-----	GIV, x.
cis-3-Hexen-1-ol lactate-----	RT.
Hexyl caproate-----	FB.
3-Hexyn-2-ol-----	x.
3-Hydroxy-2-butanone (Acetoin)-----	FMT.
*7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)----	GIV, GLD, IFF, NEO, RDA, UOP.
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal).	GIV, UOP.
Isoamyl acetate-----	FB.
Isoamyl geranate-----	FB.
Isoamyl propionate-----	FB.
Isoamyl undecylenate-----	GIV.
Isobutyl acetate-----	FB.
Isodihydro lavandulol-----	FB.
Isodihydro lavandulyl acetate-----	FB.
Isodihydro lavandulylaldehyde-----	FB.
Isopentyl acetate-----	NW.
*Isopentyl butyrate-----	FB, GIV, NW, PFW, UOP.
*Isopentyl formate-----	ELN, FB, GIV, RT.
*Isopentyl isovalerate-----	ELN, FB, PFW.
Lauraldehyde-----	CI, GIV.
3-Methyl-5-heptanone oxime-----	GIV.
2-Methyl-2-hepten-7-one-----	RDA.
6-Methyl-5 hepten-2-one-----	HOF.
Methyl isobutyrate-----	PFW.
3-Methyl-2-(and 3) nonenitrile-----	GIV.
Methyl-2-nonenoate-----	GIV.
Methylol methyl hexyl ketone-----	GIV.
2-Methylundecanal-----	GIV.
Muguoal (Alloocimenol)-----	IFF.
Myrcenyl acetate-----	IFF.
Myristaldehyde-----	GIV.
Neryl acetate-----	FB, GIV.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Nonanal-----	GIV.
Nonane-1,3-diol monoacetate-----	CI, GIV.
Nonanol-----	GIV.
Nonyl acetate-----	GIV.
Ocimenol-----	IFF.
Ocimenyl acetate-----	IFF.
Octanal-----	GIV, IFF.
3-Octanol-----	GIV.
3-Octanone (Ethyl amyl ketone)-----	GIV.
n-Octyl acetate-----	GIV.
Octyl alcohol (1-Octanol)-----	GIV.
Octyl formate-----	FB.
Pentyl acetate-----	UOP.
Propionic acid ethyl ester-----	UOP.
Pseudo linalyl acetate-----	IFF.
Pyrolysate-----	GIV.
*Rhodinol-----	FB, FEL, GIV, IFF, NEO.
Rhodiny acetate-----	GIV, IFF.
Tepyl acetate-----	UOP.
Tetrahydromuguo (T. H. alloocimenol)-----	IFF.
3,7,8,8-Tetramethyl-1,6-nonadiene-3-ol (Isobutyl linalool).	HOF.
3,7,11-Trimethyl-1,6,10-dodecatriene-3-ol-----	HOF.
2,6,10-Trimethyl-9-undecen-1-al-----	GIV.
3,6,10-Trimethyl-9-undecen-2-one and isomers-----	GIV.
Undecanal-----	GIV, IFF.
10-Undecen-1-ol acetate-----	GIV.
9-Undecenal-----	GIV.
γ-Valerolactone-----	GIV.

FLAVOR AND PERFUME MATERIALS

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TABLE 3.--FLAVOR AND PERFUME MATERIALS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of flavor and perfume materials to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of Company	Code	Name of Company
ABB	Abbott Laboratories	MRT	Morton Chemical Co., Div. of
AMB	American Bio-Synthetics Corp.		Morton-Norwich Products, Inc.
ARA	Arapahoe Chemical Inc.,	MYW	Stepan Chemical Co.
	Sub/Syntex (U.S.A.), Inc.		
ARS	Arsynco, Inc.	NCI	Union Camp Corp., Chemical Division
ARZ	Arizona Chemical Co.	NEO	Norda Inc.
		NTL	NL Industries, Inc.
BJL	Burdick & Jackson Labs., Inc.	NW	Northwestern Chemical Co.
CI	Chem-Fleur, Inc.	OPC	Orbis Products Corp.
COM	Commercial Solvents Corp.		
		PD	Parke, Davis & Co.
DOW	Dow Chemical Co.	PEN	CPC International, Inc., Penick Division
		PFW	Polak's Frutal Works, Inc.
ELN	Elan Chemical Co.	PFZ	Pfizer, Inc.
FB	Fritzsche, Dodge & Olcott, Inc.	RDA	Rhodia, Inc.
FEL	Felton International, Inc.	RT	F. Ritter & Co.
FLO	Florasynth, Inc.		
FMT	Fairmount Chemical Co., Inc.	SFF	Stauffer Chemical Co.,
			Food Ingredients Div.
GAF	GAF Corp., Chemical Division	SKG	Sunkist Growers, Inc.
GIV	Givaudan Corp.	SLV	Sterwin Chemicals, Inc.
GLD	SCM Corp., Glidden-Durkee Division	SW	Sherwin-Williams Co.
GRW	Great Western Sugar Co.		
		TOC	Tanatex Chemical Corp.
HN	Tenneco Chemicals, Inc.		
HOF	Hoffman-LaRoche, Inc.	UCC	Union Carbide Corp.
HPC	Hercules, Inc.	UDW	Accent International, Inc., Sub. of
			William Underwood Co.
IFF	International Flavor & Fragrances, Inc.	UNG	Ungerer & Co.
		UOP	Universal Oil Products Co., UOP
LUE	Monsanto Flavor/Essence, Inc.		Chemical Division
MNR	Monroe Chemical Co.	VEL	Velsicol Chemical Corp.
MON	Monsanto Co.	VND	Van Dyk & Co., Inc.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

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. Depending on the chemical composition, manufacturing process or intended use, the commercial products may contain plasticizers, fillers, extenders, stabilizers, coloring agents or other additives. Plastics materials may be molded, cast or extruded into semi-finished 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. These statistics also cover polyether and polyester polyols for urethanes which are not plastics materials themselves, but are precursors.

Statistics on U.S. production and sales of synthetic plastics and resin materials for 1973 are given in table 1.¹ U.S. production of plastics and resin materials in 1973 totaled 30,251 million pounds, or 16.7 percent more than the 25,921 million pounds produced in 1972. Sales in 1973 totaled 27,018 million pounds, valued at \$5,347 million compared with 22,946 million pounds, valued at \$4,258 million in 1972.

Thermosetting materials are those which harden with a change in composition in the final treatment so that they cannot again be softened by heat or solvents. U.S. production of thermosetting materials totaled 6,394 million pounds in 1973 compared with 4,484 million pounds in 1972. Production of the most important products in 1973 included phenolic resins (1,608 million pounds), amino (or urea and melamine) resins (1,442 million pounds), polyester resins (899 million pounds), and alkyd resins (734 million pounds).

For the first time, the Trade Commission has estimated the urethane foam (flexible and rigid) market. The estimate is based on one of the starting materials, polyether and polyester polyols for urethanes (see table 1, footnote 10).

Thermoplastic materials are those which can be repeatedly softened by heat and shaped. U.S. production of thermoplastic materials totaled 23,856 million pounds in 1973 compared with 21,437 million pounds in 1972. Production of the most important products in 1973 included polyethylene (8,582 million pounds), vinyl resins (5,522 million pounds), and styrene type materials (5,156 million pounds).

This year the Trade Commission has broken out a new family of thermoplastic materials, the engineering plastics (see table 1, footnote 17).

¹ See also table 2 which lists these products and identifies the manufacturers of each by codes. These codes are given in table 3.

PLASTICS AND RESIN MATERIALS

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TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1973

[Quantities and values are given in terms of the total weight of the materials (dry basis). Listed below are all plastics and resin materials and certain precursors for which any reported data on production or sales may be published. (Leaders (...) are used where the reported data are accepted in confidence and may not be published and/or where no data were reported.) Table 2 lists all plastics and resin materials for which data on production or sales were reported and identifies the manufacturers of each]

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds dry basis²</i>	<i>1,000 pounds dry basis²</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	30,250,617	27,018,229	5,347,428	\$0.20
Plastics and resin materials, benzenoid ³ -----	9,903,150	8,813,959	2,179,687	.25
Plastics and resin materials, nonbenzenoid-----	20,347,467	18,204,270	3,167,741	.17
THERMOSETTING RESINS				
Total-----	6,394,136	5,348,168	1,125,787	.21
Acetone-formaldehyde resins-----	914	1,036	228	.22
Alkyd resins, total-----	734,046	396,712	117,902	.30
Phthalic anhydride type-----	691,358	367,995	109,018	.30
Polybasic acid type-----	42,688	28,717	8,884	.31
Polyester resins, unsaturated ^{4 5} -----	899,409	833,149	187,704	.23
Styrene alkyd polyesters ⁶ -----	32,154	13,756	4,300	.31
Amino resins, total-----	1,441,791	1,330,770	163,779	.12
Melamine-formaldehyde resins-----	205,034	164,252	56,310	.34
Urea-formaldehyde resins ⁷ -----	1,236,757	1,166,518	107,469	.09
Dicyandiamide resins-----	2,219	1,950	1,314	.67
Epoxy resins: ⁸				
Unmodified-----	236,931	214,608	110,462	.52
Modified-----	(52,356)	(31,430)	(78,664)	.91
Furfuryl type resins-----	3,788	3,006	821	.27
Phenolic and other tar acid resins-----	1,647,856	1,377,216	257,977	.19
Polyurethane and diisocyanate resins (excluding foam and elastomers) ⁹ -----	181,429	130,020	60,459	.46
Polyether and polyester polyols for urethanes ^{10 11} -----	1,161,035	1,020,155	190,457	.19
Silicone resins-----	18,386	12,589	24,162	1.92
Other thermosetting resin ¹² -----	34,177	13,201	6,222	.47
THERMOPLASTIC RESINS				
Total-----	23,856,481	21,670,061	4,221,641	.19
Acrylic resins ^{13 14} -----	899,955	516,727	216,646	.42
Cellulosic plastics and resins ^{13 15} -----	224,865	208,248	112,208	.54
Coumarone-indene resins ¹⁶ -----	79,899	66,002	7,645	.12
Engineering plastics ¹⁷ -----	327,645	295,688	208,328	.70
Petroleum hydrocarbon resins ^{16 18} -----	297,061	287,704	32,355	.11
Polyamide resins, nylon type ^{13 19} -----	177,451	123,881	111,200	.90
Polyamide resins, non-nylon type ²⁰ -----	27,593	28,167	19,928	.71
Polyester resins, saturated ^{13 20 21} -----	172,094	152,265	138,098	.91
Polyethylene and copolymers, total ²² -----	8,581,822	7,959,686	1,109,314	.14
Density 0.940 and below-----	5,960,104	5,469,059	771,147	.14
Density over 0.940-----	2,621,718	2,490,627	338,167	.14
Polypropylene resins-----	2,164,642	2,199,533	371,215	.17
Polytetrafluoroethylene (PTFE)-----	14,019	12,834	39,134	3.05
Rosin modifications, total-----	138,875	125,936	29,624	.24
Rosin and rosin esters, unmodified (ester gums)-----	38,439	27,302	7,311	.27
Other-----	100,436	98,634	22,313	.23

See footnotes at end of table.

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds dry basis ²	1,000 pounds dry basis ²	1,000 dollars	Per pound
THERMOPLASTIC RESINS--Continued				
Styrene plastics materials, total-----	5,155,967	4,973,711	997,281	\$0.20
Acrylonitrile-butadiene-styrene (ABS) resins-----	926,181	910,069	272,260	.30
Styrene-acrylonitrile resins (SAN)-----	120,771	115,815	26,038	.22
Styrene and other styrene copolymer resins ^{2,3} -----	4,109,015	3,947,827	698,983	.18
Vinyl resins, total ^{2,4} -----	5,521,526	4,653,291	785,653	.17
Polyvinyl chloride and copolymers-----	2,54,594,313	2,53,973,748	597,909	.15
Polyvinyl acetate ^{2,5} -----	584,585	483,962	115,653	.24
Polyvinyl alcohol ^{2,7} -----	121,586	93,309	31,435	.34
Polyvinylidene chloride latex resins-----	21,257	18,861	7,103	.38
Other vinyl and vinylidene resins ^{2,8} -----	199,785	83,411	33,553	.40
All other thermoplastic resins ^{2,9, 30} -----	73,067	66,388	43,012	.65

¹ Calculated from rounded 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 liquids diluents unless they are an integral part of the materials.

³ Includes benzenoid plastics and resin materials as defined in part 1 of schedule 4 of the Tariff Schedules of the United States.

⁴ 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.

⁵ Due to a reporting error, both production and sales of unsaturated polyester resins were overstated by between 5 percent and 10 percent in the 1972 Synthetic Organic Chemical report.

⁶ "Alkyd copolymers", "styrene polyesters" and "styrenated alkyds" have been suggested as alternative names by industry sources.

⁷ Due to a reporting error, the production and sales data for urea resins in the 1972 Synthetic Organic Chemical report was understated by about 5 percent. In addition, the average unit value reported by the Trade Commission for urea resins in 1972 was in error; the correct unit value was approximately 9 cents per pound.

⁸ 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.

⁹ Data shown for modified epoxy resins are that part of the unmodified epoxy resins which is further processed; therefore, the totals in parentheses are not included in the grand total. Henceforth the term "advanced" epoxy will not be used in order to avoid confusion in reporting.

¹⁰ In view of the very large number of producers of both flexible and rigid urethane foams, these data are not collected as such by the Trade Commission. Urethane foams are described by industry sources as those urethane products which have a density below 15 pounds per cubic foot. Industry sources have estimated that flexible urethane foams accounted for 75 percent of the total 1973 consumption of polyether and polyester polyols for urethanes; the polyols are one of the two major starting materials used in the manufacture of these foams. In order to obtain the approximate total production data for flexible urethane foams, it is necessary to apply a factor of 1.5 to the production of urethane polyols. These same industry sources estimated that in 1973 rigid urethane foams represented 20% of the total consumption of polyols for urethanes, and that a factor of 2.5 should be used to determine the approximate total output for rigid urethane foams. The remaining 5 percent of production of polyols for urethanes is consumed in elastomers (synthetic rubbers) and in solid urethane plastics (e.g., coatings, surface coatings, etc.). The estimated production of both flexible and rigid urethane foams for 1973 is as follows: Flexible foams (1,161,036 thousand pounds x .75 x 1.5)=1,306,165 thousand pounds and rigid foams (1,161,036 thousand pounds x .20 x 2.5)=580,158 thousand pounds.

Urethane elastomers, the other end-use product derived from these polyols for urethanes, are reported in the elastomers (synthetic rubbers) section of the Synthetic Organic Chemicals report.

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.

¹¹ Most of the increase in production and sales of polyols for urethanes in 1973 over 1972 resulted from a more thorough coverage of this industry by the Trade Commission.

Footnotes for table 1--Continued

¹² Includes glyoxal resins, polybutadiene resins, toluenesulfonamide resins, and other thermosetting resins and their precursors.

¹³ Does not include production or sales for fiber use.

¹⁴ Includes data for acrylic resins reported to the Trade Commission under thermosetting resins.

¹⁵ The production and sales data reported in the 1972 Synthetic Organic Chemicals report for cellulosic plastics and resins were overstated by about 11 percent due to a reporting error. Production and sales data are virtually identical for both 1972 and 1973.

¹⁶ Significantly under-reported in 1972 due to misclassification.

¹⁷ Engineering plastics: Acetals, polycarbonate, polyimide, polysulfone, and polyphenylene oxide. Engineering plastics are defined in Whittington's Dictionary of Plastics, (First edition, published by Technomic Publishing Co., Inc.), as "those [plastics] 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. The other plastics named in Whittington's Dictionary as engineering plastics, ABS resins and nylon resins, are not included in the above list as they are published separately.

¹⁸ Includes data for petroleum hydrocarbon resins reported to the Trade Commission under thermosetting resins.

¹⁹ Statistics for nylon 6 and nylon 6/6 which are used in plastic applications (e.g., molding, etc.) are included here.

²⁰ Statistics for polyethylene terephthalate which is used in plastic applications (e.g., molding, etc.) are included here.

²¹ The increase in both production and sales of saturated polyester resins in 1973 over 1972 is due in part to more complete industry coverage by the Trade Commission.

²² Includes data for ethylene copolymers which could be published separately. The reason statistics for the copolymers are not reported separately is that there is no accepted industry definition of when a homopolymer ends and a copolymer begins. Ethylene accounts for 50 percent or more (by weight) of these copolymers. The low-density polyethylene copolymers includes those produced from ethylene and other non-hydrocarbon co-monomers (e.g., vinyl acetate, ethyl acetate, and acrylic acid). While the high-density copolymers includes those produced from ethylene and other hydrocarbon monomers (e.g., butene or hexene).

²³ Includes data for polystyrene resins reported to the Trade Commission under thermosetting resins.

²⁴ 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.

²⁵ Partially estimated in order to avoid possible disclosure.

²⁶ 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.

²⁷ Production and sales do not include polyvinyl alcohol used as a reactive intermediate for polyvinyl butyral or other vinyl resins.

²⁸ Includes polyvinyl butyral, polyvinyl formal, polyvinylidene chloride (solid resin), and other vinyl resins.

²⁹ Includes fluorocarbon resins except PTFE, α -methylstyrene resins, phenoxy resins, polybutylene type resins, polyphenylene sulfide type resins, polyterprene resins, and other thermoplastics materials.

³⁰ Decline in the production and sales of all other thermoplastic resins is due mainly to the break-out of a new category, engineering plastics.

Note.--Data reported to the Trade Commission do not necessarily coincide with that reported to the Society of the Plastics Industry (i.e., SPI) due to differences in both the reporting instructions (e.g., polyamide resins, nylon type) and in the coverage (e.g., phenolic resins).

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Plastics and resin materials for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Material	Manufacturers' identification codes (according to list in table 3)
THERMOSETTING RESINS	
*Acetone-formaldehyde resins-----	ACY, AMR, SNW.
*Alkyd resins:	
*Phthalic anhydride type-----	ACY, APT, ASH, AZS, BAL, BEN, BRU, CEL, CGL, CNE, COM, CPV, DAV, DEG, DSO, DUP, EW, FAR, FCD, FLW, FOC, FRE, FSH, GIL, GLD, GRV, HAN, ICF, IPC, JOB, JSC, KMC, KMP, KPT, MCC, MID, MNP, NCI, NPV, OBC, PER, PPG, PRT, PRX, RCI, RED, REL, RH, SCN, SED, SEY, SKT, SM, SW, x, x.
*Polybasic acid type-----	ACY, ASH, BEN, CNE, COM, DEG, EW, FAR, FCD, FOC, GRV, HAN, ICF, IPC, KMC, KMP, MCC, MID, MOB, PFP, PPG, RCI, RED, REL, RH, SCN, SKT, SM, SW.
*Polyester resins, unsaturated-----	ACY, APT, ASH, AZS, CEL, CGL, CNE, CPV, DA, DEG, DOW, DSO, ENJ, EPC, EW, FAR, FLW, FMP, FOM, FRE, GEI, GLD, GNT, GRG, HAN, HKD, ICF, ICI, IPC, KMC, KPT, MFG, MID, MM, MRB, MRO, OBC, OCF, ORO, POL, PPG, PPL, RCI, REL, RH, SCN, SHA, SIC, SM, SW, TXT, WLN, WTC.
*Styrene-alkyd polyesters-----	APT, ASH, CEL, CGL, CPV, DSO, EW, FLW, GRV, HAN, ICF, JOB, MCC, MID, PPG, REL, SED, SM, SW.
*Amino resins:	
*Melamine-formaldehyde resins-----	ACP, ACY, AMR, BOR, CBD, CEL, CGL, CNE, CPV, DAN, DSO, DUP, ENJ, FOM, GRV, HAN, ICF, JSC, KPT, MON, MRA, PMC, PPG, PPL, QCP, RCI, REL, RH, SBC, SCM, SED, SM, SNW, STC, SW, VAL WRD.
*Urea-formaldehyde resins-----	ACP, ACY, AMR, ASH, BOR, CBD, CBM, CEL, CGL, CMP, CNE, CPV, DAN, DUP, EFH, GAF, GLD, GP, GRV, HAN, HNC, HPC, HRT, JSC, KPT, MM, MON, MRA, NTC, PC, PGU, PPG, PPL, RCI, REL, RH, RPC, SAC, SED, SM, SNW, SOR, SW, TXT, UNO, UPL, USO, VAL, WCL, WIC, x.
*Dicyandiamide resins-----	CGY, ECC, JSC, MID, MRA, RPC, S, SNW.
Epoxy resins:	
*Unmodified-----	CEL, CGY, DOW, RCI, RSY, SHC, UCC, WLN.
*Modified-----	ACP, ASH, BEN, CNE, DSO, EW, GRV, HAN, HYC, ICF, JOB, MCC, MID, MM, MRT, OCF, POL, PPG, RRX, RCI, REL, REZ, RSY, SCN, SED, SKT, SM.
*Furfuryl-type resins-----	ACR, HVG, PTT, SM, TXT, UNO, WRD.
*Phenolic and other tar acid resins-----	ACR, AMR, ASH, BME, BOR, CBD, CBM, CD, CGL, CLK, DSO, ENJ, EW, FAR, FOM, GE, GEI, GIL, GP, GRG, HER, HKD, HVG, ICF, INL, IRI, KND, KPT, KYN, MCA, MID, MM, MON, MRB, NCI, NTC, OCF, PAI, PGU, PLS, PPG, PPL, PRX, PYZ, RAB, RCI, REL, RGC, RH, RPC, SCN, SHA, SIM, SKT, SM, SPL, SW, UCC, UNO, UPL, USR, VSV, WCA, WRD, x.
*Polyurethane and diisocyanate resins (excluding elastomers).	APT, ASH, BAL, BAS, CEL, CGL, CPV, DSO, DUP, EW, FAR, FRE, GPM, ICF, ICI, KMC, MCC, MID, MOB, MRT, OMC, PEL, PPG, PRT, PVI, QUN, RCI, REZ, SCN, SKT, SLC, SW, UCC, UPJ, WLN, WTC.
*Polyether and polyester polyols for urethanes-----	APT, ARK, BAS, CHC, CPV, DOW, DSO, DUP, ICI, JCC, MOB, OMC, PFP, PPG, RCI, SHC, UCC, UNO, UPJ, WLN, WTC.
*Silicone resins-----	ASH, CGL, DCC, MCC, MID, PPG, SPD, SWS, UCC, VPC.
All other thermosetting resins-----	AMR, ASH, CGY, CPV, DSO, EW, FLW, HYC, MID, MON, PPG, S, SM, USR, VAL, VPC, WIC.
THERMOPLASTIC RESINS	
*Acrylic resins-----	ACY, ASH, BAS, CEL, CHP, CNE, DSO, DUP, EFH, FLH, GLC, GLD, GLX, GNM, GRV, ICF, IOC, JNS, JOB, JSC, KMC, MID, MNP, NPV, POL, PPG, PVI, QUN, RH, RPC, SAR, SCO, SED, SEY, SM, SNW, UBS, VAL, VPC, x.
*Cellulosic plastics and resins-----	DOW, DUP, EKT, ICF, x.
*Coumarone-indene resins-----	DSO, DUP, NEV, PAI, VEL.

PLASTICS AND RESIN MATERIALS

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TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Materials	Manufacturers' identification codes (according to list in table 3)
THERMOPLASTIC RESINS--Continued	
*Engineering plastics:	
Acetal resins-----	CEL, DUP, POL.
Polycarbonate resins-----	GE, MOB, POL.
Polyimides and amide-imide polymers-----	ACC, DSO, DUP.
Polyphenylene oxide type resins-----	EW, GE.
Polysulfone resins-----	UCC, VPC.
Fluorocarbon resins-----	DUP, MM.
*Petroleum hydrocarbon resins-----	DSO, EKX, ENJ, GYR, ICF, NEV, NPV, PAI, PPG, RCI, VEL, ZGL.
Polyamide resins:	
*Nylon type-----	ALF, AZS, BCM, CEL, CTR, DBC, DOW, DUP, FG, GNM, LNP, MON, POL, RSN, SKP.
*Non-nylon type-----	CBY, CNE, COO, DSO, DUP, EMR, GNM, MCC, SM, SNW.
Polybutene and polyisobutylene resins-----	ENJ, WTC.
*Polyester resins, saturated-----	CEL, CNE, COO, DSO, DUP, EKT, GE, GLD, GNM, ICF, ICI, MID, MRT, RUB, SHA, VEL.
*Polyethylene and copolymers:	
*Density 0.940 and below-----	ACP, CBN, CEL, CPX, DOW, DUP, EKX, ENJ, GOC, KPP, MON, NWP, PLC, RCC, UCC, USI.
*Density over 0.940-----	ACC, ACP, CEL, CPX, DOW, DUP, GOC, HPC, KPP, MON, PLC, UCC, USI.
*Ethylene copolymers-----	DUP, EKX, UCC, USI.
*Polypropylene resins-----	ACC, DA, EKX, ENJ, HPC, NVT, PLC, RCC, SHC.
Polyterpene resins-----	CBY, PAI, SCN.
*Polytetrafluoroethylene (PTFE)-----	ACP, DUP, ICI.
*Rosin modifications:	
*Rosin and rosin esters, unmodified (ester gums)-----	ASH, CBY, CNE, DPP, FRP, MCC, NCI, RCI.
All other-----	ASH, CBY, CNE, DPP, FAR, FLW, FOC, FRP, GIL, GRV, ICF, MCC, NCI, RCI, SCF, SW, ZGL.
*Styrene type plastics materials:	
*Acrylonitrile-butadiene-styrene (ABS) resins-----	BFG, DOW, FG, GRD, MCB, MON, RCC, USR.
*Styrene-acrylonitrile resins (SAN)-----	BFG, DOW, MON, SKT, UCC.
*Styrene and other styrene copolymer resins-----	ACC, AEP, ATR, BAS, BFG, BOR, CNE, CSD, DOW, DPI, DSO, DUP, FG, FIR, GAF, GNT, GOR, GRD, GYR, HLM, ICF, IOC, JNS, JSC, KPP, MM, MON, MRT, ONX, PAI, PLC, POL, PRX, PVI, RCC, RCD, RH, RPC, SBI, SHC, SKT, SOL, UBS, UCC, UOC, USR, USS, VEL, WIC.
α-Methylstyrene polymers-----	ACC, DOW, ICF.
*Vinyl resins:	
*Polyvinyl chloride and copolymer resins-----	ACP, AIP, AME, BFG, BOR, CO, DA, FIR, GNT, GRA, GYR, HN, ICF, KYS, MON, NSC, OMC, PNT, RBT, RUB, SFP, TNA, UCC, USR.
*Polyvinyl acetate resins-----	AIP, BAL, BEN, BLS, BOR, CEL, CNE, DAN, DAV, DSO, DUP, FAR, FLH, FLW, FSH, GLC, GLD, GRD, HNC, JOB, JSC, KMC, KMP, MCC, MM, MNP, MON, NPV, NSC, OBC, OCF, ONX, PII, PPG, PRX, PVI, QCP, RCI, RPC, SBI, SCO, SED, SEY, SPC, UBS, UCC, UOC, WIC, x.
*Polyvinyl alcohol resins-----	AIP, DUP, MON.
Polyvinyl butyral resins-----	DUP, MON, UCC.
Polyvinylidene chloride resins:	
*Latex-type-----	BAS, BFG, DOW, DUP, GRD, MRT, UBS.
Solid-type-----	DOW.
All other vinyl resins-----	DSO, DUP, EW, MCC, MON, SM, UCC.
All other thermoplastic resins-----	DSO, DUP, EKX, PLC, PPG, RPC, SM, VPC, WTC.

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of plastics and resin materials to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ABS	Abex Corp., American Brakeblok Division	DPP	Dixie Pine Products Co., Inc.
ACC	Amoco Chemical Corp.	DSO	DeSoto, Inc.
ACP	Allied Chemical Corp., Plastics Division	DUP	E.I. duPont de Nemours & Co., Inc.
ACR	CPC International, Inc., Acme Resin Co. Div.		
ACY	American Cyanamid Co.	ECC	Eastern Color & Chemical Co.
AEP	A & E Plastics Pak Co., Inc.	EFH	E.F. Houghton & Co.
AIP	Air Products & Chemicals, Inc.		Eastman Kodak Co.:
ALF	Allied Chemical Corp., Fibers Div.	EKT	Tennessee Eastman Co. Division
AME	American Chemical Corp.	EKX	Texas Eastman Co. Division
AMR	Pacific Resins & Chemical Co.	EMR	Emery Industries, Inc.
APT	Whittaker Corp., Mol Rez Division	ENJ	Exxon Corp. and Exxon Chemical Co. U.S.A., Nevamar Div.
ARK	Armstrong Cork Co.		
ASH	Ashland Oil, Inc., and Ashland Chemical Co. Div.	EPC	EpoxyLite Corp.
ATR	Atlantic Richfield Co.	EW	Westinghouse Electric Corp., Industrial Plastics Div., Chemical Products Plant
AZS	AZS Corp., AZ Products Co. Div.		
		FAR	Syncon, Inc., Farnow Div.
BAL	Baltimore Paint & Chemical Corp.	FCD	France, Campbell & Darling, Inc.
BAS	BASF Wyandotte Corp.	FG	Foster Grant Co., Inc.
BCM	Belding Chemical Industries	FR	Firestone Tire & Rubber Co., Firestone Plastics Co. Div.
BEN	Bennett's	FLH	H.B. Fuller Co.
BFG	B.F. Goodrich Co., B.F. Goodrich Chemical Co. Division	FLW	Fuller-O'Brien Corp.
BLS	Dobbs-Life Savers, Inc.	FMP	FMC Corp., Industrial Chemical Div.
BME	Bendix Corp., Friction Materials Division	FOC	Handschy Chemical Co., Farac Oil & Chemical Co. Div.
BOR	Borden Co., Borden Chemical Co. Division		
BRU	M.A. Bruder & Sons, Inc.	FOM	Formica Corp.
		FRE	Freeman Chemical Corp.
CBD	Chembond Corp.	FRP	FRP Company
CBM	Carborundum Co.	FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.
CBN	Cities Service Co., Columbian Div.	FSH	Insilco Inc., Frisch & Co. Div.
CBY	Crosby Chemicals, Inc.		
CD	Budd Co., Polychem Division	GAF	GAF Corp., Chemical Division
CEL	Celanese Corp.: Celanese Coatings & Specialties Co. Celanese Plastics Co.	GE	General Electric Co.:
		GEI	Insulating Materials Dept.
CGL	Cargill, Inc.	GIL	Gilman Paint & Varnish Co.
CGY	Ciba-Geigy Corp.	GLC	General Latex & Chemical Corp.
CHC	Choate Chemical Co.	GLD	SCM Corp., Glidden-Durkee Division
CHP	C.H. Patrick & Co.	GLX	Glasflex Corp.
CLK	Clark Chemical Corp.	GNM	General Mills Chemicals, Inc.
CM	Carpenter-Morton Co.	GNT	General Tire & Rubber Co., Chemical Div.
CMP	Commercial Products Co., Inc.	GOC	Gulf Oil Corp., Gulf Oil Chemicals Co.-U.S.
CNE	Conchemco, Inc., Eastern Div.		
CO	Continental Oil Co.	GOR	Gordon Chemical Co., Inc.
COM	Commercial Solvents Corp.	GP	Georgia-Pacific Corp.
COO	Coopers Polymers, Inc.	GPM	General Plastics Manufacturing Co.
CPV	Cook Paint & Varnish Co.	GRA	Great American Chemical Corp.
CPX	Chemplex Co.	GRD	W.R. Grace & Co., Polymers Chemicals Division
CSD	Cosden Oil & Chemical Co.	GRG	P.D. George Co.
CTR	Custom Resins Inc.	GRV	Guardsman Chemical Coatings, Inc.
		GYR	Goodyear Tire & Rubber Co.
DA	Diamond Shamrock Corp.		
DAN	Dan River, Inc.	HAN	Hanna Chemical Coating Corp.
DAV	Conchemco, Inc., H.B. Davis Co. Division	HER	Heresite & Chemical Co.
DBC	Dow Badische Co.	HKD	Hooker Chemical Corp., Durez Division
DCC	Dow Corning Corp.	HLM	U.S. Industries, Inc., E. Helman Co. Division
DEG	Degan Oil & Chemical Co.		
DOW	Dow Chemical Co.		
DPI	Diamond Plastics, Inc.		

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of company	Code	Name of company
HN	Tenneco Chemicals, Inc.	PFP	Midwest Manufacturing Corp.
HNC	H & N Chemical Co.	PGU	Gulf Oil Corp., Gulf Adhesives
HPC	Hercules, Inc.	PII	Polymer Industries, Inc.
HRT	Hart Products Corp.	PLC	Phillips Petroleum Co.
HVG	Haveg Industries	PLS	Plastics Engineering Co.
HYC	Dexter Corp., Hysol Co. Division	PMC	Plastics Manufacturing Co.
ICF	Inmont Corp., ABI Div.	PNT	Pantasote Co.
ICI	ICI America, Inc. & Specialty Chemicals Div.	POL	Polymer Corp.
INL	Inland Steel Co., Inland Steel Container Co. Division	PPG	PPG Industries, Inc.
IOC	Ionac Chemical Co. Div. of Sybron Corp.	PPL	Pioneer Plastics Corp.
IPC	Interplastic Corp.	PRT	Pratt & Lambert, Inc.
IRI	Ironsides Resins, Inc.	PRX	Purex Corp., Ltd.
JCC	Jefferson Chemical Co.	PTT	Petro-Tex Corp.
JNS	S.C. Johnson & Son, Inc.	PVI	Polyvinyl Chemical Ind. Div. of Beatrice Foods Co.
JOB	Jones-Blair Paint Co.	PYZ	Polyrez Co., Inc.
JSC	Jersey State Chemical Co.	QCP	Quaker Chemical Corp.
KMC	Kohler-McLister Paint Co.	QUN	K.J. Quinn & Co., Inc.
KMP	Kelly-Moore Paint Co.	RAB	Raybestos-Manhattan, Inc., Raybestos Div.
KND	Knoedler Chemical Co.	RBT	Robintech, Inc.
KPP	Arco/Polymers, Inc.	RCC	Dart Industries, Inc., Rexene Polymers Co. Div.
KPT	Koppers Co., Organic Materials Division	RCD	Richardson Co.
KYN	Kyanize Paints, Inc.	RCI	Reichhold Chemicals, Inc.
KYS	Keysor Chemical Corp.	RED	Red Spot Paint and Varnish Co., Inc.
LNP	Liquid Nitrogen Processing Corp.	REL	Reliance Universal, Inc. & Resin Div.
MCA	Masonite Corp., Alpine Division	REZ	Hexcel Corp., Rezolin Division
MCB	Borg-Warner Corp., Borg-Warner Chemicals	RGC	Rogers Corp.
MCC	McCloskey Varnish Co.	RH	Rohm & Haas Co.
MFG	Rockwell International Corp., Resin Plant	RPC	Millmaster Onyx Corp., Refined-Onyx Division
MID	Dexter Corp., Midland Division	RSN	Rilsan Corp.
MMM	Minnesota Mining & Manufacturing Co.	RSY	Resyn Corp.
MNP	The Valspar Corp.	RUB	Hooker Chemical Corp., Ruco Division
MOB	Mobay Chemical Co.	S	Sandoz, Inc., Sandoz Color & Chemical Div.
MON	Monsanto Corp.	SAC	Southeastern Adhesives Co.
MRA	Crown Metro, Inc.	SAR	Sartomer Industries, Inc.
MRB	Marblette Co.	SBC	Scher Bros., Inc.
MRO	W.R. Grace & Co., Marco Chemical Division	SBI	Standard Brands Chemical Industries, Inc.
MRT	Morton Chemical Co. Div. of Morton-Norwich Products, Inc.	SCN	Schenectady Chemicals, Inc.
NCI	Union Carbide Corp., Chemical Division	SCO	Scholler Bros., Inc.
NEV	Neville Chemical Co.	SED	Conchemco, Inc., Colony Paint
NLC	Nalco Chemical Co.	SEY	Seydel-Woolley & Co., Inc.
NPV	Norris Paint & Varnish Co., Inc.	SFP	Stauffer Chemical Co., Plastics Div.
NSC	National Starch & Chemical Corp.	SHA	Shanco Plastics & Chemicals, Inc.
NTC	National Casein Co.	SHC	Shell Oil Co., Shell Chemical Co. Div.
NVT	Novamont Corp., Neal Works	SIC	Vistron Corp., Silmar Division
NWP	Northern Petrochemical Co.	SIM	Simpson Timber Co.
OBC	O'Brien Corp.	SKP	Shakespeare Co., Monofilament Division
OCF	Owens-Corning Fiberglas Corp.	SKT	Textron Inc., Spencer Kellogg Division
OMC	Olin Corp.	SLC	Soluol Chemical Co., Inc.
ONX	Millmaster Onyx Corp., Onyx Chemical Corp.	SM	Mobil Oil Corp., Mobil Chemical Co., Chemical Coatings Div.
ORO	Chevron Chemical Co.	SNW	Sun Chemical Corp., Chemicals Division
PAI	Pennsylvania Industrial Chemical Corp.	SOL	Solar Chemical Corp.
PC	Proctor Chemical Co., Inc.	SOR	Thomason Industries, Inc., Southern Resin Div.
PEL	Pelron Corp.	SPC	Sinclair Paint Co. Div. of Insilco Corp.
PER	Perry & Derrick Co.	SPD	General Electric Co., Silicone Products Dept.
		SPL	Spaulding Fibre Co., Inc.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of company	Code	Name of company
STC	Sou-Tex Chemical Co., Inc.	USO	U.S. Oil Co.
SW	Sherwin-Williams Co.	USR	Uniroyal, Inc., Chemical Division
SWS	Stauffer Chemical Co., SWS Silicones Division	USS	USS Chemicals Div. of U.S. Steel Corp.
		VAL	Valchem
TNA	Ethyl Corp.	VEL	Veliscol Chemical Corp.
TX	Texaco, Inc.	VPC	Baychem Corp., Verona Div.
TXT	Textilana Corp.	VSV	Valentine Sugars, Inc.
UBS	A.E. Staley Manufacturing Co., Staley Chemicals Division	WCA	West Coast Adhesives Co.
UCC	Union Carbide Corp.	WCL	Wright Chemical Co.
UNO	United-Erie, Inc.	WIC	Story Chemical Corp., Wica Chemical Div.
UOC	Union Oil Co. of California	WLN	Wilmington Chemical Corp.
UPJ	Upjohn Co.	WRD	Weyerhaeuser Co.
UPL	U.S. Plywood, WCM Operations, Shasta Area	WTC	Witco Chemical Co., Inc.
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.		
USI	National Petro Chemical Corp.	ZGL	Carolina Processing Corp.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

RUBBER-PROCESSING CHEMICALS

Rubber-Processing Chemicals

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Rubber-processing chemicals are organic compounds that are added to natural and synthetic rubbers 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, blowing agents, and peptizers. Data on production and sales of rubber-processing chemicals in 1973 are given in table 1.¹

Production of rubber-processing chemicals as a group in 1973 amounted to 401 million pounds, or 11.1 percent more than the 361 million pounds reported for 1972. Sales of rubber-processing chemicals in 1973 amounted to 312 million pounds, valued at \$199 million, compared with 280 million pounds, valued at \$178 million, in 1972. The increased production and sales of rubber-processing chemicals in 1973 is attributable principally to the increased production and sales of cyclic antioxidants, antiozonants, and stabilizers.

The production of cyclic rubber-processing chemicals in 1973 was 338 million pounds, or about 9.2 percent more than the 310 million pounds reported for 1972. Sales in 1973 were 264 million pounds, valued at \$176 million, compared with 240 million pounds, valued at \$158 million, in 1972. Of the total production of cyclic rubber-processing chemicals in 1973, accelerators accounted for 32.1 percent and antioxidants for 63.3 percent. Production of antioxidants, which amounted to 214.3 million pounds in 1973, included 138.0 million pounds of amino compounds and 76.3 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants in 1973 were 109.4 million pounds, valued at \$73.2 million; sales of phenolic and phosphite antioxidants were 54.1 million pounds, valued at \$30.1 million.

Production of acyclic rubber-processing chemicals in 1973 amounted to 62.6 million pounds, an increase of 22.4 percent from the 51.1 million pounds reported for 1972. Sales in 1973 totaled 48.1 million pounds, valued at \$23.7 million, compared with 40.2 million pounds, valued at \$19.7 million, in 1972. Accelerators accounted for 55.7 percent of the production of acyclic rubber-processing chemicals in 1973 and dodecyl mercaptans accounted for 33.5 percent.

¹ See also table 2 which lists these products and identifies the manufacturers by codes. These codes are given in table 3.

TABLE 1.--RUBBER-PROCESSING CHEMICALS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all rubber-processing chemicals for which any reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists separately all rubber-processing chemicals for which data on production or sales were reported and identifies the manufacturers of each]

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	400,925	311,969	199,489	\$0.64
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total-----	338,368	263,833	175,825	.67
Accelerators, activators, and vulcanizing agents, total--	108,454	86,729	57,056	.66
Aldehyde-amine reaction products-----	1,974	1,510	1,397	.93
Dithiocarbamic acid derivatives-----	...	274	673	2.46
Thiazole derivatives, total-----	94,615	74,475	45,013	.60
N-Cyclohexyl-2-benzothiazolesulfenamide-----	...	6,567	8,069	1.23
2,2'-Dithiobis(benzothiazole)-----	23,241	12,944	6,644	.51
2-Mercaptobenzothiazole-----	7,907	7,633	2,738	.36
2-Mercaptobenzothiazole, zinc salt-----	...	4,453	2,266	.51
All other thiazole derivatives ² -----	63,467	42,878	25,296	.59
All other accelerators, activators, and vulcanizing agents ³ -----	11,865	10,470	9,973	.95
Antioxidants, antiozonants, and stabilizers, total-----	214,314	163,428	103,377	.63
Amino compounds, total-----	138,030	109,370	73,236	.67
Aldehyde and acetone-amine reaction products-----	8,622	5,785	3,441	.59
Substituted p-phenylenediamines, total-----	71,792	52,672	44,162	.83
N,N'-Diphenyl-p-phenylenediamine-----	1,281	1,223	1,212	.99
All other substituted p-phenylenediamines-----	70,511	51,449	42,950	.84
N-Phenyl-2-naphthylamine-----	4,932	...	...	...
All other amino compounds ⁴ -----	52,684	50,913	25,633	.50
Phenolic and phosphite compounds, total-----	76,284	54,058	30,141	.56
Phenolic compounds, total-----	27,635	20,585	20,684	1.00
Polyphenolics (including bisphenols)-----	15,578	13,804	17,118	1.24
Phenol, alkylated-----	8,411	4,011	1,989	.50
Phenol, styrenated-----	2,092	1,457	479	.33
Other-----	1,554	1,313	1,098	.84
Phosphite compounds-----	48,649	33,473	9,457	.28
Peptizers-----	3,645	4,062	2,512	.62
Retarder: N-Nitrosodiphenylamine-----	2,485	1,863	1,178	.63
All other cyclic rubber-processing chemicals ⁵ -----	9,470	7,751	11,702	1.51
RUBBER-PROCESSING CHEMICALS, ACYCLIC				
Total-----	62,557	48,136	23,664	.49
Accelerators, activators, and vulcanizing agents, total--	34,864	23,134	14,492	.63
Dithiocarbamic acid derivatives, total ⁶ -----	11,037	9,791	8,098	.83
Dibutyldithiocarbamic acid, zinc salt-----	3,869	3,535	3,427	.97
Diethyldithiocarbamic acid, zinc salt-----	2,691	2,614	1,485	.57
Dimethyldithiocarbamic acid, zinc salt-----	2,265	2,337	1,132	.48
All other dithiocarbamic acid derivatives-----	2,212	1,305	2,054	1.54

See footnotes at end of table.

RUBBER-PROCESSING CHEMICALS

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TABLE 1.--RUBBER-PROCESSING CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued				
Accelerators, activators, and vulcanizing agents--Cont.				
Thiurams, total ⁷ -----	23,316	12,883	5,848	\$0.45
Bis(dimethylthiocarbamoyl) disulfide-----	17,421	9,699	3,591	.37
Bis(dimethylthiocarbamoyl) sulfide-----	1,918	2,077	1,605	.77
All other thiurams-----	3,977	1,107	652	.59
All other accelerators, activators, and vulcanizing agents ⁸ -----	511	460	546	1.19
Polymerization regulators: Dodecyl mercaptans-----	20,928	21,327	7,641	.36
Shortstops: Dimethyldithiocarbamic acid, sodium salt---	4,234	2,039	531	.26
All other acyclic rubber-processing chemicals ⁹ -----	2,531	1,636	1,000	.61

¹ Calculated from rounded figures.² Includes N-cyclohexyl-2-benzothiazolesulfenamide (production only) and 2-mercaptobenzothiazole, zinc salt (production only).³ Includes guanidines and dithiocarbamic acid derivatives (production only).⁴ Includes N-phenyl-2-naphthylamine (sales only).⁵ Includes blowing agents, and other uses not separately shown.⁶ Data on dithiocarbamates included in this table are for materials used chiefly in the processing of natural and synthetic rubbers. Data on dithiocarbamates which are used chiefly as fungicides are included in the report "Pesticides and Related Products."⁷ Includes data for small amounts of tetramethylthiuram sulfides for uses other than in the processing of natural and synthetic rubbers.⁸ Includes xanthates and disulfides.⁹ Includes blowing agents, conditioning and lubricating agents, polymerization regulators, shortstops and physical property improvers.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Rubber-processing chemicals for which separate statistics are given in table 1 are marked below with an asterisk (*) chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC	
*Accelerators, activators, and vulcanizing agents:	
*Aldehyde-amine reaction products:	
Acetaldehyde-aniline condensate-----	USR.
n-Butyraldehyde-aniline condensate-----	DUP, MON, RCD, USR.
Butyraldehyde-butylideneaniline condensate----	MON.
Heptaldehyde-aniline condensate-----	USR.
Triethyltrimethylenetriamine-----	USR.
*Dithiocarbamic acid derivatives:	
Dibenzylidithiocarbamic acid, sodium salt-----	USR.
Dibenzylidithiocarbamic acid, zinc salt-----	USR.
Dibutylidithiocarbamic acid, N,N-dimethylcyclohexyl- amine salt.	MON.
2,4-Dinitrophenyl dimethyldithiocarbamate-----	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts, mixed.	DUP.
Guanidines:	
Dicatchol borate, di-o-tolylguanidine salt-----	DUP.
1,3-Diphenylguanidine-----	ACY.
1,3-Di-o-tolylguanidine-----	ACY.
Dodecyltetramethylguanidine-----	DUP.
1,2,3-Triphenylguanidine-----	ACS.
*Thiazole derivatives:	
2-Benzothiazyl N,N-diethylthiocarbamoyl sulfide-----	PAS.
N-tert-Butyl-2-benzothiazolesulfenamide-----	ACY, MON, USR.
*N-Cyclohexyl-2-benzothiazolesulfenamide-----	ACY, BFG, MON, USR.
N,N-Diisopropyl-2-benzothiazolesulfenamide-----	ACY.
N-(2,6-Dimethylmorpholino)-2-benzothiazolesulfen- amide.	MON.
*2,2'-Dithiobis(benzothiazole)-----	ACY, BFG, GYR, MON, USR.
*2-Mercaptobenzothiazole-----	ACY, BFG, GYR, MON, USR.
2-Mercaptobenzothiazole, copper salt-----	ACY.
2-Mercaptobenzothiazole, zinc chloride-----	DUP.
*2-Mercaptobenzothiazole, zinc salt-----	ACY, BFG, GYR, USR.
4-Morpholinyl-2-benzothiazyl disulfide-----	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide-----	ACY, BFG.
All other cyclic accelerators, activators, and vulcan- izing agents:	
p-Benzoquinonedioxime-----	CTN.
Bis(p-aminocyclohexyl)methane carbamate-----	DUP.
Bis-morpholine thiocarbamyl sulfenamide-----	BFG.
Bis(morpholinothiocarbonyl) disulfide-----	ACY.
Dibenzoyl-p-quinonedioxime-----	CTN, USR.
Dibenzylamine-----	MLS, USR.
N,N'-Dicinnamylidene-1,6-hexanediamine-----	DUP.
Di-N,N'-pentamethylenethiuram tetrasulfide-----	DUP, VNC.
4,4'-Dithiodimorpholine-----	MON, VNC.
2-Imidazoline-2-thiol-----	DUP.
m-Phenylenebismaleimide-----	DUP.
Poly-p-dinitrosobenzene-----	DUP.
Toluene-2,4-diisocyanate adduct of dimethylethanol- amine.	DUP.
All other -----	WSN.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers:	
*Amino compounds:	
*Aldehyde- and acetone-amine reaction products:	
Acetaldehyde-aniline hydrochloride condensate-----	USR.
Aldol- α -naphthylamine condensate-----	BFG.
Butyraldehyde-aniline condensate-----	DUP.
Diphenylamine-acetone condensate-----	ACY, BFG, USR.
Phenyl-2-naphthylamine-acetone condensate-----	USR.
*Substituted p-phenylenediamines:	
N,N'-Bis(1,3-dimethylbutyl)-p-phenylenediamine-----	x.
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine-----	EKT, USR, x.
N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylene- diamine.	x.
N,N'-Bis(1-methylheptyl)-p-phenylenediamine-----	BFG, x.
N-sec-Butyl-N'-phenyl-p-phenylenediamine-----	USR.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine-----	USR, x.
Diaryldiphenylamines, mixed-----	GYR.
N,N'-Dicyclohexyl-p-phenylenediamine-----	x.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylene- diamine.	GYR, USR.
N,N'-1,4-Dimethylhexyl-p-phenylenediamine-----	x.
N,N'-Di-2-naphthyl-p-phenylenediamine-----	BFG.
*N,N'-Diphenyl-p-phenylenediamine-----	BFG, DUP, SDC, USR.
N-Isopropyl-N'-phenyl-p-phenylenediamine-----	USR.
N-(1-Methylheptyl)-N'-phenyl-p-phenylenediamine----	x.
N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine----	USR.
All other substituted p-phenylenediamines-----	DUP, USR, x, x.
Other amino compounds:	
p-Anilinophenol-----	BFG.
1,2-Dihydro-6-dodecyl-2,2,4-trimethylquinoline-----	MON.
1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline-----	MON.
1,2-Dihydro-2,2,4-trimethylquinoline-----	BFG, MON.
4,4'-Dimethoxydiphenylamine-----	DUP.
Dinonyldiphenylamine-----	ACY.
N,N'-Diphenylethylenediamine-----	ACY, DA, RCI.
N,N'-Diphenyl-1,3-propanediamine-----	RCI.
N,N'-Di-o-tolylethylenediamine-----	RCI.
p-Hydroxydiphenylamine-----	USR.
4-Isopropoxydiphenylamine-----	BFG.
4,4'-Methylenedianiline-----	USR.
Nonyldiphenylamine mixture (mono-, di-, and tri-)--	PAS, USR.
Octyldiphenylamine-----	ACY, USR.
Octyldiphenylamine, alkylated-----	BFG.
N-Phenyl-1-naphthylamine-----	DUP, UCC.
*N-Phenyl-2-naphthylamine-----	BFG, DUP, USR.
p-(p-Toluenesulfonamide)diphenylamine-----	USR.
All other-----	USR.
*Phenolic and phosphite compounds:	
Phenolic compounds:	
*Polyphenolics (including bisphenols):	
Bisphenol, hindered-----	GYR, USR.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)-----	MON.
2,5-Di-sec-butyldecylhydroquinone-----	USR.
2,5-Di-(1,1-dimethylpropyl)hydroquinone-----	MON.
3,7-Dioctylphenothiazine-----	USR.
2,2'-Methylenebis(6-tert-butyl-p-cresol)-----	ACY, ASH.
2,2'-Methylenebis(6-tert-butyl-4-ethylphenol)----	ACY.
2,2'-Methylenebis[6-(1-methylcyclohexyl)-p- cresol].	ICI.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers--Continued	
*Phenolic and phosphite compounds--Continued	
*Phenolic compounds--Continued	
*Polyphenolics (including bisphenols)--Continued	
2,2'-Methylenebis(6-tert-octyl-p-cresol)-----	ACY.
2,2'-Thiobis(4,6-di-sec-amylphenol)-----	MON.
4,4'-Thiobis(6-tert-butyl-m-cresol)-----	MON.
Thiobisphenol, alkylated-----	USR.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)- butane.	ICI.
Other phenolic compounds:	
o-Cresol, alkylated-----	PIT.
*Phenol, alkylated-----	ACY, BFG, GYR, NEV, RCI.
Phenol, hindered-----	DUP, GYR.
*Phenol, styrenated-----	BFG, GYR, NEV, USR.
N-Stearoyl-p-aminophenol-----	MLS.
*Phosphite compounds:	
Alkylaryl phosphites, mixed-----	WES.
Nonyl phenyl phosphites, mixed-----	NPI, USR.
Polymeric phosphite-----	NPI.
Polyphenolic phosphite, polyalkylated-----	BFG.
Triaryl phosphites-----	WES.
Blowing agents:	
4,4'-Biphenylene bis(sulfonylhydrazide)-----	USR.
N,N'-Dimethyl-N,N'-dinitrosoterephthalamide-----	DUP.
Dinitrosopentamethylenetetramine-----	NPI.
p,p'-Oxybis(benzenesulfonylhydrazide)-----	USR.
p-Toluenesulfonylhydrazide-----	USR.
p-Toluenesulfonylsemicarbazide-----	USR.
*Peptizers:	
2-Benzamidothiophene, zinc salt-----	ACY.
2',2'''-Dithiobis(benzanilide)-----	ACY.
Dixyllyl disulfides, mixed-----	PIT.
2-Naphthalenethiol-----	DUP.
Pentachlorobenzenethiol-----	SDC.
Pentachlorobenzenethiol, zinc salt-----	SDC.
Xylenethiol-----	DUP.
*Retarders: N-Nitrosodiphenylamine-----	ACY, BFG, CTN, GYR, NPI, USR.
Other cyclic rubber-processing chemicals:	
p-tert-Amylphenol sulfide (tackifier)-----	PAS.
4-Chloro-2,6-bis(2,4-dihydroxybenzyl)phenol-----	ICI.
Phenol cyanurate complex-----	ICI.
All other-----	DUP, RCI, x.
RUBBER-PROCESSING CHEMICALS, ACYCLIC	
*Accelerators, activators, and vulcanizing agents:	
*Dithiocarbamic acid derivatives:	
Dibutyldithiocarbamic acid, nickel salt-----	USR.
Dibutyldithiocarbamic acid, potassium salt-----	VNC.
Dibutyldithiocarbamic acid, sodium salt-----	ALC, DUP, USR, VNC.
*Dibutyldithiocarbamic acid, zinc salt-----	ALC, DUP, PAS, USR, VNC.
Diethyldithiocarbamic acid, selenium salt-----	VNC.
Diethyldithiocarbamic acid, sodium salt-----	PAS.
Diethyldithiocarbamic acid, tellurium salt-----	VNC.
*Diethyldithiocarbamic acid, zinc salt-----	ALC, GYR, PAS, USR, VNC.
Dimethyldithiocarbamic acid, bismuth salt-----	VNC.
Dimethyldithiocarbamic acid, copper salt-----	VNC.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued	
*Accelerators, activators, and vulcanizing agents--Cont.	
*Dithiocarbamic acid derivatives--Continued	
Dimethyldithiocarbamic acid, lead salt-----	VNC.
Dimethyldithiocarbamic acid, selenium salt-----	VNC.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide.	BFG.
*Dimethyldithiocarbamic acid, zinc salt-----	ALC, DUP, FMN, GYR, PAS, USR, VNC, WRC.
All other-----	PAS, VNC.
*Thiurams:	
Bis(diethylthiocarbamoyl) disulfide-----	DUP, GYR, PAS.
*Bis(dimethylthiocarbamoyl) disulfide-----	DUP, GYR, PAS, VNC.
*Bis(dimethylthiocarbamoyl) sulfide-----	DUP, GYR, USR.
Bis(ethylmethylthiocarbamoyl) sulfide-----	PAS.
Xanthates and sulfides:	
Bis(diisopropoxythiophosphoryl) disulfide-----	DUP.
Di-n-butylxantho disulfide-----	USR.
Diisopropylxantho disulfide-----	BFG.
Methamethacrylate(monobasic zinc salt)-----	USR.
Zinc diisopropyl xanthate-----	VNC.
All other acyclic accelerators, activators, and vulcanizing agents:	
n-Butyraldehyde-butylamine condensate-----	DUP.
Di-n-butylammonium oleate-----	DUP.
3-Ethyl-1,1-dimethyl-2-thiourea-----	VNC.
Ethylenediamine carbamate-----	DUP.
Tetramethylthiourea-----	DUP.
1,1,3-Trimethyl-2-thiourea-----	RBC, VNC.
Blowing agents: Modified urea-----	DUP.
Conditioning and lubricating agents:	
Methyl stearyl-10-sulfonic acid, sodium salt-----	DUP.
Mono- and dialkyl acid phosphates, mixed-----	DUP.
Mono- and dialkyl phosphate ammonium salts, mixed-----	DUP.
Other-----	DUP.
Polymerization regulators:	
Alkyl mercaptans, mixed-----	PLC.
*Dodecyl mercaptans-----	HK, PAS, PLC.
tert-Hexyldecyl mercaptan-----	PLC.
n-Octyl mercaptan-----	PAS.
tert-Octyl mercaptan-----	PAS.
Tridecyl mercaptan-----	PAS.
Shortstops:	
Dimethyldithiocarbamic acid, potassium salt-----	USR.
*Dimethyldithiocarbamic acid, sodium salt-----	ALC, DUP, GYR, PAS, USR, WRC.
Other acyclic rubber processing chemicals:	
Zinc laurate (activator, physical-property improver)---	USR.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 3.--RUBBER-PROCESSING CHEMICALS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of rubber-processing chemical manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACS	Allied Chemical Corp., Specialty Chemicals Div.	MLS	Miles Laboratories, Inc., Marshall Div. & Sumner Div.
ACY	American Cyanamid Co.	MON	Monsanto Co.
ALC	Alco Chemical Corp.		
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	NEV	Neville Chemical Co.
		NPI	Stepan Chemical Co., National Polychemicals Div., Polychem Dept.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.		
		PAS	Pennwalt Chemicals Corp.
CTN	Chemetron Corp., Organic Chemical Div.	PIT	Pitt-Consol Chemical Co.
		PLC	Phillips Petroleum Co.
DA	Diamond Shamrock Corp.		
DUP	E. I. duPont de Nemours & Co., Inc.	RBC	Fike Chemicals, Inc.
		RCD	Richardson Co.
		RCI	Reichhold Chemicals, Inc.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.		
		SDC	Martin-Marietta Corp., Sodyeco Div.
FMN	FMC Corp., Agricultural Chemical Div.		
		UCC	Union Carbide Corp.
GYR	Goodyear Tire & Rubber Co.	USR	Uniroyal, Inc., Chemical Div.
		VNC	Vanderbilt Chemical Corp.
HK	Hooker Chemicals & Plastics Corp.		
		WES	Borg-Warner Corp., Weston Chemical Div.
		WRC	Ventron Corp., Wood Ridge Chemical
ICI	ICI America, Inc.	WSN	Mallinckrodt Chemical Works, Washine Div.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

Elastomers

Elastomers (synthetic rubbers) are high polymeric materials with properties similar to those of natural rubber. The term "elastomers" as used in this report, means a substance, whether in bale, crumb, powder, latex, and other crude form, which can be vulcanized or similarly processed into a material that can be stretched to at least twice its original length and, after having been so stretched and the stress removed, will return with force to approximately its original length. U.S. production and sales of elastomers in 1973 are shown in table 1.¹

Production and sales quantities for styrene-butadiene (S-type rubber) are reported beginning in 1973 on a basis which includes the oil content of oil-extended forms, whereas in previous years they were reported on an elastomer-content-only basis. This change has the effect of increasing the quantity levels of production and sales for S-type and total elastomers above those reported on the former basis, and of decreasing the unit values for these two categories.

Total U.S. production of synthetic rubber in 1973 amounted to 5,990 million pounds. If reported on the same basis as for 1972, total U.S. production of elastomers in 1973 would amount to 5,404 million pounds and would represent an increase of 10 percent over the total production reported for 1972. Total sales of elastomers in 1973 amounted to 5,159 million pounds, which, if reported on the former basis, would amount to 4,670 million pounds, an increase of 13 percent above sales reported for 1972.

Styrene-butadiene rubber (SBR, or S-type rubber) in 1973 continued to be the elastomer produced in the greatest quantity as it has been for more than a quarter of a century. U.S. production of S-type rubber, including 38 million pounds of its vinylpyridine sub-type, amounted to 3,335 million pounds in 1973. If reported on the same basis as in 1972, production of S-type rubber in 1973 would be 2,749 million pounds, an increase of 4 percent above that reported for 1972. Solution polymerized butadiene rubber, a stereo type elastomer, was produced domestically in 1973 in the next largest amount--783 million pounds; production of isoprene and ethylene-propylene rubbers, the other stereo types, amounted to 265 million and 264 million pounds, respectively. Total U.S. production of these stereo type elastomers amounted to 1,312 million pounds in 1973--an increase of 13 percent over 1972. Other principal types of synthetic elastomers for which U.S. production data are reported separately are isobutylene-isoprene (butyl) rubber, production of which was 352 million pounds in 1973, and acrylonitrile-butadiene (N-type) rubber, production of which was 193 million pounds.

Sales of S-type rubber by U.S. producers in 1973 (including its vinylpyridine sub-type) amounted to 2,840 million pounds, which, if reported on the same basis as in 1972, would amount to 2,351 million pounds, an increase of 10 percent above sales reported for 1972. Sales of stereo-type elastomers in 1973 amounted to 995 million pounds. In the latter category, sales of solution polymerized butadiene rubber amounted to 515 million pounds, sales

of isoprene type rubber to 253 million pounds, and those of ethylene-propylene rubber of 227 million pounds. Sales of N-type rubber in 1973 amounted to 166 million pounds. The increase in 1973 sales over those of 1972 for the stereo- and N-type rubbers ranged from 6 percent for the isoprene type to 24 percent for the ethylene-propylene type; the increase for the butadiene type was 11 percent and for N-type 23 percent.

¹ See also table 2 which lists these products and indicates the manufacturers of each by code. The codes are identified by company name in table 3.

TABLE 1.--ELASTOMERS (SYNTHETIC RUBBERS):¹ U.S. PRODUCTION AND SALES, 1973

[Listed below are all elastomers (synthetic rubbers) for which reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all elastomers for which data on production or sales were reported and identifies the manufacturers of each]

Product	Production ²	Sales		
		Quantity ²	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	5,990,011	5,159,251	1,297,437	\$0.25
Cyclic-----	3,517,739	3,018,006	571,902	.19
Acyclic-----	2,472,272	2,141,245	725,535	.34
Acrylonitrile-butadiene type (N-type)-----	193,156	166,346	73,363	.44
Isobutylene-isoprene type (Butyl)-----	352,400	...	...	...
Silicone type-----	37,001	35,087	77,797	2.22
Stereo elastomers, total-----	1,311,909	994,894	214,413	.22
Butadiene (solution polymerized) type-----	783,199	514,576	97,314	.19
Ethylene-propylene type-----	264,192	227,438	61,062	.27
Isoprene type-----	264,518	252,880	56,037	.22
Styrene-butadiene type (S-type) -----	3,297,440	2,818,418	459,912	.16
Styrene-butadiene-vinylpyridine type-----	37,817	21,868	12,129	.55
Urethane type ⁴ -----	89,687	64,797	70,314	1.09
All other elastomers ⁵ -----	670,601	1,057,841	389,509	.37

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. (See note).

³ Calculated from rounded figures.

⁴ 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. An estimate of the total market can be made by applying a factor to sales of polyether and polyester polyols used in the manufacture of polyurethanes. (Data for such estimates will appear in the section on plastics and resin materials to be published later this year).

⁵ Includes production and sales data for acrylic ester, polysulfide, chloroprene, epichlorohydrin, isobutylene, and butadiene emulsion elastomers, certain solution elastomers, carboxylated SBR latex, chlorosulfonated polyethylene, thermoplastic rubber, miscellaneous elastomers, and sales data for the isobutylene-isoprene type elastomer.

Note.--Production and sales data for styrene-butadiene (S-type) rubber were reported in previous years on an elastomer content basis. Beginning with this report (1973), such annual data will be reported on the basis of total weight including oil content; thus, the figures for production and sales quantities of S-type, as well as those of total elastomers, are somewhat larger than they would have been if reported on the former basis. The new basis of reporting also has the effect of lowering the unit value of both the S-type and total elastomers. If reported on the same basis as for 1972 and previous years, production and sales statistics, total and for styrene-butadiene (S-type) rubber, for 1973 would be as follows:

	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	5,403,767	4,669,526	1,304,678	\$0.28
S-type	2,711,196	¹ 2,328,693	² 467,153	.20

¹ Partly estimated.

² Partly estimated. Includes the value of added oil.

TABLE 2.--ELASTOMERS (SYNTHETIC RUBBERS) FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Elastomers (synthetic rubbers) for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Product	Manufacturers' identification codes (according to list in table 3)
Acrylic ester type-----	ACY, BFG, DA, TKL.
*Acrylonitrile-butadiene type (N-type)-----	BFG, CPY, FRS, GYR, SBI, USR.
Butadiene (emulsion polymerized) type-----	BFG, FRS, GYR, TKL, TUS.
Chloroprene type (Neoprene)-----	DUP, PTT.
*Isobutylene-isoprene type (Butyl)-----	CBN, ENJ.
Polysulfide type-----	PRC, TKL.
Reaction products of natural rubber-----	GYR, ICI, WAY, x.
*Silicone type-----	DCC, PRC, SPD, SWS, UCC.
*Stereo elastomers:	
*Butadiene (solution polymerized) type-----	ASY, ATR, BFG, FRS, GNT, GYR, PLC, TUS.
*Ethylene-propylene type-----	BFG, CPY, DUP, ENJ, USR.
*Isoprene type-----	BFG, GYR, SHC.
*Styrene-butadiene type (S-type)-----	ASH, ASY, BFG, CPY, FIR, FRS, GNT, GYR, PLC, RUB, SBI, SHC, TUS, USR.
*Styrene-butadiene-vinylpyridine type-----	BFG, FIR, FRS, GNT, GYR, USR.
*Urethane type-----	ACY, BAS, BFG, CNI, DA, DNS, DUP, EPI, GNT, INP, MMM, MOB, PPP, PLN, PRC, RUB, TKL, UPJ, USR, WTC.
All other elastomers-----	ASY, BFG, DUP, ENJ, GNT, HDM, MMM, PLC, PRC, SHC, UCC.

TABLE 3.--ELASTOMERS (SYNTHETIC RUBBERS): DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of elastomers manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACY	American Cyanamid Co.	ICI	ICI America, Inc.
ASH	Ashland Oil Co., Inc.	INP	INDPOL
ASY	American Synthetic Rubber Corp.		
ATR	Atlantic Richfield Co.	MMM	Minnesota Mining & Manufacturing Co.
		MOB	Mobay Chemical Co.
BAS	BASF Wyandotte Corp.	PFP	Midwest Manufacturing Corp.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PLC	Phillips Petroleum Co.
		PLN	Disogrin Industries Corp.
CBN	Cities Service Co., Columbian Group	PRC	Products Research & Chemical Corp.,
CNI	Conap, Inc.		Chemical and Sealant Div.
CPY	Copolymer Rubber & Chemical Corp.	PTT	Petro-Tex Chemical Corp.
DA	Diamond Shamrock Corp.	RUB	Hooker Chemical Corp., Ruco Div.
DCC	Dow Corning Corp.		
DNS	Dennis Chemical Co.	SBI	Standard Brands Chemical Industries, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.	SHC	Shell Oil Co., Shell Chemical Co. Div.
		SPD	General Electric Co., Silicone Products Dept.
ENJ	Exxon Chemical Co., U.S.A.	SWS	Stauffer Chemical Co., SWS Silicones Div.
EPI	Eagle Pitcher Industries, Inc., Ohio Rubber Div.		
		TKL	Thiokol Chemical Corp.
	Firestone Tire & Rubber Co.: Firestone Plastics Co. Div. Firestone Synthetic Rubber & Latex Co. Div.	TUS	Texas-U.S. Chemical Co.
FIR			
FRS		UCC	Union Carbide Corp.
		UPJ	Upjohn Co.
		USR	Uniroyal, Inc., Chemical Div.
GNT	General Tire & Rubber Co., Chemical Div.		
GYR	Goodyear Tire & Rubber Co.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
		WTC	Witco Chemical Co., Inc.
HDM	Hardman, Inc.		
HPC	Hercules, Inc.		

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

SYNTHETIC ORGANIC CHEMICALS, 1973

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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 1 presents statistics on U.S. production and sales of plasticizers in as great as detail as is possible without revealing the operations of individual producers.¹

U.S. production of plasticizers totaled 1,873 million pounds in 1973, an increase of 9.7 percent from the 1,708 million pounds reported for 1972. Sales of plasticizers totaled 1,708 million pounds, valued at \$341 million, in 1973, compared with 1,637 million pounds, valued at \$291 million, in 1972.

Production of cyclic plasticizers in 1973, which consisted chiefly of the esters of phthalic anhydride and phosphoric acid, amounted to 1,385 million pounds, an increase of 6.4 percent from the 1,302 million pounds reported for 1972. Sales of cyclic plasticizers in 1973 totaled 1,290 million pounds, valued at \$205 million, compared with 1,273 million pounds, valued at \$180 million, in 1972. The most important cyclic plasticizer was di(2-ethylhexyl) phthalate, with production of 378 million pounds, in 1972.

Production of acyclic plasticizers in 1973 totaled 488 million pounds, an increase of 20.1 percent from the 406 million pounds reported for 1972. Sales of acyclic plasticizers totaled 419 million pounds, valued at \$136 million, in 1973, compared with 364 million pounds, valued at \$110 million, in 1972. Epoxidized soya oils were the most important acyclic plasticizer in 1973, with production of 117 million pounds.

¹ See also table 2 which lists these products and identifies the manufacturers by codes. These codes are listed in table 3.

PLASTICIZERS

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TABLE 1.--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1973

[Listed below are plasticizers for which any reported data on production and/or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all plasticizers for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value ²
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	1,873,383	1,708,413	341,385	\$0.20
Benzenoid ³ -----	1,502,160	1,389,714	233,556	.17
Nonbenzenoid-----	371,223	318,699	107,829	.34
PLASTICIZERS, CYCLIC				
Total-----	1,385,350	1,289,666	204,986	.16
Phosphoric acid esters, total-----	103,327	89,601	29,524	.33
Cresyl diphenyl phosphate-----	14,166	13,974	3,800	.27
Tricresyl phosphate-----	55,750	...	...	...
All other phosphoric acid esters ⁴ -----	33,411	75,627	25,724	.34
Phthalic anhydride esters, total-----	1,203,098	1,134,618	158,460	.14
Butyl octyl phthalates (including butyl 2-ethylhexyl phthalate, and butyl n-octyl phthalate)-----	7,365	8,015	1,160	.14
Dibutyl phthalate-----	37,913	31,230	5,583	.18
Diethyl phthalate-----	19,490	15,031	2,966	.20
Diisodecyl phthalate-----	170,742	155,329	20,938	.13
Dimethyl phthalate-----	11,339	10,880	1,952	.18
Diocetyl phthalates, total-----	429,493	423,159	53,947	.13
Di(2-ethylhexyl) phthalate-----	378,146	373,621	47,277	.13
Diiso-octyl phthalate-----	43,185	41,854	5,180	.12
Other Diocetyl phthalates-----	8,162	7,684	1,490	.19
Di-tridecyl phthalate-----	19,665	20,709	4,228	.20
Glycol phthalate esters (including Butyl phthalyl butyl glycolate, methyl phthalyl ethyl glycolate propylene glycol bis(amy) phthalate and others)-----	3,653	4,061	1,781	.44
All other phthalic anhydride esters-----	503,438	466,204	65,905	.14
Trimellitic acid esters, total-----	15,361	13,649	4,048	.30
Triiso-octyl trimellitate-----	3,378	2,729	778	.28
Tri-n-octyl n-decyl trimellitate-----	867	872	298	.34
Triocetyl trimellitate-----	2,781	...	...	...
All other trimellitic acid esters-----	8,335	10,048	2,972	.30
All other cyclic plasticizers ⁵ -----	63,564	51,798	12,954	.25
PLASTICIZERS, ACYCLIC				
Total-----	488,033	418,747	136,399	.33
Adipic acid esters, total-----	69,592	61,645	14,667	.24
Di(2-ethylhexyl) adipate-----	44,906	37,138	7,835	.21
Diisodecyl adipate-----	3,516	3,936	965	.25
Diisopropyl adipate-----	304	...	...	...
n-Octyl n-decyl adipate-----	8,812	8,760	2,027	.23
All other adipic acid esters-----	12,054	11,811	3,840	.33
Complex linear polyesters and polymeric plasticizers ⁶ -----	65,635	55,870	21,296	.38
Di(2-ethylhexyl) azelate-----	...	9,262	3,124	.34

See footnotes at end of table.

TABLE 1.--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
PLASTICIZERS, ACYCLIC--Continued				
Epoxidized esters, total-----	150,266	119,730	32,525	\$0.27
Epoxidized soya oils-----	117,050	92,781	25,231	.27
Octyl epoxytallates (including 2-ethylhexyl epoxy-				
tallates)-----	26,844	24,502	6,437	.26
All other epoxidized esters-----	6,372	2,447	857	.35
Glyceryl monoricinoleate-----	314	260	185	.71
Isopropyl myristate-----	5,005	6,540	2,859	.44
Isopropyl palmitate-----	7,550	5,879	2,497	.42
Oleic acid esters, total-----	16,271	14,739	4,392	.30
Butyl oleate-----	3,189	3,286	958	.29
Methyl oleate-----	3,481	3,423	885	.26
Propyl oleates (including n-propyl oleate and isopropyl				
oleate)-----	1,259	827	218	.26
All other oleic acid esters-----	8,342	7,203	2,331	.32
Phosphoric acid esters-----	27,493	27,626	12,536	.45
Sebacic acid esters, total-----	6,882	5,174	4,885	.94
Dibutyl sebacate-----	3,696	2,355	2,439	1.04
Di(2-ethylhexyl) sebacate-----	2,868	2,541	2,135	.84
All other sebacic acid esters-----	318	278	311	1.12
Stearic acid esters, total-----	17,012	14,081	4,840	.34
n-Butyl stearate-----	11,181	9,127	2,833	.31
All other stearic acid esters-----	5,831	4,954	2,007	.41
Triethylene glycol di(caprylate-caprate)-----	2,578	2,546	899	.35
All other acyclic plasticizers ⁷ -----	119,435	95,395	31,694	.33

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 rounded figures.

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

⁴ Includes sales data for tricresyl phosphate, among other phosphate esters.

⁵ Includes data for alkylated naphthalene, glycol dibenzoates, hydrogenated terphenyls, isopropylidenediphenoxy propanol, toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

⁶ Adipic acid polyesters accounted for most of the production of complex linear polyesters and polymeric plasticizers.

⁷ Includes data for azelaic, citric and acetylcitric, lauric, myristic, palmitic, pelargonic, and ricinoleic acid esters, glyceryl and glycol esters, and other acyclic plasticizers, not separately shown.

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Plasticizers for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification code (according to list in table 3)
PLASTICIZERS, CYCLIC	
Coumarone-indene plasticizers-----	NEV.
N-Cyclohexyl-p-toluenesulfonamide-----	x.
Dibenzyl sebacate-----	WTH.
Diethylene glycol dibenzoate-----	VEL.
Di-tert-octylphenyl ether-----	DOW.
Dipropenediol dibenzoate-----	VEL.
N-Ethyl-p-toluenesulfonamide-----	MON.
Isopropylidenediphenoxypropanol-----	DOW.
Naphthalene, alkylated-----	ACC.
*Phosphoric acid esters:	
*Cresyl diphenyl phosphate-----	FMP, MON, MTR, SFS.
Dibutyl phenyl phosphate-----	MON, ORO.
Diphenyl octyl phosphate-----	MON.
*Tricresyl phosphate-----	FMP, MON, MTR, SFS.
Triphenyl phosphate-----	EK, MON, SFS.
*Phthalic anhydride esters:	
Butyl benzyl phthalate-----	MON.
Butyl cyclohexyl phthalate-----	CPS.
*Butyl octyl phthalates:	
Butyl 2-ethylhexyl phthalate-----	GRH, TEK, UCC.
Butyl n-octyl phthalate-----	RCI, USS.
Di(2-butoxyethyl) phthalate-----	ARC, HAL.
*Dibutyl phthalate-----	COM, EKT, GRH, MON, SW, UCC, USS.
Dicyclohexyl isodecyl phthalate-----	GRH.
Dicyclohexyl phthalate-----	FMP, MON, PFZ.
Diethyl isophthalate-----	PFZ.
*Diethyl phthalate-----	EKT, KF, MON, PFZ.
Diethyl phthalate-----	USS.
*Diisodecyl phthalate-----	CO, EKT, ENJ, GRH, PPL, RCI, TEK, UCC, USS.
Di-iso-hexyl phthalate-----	ENJ.
Diisononyl phthalate-----	ENJ, PFZ.
Di(2-methoxyethyl) phthalate-----	EKT.
Dimethyl isophthalate-----	PFZ.
*Dimethyl phthalate-----	EKT, KF, MON, PFZ. TCC.
Dinonyl phthalate-----	RCI.
*Diocetyl phthalates:	
Dicapryl phthalate-----	WTH.
Di(2-ethylhexyl) isophthalate-----	UCC.
*Di(2-ethylhexyl) phthalate-----	BAS, BFG, CO, EKT, ENJ, GRH, MON, PFZ, RCI, RUB, TEK, UCC, USS.
*Diiso-octyl phthalate-----	CO, ENJ, GRH, RCI, TEK, UCC, USS.
Di-n-octyl phthalate-----	EK, PPL, WRC.
Mixed dioctyl phthalates-----	TEK.
Diphenyl phthalate-----	MON.
*Di-tridecyl phthalate-----	ENJ, GRH, RCI, RUB, TEK, UCC, USS.
*Glycol phthalate esters:	
Butyl phthalyl butyl glycolate-----	MON.
Methyl phthalyl ethyl glycolate-----	MON.
Polyester of triethylene glycol (Phthalic anhydride).	UCC.
Propylene glycol bis(amy)l phthalate-----	UCC.
All other glycol phthalate esters-----	HPC, WTC.
n-Hexyl n-decyl phthalate-----	CO, ENJ, GRH, TEK, UCC.
Hexyl isodecyl phthalate-----	GRH.
Hexyl iso-octyl phthalate-----	PFZ.
n-Octyl n-decyl phthalate-----	GRH, RCI, TEK, UCC, USS.
All other phthalic anhydride esters-----	PFZ, RUB, TEK, UCC, USS, x, x.

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, CYCLIC--Continued	
Polyethylene glycol dibenzoate-----	VEL.
Tetrahydrofurfuryl oleate-----	EMR.
Toluenesulfonamide o-, p- mixtures-----	MON.
*Trimellitic acid esters:	
Tricapryl trimellitate-----	WTH.
Tri(2-ethylhexyl) trimellitate-----	GRH, PFZ, RCI.
Tri-n-hexyl n-decyl trimellitate-----	TEK.
Tri-n-hexyl trimellitate-----	CO.
Triisodecyl trimellitate-----	PFZ.
Triisononyl trimellitate-----	ENJ.
*Triiso-octyl trimellitate-----	ENJ, GRH, RCI, RUB, TEK, USS.
*Tri-n-octyl n-decyl trimellitate-----	GRH, PFZ, RCI, RUB.
*Triooctyl trimellitate-----	RUB, TEK, USS.
All other trimellitic acid esters-----	USS, x.
Trimethylpentanediol dibenzoate-----	VEL.
All other cyclic plasticizers-----	HAL, NEV, x.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters:	
Di[2-(butoxyethoxy)ethyl] adipate-----	FMP, RCI, TKL.
*Di(2-ethylhexyl) adipate-----	CO, DA, EKT, ENJ, GRH, MON, PFZ, RCI, RH, RUB, TEK, UCC, USS, WTH.
Diisobutyl adipate-----	GRH, HAL.
*Diisodecyl adipate-----	ENJ, GRH, PFZ, RCI, RH, RUB, UCC, USS.
Diisononyl adipate-----	ENJ.
*Diisopropyl adipate-----	SBC, VND, WTH.
Dinonyl adipate-----	WTH.
Di-octyl adipates: Diiso-octyl adipate-----	RH, USS.
Di-tridecyl adipate-----	GRH.
2-(Ethyl hexyl) butoxyethyl adipate-----	HAL.
n-Hexyl n-decyl adipate-----	GRH, TEK, USS.
n-Hexyl isodecyl adipate-----	GRH.
Iso-octyl isodecyl adipate-----	GRH, PFZ.
*n-Octyl n-decyl adipate-----	GRH, MON, RCI, RH, USS.
All other adipic acid esters-----	ARC, EK.
Azelaic acid esters:	
*Di(2-ethylhexyl) azelate-----	EKT, EMR, PFZ, RCI, UCC.
Di-n-hexyl azelate-----	EMR.
Diisobutyl azelate-----	HAL.
Diiso-octyl azelate-----	EMR, PFZ.
All other azelaic acid esters-----	EMR, HAL, PFZ.
1,4-Butanediol dicaprylate-----	RUB.
Butoxyethyl pelargonate-----	HAL.
Castor oil maleate-----	RH.
Citric and acetylcitric acid esters-----	ICI, PFZ.
*Complex linear polyesters and polymeric plasticizers-----	ASH, EKT, EXX, EMR, GRH, HAL, MON, PFZ, RCI, RH, RUB, TEK, WTC, WTH.
Di[(butoxyethoxy)ethoxy]methane-----	TKL.
Di(2-butoxyethyl) laurate-----	HAL.
Dibutyl tartrate-----	ARC.
Diethylene glycol dipelargonate (Dinonanoate)-----	EMR.
Diiso-octyl diglycolate-----	CCA.
*Epoxidized esters:	
Epoxidized linseed oils-----	ASH, VIK.
*Epoxidized soya oils-----	ASH, FMP, NTL, RH, UCC, VIK, WRC, WTC.
Epoxidized tall oils-----	RH.
*2-Ethylhexyl epoxytallates-----	ASH, NTL, UCC.

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, ACYCLIC--Continued	
*Epoxidized esters--Continued	
Octyl epoxystearates-----	WTC.
*Octyl epoxytallates-----	RH, TEK, WTC.
All other epoxidized esters-----	NTL, RH.
Glyceryl tributyrates and tripropionates-----	EKT.
Glycol pelargonates-----	EMR.
Isodecyl nonanoate (Isodecyl pelargonate)-----	EMR.
Myristic acid esters:	
*Isopropyl myristate-----	ARC, TCH, WM, WTH.
All other myristic acid esters-----	SBC, SCP.
*Oleic acid esters:	
2-Butoxyethyl oleate-----	ARC, HAL.
*Butyl oleate-----	ARC, EMR, GRO, HAL, WM, WTH.
Decyl oleate-----	SBC, VND.
Glyceryl trioleate (Triolein)-----	CHL, EMR, GLY, GRO.
Isobutyl oleate-----	DA.
Isopropyl oleate-----	EMR, WM.
*Methyl oleate-----	DA, EFH, EMR, GRO, HUM.
*Propyl oleate-----	CHL, EMR, GRO, WM.
Palmitic acid esters:	
2-Ethylhexyl palmitate-----	VNO, WTH.
Isobutyl palmitate-----	ARC.
Iso-octyl palmitate-----	RUB.
*Isopropyl palmitate-----	ARC, SBC, TCH, WM, WTH.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate-----	FMP.
Tri(2-chloroethyl) phosphate-----	SFS, UCC.
Tri(2-chloropropyl) phosphate-----	SFS.
Triethyl phosphate-----	EKT.
Trioctyl phosphate-----	UCC.
All other phosphoric acid esters-----	SCP, SFS, SM.
Ricinoleic and acetylricinoleic acid esters:	
n-Butyl acetylricinoleate-----	NTL.
Butyl ricinoleate-----	NTL, RCI.
*Glyceryl monoricinoleate-----	DA, GLY, HAL, NTL.
Glyceryl tri(acetylricinoleate)-----	NTL, PFZ.
Methyl ricinoleate-----	NTL.
All other ricinoleic and acetylricinoleic acid esters--	NTL.
*Sebacic acid esters:	
Dibutoxyethyl sebacate-----	HAL, RCI.
*Dibutyl sebacate-----	EKT, GRH, PFZ, RH, USS, WTH.
*Di(2-ethylhexyl) sebacate-----	GRH, RCI, RH, WTH.
Diiso-octyl sebacate-----	DA.
Diisopropyl sebacate-----	WTH.
Dimethyl sebacate-----	WTH.
*Stearic acid esters:	
Butoxyethyl stearate-----	ARC.
*n-Butyl stearate-----	ARC, ASH, CHL, DA, EMR, GRO, RUB, TCH, WM, WTH.
Dimethylammonium stearate-----	RH.
Dodecyl (lauryl) stearate-----	RCI.
2-Ethylhexyl stearate-----	HAL, SCP.
Glyceryl triacetyl stearate-----	NTL.
Hexadecyl stearate-----	SCP, WTH.
2-Hydroxypropyl stearate-----	WTH.
Isobutyl stearate-----	ARC, DA, TCH, WM.
Isopropyl isostearate-----	TCH.
Isopropyl stearate-----	WM.
Methyl pentachlorostearate-----	HK.
Methyl stearate-----	CHL.
All other stearic acid esters-----	ARC, DA, SBC, WM, x.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, ACYCLIC--Continued Sucrose acetate isobutyrate----- Tetraethylene glycol di(2-ethylhexanoate)----- Triethylene glycol dicaprylate----- *Triethylene glycol di(caprylate-caprate)----- Triethylene glycol di(2-ethylbutyrate)----- Triethylene glycol di(2-ethylhexanoate)----- 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate----- All other acyclic plasticizers-----	ARC, EKT. UCC. RUB. HAL, PVO, RUB, WM. UCC. UCC. EKV. EMR, HAL, HPC, PFZ, SCP, SM, WTH.

PLASTICIZERS

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TABLE 3.--PLASTICIZERS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of plasticizers manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of Company
ACC	Amoco Chemicals Corp.	NEV	Neville Chemical Co.
ARC	Armak Co.	NTL	NL Industries, Inc.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	ORO	Chevron Chemical Co.
BAS	BASF Wyandotte Corp.	PFZ	Pfizer, Inc.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PPL	Pioneer Plastics Corp.
CCA	Cincinnati Milacron Chemicals, Inc.	PVO	PVO International, Inc.
CHL	Chemol, Inc.	RCI	Reichhold Chemicals, Inc.
CO	Continental Oil Co.	RH	Rohm & Haas Co.
COM	Commercial Solvents Corp.	RUB	Hooker Chemical Corp., Ruco Div.
CPS	CPS Chemical Co.	SBC	Scher Brothers, Inc.
DA	Diamond Shamrock Corp.	SCP	Henkel, Inc.
DOW	Dow Chemical Co.	SFS	Stauffer Chemical Co., Specialty Chemical Div.
EFH	E. F. Houghton & Co.	SM	Mobil Oil Corp., Mobil Chemical Co. Div.: Chemical Coatings Div.
EK	Eastman Kodak Co.:		Industrial Chemical Div.
EKT	Tennessee Eastman Co. Div.	SW	Sherwin-Williams Co.
EKX	Texas Eastman Co. Div.		
EMR	Emery Industries, Inc.	TCC	Tanatex Chemical Corp.
ENJ	Enjay Chemical Co.	TCH	Emory Industries, Inc., Trylon Chemicals Div.
FMP	FMC Corp., Organic Chemicals Div.	TEK	Teknor Apex Co.
GLY	Glyco Chemicals, Inc.	TKL	Thiokol Chemical Corp.
GRH	W. R. Grace & Co., Hatco Chemical Div.	UCC	Union Carbide Corp.
GRO	Millmaster Onyx Corp., A. Gross & Co., Div.	USS	USS Chemicals Div. of U.S. Steel Corp.
HAL	C. P. Hall Co. of Illinois	VEL	Velsicol Chemical Corp.
HK	Hooker Chemicals & Plastic Corp.	VIK	Viking Chemical Co.
HPC	Hercules, Inc.	VND	Van Dyk & Co., Inc.
HUM	Kraftco Corp., Humko Plastics Div.	WM	Inolex Corp.
ICI	ICI America, Inc.	WRC	Ventron Corp., Wood Ridge Chemical
KF	Kay-Fries Chemicals, Inc.	WTC	Witco Chemical Co., Inc.
MON	Monsanto Co.	WTH	Union Carbide Corp., Harchem Div.
MTR	Sobin Chemicals, Inc., Montrose Chemical Div.		

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

SURFACE-ACTIVE AGENTS

Surface-Active Agents

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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, paints, pharmaceuticals, and many other products.

The statistics for production and sales of surface-active agents are grouped by ionic class and by chemical class and subclass. All quantities are reported in terms of 100-percent organic surface-active ingredient 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.

Total U.S. production of surface-active agents in 1973 amounted to 4,372 million pounds, or 8.2 percent more than the 4,039 million pounds reported for 1972. Sales of bulk surface-active agents in 1973 amounted to 2,580 million pounds, valued at \$532 million, compared with sales in 1972 of 2,258 million pounds, valued at \$451 million. In terms of quantity, sales in 1973 were thus 14.3 percent larger than in 1972; in terms of value sales in 1973 were 18.0 percent larger than in 1972.

Production of anionic surface-active agents in 1973 amounted to 2,967 million pounds, or 68.0 percent of the total output reported for 1973 and 8.0 percent greater than the anionic output reported for 1972. Sales of anionics in 1973 amounted to 1,519 million pounds, valued at \$228 million. Of the total anionic output, 922 million pounds consisted of potassium and sodium salts of fatty, rosin, and tall oil acids, of which 528 million pounds consisted of the potassium and sodium salts of tallow acids and 139 million pounds was the sodium salt of coconut oil acids; 678 million pounds consisted of alkylbenzenesulfonates, of which 374 million pounds was sodium dodecylbenzenesulfonate, 149 million pounds was dodecylbenzenesulfonic acid, and 120 million pounds was sodium tridecylbenzenesulfonate; 689 million pounds consisted of ligninsulfonates, of which 462 million pounds was the calcium salt; and 220 million pounds consisted of sulfated ethers.

Production of nonionic surface-active agents in 1973 amounted to 1,124 million pounds, or 25.7 percent of the total output reported for 1973

and 7.2 percent more than the nonionic output reported for 1972. Sales of nonionics in 1973 amounted to 834 million pounds, valued at \$202 million. Of the total nonionic output, 283 million pounds consisted of benzenoid ethers, of which 152 million pounds was nonylphenol ethoxylate; 501 million pounds consisted of alcohol ethoxylates and other nonbenzenoid ethers, of which 377 million pounds was mixed linear alcohols ethoxylates; 110 million pounds consisted of glycerol esters; and 94 million pounds consisted of alkanolamides.

Production of cationic surface-active agents in 1973 amounted to 260 million pounds, or 5.9 percent of the total output reported for 1973 and 13.5 percent greater than the cationic output reported for 1972. Sales of cationics in 1973 amounted to 207 million pounds, valued at \$89 million. Of the total cationic output, 83 million pounds consisted of quaternary ammonium salts not containing oxygen, and 84 million pounds consisted of amines not containing oxygen.

Production of amphoteric surface-active agents in 1973 amounted to 21.1 million pounds, or 0.5 percent of the total output reported for 1973 and 46.5 percent greater than the amphoteric output reported for 1972. Sales of amphoterics in 1973 amounted to 19.6 million pounds, valued at \$13.2 million.

The difference between production and sales reflects inventory changes and captive consumption of soaps and 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.

SURFACE-ACTIVE AGENTS

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TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all surface-active agents for which reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all surface-active agents for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	4,372,416	2,579,664	531,840	\$0.21
Benzenoid ⁴ -----	1,108,452	627,521	120,945	.19
Nonbenzenoid ⁵ -----	3,263,964	1,952,143	410,895	.21
<i>Amphoteric Surface-Active Agents</i>				
Total-----	21,145	19,615	13,212	.67
<i>Anionic Surface-Active Agents</i>				
Total-----	2,967,119	1,519,152	227,509	.15
Carboxylic acids (and salts thereof), total-----	939,159	...	...	...
Carboxylic acids having amide, ester, or ether linkages, total-----	17,155	13,309	8,794	.66
N-Lauroylsarcosine, sodium salt-----	4,571	...	...	...
All other-----	12,584	13,309	8,794	.66
Potassium and sodium salts of fatty, rosin, and tall acids, total-----	922,004	...	...	...
Castor oil acids, potassium salt-----	...	59	20	.34
Coconut oil acid, potassium salt-----	10,149	1,974	926	.47
Coconut oil acid, sodium salt-----	139,452	978	333	.34
Corn oil acids, potassium and sodium salts-----	782	749	288	.39
Mixed vegetable oil acids, potassium salt-----	3,109	2,847	3,896	1.37
Oleic acid, potassium salt-----	...	298	108	.36
Oleic acid, sodium salt-----	1,450	501	196	.39
Soybean oil acids, potassium and sodium salts-----	579	521	111	.21
Stearic acid, potassium and sodium salts-----	1,750	1,338	598	.45
Tall oil acids, potassium salt-----	17,910	15,821	4,008	.25
Tall oil acids, sodium salt-----	10,876	...	...	...
Tallow acids, potassium and sodium salts-----	528,151	10,313	2,136	.21
All other-----	207,796	...	...	...
Phosphoric and polyphosphoric acid esters (and salts thereof), total-----	28,594	20,909	10,152	.49
Alcohols and phenol, ethoxylated and phosphated, total-----	18,313	13,513	6,166	.46
Mixed linear alcohols, ethoxylated and phosphated-----	3,955	3,856	1,813	.47
Nonylphenol, ethoxylated and phosphated-----	7,403	4,174	1,724	.41
Phenol, ethoxylated and phosphated-----	1,591	...	...	...
Tridecyl alcohol, ethoxylated and phosphated-----	784	693	271	.39
All other-----	4,580	4,790	2,358	.49
Alcohols, phosphated or polyphosphated, total-----	10,281	7,396	3,986	.54
2-Ethylhexyl phosphate, sodium salt-----	508	227	80	.35
All other-----	9,773	7,169	3,906	.55
Sulfonic acids (and salts thereof), total-----	1,524,356	...	...	...
Alkylbenzenesulfonates, total-----	678,447	234,651	34,529	.15
Dodecylbenzenesulfonic acid-----	149,096	67,251	9,089	.14
Dodecylbenzenesulfonic acid, calcium salt-----	8,767	8,558	3,979	.46
Dodecylbenzenesulfonic acid, isopropylamine salt-----	5,387	6,489	2,004	.31
Dodecylbenzenesulfonic acid, sodium salt-----	374,355	91,310	14,789	.16
Dodecylbenzenesulfonic acid, triethanolamine salt-----	6,681	...	...	...

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
<i>Anionic Surface-Active Agents--Continued</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Sulfonic acids (and salts thereof)--Continued				
Alkylbenzenesulfonates--Continued				
Tridecylbenzenesulfonic acid, sodium salt-----	119,926	...	...	...
All other-----	14,235	61,043	4,668	\$0.08
.Benzene-, cumene-, toluene-, and xylenesulfonates, total-----	77,018	64,244	6,764	.11
Toluenesulfonic acid, potassium and sodium salts-----	16,173	16,192	1,709	.11
Xylenesulfonic acid, ammonium salt-----	14,608	14,396	1,362	.09
Xylenesulfonic acid, sodium salt-----	40,139	28,497	3,008	.11
All other-----	6,098	5,159	685	.13
Ligninsulfonates, total-----	689,495	667,117	22,602	.03
Ligninsulfonic acid, ammonium salt-----	94,573	84,080	1,549	.02
Ligninsulfonic acid, calcium salt-----	462,183	447,985	8,858	.02
All other-----	132,739	135,052	12,195	.09
Naphthalenesulfonates-----	7,647	7,110	2,970	.42
Sulfonic acids having amide linkages, total-----	5,828	3,505	2,672	.76
Sulfosuccinic acid derivatives-----	2,324	1,876	1,403	.75
Taurine derivatives-----	3,504	1,629	1,269	.78
Sulfonic acids having ester or ether linkages, total-----	45,549	29,087	18,720	.64
Sulfosuccinic acid esters, total-----	17,166	14,619	8,250	.56
Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl) ester, sodium salt-----	595	...	...	...
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt-----	13,080	10,870	6,237	.57
All other-----	3,491	3,749	2,013	.54
Other sulfonic acids having ester or ether linkages-----	28,383	14,468	10,470	.72
All other sulfonic acids-----	20,372	...	...	...
Sulfuric acid esters (and salts thereof), total-----	...	222,817	57,559	.26
Acids, amides, and esters, sulfated, total-----	...	16,385	4,620	.28
Esters of sulfated oleic acid, total-----	4,759	4,761	1,631	.34
Butyl oleate, sulfated, sodium salt-----	1,458	1,577	459	.29
Propyl oleate, sulfated, sodium salt-----	517	515	161	.31
All other-----	2,784	2,669	1,011	.38
Tall oil, sulfated, sodium salt-----	3,492	3,372	680	.20
Other acids, amides, and esters, sulfated-----	...	8,252	2,309	.28
Alcohols, sulfated, total-----	...	37,813	18,428	.49
Decyl sulfate, sodium salt-----	251	238	102	.43
Dodecyl sulfate salts, total-----	48,633	30,579	14,907	.49
Dodecyl sulfate, ammonium salt-----	...	2,458	1,264	.51
Dodecyl sulfate, magnesium salt-----	655	653	402	.62
Dodecyl sulfate, sodium salt-----	18,904	17,664	8,381	.47
Dodecyl sulfate, triethanolamine salt-----	7,570	7,568	3,190	.42
All other-----	21,504	2,236	1,670	.75
Mixed linear alcohols, sulfated, ammonium salt-----	835	734	307	.42
Mixed linear alcohols, sulfated, sodium salt-----	...	1,523	672	.44
Octyl sulfate, sodium salt-----	389	387	300	.78
Other alcohols, sulfated-----	...	4,352	2,140	.49
Ethers, sulfated, total-----	219,587	138,470	26,224	.19
Alkylphenols, ethoxylated and sulfated, total-----	3,842	3,924	1,275	.33
Nonylphenol, ethoxylated and sulfated, sodium salt-----	145	201	53	.26
All other-----	3,697	3,723	1,222	.33
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt-----	2,356	2,356	523	.22

See footnotes at end of table.

SURFACE-ACTIVE AGENTS

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TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Anionic Surface-Active Agents--Continued</i>				
Sulfuric acid esters (and salts thereof)--Continued				
Ethers, sulfated--Continued				
Dodecyl alcohol, ethoxylated and sulfated, sodium salt-----	7,845	7,613	3,672	\$0.48
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt-----	96,277	...	...	...
Mixed linear alcohols, ethoxylated and sulfated, sodium salt-----	...	23,937	4,972	.21
All other-----	109,267	100,640	15,782	.16
Natural fats and oils, sulfated, total-----	31,853	30,149	8,287	.28
Castor oil, sulfated, sodium salt-----	5,920	5,664	2,707	.48
Coconut oil, sulfated, sodium salt-----	871	774	280	.36
Cod oil, sulfated, sodium salt-----	1,666	1,656	274	.17
Herring oil, sulfated, sodium salt-----	690	688	139	.20
Mixed fish oils, sulfated, sodium salt-----	4,023	3,728	747	.20
Neat's-foot oil, sulfated, sodium salt-----	2,066	1,407	333	.24
Ricebran oil, sulfated, sodium salt-----	9	9	2	.22
Soybean oil, sulfated, sodium salt-----	614	566	101	.18
Sperm oil, sulfated, sodium salt-----	778	688	184	.27
Tallow, sulfated, sodium salt-----	5,860	5,869	1,014	.17
All other-----	9,356	9,100	2,506	.28
Other anionic surface-active agents ⁶ -----	165,211	221,004	50,127	.23
<i>Cationic Surface-Active Agents</i>				
Total-----	260,452	206,589	88,705	.43
Amine oxides and oxygen-containing amines (except those having amide linkages), total-----	47,477	23,865	14,651	.61
Acyclic, total-----	41,983	18,995	12,394	.65
(Coconut oil alkyl)amine, ethoxylated-----	3,955	3,355	1,269	.38
(9-Octadecenyl)amine, ethoxylated-----	1,279	1,163	430	.37
(Tallow alkyl)amine, ethoxylated-----	2,098	2,327	1,062	.46
All other-----	34,651	12,150	9,633	.79
Cyclic (except imidazoline and oxazoline derivatives)-----	1,717	1,661	517	.31
Imidazoline and oxazoline derivatives, total-----	3,777	3,209	1,740	.54
2-Heptadecyl-1-(2-hydroxyethyl)-2-imidazoline-----	312	264	193	.73
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline-----	1,043	536	242	.45
All other-----	2,422	2,409	1,305	.54
Amines and amine oxides having amide linkages, total-----	27,638	25,978	7,844	.30
Carboxylic acid - diamine and polyamine condensates, total-----	22,980	22,337	5,653	.25
Mixed fatty acids - polyalkylenepolyamine condensate-----	2,601	2,698	1,026	.38
Tall oil acids - diethylenetriamine and polyalkylene-polyamine condensate-----	18,067	17,974	2,866	.16
All other-----	2,312	1,665	1,761	1.05
Other amines and amine oxides having amide linkages-----	4,658	3,641	2,191	.60
Amines, not containing oxygen (and salts thereof), total-----	83,923	62,039	25,775	.42
Amine salts-----	2,339	2,553	732	.29
Diamines and polyamines, total-----	16,332	15,060	4,927	.33
Imidazoline derivatives-----	1,539	1,044	464	.44
N-(Mixed alkyl)polyethylenepolyamine-----	4,384	4,265	765	.18

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Cationic Surface-Active Agents--Continued</i>				
Amines, not containing oxygen (and salts thereof)--Continued				
Diamines and polyamines--Continued				
N-(9-Octadecenyl)trimethylenediamine-----	2,661	2,970	1,144	\$0.39
N-(Tallow alkyl) trimethylenediamine-----	5,866	5,040	1,741	.35
All other-----	1,882	1,741	813	.47
Primary monoamines, total-----	36,442	28,012	11,339	.41
(Coconut oil alkyl)amine-----	1,254	1,260	656	.52
9-Octadecenylamine-----	7,262	6,500	2,714	.42
Octadecylamine-----	...	685	331	.48
(Tallow alkyl)amine-----	6,560	4,564	1,882	.41
All other-----	21,366	15,003	5,756	.38
Secondary and tertiary monoamines, total-----	28,810	16,414	8,777	.54
Bis(hydrogenated tallow alkyl)amine-----	974	...	...	...
N,N-Dimethyl(hydrogenated tallow alkyl)amine-----	4,296	...	...	...
N-Methylbis(coconut oil alkyl)amine-----	...	220	117	.53
N-Methylbis(hydrogenated tallow alkyl)amine-----	...	934	328	.35
All other-----	23,540	15,260	8,332	.55
Oxygen-containing quaternary ammonium salts-----	18,902	18,405	6,950	.38
Quaternary ammonium salts, not containing oxygen, total-----	82,512	76,302	33,485	.44
Acyclic, total-----	63,384	60,082	20,382	.34
Bis(hydrogenated tallow alkyl)dimethylammonium chloride-----	29,672	29,180	7,416	.25
All other-----	33,712	30,902	12,966	.42
Benzenoid, total-----	19,128	16,220	13,103	.81
Benzyl (coconut oil alkyl)dimethylammonium chloride-----	726	735	638	.87
Benzyl dimethyl(mixed alkyl)ammonium chloride-----	9,387	9,009	7,598	.84
Benzyl dimethyloctadecylammonium chloride-----	1,392	...	...	...
Benzyl dimethyltetradecylammonium chloride-----	345	...	...	...
All other-----	7,278	6,476	4,867	.75
<i>Nonionic Surface-Active Agents</i>				
Total-----	1,123,700	834,308	202,414	.24
Carboxylic acid amides, total-----	94,032	58,648	19,658	.34
Diethanolamine condensates (amine/acid ratio=2/1), total--	22,757	16,996	5,747	.34
Capric acid-----	181	145	72	.50
Coconut oil acids-----	10,061	8,925	3,087	.35
Coconut oil and tallow acids-----	3,584	2,379	575	.24
Lauric acid-----	1,785	635	292	.46
Oleic acid-----	1,216	969	347	.36
Stearic acid-----	617	429	152	.35
Tall oil acids-----	1,194	211	65	.31
All other-----	4,119	3,303	1,157	.35
Diethanolamine condensates (other amine/acid ratios), total-----	45,989	32,738	10,823	.33
Coconut oil acids (amine/acid ratio=1/1)-----	23,825	20,532	6,205	.30
Lauric acid (amine/acid ratio=1/1)-----	9,986	6,918	2,808	.41
Oleic acid (amine/acid ratio=1/1)-----	618	...	...	...
Stearic acid (amine/acid ratio=1/1)-----	413	380	177	.47
All other-----	11,147	4,908	1,633	.33
All other carboxylic acid amides-----	25,286	8,914	3,088	.35

See footnotes at end of table.

SURFACE-ACTIVE AGENTS

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TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nonionic Surface-Active Agents--Continued</i>				
Carboxylic acid esters, total-----	245,867	190,466	67,039	\$0.35
Anhydrosorbitol esters, total-----	29,001	17,918	7,042	.39
Anhydrosorbitol monoester of tall oil acids-----	132	...	...	...
Anhydrosorbitol mono-oleate-----	8,066	6,400	2,515	.39
Anhydrosorbitol trioleate-----	1,152	...	...	...
All other-----	19,651	11,518	4,527	.39
Diethylene glycol esters, total-----	2,228	2,117	668	.32
Diethylene glycol distearate-----	650	...	...	...
Diethylene glycol monolaurate-----	33	39	17	.44
Diethylene glycol monostearate-----	451	451	171	.38
Diethylene glycol sesquilaurate-----	...	340	124	.36
All other-----	1,094	1,287	356	.28
Ethoxylated anhydrosorbitol esters, total-----	30,392	23,666	9,446	.40
Ethoxylated anhydrosorbitol monolaurate-----	10,078	...	...	...
Ethoxylated anhydrosorbitol monopalmitate-----	333	...	...	...
Ethoxylated anhydrosorbitol monostearate-----	5,814	4,703	2,046	.44
Ethoxylated anhydrosorbitol tristearate-----	...	1,256	491	.39
All other-----	14,167	17,707	6,909	.39
Ethylene glycol esters-----	3,872	3,905	1,529	.39
Glycerol esters, total-----	109,849	88,727	29,022	.33
Complex glycerol esters-----	8,998	6,780	2,829	.42
Glycerol esters of chemically defined acids, total-----	26,149	18,371	6,966	.38
Glycerol monocaprylate-----	439	351	249	.71
Glycerol monolaurate-----	...	46	22	.48
Glycerol mono-oleate-----	4,039	2,633	988	.38
Glycerol monostearate-----	21,225	14,564	5,351	.37
All other-----	446	777	356	.46
Glycerol esters of mixed acids, total-----	74,702	63,576	19,227	.30
Glycerol monoester of hydrogenated cottonseed oil acids-----	2,918	...	...	...
Glycerol monoester of hydrogenated soybean oil acids--	16,176	12,696	4,159	.33
Glycerol monoester of lard acids-----	5,268	3,656	1,032	.28
All other-----	50,340	47,224	14,036	.30
Natural fats and oils, alkoxylated, total-----	11,444	10,910	3,547	.33
Castor oil, ethoxylated-----	6,286	5,688	2,243	.39
Hydrogenated castor oil, ethoxylated-----	2,777	2,815	751	.27
Lanolin, ethoxylated-----	871	748	246	.33
All other-----	1,510	1,659	307	.19
Polyethylene glycol esters, total-----	33,668	25,206	9,782	.39
Polyethylene glycol esters of chemically defined acids, total-----	25,325	18,879	7,930	.42
Polyethylene glycol dilaurate-----	1,501	1,169	460	.39
Polyethylene glycol dioleate-----	4,370	1,407	546	.39
Polyethylene glycol monolaurate-----	4,387	4,195	1,762	.42
Polyethylene glycol mono-oleate-----	2,565	2,282	908	.40
Polyethylene glycol monostearate-----	7,126	5,907	2,403	.41
Polyethylene glycol sesquioleate-----	128	86	28	.33
All other-----	5,248	3,833	1,823	.48
Polyethylene glycol esters of tall oil acids-----	6,054	4,425	1,221	.28
Polyethylene glycol esters of other mixed acids, total--	2,289	1,902	631	.33
Polyethylene glycol sesquiesther of coconut oil acids--	327	307	179	.58
All other-----	1,962	1,595	452	.28
Polyglycerol esters-----	6,327	6,318	1,393	.22

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nonionic Surface-Active Agents--Continued</i>				
Carboxylic acid esters--Continued				
Propanediol esters, total-----	4,675	1,993	947	\$0.48
1,2-Propanediol monolaurate-----	87	98	66	.67
1,2-Propanediol monostearate-----	3,075	1,581	752	.48
All other-----	1,513	314	129	.41
Other carboxylic acid esters-----	14,411	9,706	3,663	.38
Ethers, total-----	783,801	585,194	115,717	.20
Benzenoid ethers, total-----	282,946	267,530	49,619	.19
Dodecylphenol, ethoxylated-----	14,359	15,149	2,252	.15
Nonylphenol, ethoxylated-----	152,213	158,254	25,797	.16
Phenol, ethoxylated-----	7,327	6,967	1,128	.16
All other-----	109,047	87,160	20,442	.24
Nonbenzenoid ethers, total-----	500,855	317,664	66,098	.21
Linear alcohols, alkoxylated, total-----	430,509	259,696	45,258	.17
Decyl alcohol, ethoxylated-----	1,468	1,008	293	.29
Dodecyl alcohol, ethoxylated-----	6,611	6,387	1,397	.22
Mixed linear alcohols, ethoxylated-----	377,507	225,228	35,811	.16
Mixed linear alcohols, ethoxylated and propoxylated--	23,901	21,225	4,442	.21
9-Octadecenyl alcohol, ethoxylated-----	2,297	2,452	1,542	.63
Octadecyl alcohol, ethoxylated-----	1,416	574	335	.58
All other-----	17,309	2,822	1,438	.51
Other ethers and thioethers, total-----	70,346	57,968	20,840	.36
Tridecyl alcohol, ethoxylated-----	8,044	6,683	1,784	.27
All other ⁸ -----	62,302	51,285	19,056	.37

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 rounded 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 Includes ligninsulfonates.

⁶ Includes production of "all other" sulfated alcohols; also includes sales of "all other" potassium and sodium salts of fatty, rosin, and tall oil acids.

⁷ Includes ethoxylated sorbitol esters and miscellaneous esters.

⁸ Includes "other" nonionic surface-active agents.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973

[Surface-active agents for which separate statistics are given in table 1 are marked with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Amphoteric Surface-Active Agents</i>	
Acyclic:	
Alkylbetaine-----	DUP.
(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-[2-(Carboxymethylamino)ethyl]-N-(2-hydroxyethyl)- coconut oil amide, sodium salt.	WM.
(Carboxymethyl)[3-(coconut oil amido)propyl]dimethyl- ammonium chloride, ammonium salt.	x.
(Carboxymethyl)[3-(coconut oil amido)propyl]di- methylammonium chloride, sodium salt.	x.
(Carboxymethyl)[3-(coconut oil amido)propyl]dimethyl- ammonium hydroxide, inner salt.	ASH, BRD, TCH.
(1-Carboxyundecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-(Coconut oil alkyl)- β -alanine, partial sodium salt---	GNM.
N-(Coconut oil alkyl)- β -alanine, sodium salt-----	GNM.
3-[(Coconut oil alkyl)amino]butyric acid, sodium salt.	ARC.
N-(2-Coconut oil amidoethyl)-N-(2-hydroxyethyl)- glycine, sodium salt.	TCC.
N-(Dodecyl and tetradecyl)- β -alanine-----	GNM.
N-(Dodecyl and tetradecyl)- β -alanine, triethanolamine salt.	GNM.
N-Dodecyl-3-iminodipropionic acid-----	GNM.
N-Dodecyl-3-iminodipropionic acid, disodium salt-----	GNM.
Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt.	ASH, RH.
(Mixed alkyl)sulfobetaine-----	TXT.
Mixed fatty betaines-----	TXT.
Oleic acid - ethylenediamine condensate, propoxylated and sulfated, sodium salt.	S.
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt.	FNX, GNM.
All other acyclic-----	ARC, x.
Cyclic:	
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolium chloride, disodium salt.	BRD.
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium hydroxide, disodium salt.	MIR.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2- imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imid- azolinium hydroxide, sodium derivative, sodium salt.	ASH, MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2- imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-dodecyl-2- imidazolinium hydroxide, sodium salt.	TCH.
Heptadecylmethylbenzimidazolesulfonic acid, sodium salt.	CGY.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents</i>	
*Carboxylic acids (and salts thereof):	
Amine salts of fatty, rosin, and tall oil acids:	
Coconut oil acids, diethanolamine salt-----	SOP.
Coconut oil acids, triethanolamine salt-----	SBP.
Lauric, myristic, and stearic acids, tri- ethanolamine salt.	SBP.
Oleic acid, n-butylamine salt-----	DYS.
Oleic acid, diethylamine salt-----	ONX, WTC.
Oleic acid, triethanolamine salt-----	DA.
Rosin acid, triethanolamine salt-----	ONX.
Stearic acid, dimethylpropylamine salt-----	WM.
Stearic acid, N,N,N'N'-tetrakis(2-hydroxyethyl)- ethylenediamine salt.	ICI.
Stearic acid, triethanolamine salt-----	GLY.
Tall oil acids, diethanolamine salt-----	SOP.
Tallow acids, ethanolamine salt-----	SBP.
Tallow acids, triethanolamine salt-----	SBP.
*Carboxylic acids having amide, ester, or ether linkages:	
N-(Coconut oil acyl)sarcosine, sodium salt-----	HMP.
Diisobutylene - maleic anhydride copolymer, ammonium and sodium salts (Diisobutylene maleate).	RH.
Epoxidized oleic acid, ammonium salt-----	SCP.
*N-Lauroylsarcosine, sodium salt-----	CP, HMP, ONX.
Lauryl(ethyleneoxy)propionic acid, sodium salt-----	SEY.
N-(Mixed alkylsulfonyl)glycine, sodium salt-----	GAF.
N-Oleoylpolypeptide, sodium salt-----	LMI.
N-Oleoylsarcosine, sodium salt-----	GAF.
Stearyl-2-lactylic acid-----	GLY.
Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt.	SYL.
Unspecified sarcosine derivatives-----	HMP.
All other-----	BRD, x.
*Potassium and sodium salts of fatty, rosin, and tall oil acids:	
Animal grease, sodium salt-----	NMC.
*Castor oil acids, potassium salt-----	NTL, PEK, SEA.
Castor oil acid, sodium salt-----	HEW, NTL.
Cocoa butter acids, sodium salt-----	HEW.
*Coconut oil acids, potassium salt-----	AES, CON, DA, DYS, ESS, GRC, GRL, HEW, HNT, JRG, MCP, NMC, PCH, PEK, PG, SOP.
*Coconut oil acids, sodium salt-----	AGP, CON, CP, GRC, HEW, JRG, LEV, NMC, NPR, PG. BSW.
*Corn oil acids, potassium and sodium salts:	
Potassium salt-----	GRC, HNT, NMC.
Sodium salt-----	GRC, NMC.
Lauric acid, potassium salt-----	USR.
Lauric acid, sodium salt-----	HEW.
Mixed fish oil acids, sodium salt-----	DA.
*Mixed vegetable oil acids, potassium salt-----	AES, DYS, GRC, GRL, LUR, PCH, PEK.
*Oleic acid, potassium salt-----	AES, ARL, DA, DAN, GYR, HNT, SCP, SHP, USR, WBG.
*Oleic acid, sodium salt-----	BSW, DA, LUR, MRV, NMC, USR, WBG, WTC.
Olive oil acids, sodium salt-----	HEW, HNT, LUR.
Palm oil acids, sodium salt-----	HEW, NMC, PRX.
Peanut oil acids, potassium salt-----	KAL, SLC.
Rosin acids, potassium salt-----	ASY, GYR, SNW, USR, x.
Rosin acids, sodium salt-----	ASY, CRT, HRT, PRX, SLM, x.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Carboxylic acids (and salts thereof)--Continued	
*Potassium and sodium salts of fatty, rosin, and tall oil acids--Continued	
*Soybean oil acids, potassium and sodium salts:	
Potassium salt-----	CON, DYS, HEW, PCH.
Sodium salt-----	HEW, NMC.
*Stearic acid, potassium and sodium salts:	
Stearic acid, potassium salt-----	CON, DYS, HEW, SCO, USR, WTC.
Stearic acid, sodium salt-----	DA, HEW, JRG, WTC.
*Tall oil acids, potassium salt-----	AES, ASY, CON, DYS, ESS, GAF, GRC, GYR, HNT, MCP, NMC, PEK, PNK, SOP, VAL, x.
*Tall oil acids, sodium salt-----	CON, GRC, GYR, MRV, PRX, SOP, UNP, x.
Tallow acids, potassium and sodium salts:	
Potassium salt-----	AES, ASY, GYR, PG, USR.
Sodium salt-----	AGP, ASY, BSW, CON, CP, GRC, GYR, HEW, JRG, LEV, LUR, NMC, NPR, PG, PRX, USR.
All other-----	GYR, USR.
*Phosphoric and polyphosphoric acid esters (and salts thereof):	
*Alcohols and phenols, ethoxylated and phosphated:	
Butyl alcohol, ethoxylated and phosphated-----	GAF.
Dinonylphenol, ethoxylated and phosphated-----	ARL, GAF.
Dodecyl alcohol, ethoxylated and phosphated-----	GAF.
Dodecylphenol, ethoxylated and phosphated-----	GAF.
2-Ethylhexanol, ethoxylated and phosphated-----	FNX, WAY.
Isopentyl alcohol, ethoxylated and phosphated-----	GAF.
*Mixed linear alcohols, ethoxylated and phosphated----	BAS, CHP, CRT, CST, FNX, GAF, SEY, SNW, TCH, TXT, WIC, WTC.
*Nonylphenol, ethoxylated and phosphated-----	ARL, CRT, DEX, GAF, HDG, NLC, SCP, SEY, SOP, TCC, TXN, TXT, WAY, WTC.
Nonylphenol, ethoxylated and phosphated, barium salt.	GAF.
9-Octadecenyl alcohol, ethoxylated and phosphated----	ARL, RH, WAY.
Octylphenol, ethoxylated and phosphated-----	x.
Octylphenol, ethoxylated and phosphated, magnesium salt.	
*Phenol, ethoxylated and phosphated-----	FNX, GAF, WTC, x.
Polyalkylene glycol, phosphated-----	BAS.
Polyhydric alcohol, ethoxylated and phosphated-----	NLC.
Polypropylene glycol, phosphated-----	LUR.
*Tridecyl alcohol, ethoxylated and phosphated-----	ARL, FNX, GAF, SNW, TCC, WAY, WTC.
All other-----	GAF, WTC.
*Alcohols, phosphated or polyphosphated:	
Decyl, dodecyl, and octyl phosphate, morpholine salt.	DUP.
Decyl and octyl phosphate-----	TXN.
2-Ethylhexyl phosphate-----	WAY.
*2-Ethylhexyl phosphate, sodium salt-----	CHP, FNX, MRA, SEY, SYL, UCC.
2-Ethylhexyl phosphate, triethanolamine salt-----	SYL.
2-Ethylhexyl polyphosphate-----	x.
2-Ethylhexyl polyphosphate, sodium salt-----	x.
Hexyl phosphate-----	ICI.
Hexyl phosphate, potassium salt-----	ICI.
Hexyl polyphosphate, potassium salt-----	DEX.
Isooctyl phosphate-----	GAF.
Mixed alkyl phosphate-----	CST, DUP, SFS, TCC, WTC.
Mixed alkyl phosphate, diethanolamine salt-----	DUP.
9-Octadecenyl phosphate-----	DUP.
Octadecyl phosphate-----	DUP.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Phosphoric and polyphosphoric acid esters (and salts thereof)--Continued	
*Alcohols, phosphated or polyphosphated--Continued	
Octyl phosphate-----	TXT, WTC.
Octyl phosphate, alkylamine salt-----	DUP, NLC, TXT.
Octyl phosphate, potassium salt-----	DUP.
Octyl polyphosphate-----	DEX.
Octyl polyphosphate, potassium salt-----	SNW, x.
Oleyl phosphate-----	DUP.
Tridecyl phosphate-----	TCH.
All other-----	BRD, DUP, QCP, TCH, WTC, x.
*Sulfonic acids (and salts thereof):	
*Alkylbenzenesulfonates:	
*Dodecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid-----	ATR, CO, CRT, CTL, EMK, FNX, LAK, LEV, PIL, PLX, PRX, RCD, STP, TCI, TEN, WTC.
Dodecylbenzenesulfonic acid, ammonium salt-----	ARL, FNX, TXN.
Dodecylbenzenesulfonic acid, butylamine salt-----	WTC.
*Dodecylbenzenesulfonic acid, calcium salt-----	ICI, NLC, RCD, RH, STP, TMH, WTC.
Dodecylbenzenesulfonic acid, diethanolamine salt---	FNX.
Dodecylbenzenesulfonic acid, dimethylamine salt---	PIL.
Dodecylbenzenesulfonic acid, dimethylamino- propoxyamine salt.	TCH.
Dodecylbenzenesulfonic acid, ethylenediamine salt.	ICI.
Dodecylbenzenesulfonic acid, isopropanolamine salt.	ARD, CTL, SNW.
*Dodecylbenzenesulfonic acid, isopropylamine salt---	AAC, CHP, CIN, CTL, ICI, RCD, STP, TCH, WTC.
Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt.	ECC, NLC, TCH.
Dodecylbenzenesulfonic acid, potassium salt-----	RCD, SOP, STP, VAL.
*Dodecylbenzenesulfonic acid, sodium salt-----	AAC, ARD, ARL, ASH, ATR, BLA, CO, CP, CRT, CTL, DA, ECC, HLI, LEV, NMC, PG, PIL, PLX, PRX, QCP, RCD, SEY, SOP, STP, TEN, TXN, UCC, WIC, WTC.
Dodecylbenzenesulfonic acid, triethanolamine salt.	AAC, ARD, ARL, ATR, CTL, ECC, ESS, FNX, HLI, PIL, RCD, SOP, SOS, STP, TXN, WTC.
*Other alkylbenzenesulfonates:	
Decylbenzenesulfonic acid, sodium salt-----	LAK.
Didodecylbenzenesulfonic acid-----	CO, WTC.
Didodecylbenzenesulfonic acid, sodium salt-----	ATR.
Pentadecylbenzenesulfonic acid, potassium salt----	STP.
Tridecylbenzenesulfonic acid-----	CO, RCD.
Tridecylbenzenesulfonic acid, calcium salt-----	WTC.
*Tridecylbenzenesulfonic acid, sodium salt-----	BLA, CP, NPR, PG, RCD, TXT, WTC.
Undecylbenzenesulfonic acid-----	TXT.
Undecylbenzenesulfonic acid, ammonium salt-----	TXT.
Undecylbenzenesulfonic acid, sodium salt-----	TXT.
Undecylbenzenesulfonic acid, triethanolamine salt.	TXT.
All other-----	TXT, USR.
*Benzene-, cumene-, toluene-, and xylenesulfonates:	
Benzenesulfonic acid, sodium salt-----	NES.
*Cumenesulfonic acid, ammonium salt-----	NES, PRX, STP, WTC.
Cumenesulfonic acid, sodium salt-----	NES.
Toluenesulfonic acid-----	WTC.
*Toluenesulfonic acid, potassium and sodium salts:	
Potassium salt-----	NES, STP, TXN, WTC.
Sodium salt-----	CO, NES, PRX, STP, WTC.
Xylenesulfonic acid-----	HLI.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfonic acids (and salts thereof)--Continued	
*Benzene-, cumene-, toluene-, and xylenesulfonates--Continued	
*Xylenesulfonic acid, ammonium salt-----	CO, NES, STP, TXN, WTC.
Xylenesulfonic acid, potassium salt-----	NES.
*Xylenesulfonic acid, sodium salt-----	ATR, CO, ICI, NES, PIL, PRX, SDC, STP, TXT, WTC.
*Ligninsulfonates:	
Ligninsulfonic acid, aluminum salt-----	MAR.
*Ligninsulfonic acid, ammonium salt-----	CPP, CRZ, SPA, WVA.
*Ligninsulfonic acid, calcium salt-----	CRZ, CWP, LKY, MAR, PSP.
Ligninsulfonic acid, chromium salt-----	MAR, PSP, RAY.
Ligninsulfonic acid, copper salt-----	WVA.
Ligninsulfonic acid, iron salt-----	CRZ, WVA.
Ligninsulfonic acid, magnesium salt-----	MAR, WVA.
Ligninsulfonic acid, manganese salt-----	WVA.
Ligninsulfonic acid, potassium salt-----	SPA.
Ligninsulfonic acid, sodium salt-----	CRZ, MAR, PSP, RAY, SPA, WVA.
Ligninsulfonic acid, zinc salt-----	PSP, WVA.
All other-----	x.
*Naphthalenesulfonates:	
Benzylnaphthalenesulfonic acid-----	ECC.
Butylnaphthalenesulfonic acid, sodium salt-----	CLD, DA.
Dibutyl-naphthalenesulfonic acid-----	GAF, S.
Didodecyl-naphthalenesulfonic acid, sodium salt-----	PFZ.
Diisopropyl-naphthalenesulfonic acid, sodium salt-----	DA, PFZ.
Dipentyl-naphthalenesulfonic acid, (mixed alkyl)-amine salt.	NLC.
Dipentyl-naphthalenesulfonic acid, sodium salt-----	CGY.
Isopropyl-naphthalenesulfonic acid-----	DA, DUP, GRD.
Methylenebis(2-naphthalenesulfonic acid)-----	DUP.
Methylnaphthalenesulfonic acid, sodium salt-----	DA, UDI.
Methylnonyl-naphthalenesulfonic acid, sodium salt-----	UDI.
Tetrahydronaphthalenesulfonic acid, sodium salt-----	DUP.
*Sulfonic acids having amide linkages:	
*Sulfosuccinic acid derivatives:	
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt.	ACY, MOA.
N-(2-Hydroxyethyl)-N-(undecyl)sulfosuccinamic acid, disodium salt.	ARD.
N-Octadecylsulfosuccinamic acid, disodium salt-----	ACY.
N-(Oleoyloxyisopropyl)sulfosuccinamic acid, disodium salt.	WTC.
Sulfosuccinamic acid, alkanolamide ester, ammonium salt.	SCP.
Sulfosuccinic acid, alkanolamide ester, sodium salt.	HDG, SCP.
Sulfosuccinic acid, alkanolamide ester, tri-ethanolamine salt.	SCP.
Sulfosuccinic acid, 2-(coconut oil amido)ethyl ester, disodium salt.	LAK.
*Taurine derivatives:	
N-(Coconut oil acyl)-N-methyltaurine, sodium salt--	GAF, LIL, TNI.
N-Cyclohexyl-N-palmitoyltaurine, sodium salt-----	GAF.
N-Methyl-N-lauroyltaurine, sodium salt-----	GAF.
N-Methyl-N-myristoyltaurine, sodium salt-----	GAF.
N-Methyl-N-oleoyltaurine, sodium salt-----	DA, DEP, GAF, HRT.
N-Methyl-N-palmitoyltaurine, sodium salt-----	GAF.
N-Methyl-N-(tall oil acyl)taurine, sodium salt-----	CRT, FNX, GAF, MRA.
N-Methyl-N-(tallow acyl)taurine, sodium salt-----	GAF.
*Sulfonic acids having ester or ether linkages:	
*Sulfosuccinic acid esters:	
*Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl) ester, sodium salt.	DAN, ECC, GAF, MOA.
*Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt.	ACY, CGY, CHP, CRT, CST, DA, DAN, EMK, FNX, HDG, HRT, MCP, MOA, MRA, PC, SBC, SCO, WTC.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfonic acids (and salts thereof)--Continued	
*Sulfonic acids having ester or ether linkages--Continued	
*Sulfosuccinic acid esters--Continued	
Sulfosuccinic acid, bis(tallow monoglyceride) ester, sodium salt.	ACY.
Sulfosuccinic acid, dihexyl ester, sodium salt-----	ACY, MOA.
Sulfosuccinic acid, diisodecyl ester, sodium salt.	MCP.
Sulfosuccinic acid, diisooctyl ester, sodium salt.	RH.
Sulfosuccinic acid, dipentyl ester, sodium salt----	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt.	ACY, MOA.
Sulfosuccinic acid, monolauryl ester, sodium salt--	ARD.
*Other sulfonic acids having ester or ether linkages:	
Coconut oil acids, 2-sulfoethyl ester, sodium salt.	GAF, LEV, x.
Dodecyldiphenyloxidedisulfonic acid, disodium salt.	DOW.
Dodecyl sulfoacetate, sodium salt-----	STP.
Glycerol monostearate sulfoacetate, sodium salt----	WTC.
Herring oil, sulfonated, sodium salt-----	SLM.
Iso-octylphenol, ethoxylated and sulfonated, sodium salt.	RH.
n-Octylphehol, ethoxylated and sulfonated, sodium salt.	CRT.
All other-----	SLM.
*All other sulfonic acids:	
Butylhydroxybiphenylsulfonic acid-----	RBC.
Mixed alkanesulfonic acid, sodium salt-----	DUP.
Mixed linear alpha olefins, sulfonated-----	CP, LAK, NLC, STP.
Petroleumsulfonic acid, water soluble (acid layer), sodium salt.	WTC.
*Sulfuric acid esters (and salts thereof):	
*Acids, amides, and esters, sulfated:	
Coconut oil acids - ethanolamine condensate, sulfated, potassium salt.	DEX, EMK.
*Esters of sulfated oleic acid:	
2-Butoxyethyl oleate, sulfated, sodium salt-----	S.
*Butyl oleate, sulfated, sodium salt-----	AKS, CRT, EFH, ICI, MCP, PC.
2-Ethylhexyl oleate, sulfated, sodium salt-----	CHP.
Ethyl oleate, sulfated, sodium salt-----	GAF.
Glyceryl trioleate, sulfated, sodium salt-----	LEA, MRV.
Isobutyl oleate, sulfated, sodium salt-----	DA.
Isopropyl oleate, sulfated, sodium salt-----	CRT, DEX, HRT, LEA, SCP.
Methyl oleate, sulfated, sodium salt-----	ICI.
Mixed oleic acid esters, sulfated, sodium salt----	EFH.
*Propyl oleate, sulfated, sodium salt-----	ACY, AKS, CHP, CIN, MCP, MRV.
Oleic acid, sulfated, disodium salt-----	ACT, ACY, CHP, DA, GAF, LEA, SCO, TEN.
Other acids, amides, and esters, sulfated:	
Glycerol monoester of coconut oil acids, sulfated sodium salt.	CP.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfuric acid esters (and salts thereof)--Continued	
*Acids, amides, and esters, sulfated--Continued	
Other acids, amides, and esters sulfated--Continued	
*Tall oil, sulfated, sodium salt-----	ACT, APX, BAO, CRT, DA, FNX, ICI, SEA, WHI, WHW, WTC.
All other-----	DA, DUP, EMR, SCO.
*Alcohols, sulfated:	
Coconut and sperm oil alkyl sulfate, sodium salt----	DA, DUP, FNX.
Decyl and octyl sulfate, sodium salt-----	TCH.
*Decyl sulfate, sodium salt-----	APX, CTL, DUP, HLI, SCP.
3,9-Diethyl-6-tridecyl sulfate, sodium salt-----	UCC.
*Dodecyl sulfate salts:	
*Ammonium salt-----	AAC, CTL, HLI, JRG, ONX, PG, SCP, STP, TCH.
Diethanolamine salt-----	DUP, HLI, JRG, ONX, SCP, STP, TCH.
Diethylamine salt-----	AAC.
N,N-Diethylcyclohexylamine salt-----	DUP.
Isopropanolamine salt-----	JRG, TCH.
*Magnesium salt-----	AAC, HLI, ONX, STP.
Potassium salt-----	PG.
*Sodium salt-----	AAC, CTL, DUP, HLI, JRG, ONX, SCP, STP, TCH.
*Triethanolamine salt-----	AAC, CTL, DUP, HLI, ONX, SCP, STP, TCH, TXT.
2-Ethylhexyl sulfate, sodium salt-----	AAC, TCH, UCC.
Hexadecyl sulfate, sodium salt-----	AAC, DUP, SCP.
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt----	UCC.
Hexyl sulfate, potassium salt-----	DEX.
Lauryl alcohol sulfate, sodium salt-----	SEY.
Lauryl alcohol sulfate, triethanolamine salt-----	SEY.
*Mixed linear alcohol sulfate, ammonium salt-----	LAK, NTL, S, SCP, TXT, UCC, WTC.
*Mixed linear alcohol sulfate, sodium salt-----	LAK, PG, SCP, TXT.
Mixed linear alcohol sulfate, triethanolamine salt.	LAK, PG, SCP.
Nonyl sulfate, sodium salt-----	TEN.
9-Octadecenyl sulfate, 2-(diethylamino)ethanol salt--	AAC.
Octadecyl sulfate, sodium salt-----	DUP, EMK, ONX, PG.
*Octyl sulfate, sodium salt-----	AAC, DUP, WTC.
Oleyl sulfate, sodium salt-----	DUP.
Tridecyl sulfate, sodium salt-----	AAC.
All other-----	LEV.
*Ethers, sulfated:	
*Alkylphenols, ethoxylated and sulfated:	
Iso-octylphenol, ethoxylated and sulfated, sodium salt.	RH.
1-Naphthol, ethoxylated and sulfated, sodium salt--	TCH.
Nonylphenol, ethoxylated and sulfated, ammonium salt.	CGY, GAF, STP, WTC.
*Nonylphenol, ethoxylated and sulfated, sodium salt.	CRT, DEX, GAF.
Nonylphenol, ethoxylated and sulfated, triethanolamine salt.	ARL.
*Dodecyl alcohol, ethoxylated and sulfated, ammonium salt.	AAC, AKS, CTL, STP, TXT.
*Dodecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ASH, CTL, ONX, SCP, STP, TCH.
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt.	LEV, TXN.
2-Ethylhexanol, ethoxylated and sulfated, sodium salt.	UCC.
2-Hexyloxypropyl sulfate, sodium salt-----	S.
*Mixed linear alcohols, ethoxylated and sulfated ammonium salt.	CO, LAK, NLC, PG, PIL, RCD, SCP, SHC, STP WTC.
*Mixed linear alcohols, ethoxylated and sulfated, sodium salt.	AAC, ASH, CO, DA, GAF, LAK, PG, PIL, RCD, SCP, SHC, STP, TCI, TXT, WTC.
Mixed linear alcohols, ethoxylated and sulfated, triethanolamine salt.	RCD.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfuric acid esters (and salts thereof--Continued	
*Ethers, sulfated--Continued	
Tridecyl alcohol, ethoxylated and sulfated, ammonium salt.	PRX.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ARL.
*Natural fats and oils, sulfated:	
*Castor oil, sulfated, sodium salt-----	ACT, ACY, AKS, ARL, BAO, CRT, DA, DEX, EFH, FNX, GAF, HRT, ICI, KAL, KNG, LEA, LUR, MRD, S, SCO, SCP, SLC, SLM, WHW.
*Coconut oil, sulfated, sodium salt-----	ACY, APX, BAO, DA, LUR, MRD, SEA, WHW.
*Cod oil, sulfated, sodium salt-----	ACT, BAO, SEA, WHI, WHW.
Grease, other than wool, sulfated, sodium salt-----	SEA, WHI.
Herring oil, sulfated, ammonium salt-----	SCP.
*Herring oil, sulfated, sodium salt-----	ACT, DA, SLM, WHI, WHW.
Lard, sulfated, sodium salt-----	CRT, FNX, WAW, WHW.
Mixed alpha olefins and vegetable oils, sulfated, sodium salt.	SLM.
Mixed animal and vegetable oils, sulfated, sodium salt.	SLM.
*Mixed fish oils, sulfated, sodium salt-----	ACT, DA, MRD, SLM.
Mixed vegetable oils, sulfated, sodium salt-----	LUR, SEY.
Mustard seed oil, sulfated, sodium salt-----	DA, LUR, SLC.
*Neat's-foot oil, sulfated, sodium salt-----	ACT, BAO, CRT, DA, KAL, LUR, MRD, PC, SEA, SLM.
Peanut oil, sulfated, sodium salt-----	ACY, DA, LEA, LUR.
Pecan oil, sulfated, sodium salt-----	CRT.
*Ricebran oil, sulfated, sodium salt-----	DA, KNG, LUR.
*Soybean oil, sulfated, sodium salt-----	ACT, CRT, HRT, KAL, LEA, MRD, ONX, WHW.
*Sperm oil, sulfated, sodium salt-----	ACT, BAO, DA, LEA, ONX, SCO, SEA, WHI, WHW.
*Tallow, sulfated, sodium salt-----	ACT, ACY, BSW, DA, ECC, LUR, MCP, MRD, PC, SCP, SEY, SID, SLM, SOS, WHI.
Other anionic surface-active agents:	
Lignin and salts thereof-----	WVA.
Mixed linear alcohols, ethoxylated and carbonated, sodium salt.	S.
Polyethylene-vinyl alcohol copolymer, potassium salt---	NLC.
Tridecyl alcohol, ethoxylated and carbonated, sodium salt.	S.
All other-----	S, STC.
<i>Cationic Surface-Active Agents</i>	
*Amine oxides and oxygen-containing amines (except those having amide linkages):	
*Acyclic:	
N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine oxide.	ARC.
N,N-Bis(2-hydroxyethyl)dodecylamine-----	CTL.
N,N-Bis(2-hydroxyethyl)octadecylamine-----	ARC, FIN, TCH.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine-----	ARC.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine acetate---	PG.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine oxide-----	ARC.
*(Coconut oil alkyl)amine, ethoxylated-----	ARC, ASH, BRD, ICI, NLC.
(Coconut oil alkyl)amine, ethoxylated, acetate-----	RPC.
(Coconut oil alkyl)amine, ethoxylated, maleate-----	SDH.
N,N-Dimethyl(coconut oil alkyl)amine oxide-----	ARC.
N,N-Dimethyldodecylamine oxide-----	BRD.
N,N-Dimethyldodecylamine oxide (Lauryl dimethylamine oxide).	BRD, x.
N,N-Dimethylhexadecylamine oxide-----	ONX.
N,N-Dimethyl(hydrogenated tallow alkyl)amine oxide---	ARC.
N,N-Dimethylmyristylamine oxide-----	BRD.
Ethylenediamine, ethoxylated and propoxylated-----	ICI.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Amine oxides and oxygen-containing amines (except those having amide linkages)--Continued	
*Acyclic--Continued	
(Hydrogenated tallow alkyl)amine, ethoxylated-----	CGY.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine.	NLC.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine distearate, methyl sulfate.	DUP.
(Mixed alkyl)amine, ethoxylated-----	DA, GAF, ICI, RH, TCH.
(Mixed alkyl)poly(oxyethylene)amine-----	GAF.
Mixed substituted oximes-----	GNM.
*(9-Octadecenyl)amine, ethoxylated-----	ARC, DA, TCH.
Octadecylamine, ethoxylated-----	ARC, TCH.
Polyethylenepolyamine, alkoxylated-----	NLC.
(Soybean oil alkyl)amine, ethoxylated-----	ARC, ASH.
*(Tallow alkyl)amine, ethoxylated-----	ARC, CGY, DUP, GAF, TCH, WTC.
Tallow alkyl amine ethoxylated, sulfate-----	DUP.
N-(Tallow alkyl)trimethylenediamine, ethoxylated----	ARC, WTC.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine----	NLC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine dioleate, methyl sulfate,	DUP.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated.	ARC, BAS.
Triethanolamine, ethoxylated-----	TCH.
All other-----	ARC.
*Cyclic (except imidazoline and oxazoline derivatives):	
Aniline, ethoxylated-----	TCH.
N-(Coconut oil alkyl)morpholine oxide-----	ARC.
N-Dodecylmorpholine-----	BRD.
Lignin amines-----	WVA.
Rosin amine, ethoxylated-----	HPC, NLC, WTC.
m-Toluidine, ethoxylated-----	TCH.
Imidazoline and oxazoline derivatives:	
1-(2-Aminoethyl)-2-olyl-2-imidazoline-----	TCH.
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline.	COM.
2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline.	BRD, DA, ONX.
2-(8-Heptadecenyl)-4-hydroxymethyl-4-methyl-2-oxazoline.	BRD, COM.
*2-(Heptadecyl)-1-(2-hydroxyethyl)-2-imidazoline-----	BRD, CGY, CHP, MOA, SNW.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline.	BRD, CGY, MOA, TCH.
*1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline.	BRD, HDG, MOA, NLC, TCH, WTC.
1-(2-Hydroxyethyl)-2-tridecyl-2-imidazoline hydrochloride.	CGY.
1-(2-Hydroxypropyl)-2-imidazoline-----	TCH.
*Amines and amine oxides having amide linkages:	
*Carboxylic acids - diamine and polyamine condensates:	
Caprylic acid - tetraethylenepentamine condensate----	ICI.
Coconut oil acids - diethylenetriamine condensate----	APX, TXT.
Coconut oil acids - N,N-dimethyltrimethylene-diamine condensate.	JRG.
Mixed dicarboxylic acids - polyalkylenepolyamine condensate.	TXT.
*Mixed fatty acids - polyalkylenepolyamine condensate.	GRD, NLC, QCP, TCH.
Oleic acid - diethylenetriamine condensate-----	ICI.
Oleic acid - N,N-dimethyltrimethylenediamine condensate.	CCW.
Pelargonic acid - tetraethylenepentamine condensate.	ICI

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Amines and amine oxides having amide linkages--Continued	
*Carboxylic acids - diamine and polyamine condensates--Continued	
Stearic acid, diethanolamine condensate, methyl sulfate.	DUP.
Stearic acid - diethylenetriamine condensate-----	FNX, ONX, S.
Stearic acid - N,N-diethylethylenediamine condensate.	CGY, S.
Stearic acid - N,N-dimethyltrimethylenediamine condensate.	SNW.
Stearic acid - polyamine condensate-----	VND.
Stearic acid - tetraethylenepentamine condensate----	ONX.
*Tall oil acids - diethylenetriamine and polyalkylene polyamine condensates:	
Tall oil acids - diethylenetriamine condensate----	AZS, FNX, NCW, NLC, WTC.
Tall oil acids - polyalkylenepolyamine condensate--	AZS, QCP, WTC.
All other-----	ASH.
*Other amines and amine oxides having amide linkages:	
Coconut oil acids - diethylenetriamine condensate, polyethoxylated.	TCC.
3-Lauramido-N,N-dimethylpropylamine oxide-----	SNW.
Mixed fatty acids - alkylenediamine condensate, polyethoxylated.	GAF.
Oleic acid - ethylenediamine condensate, mono-ethoxylated.	CLD, DA, DEX, SOC, TNA.
Palm oil acids - ethylenediamine condensate, mono-ethoxylated.	APX.
Stearic acid - diethylenetriamine condensate, poly-ethoxylated.	ARC, TCC.
Stearic acid - ethylenediamine condensate, mono-ethoxylated.	CLD, CST, DA, DEX, ICI, MRV, S, SCP.
Stearic acid - ethylenediamine condensate, poly-ethoxylated.	ICI.
*Amines, not containing oxygen (and salts thereof):	
*Amine salts:	
(Coconut oil alkyl)amine acetate-----	ARC.
(Hydrogenated tallow alkyl)amine acetate-----	ARC.
(9-Octadecenyl)amine acetate-----	GNM.
Octadecylamine acetate-----	ACY, ARC.
N-(Oleyl alkyl)trimethylenediamine tallate-----	ARC.
(Tallow alkyl)amine acetate-----	ARC.
N-(Tallow alkyl)trimethylenediamine acetate-----	ARC, ASH.
N-(Tallow alkyl)trimethylenediamine oleate-----	ARC, ASH.
N-(Tallow alkyl)trimethylenediamine tallate-----	ARC.
All other-----	NLC, SM.
*Diamines and polyamines:	
N-(Coconut oil alkyl)trimethylenediamine-----	ARC, ENO, GNM.
N-(Docosyl and eicosyl)trimethylenediamine-----	ENO.
N-Dodecyl-diethylenetriamine-----	ARC.
*Imidazoline derivatives:	
1-[3-(2-Aminoethyl)naphth-1-yl]-2-(8-hepta-decenyl)-2-imidazoline.	NLC.
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline.	ARC, AZS, NLC.
2-Heptadecyl-2-imidazoline-----	EMR, SCO.
1-(2-Stearamidoethyl)-2-heptadecyl-2-imidazoline--	ICI.
*N-(Mixed alkyl)polyethylenepolyamine-----	ARC, BAS, CCW, SNW.
*N-(9-Octadecenyl)trimethylenediamine-----	ARC, ASH, GNM.
N-(Soybean oil alkyl)trimethylenediamine-----	ENO.
N-(Tallow alkyl)dipropylenetriamine-----	ARC, GNM.
*N-(Tallow alkyl)trimethylenediamine-----	ARC, ASH, ENO, GNM.
*Primary monoamines:	
* (Coconut oil alkyl)amine-----	ARC, ASH, ENO, GNM.
Dodecylamine-----	ARC, ASH, GNM.
(Docosyl and eicosyl)amine-----	ENO.
(Hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO, GNM.
(Mixed alkyl)amine-----	ARC.
(Mixed tert-alkyl)amine-----	RH.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
<i>*Amines, not containing oxygen (and salts thereof)--Continued</i>	
<i>*Primary monoamines--Continued</i>	
*9-Octadecenylamine-----	ARC, ASH, ENO, GNM.
*Octadecylamine-----	ARC, ASH, ENO, GNM.
Octylamine-----	ARC.
tert-Octylamine-----	RH.
(Soybean oil alkyl)amine-----	ARC, ENO.
(Tall oil alkyl)amine-----	ASH, GNM.
*(Tallow alkyl)amine-----	ARC, ASH, ENO, GNM.
<i>*Secondary and tertiary monoamines:</i>	
Bis(coconut oil alkyl)amine-----	ARC.
*Bis(hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO.
N,N-Dimethyl(coconut oil alkyl)amine-----	ARC, BRD.
N,N-Dimethyldodecylamine-----	BRD.
N,N-Dimethyldodecylamine-----	ARC, BRD, ONX.
N,N-Dimethylhexadecylamine-----	ARC, BRD, ONX.
*N,N-Dimethyl(hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO.
N,N-Dimethyl(mixed alkyl)amine-----	ARC, BRD, ENO, ONX.
N,N-Dimethyloctadecylamine-----	ARC, BRD, ENO, ONX.
N,N-Dimethyloctylamine-----	BRD.
N,N-Dimethyl(soybean oil alkyl)amine-----	ARC, ENO.
N,N-Dimethyltetradecylamine-----	ARC, BRD, ONX.
N,N-Dimethyltridecylamine-----	BRD.
*N-Methylbis(coconut oil alkyl)amine-----	ASH, ENO, GNM.
*N-Methylbis(hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO, GNM.
N-Methyldioctadecylamine-----	ASH.
Trioctylamine-----	GNM.
Tris(hydrogenated tallow alkyl)amine-----	ASH.
<i>*Oxygen-containing quaternary ammonium salts:</i>	
<i>Quaternary ammonium salts having amide linkages:</i>	
Ethyl dimethyl(3-pelagonamidopropyl)ammonium ethyl sulfate.	TCH.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium dihydrogen phosphate.	ACY.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium nitrate.	ACY.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium methyl sulfate.	DUP.
(3-Lauramidopropyl)trimethylammonium methyl sulfate.	ACY.
2-(2-Lauroyloxyethyl)carbamoyl-1-methylpyridinium chloride.	WTC.
1-Methyl-2-(2-stearoyloxyethyl)carbamoylpyridinium chloride.	WTC.
Tall oil acid - polyalkylenepolyamine condensate, ammonium methyl sulfate.	NLC.
All other-----	x.
<i>Other oxygen-containing quaternary ammonium salts:</i>	
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate.	LUR.
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)-ammonium chloride.	CGY, NLC.
Benzyl(coconut oil alkyl, ethoxylated)dimethyl-ammonium chloride.	GAF.
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazolinium chloride.	MOA, NLC.
Bis(2-hydroxyethyl, ethoxylated)ethyl(hydrogenated tallow alkyl)ammonium ethyl sulfate.	ICI.
Bis(2-hydroxyethyl, ethoxylated)methyl(9-octadecenyl)ammonium chloride.	ARC.
Bis(2-hydroxyethyl, ethoxylated)methyloctadecyl-ammonium chloride.	ARC.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Oxygen-containing quaternary ammonium salts--Continued	
Other oxygen-containing quaternary ammonium salts--Continued	
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)methylammonium chloride.	ARC, ASH.
(Coconut oil alkyl)bis(2-hydroxyethyl)methylammonium nitrate.	ARC.
(Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride.	RH.
(Ethoxybenzyl)dimethyl(octyltolylloxy)ammonium chloride.	RH.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium ethyl sulfate.	ICI.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate-----	BRD, ICI.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate.	ICI.
2-Hydroxytrimethylenebis[(coconut oil alkyl)dimethylammonium chloride].	CGY.
Quaternarized propoxylated stearyl amine-----	TCC.
*Quaternary ammonium salts, not containing oxygen:	
*Acyclic:	
Bis(coconut oil alkyl)dimethylammonium chloride-----	ARC, ASH, ENO, GNM.
Bis(coconut oil alkyl)dimethylammonium nitrate-----	ARC.
*Bis(hydrogenated tallow alkyl)dimethylammonium chloride.	ARC, ASH, CIN, ENO, GNM.
Bis(hydrogenated tallow alkyl)dimethylammonium aluminum silicate.	GNM.
Bis(hydrogenated tallow alkyl)dimethylammonium methyl sulfate.	PRX.
(Coconut oil alkyl)trimethylammonium chloride-----	ARC, GNM.
Didecyltrimethylammonium chloride-----	BRD.
Didecyltrimethyldioctylammonium chloride-----	BRD.
Didodecyltrimethylammonium bromide-----	ONX.
Dimethylbis(9-octadecenyl)ammonium chloride-----	GNM.
Dimethylbis(soybean oil alkyl)ammonium chloride-----	ARC.
Dimethyldioctadecylammonium chloride-----	ASH, ONX, PG.
Dimethyldioctadecylammonium methyl sulfate-----	ONX.
Dodecyltrimethylammonium bromide-----	DUP.
Dodecyltrimethylammonium chloride-----	ARC, GNM.
1-Ethylamino-bis(ethyleneheptadecylamide) ethyl sulfate.	EFH.
Ethyltrimethyl(mixed alkyl)ammonium ethyl sulfate----	DEX, JOR, TCC.
Ethyltrimethyl(9-octadecenyl)ammonium bromide-----	ONX.
Ethylhexadecyltrimethylammonium bromide-----	FIN.
Hexadecyltrimethylammonium bromide-----	DUP, FIN.
Hexadecyltrimethylammonium chloride-----	ARC, BRD.
Hexadecyltrimethylammonium p-toluenesulfonate-----	FIN.
(Hydrogenated tallow alkyl)trimethylammonium chloride.	ARC.
Methyltrioctylammonium chloride-----	GNM.
Mixed dialkyltrimethylammonium chloride-----	BRD.
N,N,N',N'-Pentamethyl-N-(tallow alkyl)trimethylenebis[ammonium chloride].	ARC, GNM.
Trimethyl(mixed alkyl)ammonium chloride-----	NLC.
Trimethyloctadecylammonium chloride-----	ARC.
Trimethyl(soybean oil alkyl)ammonium chloride-----	ARC.
Trimethyl(tallow alkyl)ammonium chloride-----	ARC, ASH, ENO, GNM.
Trimethyltetradecylammonium bromide-----	FIN.
All other-----	GNM, x.
*Benzenoid:	
*Benzyl(coconut oil alkyl)dimethylammonium chloride.	ARC, CRT, DEP, ENO, LUR, TXT.
*Benzyltrimethyl(mixed alkyl)ammonium chloride-----	AAC, ASH, BRD, FIN, ONX, RH, SDH, TXT.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Quaternary ammonium salts, not containing oxygen-- Continued	
*Benzenoid--Continued	
*Benzyltrimethylammonium chloride-----	BRD, FIN, ONX, RH, SNW, TNI.
Benzyltrimethylammonium chloride-----	ENO.
*Benzyltrimethylammonium chloride-----	FIN, LEM, SDH.
Benzyltrimethylammonium chloride-----	FIN, ONX.
Benzylhexadecyldimethylammonium chloride-----	ONX.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ENO, ONX.
1-Benzyl-2-picolinium bromide-----	FIN.
1-Benzylpyridinium chloride-----	DEP.
Benzyltrimethylammonium chloride-----	CHP, CIN, CRT, SNW, TCC.
(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride.	ONX.
(Dodecylbenzyl)triethylammonium chloride-----	PC.
2-Dodecylisoquinolinium bromide-----	ONX.
(Dodecylmethylbenzyl)trimethylammonium chloride-----	RH.
1-Dodecylpyridinium chloride-----	HK.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride.	BRD, ONX.
(Methyloctyl)bis(2-hydroxyethyl)ammonium p-toluene- sulfonate.	FIN.
1-(Mixed alkyl)quinolinium ethyl sulfate-----	x.
1-Phenethyl-2-picolinium bromide-----	FIN.
All other-----	ICI, STC.
<i>Nonionic Surface-Active Agents</i>	
*Carboxylic acid amides:	
*Diethanolamine condensates (amine/acid ratio=2/1):	
*Capric acid-----	CGY, ECC, SCP, TCH.
Castor oil acids-----	CLI, FNX, NTL.
*Coconut oil acids-----	ACT, AKS, ARD, ARL, BRD, BSW, CIN, CLI, CTL, DA, EFH, FNX, HLI, HRT, JOR, KNP, LUR, MCP, MOA, MRV, ONX, PC, PG, PNK, PVO, SBC, SCP, SEY, STP, TCH, TXC, TXN, UNN, VND, WTC, x.
*Coconut oil and tallow acids-----	ACT, ASH, CLI, CRT, ECC, ESS, MOA, PG, PVO, SOS.
*Lauric acid-----	ARD, BRD, CLI, DA, ECC, HLI, ONX, PG, SOS, TCH.
Lauric and myristic acids-----	HLI, MOA, PVO, SBC, STP.
Linoleic acid-----	VND, WTC.
Mixed vegetable oil acids-----	HLI.
*Oleic acid-----	CCW, CLI, EMR, PVO, STP.
Pelargonic acid-----	TCH.
*Stearic acid-----	CLI, DA, EMR, ECC, JOR, ONX, SCO, TXC, VAL.
*Tall oil acids-----	EFH, MCP, MOA, MRV, SOS, WTC.
Tallow acids-----	SOS.
*Diethanolamine condensates (other amine/acid ratios):	
*Coconut oil acids (amine/acid ratio=1/1)-----	ARD, ASH, AZS, CCL, CGY, CLI, CTL, DA, FNX, HLI, JRG, MOA, MRV, ONX, PIL, SBC, SEY, STP, TCC, TCH, TXN, TXT, WTC.
Coconut oil acids (amine acid ratio unspecified)-----	CON, JRG.
Isostearic acids (amine/acid ratio=1/1)-----	SBC.
*Lauric acid (amine/acid ratio=1/1)-----	ARD, ASH, CLI, CTL, EMK, LEV, MOA, ONX, SBC, TCH, TXN, TXT, WTC.
Lauric and myristic acids (amine/acid ratio=1/1)-----	PG, TXT.
Linoleic acid (amine/acid ratio=1/1)-----	MOA, SBC.
*Oleic acid (amine/acid ratio=1/1)-----	CGY, HLI, SBC, SCP, TXT.
Palmitic and stearic acid (amine/acid ratio=1/1)-----	MCP.
Rapeseed oil acids (amine/acid ratio=1/1)-----	EFH.
*Stearic acid (amine/acid ratio=1/1)-----	CGY, ECC, EMR, FNX, MRV, RPC, SEY.
Stearic acid (amine/acid ratio=2.7/1)-----	EFH.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid amides--Continued	
*Diethanolamine condensates (other amine/acid ratios)--Continued	
Tall oil acids (amine/acid ratio=1/1)-----	ECC, EFH, FNX.
Tallow acids (amine/acid ratio=1/1)-----	RPC, TCH, VAL.
All other-----	EFH, ORO, STP.
All other carboxylic acid amides:	
Coconut oil acids - ethanolamine condensate (amine/acid ratio=2/1).	CTL, PRX, STP, TCH, VND, WTC.
Coconut oil acids - ethanolamine condensate (amine/acid ratio=1/1).	ARD, HLI, HUM, MOA, PG, STP, WTC.
Coconut oil acids - ethanolamine condensate, ethoxylated.	STP.
Coconut oil acids - isopropanolamine condensate-----	STP.
Hydrogenated castor oil acids - ethanolamine condensate (amine/acid ratio=2/1).	GLY, NTL.
Hydrogenated tallow acids - ethanolamine condensate (amine/acid ratio=2/1).	CTL.
Lauric acid - ethanolamine condensate (amine/acid ratio=2/1).	ARC, PRX, WTC.
Lauric acid - ethanolamine condensate (amine/acid ratio=1/1).	ARD.
Lauric acid - isopropanolamine condensate-----	CLI, MOA, SNW.
Lauric and myristic acids - ethanolamine condensate (amine/acid ratio=1/1).	MOA, TXT.
Lauric and myristic acids - isopropanolamine condensate.	LEV.
Oleic acid - ethanolamine condensate (amine/acid ratio=1/1).	VPC.
Oleic acid - ethanolamine condensate, ethoxylated----	ARD, GAF.
Stearic acid - ethanolamine condensate (amine/acid ratio=2/1).	CLI.
Stearic acid - ethanolamine condensate (amine/acid ratio=1/1).	HAL, MOA, SBC, SNW, VND.
Tallow acids - ethanolamine condensate (amine/acid ratio=1/1).	SCP.
All other-----	ROB, MCP, TCH, TXN.
*Carboxylic acid esters:	
*Anhydrosorbitol esters:	
Anhydrosorbitol dioleate-----	ICI.
*Anhydrosorbitol monoester of tall oil acids-----	GLY, HDG, ICI, TCH.
Anhydrosorbitol monolaurate-----	GLY, HDG, ICI, SYL, TCH.
*Anhydrosorbitol mono-oleate-----	GLY, HDG, ICI, PVO, SYL, TCH.
Anhydrosorbitol monopalmitate-----	GLY, HDG, ICI, TCH.
Anhydrosorbitol monostearate-----	GLD, GLY, HDG, ICI, PVO, TCH.
Anhydrosorbitol sesquiester of tall oil acids-----	WTC.
Anhydrosorbitol sesquioleate-----	GLY, HDG, TCH.
Anhydrosorbitol triester of tall oil acids-----	GLY, TCH.
*Anhydrosorbitol trioleate-----	GLY, ICI, TCH.
Anhydrosorbitol tristearate-----	GLY, ICI, PVO, TCH.
All other-----	SYL, TCH.
*Diethylene glycol esters:	
Diethylene glycol dioleate-----	GLY.
*Diethylene glycol distearate-----	ARC, ECC, GLY, VAL.
Diethylene glycol monoester of coconut oil acids-----	AAC, ARC, DA.
Diethylene glycol monoester of tallow acids-----	QCP.
*Diethylene glycol monolaurate-----	GLY, HAL, HDG.
Diethylene glycol mono-oleate-----	ARC, HAL.
Diethylene glycol monoricinoleate-----	GLY.
*Diethylene glycol monostearate-----	ARC, CHP, CLI, DA, HAL, HDG, MCP, VND.
Diethylene glycol sesquiester of tall oil acids-----	ECC.
*Diethylene glycol sesquilaurate-----	ARC, GLY, WM.
Diethylene glycol sesquistearate-----	WM, WTC.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid esters--Continued	
*Ethoxylated anhydrosorbitol esters:	
Ethoxylated anhydrosorbitol isostearate-----	TCH.
*Ethoxylated anhydrosorbitol monolaurate-----	AAC, GLY, HDG, ICI, PVO, SYL, TCH.
Ethoxylated anhydrosorbitol mono-oleate-----	AAC, ARC, GLY, HDG, ICI, PVO, SYL, TCH.
*Ethoxylated anhydrosorbitol monopalmitate-----	AAC, ICI, TCH.
*Ethoxylated anhydrosorbitol monostearate-----	AAC, GLY, HDG, ICI, PVO, TCH.
Ethoxylated anhydrosorbitol triester of tall oil acids.	ICI, TCH.
Ethoxylated anhydrosorbitol trioleate-----	AAC, GLY, ICI, TCH.
*Ethoxylated anhydrosorbitol tristearate-----	AAC, GLY, HDG, ICI, PVO, TCH.
All other-----	GLY.
*Ethoxylated sorbitol esters:	
Ethoxylated sorbitol beeswax ester-----	ICI.
Ethoxylated sorbitol distearate-----	ICI.
Ethoxylated sorbitol heptaoleate-----	ICI.
Ethoxylated sorbitol hexaester of tall oil acids----	ICI, TCH.
Ethoxylated sorbitol hexaoleate-----	GLY, ICI, TCH.
Ethoxylated sorbitol lanolin ester-----	ICI.
Ethoxylated sorbitol mono-oleate-----	GLY.
Ethoxylated sorbitol monostearate-----	TCH.
Ethoxylated sorbitol oleate, acetylated-----	ICI.
Ethoxylated sorbitol pentaester of tall oil acids----	WTC.
Ethoxylated sorbitol pentalaurate-----	ICI.
Ethoxylated sorbitol pentaoleate-----	ICI.
Ethoxylated sorbitol tetraester of lauric and oleic acids.	ICI.
Ethoxylated sorbitol tetraester of tall oil acids----	ICI.
Ethoxylated sorbitol tetraoleate-----	ICI.
*Ethylene glycol esters:	
Ethylene glycol distearate-----	ARC, EMR, HUM, WM.
Ethylene glycol mono-oleate-----	EFH.
Ethylene glycol monostearate-----	ARC, CLI, GLY, HAL, HDG, KNP, TCH, VND, WM.
All other-----	EMR.
*Glycerol esters:	
*Complex glycerol esters:	
Glycerol diacetyltartrate monostearate-----	WTC.
Glycerol esters ethoxylated-----	GLY.
Glycerol lactate esters of fatty acids-----	GLD.
Glycerol lactate stearate-----	GLY.
Glycerol monoester of mixed fatty acids, acetylated.	EKT.
Glycerol mono-oleate, acetylated-----	GLY, x.
Glycerol monostearate, succinylated-----	EKT.
Glycerol pelargonate-----	WM.
*Glycerol esters of chemically defined acids:	
Glycerol dioleate-----	ARC, HAL.
Glycerol dilaurate-----	VND.
Glycerol distearate-----	ARC, ICI.
*Glycerol monocaprylate-----	ARC, GLY, PVO.
Glycerol monoisostearate-----	TCH.
*Glycerol monolaurate-----	ARC, GLY, HAL.
*Glycerol mono-oleate-----	ARC, CCW, CHP, DA, EFH, EMR, GLY, GRO, HAL, HDG, PVO, TCH, WM, WTC.
Glycerol monoricinoleate-----	DA, HAL, HDG.
*Glycerol monostearate-----	ARC, ASH, BLS, CHL, CIN, EFH, EMR, FNX, GLY, GRO, HAL, HDG, LUR, PG, PVO, SCP, SOS, TCH, VND,, WM, WTC.
*Glycerol esters of mixed acids:	
Glycerol monoester of coconut oil acids-----	PVO.
Glycerol monoester of cottonseed oil acids-----	EKT.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid esters--Continued	
*Glycerol esters--Continued	
*Glycerol esters of mixed acids--Continued	
*Glycerol monoester of hydrogenated cottonseed oil acids.	GLD, LEV, WM.
*Glycerol monoester of hydrogenated soybean oil acids.	ASH, EKT, GLD, NW, PVO, TCH, WTC.
Glycerol monoester of hydrogenated tall oil acids--	TCH.
*Glycerol monoester of lard acids-----	EKT, GLD, GLY.
Glycerol monoester of peanut oil acids-----	PVO.
Glycerol monoester of tallow acids-----	BFP.
Glycerol sesquiester of hydrogenated tallow acids--	JRG.
Glycerol sesquiester of tall oil acids-----	SLM.
All other-----	BFP, EKT, GLD, ICI, LEV.
*Natural fats and oils, alkoxylated:	
Avocado oil, ethoxylated-----	TCH.
*Castor oil, ethoxylated-----	AAC, DA, GAF, ICI, NLC, NTL, PVO, SYL, TCH, TMH, WTC.
Corn oil, ethoxylated-----	TCH.
*Hydrogenated castor oil, ethoxylated-----	DA, ICI, TCH.
*Lanolin, ethoxylated-----	AAC, CRD, CRN, ICI, PRX, TCH.
All other-----	ARC, DA, JCC.
*Polyethylene glycol esters:	
*Polyethylene glycol esters of chemically defined acids:	
*Polyethylene glycol dilaurate-----	ARC, DA, EFH, GLY, HAL, HDG, PVO, TCH, WM.
*Polyethylene glycol dioleate-----	ARC, BRD, CGY, CLD, DA, EFH, GLY, HAL, HDG, NLC, TCH, VND, WM.
Polyethylene glycol distearate-----	ARC, FNX, GLY, HAL, HDG, TCH, WM.
Polyethylene glycol methylcarbitol maleate-----	CCA.
Polyethylene glycol monoisostearate-----	TCH.
*Polyethylene glycol monolaurate-----	AAC, ARC, BRD, CCA, CGY, DA, GLY, HAL, HDG, ICI, KNP, TCH.
*Polyethylene glycol mono-oleate-----	AAC, ARC, BRD, CCA, CGY, CLD, CRT, DA, DEX, EFH, GAF, GLY, HAL, HDG, ICI, ONX, PVO, SCP, TCH, VND, WM, WTC.
Polyethylene glycol mono-oleate, ethoxylated-----	ICI.
Polyethylene glycol monopalmitate-----	ICI, WTC.
Polyethylene glycol monopelargonate-----	EMR, TCH.
Polyethylene glycol monricinoleate-----	DA.
*Polyethylene glycol monostearate-----	AAC, AKS, ARC, CGY, CHP, CRT, DA, DEP, DEX, EFH, EMR, GAF, GLY, HAL, HDG, HRT, ICI, KNP, MCP, ONX, PC, PVO, TCH, VND, WM, WTC.
Polyethylene glycol monotallate-----	TCH.
*Polyethylene glycol sesquioleate-----	ICI, TCH, WTC.
*Polyethylene glycol esters of tall oil acids:	
Polyethylene glycol diester of tall oil acids-----	GLY.
Polyethylene glycol ester of tall oil acids-----	ACT, EFH, GLY.
Polyethylene glycol monoester of tall oil acids, ethoxylated.	NLC, TCH.
Polyethylene glycol sesquiester of rosin acids-----	HPC.
Polyethylene glycol sesquiester of tall oil acids.	ARC, ICI, MON, PVO, SLM, SM, WTC.
*Polyethylene glycol esters of other mixed acids:	
Polyethylene glycol diester of trimerized castor oil acids.	GLY.
Polyethylene glycol monoester of coconut oil acids.	GLY.
Polyethylene glycol monoesters of lauric and stearic acids.	MCP.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid esters--Continued	
*Polyethylene glycol esters--Continued	
*Polyethylene glycol esters of other mixed acids--Continued	
Polyethylene glycol monoester of coconut oil acids, ethoxylated.	AAC, ICI.
Polyethylene glycol monoester of soybean oil acids.	TCH.
Polyethylene glycol sesquiester of castor oil acids.	CGY.
*Polyethylene glycol sesquiester of coconut oil acids.	AAC, ARL, MRT, PG, VND.
Polyethylene glycol sesquiester of oleic acid-----	SM.
Polyethylene glycol sesquiester of tallow acids----	SOS.
All other-----	ECC, EMR, MCP.
*Polyglycerol esters:	
Polyglycerol decaoleate-----	TCH.
Polyglycerol ester of tall oil acids-----	AZS.
Polyglycerol mono-oleate-----	HDG, PVO, TCH, VND, WTC.
Polyglycerol monostearate-----	GLY, PVO, SEY, TCH, WTC.
Polyglycerol tetraoleate-----	GLY.
*Propanediol esters:	
1,2-Propanediol dicocoate-----	GLY.
1,2-Propanediol dioleate-----	x.
1,3-Propanediol monoester of coconut oil acids-----	WM.
*1,2-Propanediol monolaurate-----	ARC, HAL, PVO.
1,2-Propanediol mono-oleate-----	EFH, HAL.
*1,2-Propanediol monostearate-----	ARC, CCW, EKT, GLD, GLY, HAL, ICI, PVO, TCH, WTC.
1,2-Propanediol sesquiester of hydrogenated tallow acids.	JRG.
All other-----	GLD.
Miscellaneous carboxylic acid esters:	
Anhydrosorbitol glycerol monolaurate-----	ICI.
Ethoxylated glycerol sesquiester of mixed fatty acids.	ICI.
Ethoxylated 1,2-propanediol mono-oleate-----	WTC.
Ethoxylated 1,2-propanediol monostearate-----	ICI, WTC.
2-Hydroxymethyl-2-butene-1,4-diol monopelargonate----	ICI.
Lauric acid esters of glycerol and ethoxylated nonylphenol.	TCC.
Mannitol dioleate, propoxylated-----	WTC.
Methylglucoside laurate-----	HDG.
Mixed polyhydric alcohols triester of tall oil acids.	ICI.
Oleic acid esters of ethoxylated nonylphenol-----	EFH.
Pentaerythritol distearate-----	GLY, QCP.
Pentaerythritol stearate-----	VAL.
Polyalkylene glycol adipate-----	NLC.
Polypropylene glycol monoester-----	SOS.
Polypropylene glycol mono-oleate-----	HDG.
Polypropylene glycol monostearate-----	HDG.
Stearic acid, ethoxylated and propoxylated-----	TCH.
All other-----	CCW, EMR, GLY, TCH.
*Ethers:	
*Benzenoid ethers:	
(Mixed alkyl)phenol - formaldehyde, alkoxylated-----	NLC, NTL, WTC.
Nonylphenol - formaldehyde, alkoxylated-----	NLC, WTC.
tert-Octylphenol - formaldehyde, ethoxylated-----	ARC, DA.
Diisobutylphenol, ethoxylated-----	GAF.
Dinonylphenol, ethoxylated-----	GAF, JCC, STP, TCH.
*Dodecylphenol, ethoxylated-----	GAF, MON, TCH, TMH, UCC, WTC.
Iso-octylphenol, ethoxylated-----	ABC, APX, DA, OMC, RH.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
<i>*Ethers--Continued</i>	
<i>*Benzenoid ethers--Continued</i>	
(Mixed alkyl)phenol, ethoxylated-----	GAF, PRX, RH, TCH.
(Mixed alkyl)phenol, ethoxylated, butyl ether-----	NLT.
(Mixed alkyl)phenoxypropyl(ethyleneoxy)ethyl chloride.	GAF, NLC.
*Nonylphenol, ethoxylated-----	ABC, ASH, CGY, DA, GAF, HDG, ICI, JCC, MON, OMC, RH, STP, TCH, TMH, UCC, WTC.
Nonylphenol, ethoxylated and propoxylated-----	WTC.
Nonylphenoxypropyl(ethyleneoxy)ethyl iodide-----	GAF.
n-Octylphenol, ethoxylated-----	TCH, VPC.
*Phenol, ethoxylated-----	CLY, DA, GAF, ICI, JCC, UCC.
Phenol, propoxylated-----	ICI.
Styrenated phenol, ethoxylated-----	DA.
Tetradecylphenol, ethoxylated-----	ORO.
Tridecylphenol, ethoxylated-----	TCH.
Xylenol, ethoxylated-----	NLC.
All other-----	SDW.
<i>*Nonbenzenoid ethers:</i>	
<i>*Linear alcohols, alkoxylated:</i>	
Coconut oil alcohol, ethoxylated-----	GLY, TCH, WTC.
*Decyl alcohol, ethoxylated-----	GAF, ICI, TCH, VPC.
Decyl and octyl alcohols, ethoxylated-----	GAF, GLY.
Decyl and octyl alcohols, ethoxylated and propoxylated.	GAF.
Decyloxypropyl(ethyleneoxy)ethyl chloride-----	RH.
Derivative of ethoxylated primary alcohol-----	AAC, ABC, HDG, ICI, OMC, UCC, VPC, WTC.
*Dodecyl alcohol, ethoxylated-----	AAC, CGY, GLY, ICI, TCH.
Hexadecyl alcohol, ethoxylated-----	AAC, CIN, CO, DA, DUP, GAF, HDG, JCC, NLC, RH, SHC, STP, TCH, UCC, WTC.
*Mixed linear alcohols, ethoxylated-----	BAS, DUP, JCC, STP, TCH, UCC, WTC.
Mixed linear alcohols, ethoxylated and propoxylated.	DUP.
Mixed linear alcohols, propoxylated-----	AAC, ABC, CRN, DA, GAF, ICI, TCH, VPC.
*9-Octadecenyl alcohol, ethoxylated-----	CGY, DA, DUP, GAF, ICI, HDG, TCH, VPC.
*Octadecyl alcohol, ethoxylated-----	CRD.
Oleyl alcohol, ethoxylated-----	DUP.
Sperm oil alcohol, ethoxylated-----	TCH.
Stearyl alcohol, ethoxylated-----	AAC, JCC, TCH.
Tallow alcohol, ethoxylated-----	CRD.
Wool wax alcohols, ethoxylated-----	
<i>*Other ethers and thioethers:</i>	
tert-Dodecyl mercaptan, ethoxylated-----	AAC, UCC.
2-Ethylhexanol, ethoxylated-----	TCH.
Ethyl octanol, ethoxylated-----	TCH.
Glucose, ethoxylated-----	RH.
Glycerol, alkoxylated-----	NLC.
Isodecyl alcohol, ethoxylated-----	TCH.
Isodecyl alcohol, ethoxylated and propoxylated-----	TCH.
Iso-octyl alcohol, ethoxylated-----	GAF.
Lauryl alcohol, ethoxylated-----	ASH.
Mixed alcohols, ethoxylated-----	CRN, PVO, SYL, UCC.
Poly(mixed ethylene, propylene)glycol-----	BAS, NLC, UCC, WTC.
Polypropylene glycol, ethoxylated-----	ASH, NLC, WTC.
Rosin alcohol, ethoxylated-----	NLC.
Sorbitol, ethoxylated-----	TCH, WTC.
*Tridecyl alcohol, ethoxylated-----	AAC, DUP, GAF, ICI, JCC, MON, NLC, OMC, PVO, SYL, TCH, UCC, WTC.
Tridecyl alcohol, propoxylated and ethoxylated-----	JCC.
Trimethylheptanol, ethoxylated-----	TCH.
Trimethylnonyl alcohol, ethoxylated-----	HDG, UCC.
Trimethylolpropane, alkoxylated-----	BAS, HDG.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i> *Ethers--Continued *Other nonionic surface-active agents: Dodecylbenzenesulfonic acid - diethanolamine condensate, fatty acid monoester. Octyl phosphate, ethoxylated----- Tri(castor oil alkyl)phosphate----- All other-----	ACT. DUP. GLY. AIP, STC, SYL.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of surface-active agents to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
AAC	Alcolac Chemical Corp.	FIN	Pine Organics, Inc.
ABC	Balchem Corp.	FNX	Finetex Corp.
ACT	Arthur C. Trask Co.		
ACY	American Cyanamid Co.	GAF	GAF Corp., Chemical Div.
AES	Amerace Corp., Penetone Div.	GLD	SCM Corp., Glidden Durkee
AGP	Armour-Dial, Inc.	GLY	Glyco Chemicals, Inc.
AIP	Air Products & Chemicals, Inc.	GNM	General Mills Chemicals, Inc.
AKS	Arkansas Co., Inc.	GRC	Chemed Corp., Dubois Chemicals Div.
APX	Apex Chemical Co., Inc.	GRD	W.R. Grace & Co., Polymer & Chemicals Div.
ARC	Armak Co.	GRL	Chemed Corp., Vestal Laboratories, Inc.
ARD	Ardmore Chemical Co.	GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
ARL	Arol Chemical Products Co.	GYR	Goodyear Tire & Rubber Co.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.		
ASY	American Synthetic Rubber Corp.	HAL	C.P. Hall Co. of Illinois
ATR	Atlantic Richfield Co., ARCO Chemical Co.	HDG	Hodag Chemical Corp.
AZS	AZS Corp.: AZ Products Co. Div. Lancaster Chemical Co. Div.	HEW	Hewitt Soap Co., Inc.
		HK	Hooker Chemicals & Plastics Corp.
BAO	Bayoil Co., Inc.	HLI	Haag Laboratories, Inc.
BAS	BASF Wyandotte Corp.	HMP	W.R. Grace & Co., Dewey & Almy Chemical Div., Organic Chemicals
BFP	Breddo Food Products Corp.	HNT	Huntington Laboratories, Inc.
BLA	Astor Products, Inc., Blue Arrow Div.	HPC	Hercules, Inc.
BLS	Dobbs-Life Savers, Inc.	HRT	Hart Products Corp.
BRD	Lonza, Inc.	HUM	Kraftco Corp., Humko Products Div.
BSW	Original Bradford Soap Works, Inc.		
CCA &	Cincinnati Milacron Chemicals, Inc.	ICI	ICI America, Inc.
CCW		JCC	Jefferson Chemical Co., Inc.
CCL	A.E. Staley Manufacturing Co., Textile Div.	JOR	Jordan Chemical Co.
CGY	Ciba-Geigy Corp. and Ciba Pharmaceutical Co.	JRG	Andrew Jergens Co.
CHL	Chemol, Inc.		
CHP	C.H. Patrick & Co., Inc.	KAL	Kali Manufacturing Co.
CIN	Cindet Chemicals, Inc.	KNG	Far-Best Corp., O.L. King Div.
CLD	Colloids, Inc.	KNP	Knapp Products, Inc.
CLI	Clintwood Chemical Co.		
CLY	W.A. Cleary Corp.	LAK	Lakeway Chemicals, Inc.
CO	Continental Oil Co.	LEA	Leatex Chemical Co.
COM	Commercial Solvents Corp.	LEM	Napp Chemicals, Inc.
CON	Concord Chemical Co., Inc.	LEV	Lever Brothers Co.
CP	Colgate-Palmolive Co.	LIL	Eli Lilly & Co.
CPP	Charmin Paper Products Co.	LKY	Lake States Div. of St. Regis Paper Co.
CRD	Croda, Inc.	LMI	North American Chemical Co.
CRN	CPC International, Inc.	LJR	Laurel Products Corp.
CRT	Crest Chemical Corp.		
CRZ	Crown Zellerbach Corp., Chemical Products Div.	MAR	American Can Co.
CST	Charles S. Tanner Co.	MCP	Moretex Chemical Products, Inc.
CTL	Continental Chemical Co.	MIR	Miranol Chemical Co., Inc.
CWP	Consolidated Papers, Inc.	MOA	Mona Industries, Inc.
		MON	Monsanto Co.
DA	Diamond Shamrock Corp.	MRA	Crow-Metro, Inc.
DAN	Dan River, Inc.	MRD	Marden-Wild Corp.
DEP	DePaul Chemical Co., Inc.	MRT	Morton Chemical Co. Div. of Morton-Norwich Products, Inc.
DEX	Dexter Chemical Corp.	MRV	Marlowe-Van Loan Corp.
DOW	Dow Chemical Co.	MYW	Stepan Chemical Co., Maywood Div.
DUP	E.I. duPont de Nemours & Co., Inc.		
DYS	Davies-Young Co.	NCW	Nostrup Chemical Works, Inc.
		NES	Nease Chemical Co., Inc.
ECC	Eastern Color & Chemical Co.	NLC	Nalco Chemical Co.
EFH	E.F. Houghton & Co.	NMC	National Milling & Chemical Co., Inc.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.	NPR	Safeway Stores, Inc.
EMK	Emkay Chemical Co.	NTL	NL Industries, Inc.
EMR	Emery Industries, Inc.	NW	Northwestern Chemical Co.
ENO	Enenco, Inc.		
ESS	Essential Chemicals Corp.	OMC	Olin Corp.
		ONX	Millmaster Onyx Corp., Onyx Chemical Co.
		ORO	Chevron Chemical Co.

TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of Company	Code	Name of company
PC	Proctor Chemical Co., Inc.	SOP	Southern Chemical Products Co.
PCH	Peerless Chemical Co.	SOS	Southern Sizing Co.
PEK	Peck's Products Co.	SPA	Scott Paper Co.
PFZ	Pfizer, Inc.	STC	Sou-Tex Chemical Co., Inc.
PG	Procter & Gamble Co.	STP	Stepan Chemical Co.
PIL	Pilot Chemical Co.	SYL	Deering Millikin, Inc., Milliken Chemical Div.
PLX	Plex Chemical Corp.		
PNX	Murphy-Phoenix Co.		
PRX	Purex Corp.	TCC	Tanatex Chemical Corp.
PSP	Georgia-Pacific Corp., Bellingham Div.	TCH	Emery Industries, Inc., Trylon Chemical Div.
PVO	PVO International, Inc.		
		TCI	Texize Chemical Co.
QCP	Quaker Chemical Corp.	TEN	Cities Service Co., Copperhill Operations
		TMH	Thompson-Hayward Chemical Co.
RAY	ITT Rayonier, Inc.	TNA	Ethyl Corp.
RBC	Fike Chemicals, Inc.	TNI	The Gillette Co., Chemical Div.
RCD	Richardson Co., Organic Chemical Div.	TXC	Tex Chem Co.
RH	Rohm & Haas Co.	TXN	Textilana-Nease, Inc.
ROB	Robeco Chemicals, Inc.	TXT	Textilana Corp.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.		
		UCC	Union Carbide Corp.
S	Sandoz, Inc., Sandoz Colors & Chemical Div.	UDI	Petrochemicals Co., Inc.
SBC	Scher Bros., Inc.	UNN	United Chemical Corp. of Norwood
SBP	Sugar Beet Products Co.	UNP	United Chemical Products Corp.
SCO	Scholler Bros., Inc.	USR	Uniroyal, Inc., Chemical Div.
SCP	Henkel, Inc.		
SDC	Martin-Marietta Corp., Sodyeco	VAL	Valchem
	Sterling Drug, Inc.:	VND	Van Dyk & Co., Inc.
SDH	Hilton-Davis Chemical Co. Div.	VPC	Baychem Corp., Verona Div.
SDW	Winthrop Laboratories Div.		
SEA	Seabrook Chemicals, Inc.	WAW	W.A. Wood Co.
SEY	Seydel-Woolley & Co.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
SFS	Stauffer Chemical Co., Specialty Div.	WBG	White & Bagley Co.
SHC	Shell Oil Co., Shell Chemical Co. Div.	WHI	White & Hodges, Inc.
SHP	Shepherd Chemical Co.	WHW	Whittemore-Wright Co., Inc.
SID	George F. Siddall Co., Inc.	WIC	Story Chemicals Corp., Wica Chemicals Div.
SLC	Soluol Chemical Co., Inc.		
SLM	Salem Oil & Grease Co.	WM	Inolex Corp.
SM	Mobil Oil Corp., Mobil Chemical Co., Chemical Coatings Div.	WTC	Witco Chemical Co., Inc.
SNW	Sun Chemical Corp., Chemicals Div.	WVA	Westvaco Corp., Chemicals Div., Poly-chemical Dept.
SOC	Standard Oil Co. of California, Chevron Chemical Co.		

Note.--Complete names and addresses of the above reporting companies are listed in Table 1 of the Appendix.

Pesticides and Related Products

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

U.S. production of pesticides and related products in 1973 amounted to 1,289 million pounds--11.3 percent greater than the 1,158 million pounds reported for 1972 (table 1).¹ Sales in 1973 were 1,199 million pounds, valued at \$1,344 million, compared with 1,022 million pounds, valued at \$1,092 million, in 1972.

The output of cyclic pesticides and related products amounted to 910 million pounds in 1973--8.4 percent greater than the 839 million pounds produced in 1972. Sales in 1973 were 852 million pounds, valued at \$1,091 million, compared with 720 million pounds, valued at \$890 million in 1972. Production of acyclic pesticides and related products in 1973 amounted to 379 million pounds, compared with 318 million pounds reported for 1972, an increase of 19.1 percent. Sales in 1973 were 347 million pounds, an increase of about 15.0 percent, as compared to the 302 million pounds reported in 1972; the value of sales was \$252 million in 1973, compared with \$202 million in 1972--an increase of 24.9 percent.

¹ See also table 2 which lists these products and identifies the manufacturers by codes. These codes are given in table 3.

PESTICIDES AND RELATED PRODUCTS

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TABLE 1.--PESTICIDES AND RELATED PRODUCTS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all pesticides and related products for which any reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all pesticides and related products for which data on production or sales were reported and identifies the manufacturers of each]

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	1,288,952	1,198,568	1,343,581	\$1.12
Benzenoid-----	750,829	681,344	862,753	1.27
Nonbenzenoid-----	538,123	517,224	480,828	.93
PESTICIDES AND RELATED PRODUCTS, CYCLIC				
Total-----	909,901	851,568	1,091,211	1.28
Fungicides, total-----	110,336	101,968	81,015	.79
Mercury fungicides, total-----	651	567	2,183	3.85
Phenylmercuric acetate (PMA)-----	290	273	1,092	4.00
Other mercury fungicides-----	361	294	1,091	3.71
Naphthenic acid, copper salt-----	1,552	1,613	538	.33
Pentachlorophenol (PCP)-----	46,606	48,936	7,820	.16
All other cyclic fungicides ² -----	61,527	50,852	70,474	1.39
Herbicides and plant hormones, total-----	386,852	351,805	683,041	1.94
1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH)-----	...	3,947	5,727	1.45
2,4-Dichlorophenoxyacetic acid, dimethylamine salt-----	29,542	30,199	10,737	.36
All other cyclic herbicides and plant hormones ³ -----	357,310	317,659	666,577	2.10
Insecticides and rodenticides, total-----	412,713	397,795	327,155	.82
Aldrin-toxaphene group ⁴ -----	145,584	141,963	74,466	.52
Organophosphorus insecticides, total-----	102,155	102,540	121,999	1.19
0,0-Dimethyl 0-p-nitrophenyl phosphorothioate (Methyl parathion)-----	48,890	52,450	26,046	.50
All other organophosphorus insecticides ⁵ -----	53,265	50,090	95,953	1.92
All other cyclic insecticides and rodenticides ⁶ -----	164,974	153,292	130,690	.85
PESTICIDES AND RELATED PRODUCTS, ACYCLIC				
Total-----	379,051	347,000	252,370	.73
Fungicides, total-----	43,628	44,436	27,120	.61
Dithiocarbamic acid salts ⁷ -----	41,417	41,583	21,238	.51
All other acyclic fungicides ⁸ -----	2,211	2,853	5,882	2.06
Herbicides and plant hormones, total-----	108,967	95,044	81,348	.86
Methanearsonic acid salts ⁹ -----	40,126	38,235	10,743	.28
All other acyclic herbicides ¹⁰ -----	68,841	56,809	70,605	1.24

See footnotes at end of table.

TABLE 1.--PESTICIDES AND RELATED PRODUCTS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Product	Production	Sales		
		Quantity	Value	Unit value ¹
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Insecticides, rodenticides, soil conditioners and fumigants, total-----	226,456	207,520	143,902	\$0.69
Methyl bromide (Bromomethane)-----	29,571	28,663	11,580	.40
Organophosphorus insecticides ¹¹ -----	70,450	65,438	91,034	1.39
All other acyclic insecticides, rodenticides, soil conditioners and fumigants ¹² -----	126,435	113,419	41,288	.36

¹ Calculated from rounded figures.

² Includes captan, captafol, dinocap, DMT, difolatan, folpet, pentachloronitrobenzene, sodium pentachlorophenate, tri- and tetra-chlorophenols (including 2,4,5-trichlorophenol and its salts), and others.

³ Includes amiben esters and salts, atrazine, barban, benefin, bensulide, 2,4-D, acid, esters, and salts, 2,4-DB, dicamba, dimethylurea compounds, dinitrophenol compounds, isopropyl phenylcarbamates (IPC and CIPC), MCPA, MH (production only), molinate, NPA, picloram, propanil, silvex and its esters, 2,4,5-T acid esters and salts, triazines, trifluralin, uracils, and others.

⁴ Includes aldrin, chlordan, dieldrin, endrin, heptachlor, and toxaphene.

⁵ Includes azinphosmethyl, carbophenothion, coumaphos, diazinon, dioxathion, fensulfothion, parathion, ronnel, and other phosphorothioates and phosphorodithioates, and others.

⁶ Includes carbaryl, carbofuran, chlorinated insecticides (BHC + lindane, chlorobenzilate, DDT, dicofol, endosulfan, methoxychlor, and others), insect attractants, DEET and other insect repellents, small amounts of rodenticides, piperonyl butoxide and other synergists, and others.

⁷ Includes ferbam, maneb, nabam, PETD and zineb, plus the remaining dithiocarbamates which are used chiefly as fungicides.

⁸ Includes dodine, mercury compounds, and others.

⁹ Includes the mono- and di-sodium salts, and the dodecyl- and octyl-ammonium salts of methanearsonic acid.

¹⁰ Includes cacodylic acid, CDAA, dalapon, thiocarbamate, thiolcarbamate, and organophosphorus herbicides, sodium TCA, and others.

¹¹ Includes DDVP, dimethoate, disulfoton, ethion, malathion, monocrotophos, naled, phorate, and other organophosphorus insecticides.

¹² Includes aldicarb, chloropicrin, DBCP, soil conditioners and fumigants, methomyl, 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 report on cyclic intermediates.

PESTICIDES AND RELATED PRODUCTS

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TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Pesticides and related products for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC	
*Fungicides:	
2,6-Bis(dimethylaminomethyl)cyclohexanone-----	MRK.
4-Bromoacetoxymethyl-m-dioxaline-----	EFH.
2'-Bromo-4'-hydroxyacetophenone-----	BKM.
Cyanomethylthiobenzothiazole-----	x.
2,4-Dichloro-6-(o-chloroanilino)-s-triazine-----	CHG.
1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)-----	DUP.
1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline (Ethoxyquin).	MON.
3,5-Dimethyl-1,3,5-2H-tetrahydrothiadiazine-2-thione (DMTT).	MRK.
Diphenylammonium propionate-----	MRK.
5-Ethoxy-3-trichloromethyl-1,2,4-thiadiazole-----	OMC.
Hexahydro-1,3,5-triethyl-s-triazine-----	VNC.
*Mercury fungicides:	
*Phenylmercuric acetate (PMA)-----	CLY, MRK, TRO, WRC.
Phenylmercuric ammonium acetate-----	TRO.
Phenylmercuric dimethyldithiocarbamate-----	WRC.
Phenylmercuric hydroxide-----	WRC.
Phenylmercuric lactate-----	WRC.
Phenylmercuric oleate-----	CLY, HN, TRO, WRC.
Phenylmercuric propionate-----	MRK.
Phenylmercuric succinate-----	WRC.
Methyl-N-benzimidazol-2-yl-N-(butylcarbomoyl) carbamate (Benomyl).	DUP.
2-(1-Methyl-n-heptyl)-4,6-dinitrophenyl crotonate (Dinocap).	RH.
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Piperalin).	LIL.
*Naphthenic acid, copper salt-----	CCA, FER, MCI, SHP, WTC.
10,10'-Oxybisphenoxarsine-----	SAL.
Pentachloronitrobenzene (PCNB)-----	OMC.
*Pentachlorophenol (PCP)-----	DOW, FRO, MON, RCI.
Pentachlorophenol, sodium salt-----	DOW, RCI.
8-Quinololinol (8-Hydroxyquinoline), copper salt-----	ASH.
cis-N-[(1,1,2,2-Tetrachloroethyl)thio]-4-cyclohexene- 1,2-dicarboximide (Captafol)	ORO.
2,4,5,6-Tetrachloroisophthalonitrile-----	DA.
2,3,4,6-Tetrachlorophenol-----	DOW.
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan).	SFA, SFC.
N-Trichloromethylthiophthalimide (Folpet)-----	SFA, SFC.
2,4,5-Trichlorophenol acid and salts:	
2,4,5-Trichlorophenol-----	DOW.
2,4,5-Trichlorophenol, ethanolamine salt-----	GAF.
2,4,5-Trichlorophenol, sodium salt-----	DOW.
2,4,6-Trichlorophenol-----	DOW.
1,3,5-Tris(2-isopropanol)-s-triazine-----	EFH.
*Herbicides and plant hormones:	
2-Amino-4-N,N-diethylamino-3,5-dinitrobenzotri- fluoride (Cobex).	x.
4-Amino-3,5,6-trichloropicolinic acid (Picloram)-----	DOW.
2,4-Bis(isopropylamino)-6-methylthio-s-triazine (Prometryn).	CGY.
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)-----	ACN, DUP.
2-sec-Butylamino-4-ethylamino-6-methoxy-s- triazine.	CGY.
2-tert-Butylamino-4-chloro-6-ethylamino-s-triazine----	CGY.
2-tert-Butylamino-4-ethylamino-6-methoxy-s-triazine----	CGY.
2-tert-Butylamino-4-ethylamino-6-methylthio-s- triazine.	CGY.
3-tert-Butyl-5-chloro-6-methyluracil (Terbacil)-----	DUP.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
N-Butyl-N-ethyl- α,α,α -trifluoro-2,6-dinitro-p-toluidine (Benefin).	LIL.
2-Butynyl-4-chloro-m-chlorocarbanilate (Barban)-----	GOC.
2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)-----	CGY.
2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine).	CGY.
2-Chloro-4-cyclopropylamino-6-isopropylamino-s-triazine.	GOC.
2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)acetanilide (Butachlor).	MON.
2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor).	MON.
2-Chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine).	CGY.
2-(4-Chloro-6-ethylamino-s-triazin-2-ylamino)-2-methylpropionitrile (Cyanazine)	CGY.
2-Chloro-N-isopropylacetanilide (Propachlor)-----	MON.
4-(4-Chloro-2-methylphenoxy)butyric acid-----	RDA.
3-(p-Chlorophenyl)-1,1-dimethylurea (Monuron)-----	DUP.
3-(p-Chlorophenyl)-1,1-dimethylurea trichloroacetate--	ACN.
3,5-Dibromo-4-hydroxybenzoylnitrile, octanoic acid ester (Bromoxynil octanoate).	RDA.
2,5-Dichloro-3-aminobenzoic acid, ammonium salt-----	GAF, x.
2,5-Dichloro-3-aminobenzoic acid, methyl ester-----	GAF.
3,6-Dichloro-2-anisic acid (Dicamba)-----	VEL.
2,4-Dichlorobenzyltributylphosphonium chloride-----	SM.
2,5-Dichloro-6-nitrobenzoic acid, sodium salt-----	GAF.
4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB)-----	RDA.
2,4-Dichlorophenoxypropionic acid-----	RDA.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)-----	DUP.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron).	DUP.
3',4'-Dichloropropionanilide (Propanil)-----	EGR, MON, RH.
*1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH).	ACY, ASL, FMT, USR.
N-(beta-0,0-Diisopropyl-dithiophosphorylethyl)benzene sulfonamide (Bensulide).	SFA.
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)-----	CWN.
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)-----	DA.
Dinitrobutylphenol (DNBP)-----	DOW, FMN.
Dinitrobutylphenol, ammonium salt-----	DOW, FMN.
Dinitrobutylphenol, triethanolamine salt-----	DOW, FMN.
Dinitrocresol, sodium salt-----	FMN.
3,5-Dinitro-N ⁴ , N ⁶ -di(n-propylsulfanilamide (Oryzalin).	LIL.
2-Ethylamino-4-isopropylamino-6-methylmercapto-s-triazine (Ametryne).	CGY.
S-Ethyl(cyclohexyl)ethylthiocarbamate-----	SFA.
S-Ethyl-diethylthiocarbamate-----	GOC.
S-Ethyl hexahydro-1H-azepine-1-carbothioate (Molinate).	SFA.
2-Ethylthio-4,6-bis(isopropylamino)-s-triazine.	CGY.
Gibberellic acid-----	ABB, MRK.
3-Indolebutyric acid-----	ARA, MRK.
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)-----	PPG.
Isopropyl N-phenylcarbamate (IPC)-----	PPG.
2-Methoxy-4,6-bis(isopropylamino)-s-triazine (Prometron).	CGY.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)-----	DUP.
4-(Methylsulfonyl)-2,6-dinitro-N,N-dipropylaniline (Nitralin).	SHC.
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetic acid, sodium salt-----	AMC, BKL.
1,8-Naphthalic anhydride-----	GOC.
N-1-Naphthylphthalamic acid (NPA)-----	USR.
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, di- sodium salt (Endothall).	PAS.
Phenoxyacetic acid derivatives:	
4-Chloro-2-methylphenoxyacetic acid (MCPA)-----	CLY, RDA, TMH.
2,4-Dichlorophenoxyacetic acid (2,4-D)-----	DOW, MON, RDA.
2,4-Dichlorophenoxyacetic acid esters and salts:	
2,4-Dichlorophenoxyacetic acid, 2-butoxyethyl ester.	DOW, RIV.
2,4-Dichlorophenoxyacetic acid, butoxypolypropyl- eneglycol ester.	DOW.
2,4-Dichlorophenoxyacetic acid, n-butyl ester-----	RIV.
2,4-Dichlorophenoxyacetic acid, sec-butyl ester---	DOW, RDA.
*2,4-Dichlorophenoxyacetic acid, dimethylamine salt.	DOW, PBI, RDA, RIV, TMH.
2,4-Dichlorophenoxyacetic acid, ethanolamine and isopropanolamine salt.	DOW.
2,4-Dichlorophenoxyacetic acid, iso-octyl ester---	DOW, RDA, RIV.
2,4-Dichlorophenoxyacetic acid, isopropyl ester---	DOW.
2,4-Dichlorophenoxyacetic acid, lithium salt-----	GTH.
2,4-Dichlorophenoxyacetic acid, sodium salt-----	DOW, RIV.
2,4,5-Trichlorophenoxyacetic acid esters and salts:	
2,4,5-Trichlorophenoxyacetic acid, 2-butoxyethyl ester.	DOW.
2,4,5-Trichlorophenoxyacetic acid, butoxypoly- propyleneglycol ester.	DOW.
2,4,5-Trichlorophenoxyacetic acid, sec-butyl ester.	DOW.
2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester.	DOW, RIV, TMH.
2,4,5-Trichlorophenoxyacetic acid, triethylamine salt.	DOW.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclo- pentadiene) isomers.	VEL.
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)-----	DOW, TMH.
2-(2,4,5-Trichlorophenoxy)propionic acid esters and salts:	
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-butoxy- ethyl ester.	DOW, RIV.
2-(2,4,5-Trichlorophenoxy)propionic acid, butoxypoly- propylene glycol ester.	DOW.
2-(2,4,5-Trichlorophenoxy)propionic acid, iso-octyl ester.	DOW, RIV.
α,α,α -Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin).	LIL.
All other cyclic herbicides-----	LIL, RH, x.
Insect attractants and repellents:	
tert-Butyl 4(and 5)-chloro-2-methylcyclohexanecarboxy- late (Trimedlure).	UOP.
2-(3,4-Dichlorophenyl)-1,2,4-oxadiazoline-4-methyl- 3,5-dione.	NES.
N,N-Diethyltoluamide (DEET)-----	HPC, PFZ.
Di-n-propylisocinchomeronate-----	MGK.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
Insecticides:	
3-sec-Amylphenyl-N-methylcarbamate-----	x.
5-Benzyl-3-furylmethyl-2,2-dimethyl-3-(2-methyl- propenyl)cyclopropane carboxylate (Resmethrin).	PEN.
Bacillus thuringiensis-----	ABB, IMC, S.
2-sec-Butyl-4,6-dinitrophenyl-3,3-dimethylacrylate (Binapacryl).	FMN.
2-(p-tert-Butylphenoxy)cyclohexyl-2'-propynyl sulfite--	USR.
o-sec-Butylphenyl-N-methylcarbamate-----	OTC.
Chlorinated insecticides:	
*Aldrin-toxaphene group:	
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor).	VEL.
Hexachloro-epoxy-octahydro-endo, endo-dimethano- naphthalene (Endrin).	VEL.
Hexachloro-epoxy-octahydro-endo, exo-dimethano- naphthalene (Dieldrin).	SHC.
Hexachloro-hexahydro-endo, exo-dimethanonaphthalene (Aldrin).	SHC.
Octachloro-hexahydro-methanoindene (Chlordan)-----	VEL.
Toxaphene (Chlorinated camphene)-----	HN, HPC.
2,2-Bis(p-chlorophenyl)-1,1-dichloroethane (DDD) (TDE).	RH.
α -Bis(p-chlorophenyl) β,β,β -trichloroethane (DDT)-----	MTO.
Chlorobenzilate-----	CGY.
o-Chlorophenyl-N-methylcarbamate-----	OTC.
p-Chlorophenyl 2,4,5-trichlorophenyl sulfone (Tetradifon).	FMN.
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta-[cd] pentalen-2-one (Chlordecone).	ACN.
1,1-Dichloro-2,2-bis(p-ethylphenyl)ethane-----	RH.
4,4'-Dichloro- α -trichloromethylbenzhydrol (Dicofol)--	RH.
Dodecachlorooctahydro-1,3,4-metheno-2H-cyclobuta-[cd] pentalene (Mirex).	ACN.
Hexachlorocyclohexane (Benzene hexachloride) (BHC)---	HK.
Hexachlorocyclohexane, 100% γ -isomer (Lindane)-----	HK.
Hexachloro-hexahydro-methano-benzodioxathiepin 3-oxide (Endosulfan).	HK.
Isopropyl 4,4'-dichlorobenzilate (Chloropropylate)---	CGY.
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor).	ACN, CHF, DUP.
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methyl- carbamate (Carbofuran).	FMC.
m-[[[(Dimethylamino)methylene]amino]phenyl-N-methyl- carbamate.	x.
m-[[[(Dimethylamino)methylene]amino]phenyl methyl- carbamate hydrochloride (Formetanate hydrochloride).	MRT.
m-(1-Ethylpropyl)phenyl methylcarbamate-----	ORO.
m-(1-Methylbutyl)phenyl methylcarbamate-----	ORO.
1-Naphthyl N-methylcarbamate (Carbaryl)-----	UCC.
*Organophosphorus insecticides:	
O-(4-Bromo-2,5-dichlorophenyl)O-methyl phenyl- phosphonothioate (Leptophos).	VEL.
4-tert-Butyl-2-chlorophenylmethyl methylphos- phoramidite.	DOW.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
Insecticides--Continued	
*Organophosphorus insecticides--Continued	
S-[[[p-Chlorophenyl]thio]methyl 0,0-diethyl phosphorodithioate (Carbophenothion).	SFA.
0,0-Diethyl 0-3-chloro-4-methyl-1-oxo-2H-1-benzopyran-7-yl-phosphorothioate (Coumaphos).	CHG.
0,0-Diethyl 0-(2-isopropyl-4-methyl-6-pyrimidinyl)-phosphorothioate (Diazinon).	CGY.
0,0-Diethyl 0-[p-(methylsulfinyl)phenyl] phosphorothioate (Fensulfothion).	CHG.
0,0-Diethyl 0-p-nitrophenyl phosphorothioate (Parathion).	MON, SFA.
0,0-Diethyl 0-3,5,6-trichloro-2 pyridyl phosphorothioate.	DOW.
0,0-Dimethyl 0-[4-(methylthio)-m-tolyl]phosphorothioate (Fenthion).	CHG.
*0,0-Dimethyl 0-p-nitrophenyl phosphorothioate (Methyl parathion).	AMP, MON, SFA, VEL.
0,0-Dimethyl S-[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl] phosphorodithioate (Azinphos-methyl)	CHG.
Dimethyl 2,4,5-trichlorophenyl phosphorothionate (Ronnell).	DOW.
2,3-p-Dioxane S,S-bis(0,0-diethylphosphorodithioate) (Dioxathion).	HPC.
0-Ethyl 0-p-nitrophenyl phenylphosphonothioate (EPN).	SFA.
0-Ethyl S-phenylethylphosphonodithioate -----	SFA.
α-Methylbenzyl 3-(dimethoxyphosphinyloxy)-cis-crotonate.	SHC.
0,0,0',0'-Tetramethyl 0,0'-thiodi-p-phenylene phosphorothioate.	ACY.
All other organophosphorus insecticides-----	SFA, SHC.
N-(1-Phenyl-2-nitropropyl)piperazine-----	MRK.
All other cyclic insecticides-----	PFZ, PLC.
Nematocides:	
0,0-Diethyl 0-(2,4-dichlorophenyl) phosphorothioate (Dichlofenthion).	SM.
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin).	ACY.
Rodenticides:	
3-(α-Acetonilbenzyl)-4-hydroxycoumarin (Warfarin)-----	MOT, PEN.
2-Diphenylacetyl-1,3-indandione and sodium salt (Diphacinone).	NES.
2-Pivaloyl-1,3-indandione (Pindone)-----	MOT, PIC.
Synergists and adjuvants:	
α-[2-(2-n-Butoxyethoxy)-ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide).	ALP, BKL, FMN, FMP.
N-(2-Ethylhexyl)bicyclo[2.2.1]-5-heptene-2,3-dicarboximide.	MGK.
Piperonal bis[2-(2'-n-butoxyethoxy)ethyl]acetal (Heliotropin acetal).	MGK.
All other cyclic pesticides and related products-----	PEN.
PESTICIDES AND RELATED PRODUCTS, ACYCLIC	
*Fungicides:	
Bis-1,4-bromoacetoxy-2-butene-----	VIN.
Cadmium sebacate-----	MAL.
Cadmium succinate-----	MAL.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Fungicides--Continued	
1-Chloro-2-nitropropane (Korax)-----	FMN.
Copper tallate-----	AMP.
Dimethylthiocarbonyl disulfide-----	CLY.
Disodium cyanodithioimidocarbonate-----	x.
*Dithiocarbamic acid fungicides:	
Dimethyldithiocarbamic acid, ferric salt (Ferbam)----	FMN.
Dimethyldithiocarbamic acid, manganese salt-----	FMN.
Dimethyldithiocarbamic acid, potassium salt-----	BKM.
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam).	ALC, RH, USR.
Ethylene bis(dithiocarbamic acid), manganese salt (Maneb).	DUP, RH.
Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions.	RH.
Ethylene bis(dithiocarbamic acid), zinc salt (Zineb).	FMN, RH.
Polyethylenethiuram disulfide (PETD)-----	FMN.
All other dithiocarbamic acid fungicides-----	VNC.
n-Dodecylguanidine acetate (Dodine)-----	ACY.
2-Hydroxypropylmethanethiol sulfonate-----	x.
Chloromethoxypropylmercuric acetate-----	TRO.
*Herbicides and plant hormones:	
N,N-Bis(phosphonomethyl)glycine-----	MON.
N,N-Bis(phosphonomethyl)glycine, isopropylamine salt---	MON.
2-Chloroallyl diethyldithiocarbamate (CDEC)-----	MON.
2-Chloro-N,N-diallylacetamide (CDAA)-----	MON.
(2-Chloroethyl)phosphonic acid-----	GAF.
S-2,3-Dichloroallyl diisopropylthiolcarbamate (Diallate).	MON.
2,2-Dichloropropionic acid, sodium salt (Dalapon)-----	DOW.
N-Dimethylaminosuccinamic acid (DMSA)-----	USR.
Dimethylarsinic acid (Cacodylic acid)-----	ASL.
S-Ethyl-N,N-diisobutylthiocarbamate (Butylate)-----	SFA.
S-Ethyl N,N-dipropylthiolcarbamate (EPTC)-----	SFA.
Ethyl xanthogen disulfide (EXD)-----	RBC.
*Methanearsonic acid, disodium salt (DSMA)-----	ASL, CLY, VIN.
*Methanearsonic acid, dodecyl- and octylammonium salt---	CLY.
*Methanearsonic acid, monosodium salt (MSMA)-----	ASL, DA.
Poly[oxyethylene(dimethylimino)ethylene(dimethylimino)- ethylene dichloride].	BKM.
S-Propyl butylethylthiocarbamate (Pebulate)-----	SFA.
S-Propyl dipropylthiocarbamate (Vernolate)-----	SFA.
S,S,S-Tributyl phosphorotrithioate-----	PLC.
Tributyl phosphorotrithioate (Merphos)-----	SM.
Trichloroacetic acid, sodium salt (TCA)-----	DOW.
S-2,3,3-Trichloroallyl diisopropylthiolcarbamate (Triallate).	MON.
*Insecticides:	
2-(2-Butoxyethoxy)ethyl thiocyanate-----	RH.
S-Methyl N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl).	DUP.
*Organophosphorus insecticides:	
S-[1,2-Bis(ethoxycarbonyl)ethyl] 0,0-dimethyl phosphorodithioate (Malathion).	ACN, ACY.
2-Carbomethoxy-1-propen-2-yl dimethyl phosphate (Mevinphos).	SHC.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled).	SHC.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Insecticides--Continued	
*Organophosphorus insecticides--Continued	
0,0-Diethyl S-2-(ethylthio)ethyl phosphorodithioate (Disulfoton).	CHG.
0,0-Diethyl 0-2-(ethylthio)ethyl phosphorothioate (Demeton O).	CHG.
0,0-Diethyl S-(ethylthio)methyl phosphorodithioate (Phorate).	ACY.
3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-crotonamide (Dicrotophos).	SHC.
0,0-Dimethyl 2,2-dichlorovinyl phosphate (Dichlorvos).	SHC.
0,0-Dimethyl S-[2-ethylsulfinyl]ethyl]phosphorothioate (Oxydemetonmethyl).	CHG.
0,0-Dimethyl S-(N-methylcarbamoylmethyl)phosphorodithioate (Dimethoate).	ACY.
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide (Monocrotophos).	SHC.
0,S-Dimethyl phosphoramidodithioate-----	CHG.
0,0,0',0'-Tetraethyl S,S'-methylene bisphosphorodithioate (Ethion).	FMN, FMP.
0,0,0',0'-Tetra-n-propyl dithiopyrophosphate-----	SFA.
All other acyclic insecticides-----	PLC.
Nematocides:	
0-Ethyl S,S-dipropyl phosphorodithioate-----	SM.
2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb).	CGY, UCC.
Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium salt.	ACY.
Soil fumigants:	
1,2-Dibromo-3-chloropropane (DBCP)-----	DOW, SHC.
1,3-Dichloropropene-----	DOW.
1,3-Dichloropropene and 1,2-dichloropropane-----	DOW, SHC.
*Methyl bromide (Bromomethane)-----	AMP, DOW, GTL, MCH.
Methyl isothiocyanate-----	MRT.
Trichloronitromethane (Chloropicrin)-----	DOW, NLO, SBN.
All other acyclic pesticides and related products-----	ACY, PLC, RBC, SFA, TRO.

TABLE 3.--PESTICIDES AND RELATED PRODUCTS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers of pesticides and related products that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ABB	Abbott Laboratories	MCI	Mooney Chemical Corp.
ACN	Allied Chemical Corp., Agricultural Div.	MGK	McLaughlin, Gormley & King Co.
ACY	American Cyanamid Co.	MON	Monsanto Co.
ALC	Alco Chemical Corp.	MOT	Motomoco, Inc.
ALP	Alpha Laboratories, Inc.	MRK	Merck & Co., Inc.
AMC	Amchem Products, Inc., Div. of Rorer-Amchem, Inc.	MRT	Morton Chemical Co. Div. of Morton-Norwick Products, Inc.
AMP	Kerr-McGee Chemical Corp.	MTO	Montrose Chemical Corp. of California
ARA	Arapahoe Chemical, Inc. Sub. of Syntex (U.S.A.) Inc.	NES	Nease Chemical Co., Inc.
ASH	Ashland Oil, Inc. Ashland Chemical Co. Div.	NLO	Niklor Chemical Co.
ASL	Ansul Chemical Co.	OMC	Olin Corp.
BKL	Millmaster Onyx Corp., Millmaster Chemical Co. Div., Berkeley Chemical Dept.	ORO	Chevron Chemical Co.
BKM	Buckman Labs., Inc.	OTC	Story Chemical Corp.
CCA	Cincinnati Milacron Chemicals, Inc.	PAS	Pennwalt Corp.
CGY	Ciba-Geigy Corp., Ciba Agricultural Co.	PBI	Gordon Corp.
CHF	Chemical Formulators, Inc.	PEN	CPC International, Inc., Penick Div.
CHG	Baychem Corp., Chemagro Div.	PFZ	Pfizer, Inc.
CLY	W. A. Cleary Corp.	PIC	Pierce Organics, Inc.
CWN	Upjohn Co., Fine Chemical Div.	PLC	Phillips Petroleum Co.
DA	Diamond Shamrock Corp.	PPG	PPG Industries, Inc.
DOW	Dow Chemical Co.	RBC	Fike Chemicals, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.	RCI	Reichhold Chemicals, Inc.
EFH	E. F. Houghton & Co.	RDA	Rhodia, Inc.
EGR	Eagle River Chemical Corp.	RH	Rohm & Haas Co.
FER	Ferro Corp., Ferro Chemical Div.	RIV	Riverdale Chemical Co.
FMN	FMC Corp., Agricultural Chemical Div.	S	Sandoz-Wander, Inc.
FMP	Industrial Chemical Div., Organic Business Group	SAL	Salsbury Laboratories
FMT	Fairmount Chemical Co.	SBN	Sobin Chemical Co.
FRO	Vulcan Materials, Co., Chemical Div.	SFA	Stauffer Chemical Co.: Agricultural Div.
GAF	GAF Corp., Chemical Div.	SFC	Calhio Chemicals, Inc. Div.
GOC	Gulf Oil Corp., Gulf Oil Chemical Co.-U.S.	SHC	Shell Oil Co., Shell Chemical Co. Div.
GTH	Guth Chemical Co.	SHP	Shepherd Chemical Co.
GTL	Great Lakes Chemical Corp.	SM	Mobil Oil Corp., Mobil Chemical Co. Div., Industrial Chemical Div.
HK	Hooker Chemicals & Plastics Corp.	TMH	Thompson-Hayward Chemical Co.
HN	Tenneco Chemicals, Inc.	TRO	Troy Chemical Co.
HPC	Hercules, Inc.	UCC	Union Carbide Corp.
IMC	International Minerals & Chemical Corp.	UOP	Universal Oil Products Co., UOP Chemical Div.
LIL	Eli Lilly & Co.	USR	Uniroyal, Inc., Chemical Div.
MAL	Mallinckrodt Chemical Works	VEL	Velsicol Chemical Corp.
MCH	Michigan Chemical Corp.	VIN	Vineland Chemical Co.
		VNC	Vanderbilt Chemical Corp.
		WRC	Ventron Corp., Ventron Chemical
		WTC	Witco Chemical Co., Inc.

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

Miscellaneous Chemicals

The term miscellaneous chemicals comprises those synthetic organic products that are not included in the use groups covered by the other preliminary reports in the 1973 series. They include products that are employed in a great variety of uses. The number of chemicals used exclusively for only one purpose is not large. Among the products covered are those used for gasoline and lubricating oil additives, paint driers, photographic chemicals, tanning materials, flotation reagents, refrigerants, textile polymers, sequestering agents, organic fertilizers, anti-freeze chemicals, solvents, and acyclic intermediates. This report presents statistics on U.S. production and sales of miscellaneous chemicals in as great detail as is possible without revealing the operations of individual producers.

Production of miscellaneous cyclic and acyclic chemicals in 1973 totaled almost 99 billion pounds, or 9.4 percent more than the output of 90.5 billion pounds reported for 1972. Sales of miscellaneous chemicals in 1973 amounted to 49.7 billion pounds, valued as \$5.3 billion, compared with 45.2 billion pounds, valued at \$4.7 billion in 1972.

The total output of miscellaneous cyclic chemicals in 1973 was 3.2 billion pounds. Sales in 1973 totaled 1.5 billion pounds, valued at \$523 million. In 1973, the most important cyclic compound was polyethylene terephthalate, the output of which was 1.7 billion pounds. The lubricating oil and grease additives group output increased significantly, from 388 million pounds in 1972 to 535 million pounds in 1973.

Total production of miscellaneous acyclic chemicals in 1973 was 95.7 billion pounds, or 8.7 percent more than the output of 88.1 billion pounds reported for 1972. Sales in 1973 totaled 48.2 billion pounds, valued at \$4.8 billion, compared with 44.0 billion pounds, valued at \$4.3 billion, in 1972. The statistics for acyclic chemicals are grouped primarily by chemical function. The order of precedence of these functional groups is generally that used in naming and indexing chemical compounds by Chemical Abstracts, but other important considerations are comparability with other statistics and the need for groupings that will not reveal the operations of individual producers.

In 1973, the most important groups of acyclic chemicals were the halogenated hydrocarbons, the nitrogenous compounds, monohydric alcohols, and aldehydes and ketones. Production of halogenated hydrocarbons, which are used as solvents, intermediates, refrigerants, and aerosol propellants, totaled 22.6 billion pounds. The most important chemicals in this group were dichloroethane (production of 9.3 billion pounds in 1973, compared with 7.8 billion pounds in 1972) and vinyl chloride (5.4 billion pounds

SYNTHETIC ORGANIC CHEMICALS, 1973

in 1973, compared with 5.1 billion pounds in 1972). Output of nitrogenous compounds totaled 17.0 billion pounds. The most important chemical in this group was urea (used principally in fertilizers and as a feed additive), production of which was 7.1 billion pounds in 1973 and 6.9 billion pounds in 1972.

Monohydric alcohols, which are used largely as solvents and intermediates, were the third largest group in 1973, with production of 14.9 billion pounds. The most important items in the group in terms of production were synthetic methanol (7.1 billion pounds in 1973, compared with 6.5 billion pounds in 1972), synthetic ethyl alcohol (2.0 billion pounds in 1973, compared with 1.8 billion pounds in 1972) and isopropyl alcohol (remaining at the 1.8 billion pound level in 1973). Aldehydes and ketones, which are also used largely as solvents and intermediates, were the next largest group with production of 12.2 billion pounds. The most important items in this group in 1973 were formaldehyde (6.4 billion pounds) and acetone (2.0 billion pounds).

MISCELLANEOUS CHEMICALS

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973

[Listed below are all miscellaneous chemicals for which any reported data on production or sales may be published. (Leaders are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all miscellaneous chemicals for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	98,973,517	49,666,924	5,286,928..	\$0.11
MISCELLANEOUS CHEMICALS, CYCLIC				
Total-----	3,224,383	1,478,792	523,356	.35
Benzoic acid, sodium salt-----	11,783	12,718	3,879	.31
Benzoyl peroxide-----	8,829	7,930	7,405	.93
Benzyl alcohol-----	12,862	13,356	4,073	.30
Butyl benzoate-----	5,095	5,144	962	.19-
tert-Butyl peroxybenzoate-----	2,434	2,440	2,479	1.02
2,6-Di-tert-butyl-p-cresol:				
Food grade-----	8,057	8,621	4,563	.53
Tech-----	23,907	19,337	9,347	.48
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)-----	776	...	...	...
Dioxane (1,4-Diethylene oxide)-----	16,223	6,928	2,308	.33
Enzymes-----	(²)	(²)	26,244	...
Flotation reagents-----	11,195	9,740	1,601	.16
Gasoline additives ³ -----	55,121	...	...	...
Hexamethylenetetramine, tech-----	100,711	71,073	9,070	.13
p-Hydroxybenzoic acid esters:				
Methyl p-hydroxybenzoate (Methylparaben)-----	1,085	1,111	1,714	1.54
Propyl p-hydroxybenzoate (Propylparaben)-----	358	329	604	1.84
Lubricating oil and grease additives, total-----	534,821	372,106	73,818	.20
Oil-soluble petroleum sulfonates, total-----	371,410	244,515	39,085	.16
Oil-soluble petroleum sulfonates, calcium salt-----	197,352	105,605	15,966	.15
Oil-soluble petroleum sulfonates, sodium salt-----	128,177	105,930	14,192	.13
All other-----	45,881	32,980	8,927	.27
Phenol salts-----	78,481	...	...	...
All other lubricating oil and grease additives-----	84,930	127,591	34,733	.27
Morpholine-----	...	25,963	7,868	.30
Naphthenic acid salts, total ^{4 5} -----	20,170	19,346	6,992	.36
Calcium naphthenate-----	1,303	1,322	502	.38
Cobalt naphthenate-----	3,252	3,220	2,354	.73
Iron naphthenate-----	...	223	77	.35
Lead naphthenate-----	11,611	...	...	...
Manganese naphthenate-----	1,200	1,232	421	.34
Zinc naphthenate-----	1,276	1,231	394	.32
All other-----	1,528	12,118	3,244	.27
Photographic chemicals:				
2,5-Diethoxy-4-morpholinobenzenediazonium chloride-----	155	157	902	5.75
p-Diethylaminobenzenediazonium chloride-----	142	142	271	1.91
p-[Ethy(2-hydroxyethyl)amino]benzenediazonium chloride-----	18	18	56	3.11

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
MISCELLANEOUS CHEMICALS, CYCLIC--Continued				
Pinenes (α - and β -)-----	85,102	51,767	6,251	\$0.12
Polyethylene terephthalate-----	1,672,314	322,075	93,401	.29
Tall oil salts, total ⁵ -----	7,460	7,529	1,693	.22
Cobalt tallate-----	1,050	1,044	571	.55
Copper tallate-----	66	60	18	.30
Lead tallate-----	1,333	1,395	330	.24
Manganese tallate-----	455	464	154	.33
All other-----	4,556	4,566	620	.14
Tanning materials, synthetic-----	54,932	55,151	12,234	.22
All other miscellaneous cyclic chemicals-----	590,833	465,811	245,621	.53
MISCELLANEOUS CHEMICALS, ACYCLIC				
Total-----	95,749,134	48,188,132	4,763,572	.10
<i>Cellulose Esters and Ethers</i>				
Total-----	1,065,806	323,087	139,766	.43
Cellulose esters: Cellulose acetate-----	834,489	...	...	...
Cellulose ethers: Sodium carboxymethylcellulose, 100%-----	68,542	73,442	33,682	.46
All other cellulose esters and ethers ⁶ -----	162,775	249,645	106,084	.42
<i>Lubricating Oil Additives</i>				
Total-----	569,641	209,188	48,034	.23
Phosphorodithioates (Thiophosphates)-----	129,050	...	...	...
Sulfur compounds: Sulfurized lard oil-----	4,041	2,841	668	.24
All other-----	436,550	206,347	47,366	.23
<i>Nitrogenous Compounds</i>				
Total ⁷ -----	17,040,379	9,228,234	945,437	.10
Acrylonitrile-----	1,354,160	480,715	50,878	.11
Amines, total-----	1,376,156	368,820	85,437	.23
Butylamines-----	19,771	10,545	3,453	.33
Diethylenetriamine-----	...	30,857	10,206	.33
Ethylamines-----	...	29,163	5,493	.19
Ethylenediamine-----	...	52,731	10,895	.21
1,6-Hexanediamine (Hexamethylenediamine)-----	918,312	...	...	...
Methylamines:				
Dimethylamine-----	121,522	50,152	5,107	.10
Methylamine, mono-----	37,015	26,719	2,395	.09
Trimethylamine-----	28,892	23,526	2,263	.10

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nitrogenous Compounds--Continued</i>				
Amines--Continued				
Propylamines:				
Dipropylamine-----	18,104	18,103	4,708	\$0.26
Propylamine, mono-----	439	416	253	.61
Triethylenetetramine-----	...	16,102	5,880	.37
All other-----	232,101	110,506	34,784	.31
Caprolactam-----	656,297	293,886	57,944	.20
2-Dimethylaminoethanol-----	4,204	...	...	...
Erucamide-----	3,674	3,513	3,648	1.04
Ethanolamines, total-----	293,061	267,276	31,757	.12
2-Aminoethanol (Monoethanolamine)-----	88,376	82,458	9,300	.11
2,2'-Aminodiethanol (Diethanolamine)-----	106,171	87,446	9,323	.11
2,2',2''-Nitrilotriethanol (Triethanolamine)-----	98,514	97,372	13,134	.14
N,N'-Ethylene bis(stearamide)-----	8,297	8,896	3,170	.36
Hexamethylenediammonium adipate (Nylon salt)-----	770,395	...	...	...
Nitriloacids and salts, total-----	160,856	125,466	32,305	.26
(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt-----	4,134	3,960	1,096	.28
(Ethylenedinitrilo)tetraacetic acid, disodium salt-----	1,495	...	...	...
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate-----	3,501	3,189	1,538	.48
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt-----	62,787	38,954	10,675	.27
(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt-----	7,210 ¹	5,033	2,109	.42
All other-----	81,729	74,330	16,887	.23
Nylon 6 and 6/6 (polymers for fiber, only)-----	1,692,133	...	...	...
Pentaerythritol tetranitrate-----	5,171	3,375	2,928	.87
Polyacrylamide-----	19,996	17,289	13,774	.80
Polyacrylonitrile-----	751,695	...	...	...
Urea in compounds or mixtures (100% basis), total-----	⁸ 7,086,178	⁹ 6,756,710	⁹ 228,103	.03
In feed compounds-----	818,046	797,373	26,058	.03
In liquid fertilizer-----	2,472,051	2,225,507	79,093	.04
In solid fertilizer-----	2,912,346	3,182,133	105,816	.03
All other-----	883,735	551,697	17,136	.03
All other nitrogenous compounds-----	2,858,106	902,288	435,493	.48
<i>Acids, Acyl Halides and Anhydrides</i>				
Total-----	7,184,058	1,943,065	275,121	.14
Acetic acid, synthetic, 100%-----	2,428,606	608,742	32,069	.05
Acetic anhydride, 100%-----	1,670,046	...	...	...
Acrylic acid-----	131,627	26,425	5,434	.21
Adipic acid-----	1,567,113	152,750	24,757	.16
Dodecenylsuccinic anhydride-----	1,644	1,575	711	.45
Formic acid, 90%-----	53,106	44,688	4,099	.09

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1973

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Acids, Acyl Halides and Anhydrides--Continued</i>				
Fumaric acid-----	53,509	45,631	8,955	\$0.20
Lauroyl chloride-----	4,198	...	...	...
Maleic anhydride-----	281,813	213,906	32,330	.15
Polyacrylic acid-----	873	833	497	.60
Propionic acid-----	60,392	53,324	5,184	.10
All other acids, acyl halides and anhydrides-----	931,131	795,191	161,085	.20
<i>Salts of Organic Acids</i>				
Total-----	347,704	305,098	119,116	.39
Acetic acid salts, total-----	27,726	33,806	7,308	.22
Copper acetate-----	291	281	268	.95
Potassium acetate-----	2,567	2,291	686	.30
Sodium acetate-----	...	20,551	3,654	.18
Zinc acetate-----	526	615	244	.40
Zirconium acetate-----	...	287	115	.40
All other-----	24,342	9,781	2,341	.24
Allylsulfonic acid, sodium salt-----	1,857	1,716	918	.53
2-Ethylhexanoic acid (α -Ethylcaproic acid) salts, total-----	11,390	9,618	8,642	.90
Calcium 2-ethylhexanoate-----	2,003	1,179	572	.49
Cobalt 2-ethylhexanoate-----	3,225	2,776	2,692	.97
Lead 2-ethylhexanoate-----	891	615	171	.28
Manganese 2-ethylhexanoate-----	455	...	...	...
Zinc 2-ethylhexanoate-----	1,172	1,116	664	.59
Zirconium 2-ethylhexanoate-----	1,828	1,749	2,030	1.16
All other-----	1,816	2,183	2,513	1.15
Formic acid, sodium salt, tech-----	38,566	38,412	1,184	.03
Gluconic acid, sodium salt-----	11,841	14,639	3,817	.26
Lactic acid salts-----	2,534	2,051	1,030	.50
Octanoic acid salts-----	1,630	1,369	1,775	1.30
Oleic acid salts-----	1,012	692	480	.69
Palmitic acid salts-----	104	...	...	...
Propionic acid salts:				
Calcium propionate-----	20,164	16,037	3,612	.23
Sodium propionate-----	3,580	...	...	...
Stearic acid salts, total ¹⁰ -----	75,749	73,493	30,314	.41
Aluminum stearates, total-----	3,699	3,684	1,784	.48
Aluminum distearate-----	2,845	2,878	1,388	.48
Aluminum monostearate-----	465	432	217	.50
Aluminum tristearate-----	389	374	179	.48
Barium stearate-----	435	431	218	.51
Calcium stearate-----	42,838	43,015	15,995	.37
Magnesium stearate-----	6,154	4,332	2,023	.47
Zinc stearate-----	18,640	18,242	8,418	.46
All other-----	3,983	3,789	1,876	.50
All other salts of organic acids-----	151,551	113,265	60,036	.53

See footnotes at end of table.

MISCELLANEOUS CHEMICALS

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
<i>Aldehydes and Ketones</i>				
Total-----	12,183,262	6,111,697	271,701	\$0.04
Acetone, total-----	1,989,469	1,547,689	67,928	.04
From cumene-----	1,240,109	849,868	36,942	.04
All other-----	749,360	697,821	30,986	.04
2-Butanone (Methyl ethyl ketone)-----	540,709	520,126	43,686	.08
Butyraldehyde-----	477,001	...	...	...
Formaldehyde (37% by weight)-----	6,424,113	2,771,589	51,578	.02
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)-----	...	50,994	6,517	.12
4-Methyl-2-pentanone (Methyl isobutyl ketone)-----	154,751	168,909	18,846	.11
All other aldehydes and ketones-----	2,597,219	1,052,390	83,346	.08
<i>Alcohols, Monohydric, Unsubstituted</i>				
Total-----	14,873,319	8,980,682	411,627	.05
Alcohols, C ₁₁ or lower, unmixed:				
Butyl alcohols:				
n-Butyl alcohol (n-Propylcarbinol)-----	518,551	383,405	30,245	.08
Isobutyl alcohol (Isopropylcarbinol)-----	132,830	104,575	5,656	.05
Ethyl alcohol, synthetic ¹¹ -----	1,961,829	1,520,227	84,015	.06
2-Ethyl-1-hexanol-----	402,307	346,302	33,136	.10
Hexyl alcohol-----	19,826	...	...	...
Isodecyl alcohol-----	174,317	46,943	5,039	.11
Iso-octyl alcohols-----	49,259	36,402	3,936	.11
Isopropyl alcohol-----	1,834,952	899,752	52,533	.06
Methanol, synthetic-----	7,064,370	3,841,752	64,306	.02
Propyl alcohol (Propanol)-----	92,603	80,145	9,160	.11
Alcohols, C ₁₂ and higher, unmixed: Stearyl and other octadecyl alcohols-----	...	10,961	3,544	.32
Mixtures of alcohols, total-----	540,503	431,445	58,920	.14
C ₁₁ and lower, only-----	114,142	112,539	11,933	.11
C ₁₂ and higher, only-----	426,361	318,906	46,987	.15
All other monohydric alcohols, unsubstituted (including mixtures)-----	2,081,972	1,278,773	61,137	.05
<i>Polyhydric Alcohols and Their Esters and Ethers</i>				
Total ¹² -----	6,256,772	5,270,251	559,970	.11
Polyhydric alcohols, total-----	4,686,022	3,937,346	357,601	.09
Ethylene glycol-----	3,277,639	2,828,598	193,317	.07
Glycerol, synthetic only-----	207,983	...	...	...
2-Methyl-2,4-pentanediol (Hexylene glycol)-----	23,917	33,416	4,978	.15
Pentaerythritol-----	103,237	103,636	18,344	.18
Propylene glycol (1,2-Propanediol)-----	501,808	520,298	44,911	.09
Sorbitol-----	157,956	105,908	22,799	.22
All other-----	413,482	345,490	73,252	.21
Polyhydric alcohol esters, total-----	219,606	255,938	55,203	.22
Ethylene glycol diacetate-----	6,119	6,217	1,152	.18
All other-----	213,487	249,721	54,051	.22

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Polyhydric Alcohols and Their Esters and Ethers--Continued</i>				
Polyhydric alcohol ethers, total-----	1,351,144	1,076,967	147,166	\$0.14
2-Butoxyethanol (Ethylene glycol monobutyl ether)-----	137,773	120,966	17,333	.14
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monoisobutyl ether)-----	25,331	21,492	3,348	.16
Diethylene glycol-----	268,704	212,781	13,410	.06
Dipropylene glycol-----	53,282	52,105	4,793	.09
2-Ethoxyethanol (Ethylene glycol monoethyl ether)-----	190,261	96,620	11,775	.12
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)-----	27,809	33,546	4,808	.14
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)-----	23,446	...	...	...
2-Methoxyethanol (Ethylene glycol monomethyl ether)-----	86,246	88,754	10,681	.12
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)-----	29,072	12,759	1,954	.15
2-(2-Methoxyethoxy)ethanol (Diethyleneglycol monomethyl ether)-----	13,725	15,213	1,848	.12
Polyethylene glycol-----	56,917	53,997	12,382	.23
Polypropylene glycol-----	85,458	67,714	12,065	.18
Tetraethylene glycol-----	12,153	8,365	1,134	.14
Triethylene glycol-----	113,097	93,552	10,695	.11
Tripropylene glycol-----	...	1,837	307	.17
All other ethers of polyhydric alcohols-----	227,870	197,266	40,633	.21
<i>Esters of Monohydric Alcohols</i>				
Total-----	3,675,654	2,247,272	304,442	.14
n-Butyl acetate, unmixed-----	81,050	90,746	10,707	.12
Isobutyl acetate, unmixed-----	...	36,685	3,688	.10
Butyl acrylate-----	128,003	78,130	13,027	.17
tert-Butyl-peroxy-2-ethylhexanoate-----	1,424	1,415	2,049	1.45
tert-Butyl peroxy-pivalate-----	1,014	1,003	1,741	1.74
Dibutyl maleate-----	11,226	...	...	...
Diethyl malonate-----	718	...	...	...
Diethyl(1-methylbutyl)malonate-----	290	...	...	...
Dilauryl 3,3'-thiodipropionate-----	1,912	1,848	1,290	.70
Dioctyl maleate-----	7,692	6,878	1,194	.17
Distearyl 3,3'-thiodipropionate-----	2,084	1,924	1,382	.72
Ethyl acetate (85%)-----	221,477	219,517	19,473	.09
Ethyl acrylate-----	275,506	136,410	21,107	.15
2-Ethyl-1-hexyl acrylate-----	49,089	44,678	8,567	.19
Iso-octyl mercaptoacetate-----	6,451	...	...	...
Isopropyl acetate-----	...	44,843	4,756	.11
Methyl methacrylate, monomer-----	706,295	...	...	...
Phosphorus acid esters, not elsewhere specified-----	82,027	63,121	27,602	.44
Propyl acetate-----	34,585	34,768	4,319	.12
Vinyl acetate-----	1,502,666	962,740	67,095	.07
All other-----	562,145	522,566	116,445	.22

See footnotes at end of table.

MISCELLANEOUS CHEMICALS

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1973--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Halogenated Hydrocarbons</i>				
Total-----	22,603,048	10,259,807	794,482	\$0.08
Carbon tetrachloride-----	1,047,318	989,388	59,531	.06
Chlorinated paraffins, total-----	74,566	76,003	11,581	.15
35-64% chlorine-----	56,627	58,857	7,904	.13
Other-----	17,938	17,146	3,677	.21
Chlorodifluoromethane-----	...	97,461	43,682	.45
Chloroethane (Ethyl chloride)-----	660,120	281,598	18,559	.07
Chloroform-----	252,786	243,828	16,018	.07
Chloromethane (Methyl chloride)-----	13 544,060	227,342	12,553	.06
1,2-Dibromoethane (Ethylene dibromide)-----	331,121	169,284	28,100	.17
Dichlorodifluoromethane-----	488,831	463,894	110,812	.24
1,2-Dichloroethane (Ethylene dichloride)-----	13 9,292,704	1,351,414	40,489	.03
Dichloromethane (Methylene chloride)-----	520,183	473,891	37,297	.08
Iodoethane (Ethyl iodide)-----	10	...	...	...
Iodomethane (Methyl iodide)-----	19	...	...	...
Tetrachloroethylene (Perchloroethylene)-----	705,819	734,395	47,294	.06
1,1,1-Trichloroethane (Methylchloroform)-----	548,394	566,194	49,534	.09
Trichloroethylene-----	451,702	463,099	32,956	.07
Trichlorofluoromethane-----	333,773	328,992	61,352	.19
Vinyl chloride, monomer (Chloroethylene)-----	5,351,056	3,554,276	147,518	.04
All other halogenated hydrocarbons-----	2,000,586	238,748	77,206	.32
<i>All Other Miscellaneous Acyclic Chemicals</i>				
Total-----	9,949,491	3,309,751	893,876	.27
2-Butanone peroxide-----	6,429	6,384	6,203	.97
tert-Butyl peroxide (Di-tert-butyl peroxide)-----	2,439	2,394	1,771	.74
Carbon disulfide-----	777,420	552,420	21,179	.04
Epoxydes, ethers, and acetals, total-----	6,509,228	1,375,628	119,300	.09
Ethylene oxide-----	4,167,076	501,074	34,913	.07
Ethyl ether, tech-----	68,824	...	...	...
Ethyl ether, U.S.P-----	3,610	...	...	...
Isopropyl ether-----	...	9,789	931	.10
Propylene oxide-----	1,753,083	...	...	...
All other epoxydes, ethers, and acetals-----	516,635	864,765	83,456	.10
Organo-silicon compounds, total-----	233,983	115,083	148,609	1.29
Silicone fluids-----	90,330	70,029	77,446	1.11
Other organo-silicon compounds-----	143,653	45,054	71,163	1.58
Phosgene (Carbonyl chloride)-----	728,164	...	...	...
Sodium methoxide (Sodium methylate)-----	7,592	8,004	2,189	.27
Tetraethyllead-----	353,346	...	...	...
Other organo-lead compounds-----	763,390	959,013	518,667	.54
All other-----	567,500	290,825	75,958	.26

See footnotes on following page.

SYNTHETIC ORGANIC CHEMICALS, 1973

Footnotes for table 1

- ¹ Calculated from rounded figures.
- ² Not available.
- ³ Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given with "Plasticizers."
- ⁴ Quantities are given on the basis of solid naphthenate, tallate or linoleate content.
- ⁵ Statistics exclude production and sales of copper naphthenate. Statistics on copper naphthenate are given with "Pesticides and Related Products."
- ⁶ Ethylcellulose which was formerly included with cellulose ethers is now included with cellulosic plastics materials.
- ⁷ Statistics exclude production and sales of fatty amines. Statistics on fatty amines are given with "Surface-Active Agents."
- ⁸ Production of urea in primary solution totaled 7,270,732 thousand pounds.
- ⁹ Includes estimated values for sales of urea in nitrogen compounds.
- ¹⁰ Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included with "Surface-Active Agents."
- ¹¹ Statistics on production of ethyl alcohol from natural sources by fermentation are issued by the Department of Treasury, Bureau of Alcohol, Tobacco, and Firearms.
- ¹² Some polyols which are used as intermediates for urethanes have been included with "Plastics and Resin Materials."
- ¹³ Production totals may be understated because some methyl chloride and ethylene dichloride is produced but not separated or accurately measured (and therefore not reported) by some producers.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973

[Miscellaneous chemicals for which separate statistics are given in table 1 are marked with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 3. An x signifies that the manufacturer did not consent to his identification with the designated product]

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC	
6-Acetoxy-2,4-dimethyl-1,3-dioxane-----	GIV.
Acetylcyclohexanesulfonyl peroxide-----	WTL.
Adenosine and derivatives-----	PLB.
3-(3''-Aminobenzamide)-1-(2',4',6'-trichlorophenyl)-5- pyrazole.	x.
2-Aminobenzothiazole-----	FMT.
1-(2-Aminoethyl)piperazine-----	JCC, UCC.
1-(2-Aminoethyl) piperazine, technical-----	UCC.
1-(2-Aminopropyl) piperazine-----	JCC.
Amyl p-dimethylaminobenzoate-----	VND.
Benzotriazoles, substituted-----	CGY.
*Benzoic acid, sodium salt-----	HN, MON, PFZ, VEL, WSN.
p-Benzoquinone (p-Quinone)-----	EKT.
Benzothiazole-----	ACY.
*Benzoyl peroxide-----	AZT, CAD, NOC, RCI, WTC, WTL.
*Benzyl alcohol-----	BPC, HN, MNR, UOP, VEL.
Bis(2,4-dichlorobenzoyl) peroxide-----	CAD, WTL.
1,8-Bis-(dimethylamino)naphthalene-----	ALD.
Bis(α,α-dimethylbenzyl)peroxide-----	WTL.
2,4-Bis(4-Hydroxy-3,5-di-tert-butylphenoxy)-6-(n-octyl- thio)-1,3,5-triazine.	CGY.
1,3-Bis(N-m-methoxyphenylurethane benzene-----	OTC.
2,4-Bis(n-octylthio)-6-(4'-hydroxy-3',5'-di-tert-butyl- anilino)-1,3,5-triazine.	CGY.
2-Bromothiazole-----	ALD.
Boron fluoride-phenol complex-----	ACS.
*Butyl benzoate-----	CHL, CPS, PFZ, TCC, VEL.
2(and 3)-tert-Butyl-4-methoxyphenol-----	EKT.
*tert-Butyl peroxybenzoate-----	AZT, CAD, NOC, WTC, WTL.
4-tert-Butylpyrocatechol-----	BKL, DOW.
Camphene-----	GLD, HN, HPC.
Cellulose acetate phthalate-----	x.
Centralite-1 (N,N'-Diethyl-N,N'-diphenylurea)-----	OTC.
Chemical indicators and reagents-----	EK, FIN, GFS, LAM, NEP, PFN, x.
Chloramine B (Sodium derivative of N-chlorobenzenesulfon- amide).	NES.
1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride.	DOW.
o-Chlorobenzamalonitrile-----	ASH.
Chlorophyllin, sodium-potassium-copper-----	KCH.
Cumene hydroperoxide-----	ACP, RCI.
Cyanuric acid-----	FMB.
1,3-Cyclohexadiene-----	ALD.
Cyclohexanone peroxide-----	AZT, NOC.
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid) disubstituted, polyester salts: Barium and cadmium salts.	RCI.
Cyclohexyl chloride-----	x.
1,4-Cyclohexylenedimethanol-----	EKT.
Cyclopropanecarboxylic acid or acid chloride-----	ALD.
Cyclopropane-----	OH, TAE.
Cytidine and derivatives-----	PLB.
Decabromobiphenyl or ether-----	FIN.
Decahydronaphthalene (Decalin)-----	DUP.
Dehydroacetic acid or sodium salt-----	GAN.
2,5-Di-tert-amylhydroquinone-----	EKT.
1,4-Diazobicycl-(2.2.2)octane-----	AIP.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Diazodinitrophenol-----	HPC.
2,5-Di (benzoylperoxy)-2,5-dimethylhexane-----	WTL.
Di- and tribomosalicylanilide-----	FIN.
2,6-Di-tert-butyl-p-cresol:	
*Food grade-----	ASH, KPT, SHC, USR.
*Tech-----	ASH, KPT, PRD, SHC, USR.
2,5-Di-tert-butylhydroquinone-----	EKT.
Di-tert-butyl diperoxyphthalate-----	WTL.
1,3-Dichloro-5,5-dimethylhydantoin-----	GLY.
4,4'-Dichloro-3-(trifluoromethyl)carbanilide-----	CGY.
Dicyclohexylammonium nitrate-----	OMC.
2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)-----	PLC.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone-----	GAF.
3,5-Dihydroxy-3,5-dimethyl-1,2-peroxycyclopentane-----	WTL.
2,6-Dihydroxyisonicotinic acid (2,6-Dihydroxy-4-carboxy- pyridine).	EK.
2,2'-Dihydroxy-4-methoxybenzophenone-----	ACY.
Diiodomethyl-p-tolyl sulphone-----	ABB.
Diisopropylbenzene hydroperoxide-----	HPC.
Diisopropyl cresols-----	GTV.
Diketene-----	ALD, EKT, FMP.
*p-Dimethoxybenzene (Dimethyl ether of hydroquinone)-----	ASL, EKT, GAF.
2,6-Dimethylmorpholine-----	DOW, UCC.
4,4-Dinitrocarbanilide-4,6-dimethyl-2-pyrimidinol-----	MRK.
Di-n-octadecyl-3,5-di-tert-butyl-4-hydroxyphenyl phospho- nate.	CGY.
1,2-Dioctylcyclobutane-3,4-bis(octamethyleneisocyanate)--	x.
*Dioxane (1,4-Diethylene oxide)-----	DOW, FER, UCC.
1,3-Dioxolane-----	FER.
Dipropylene glycol salicylate-----	SBC.
4-(Dodecyloxy)-2-hydroxybenzophenone-----	DUP, EKT.
*Enzymes:	
Hydrolytic:	
Amylases-----	BAX, CRN, DLI, GPR, MLS, PFZ, RH.
Proteases-----	BAX, CHH, DOL, MLS, PEN, PFZ, SPR.
Other-----	BAX, JFR, MLS, OMS, PFZ, RH, SPR, WBC.
Nonhydrolytic-----	MLS, OMS, PFZ, PLB, WBC.
1,2-Epoxy-3-phenoxypropane (Glycidyl phenyl ether)-----	DUP.
Ethyl cellulose phthalate-----	EK.
Ethyl- α -cyano- β -pentyleinnamate-----	GAF.
2-Ethylhexyl benzoate-----	x.
2-Ethylhexyl p-dimethylaminobenzoate-----	VND.
Ethylidene norbornene-----	UCC.
4-Ethylmorpholine-----	JCC, UCC.
*Flotation reagents:	
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt-----	ACY.
Dicresylphosphorodithioic acid, sodium salt-----	KCU.
2,2'-Dimethylthiocarbanilide (Di-o-tolylthiourea)-----	RBC.
Rosin amines-----	HPC.
Tall oil derived-----	HN.
Thiocarbanilide (Diphenylthiourea)-----	ACY.
Furan derivatives:	
2-Furaldehyde (Furfural)-----	QKO.
Tetrahydrofurfuryl alcohol-----	QKO.
Gallic acid-----	MAL.
*Gasoline additives:	
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine-----	EKT.
Butylphenols, mixed-----	TNA.
N-sec-Butyl-N-phenylphenylenediamine-----	x.
2,6-Di-tert-butylphenol-----	TNA.
N,N'-Di-sec-butyl-p-phenylenediamine-----	DUP, EKT, USR.
2,6-Di-tert-butyl- α -dimethylamino-p-cresol-----	TNA.
2,6-Diethylaniline-----	TNA.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Gasoline additives--Continued	
N,N'-Diisopropyl-p-phenylenediamine-----	DUP, EKT, USR.
N,N'-Disalicylidene-1,2-propanediamine-----	DUP, SM, TX.
Methylcyclopentadienylmanganese tricarbonyl-----	TNA.
4,4'-Methylenebis(2,6-di-tert-butylphenol)-----	TNA.
4,4'-Thiobis(6-tert-butyl-o-cresol)-----	TNA.
2,2'-Thiobis(6-tert-butyl-p-cresol)-----	ASH.
Triheptyl phenol-----	SM.
1,3,5-Tris(3,5-di-tert-butyl-4-hydroxybenzyl)- mesitylene.	TNA.
Other-----	
Glycerol p-aminobenzoate-----	EKT, GLY, SM, TNA, x.
Guanosine and derivatives-----	VND.
*Hexamethylenetetramine, tech-----	PLB.
Homomenthyl salicylate-----	BOR, DUP, HKD, HN, HMP, PLS, UCC.
Hydrabamine hydrobromide-----	ARS.
Hydrindantin-----	ABB.
p-Hydroxybenzoic acid esters:	HEX.
Butyl p-hydroxybenzoate (Butylparaben)-----	HN, LEM, WSN.
Ethyl p-hydroxybenzoate (Ethylparaben)-----	HN; WSN.
*Methyl p-hydroxybenzoate (Methylparaben)-----	ARS, HN, LEM, WSN.
*Propyl p-hydroxybenzoate (Propylparaben)-----	ARS, HN, LEM, WSN.
N-(Hydroxyethyl)piperazine-----	UCC.
2-Hydroxy-4-methoxybenzophenone-----	ACY, GAF.
Hydroxymethyl dimethyl-5,5-hydantoin-----	GLY.
2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate-----	ACY.
2-(2-Hydroxy-5-tert-octylphenyl)benzotriazole-----	ACY.
1-Hydroxy-2-pyridine (Omadine)-----	OMC.
1,2,3-Indantrione monohydrate (Ninhydrin)-----	HEX.
Inosine and derivatives-----	PLB.
Isopropyl-o-cresols-----	CP.
*Lubricating oil and grease additives:	
*Oil-soluble petroleum sulfonates:	
Oil-soluble petroleum sulfonate, ammonium salt-----	NTL.
Oil-soluble petroleum sulfonate, barium salt-----	CO, LUB, WTC.
*Oil-soluble petroleum sulfonate, calcium salt-----	CO, ENJ, LUB, ORO, PAR, PLC, TX, WTC.
Oil-soluble petroleum sulfonate, magnesium salt-----	CO, LUB.
*Oil-soluble petroleum sulfonate, sodium salt-----	CO, ENJ, MOR, PAR, SHC, SOC, WTC.
Other-----	CO, LUB, ORO, TX.
*Phenol salts:	
Barium alkylphenolates-----	CCA, ENJ, TX.
Calcium alkylphenolates-----	ORO, TX.
Other-----	ATR, ENJ, ORO, SM, x.
All other-----	ENJ, GLY, GOC, LUB, ORO, PLC, SM, UCC, x.
p-Menthane-----	HPC.
8-p-Menthyl hydroperoxide-----	HN, HPC.
p-Methoxybenzylidenemalononic acid, diethyl and dimethyl esters.	ACY.
p-Methoxybenzylidenemalononic acid, dimethyl ester-----	ACY.
4-Methoxyphenol-----	ARS, ASL, EKT.
Methyl o-cresotinate-----	TCC.
2,2'-Methylenebis(4-chlorophenol) (Dichlorophene)-----	GIV.
Methylenebis(phenoxypropanol)-----	JCC.
2,2'-Methylenebis(3,4,6-trichlorophenol) (Hexachloro- phene).	GIV.
Methyl gallate-----	HSH.
4-Methylmorpholine-----	JCC, UCC.
Methyl phenyl phosphates-----	TNA.
4-Methylpiperazine-----	UCC.
1-Methyl-2-pyrrolidone, monomer-----	GAF.
*Morpholine-----	DOW, JCC, UCC.
Morpholine salt of p-toluenesulfonic acid-----	AMB.
*Naphthenic acid salts:	
Aluminum naphthenate-----	SHP.
Barium naphthenate-----	CCA.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Naphthenic acid salts--Continued	
Cadmium naphthenate-----	CCA.
*Calcium naphthenate-----	CCA, CCC, FER, HN, MCI, SHP, TRO, WTC.
Chromium naphthenate-----	MCI.
Cobalt lead manganese naphthenate-----	HN.
*Cobalt naphthenate-----	CCA, FER, HN, MCI, SHP, TRO, WTC.
*Iron naphthenate-----	CCA, HN, MCI, WTC.
Lead manganese naphthenate-----	CCA.
*Lead naphthenate-----	CCA, CCC, FER, MCI, SHP, TX, WTC.
Lithium naphthenate-----	CCA, MCI.
*Manganese naphthenate-----	CCA, FER, HN, MCI, SHP, SM, WTC.
Magnesium naphthenate-----	CCA.
Rare earths naphthenates-----	CCA, SHP.
Sodium naphthenate-----	CCA.
Strontium naphthenate-----	CCA.
*Zinc naphthenate-----	CCA, CCC, FER, HN, MCI, SHP, WTC.
All other-----	SHP, TRO.
1-Naphthenyl-2-tallow diamine-----	SM.
Norcamphor-----	ALD.
Octadecyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)- propionate.	CGY.
1-Oleylprimidine-2-oleyl diamine-----	SM.
Phenothiazine-----	WAG.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)-----	DOW, TCH.
2-(2-Phenoxyethoxy)ethanol (Diethylene glycol phenyl ether).	DOW.
2,2'-(p-Phenylene)diethanol-----	EKT.
m-Phenylene isonaphthalamide-----	DUP.
Phenyl hydrogen phosphate-----	HDG.
5-Phosphorylribose-1-pyrophosphate-----	PLB.
Photographic chemicals:	
N-(2-Acetamidophenethyl)-1-hydroxy-2-naphthamide-----	EKT.
5-Amino-2,3-dihydro-1,4-phthalazenedione-----	EK.
N-[2-(4-Amino-N-ethyl-m-toluidino)ethyl]methane- sulfonamide.	EKT.
2-(4-Amino-N-ethyl-m-toluidino)ethyl sulfate-----	EKT.
3-Amino-1,2,4-triazole-----	FMT.
Benzotriazole-----	EK, FMT, MRT, SW.
α-Benzoyl-o-methoxyacetanilide-----	EKT.
p-Benzylaminophenol hydrochloride-----	EK.
Catechol-----	CRZ.
5-Chlorobenzetriazole-----	FMT.
3-Chloro-4-diethylaminobenzenediazonium chloride (p- Diazo-2-chloro-N,N-diethylaniline) - zinc chloride.	ESA, FMT.
2-Chloro-N,N-diethyl-p-phenylenediamine hydrochloride--	IDC.
Chlorohydroquinone-----	EK.
2N-(2,4-Di-tert-amylophenoxyacetamido)-4,6-dichloro- m-cresol.	x.
4-Diazo-3,5-diethoxythiocresol salts-----	FMT.
4-Diazo-1-morpholine benzene zinc chloride-----	FMT.
*2,5-Diethoxy-4-morpholinobenzenediazonium chloride----	ALL, ESA, HST.
*p-Diethylaminobenzenediazonium chloride-----	ESA, FMT, IDC.
p-Diethylaminobenzenediazonium fluoroborate-----	x.
p-Diethylamino-o-toluenediazonium chloride-----	IDC.
N,N-Diethyl-p-phenylenediamine hydrochloride-----	EKT.
N,N-Diethyltoluene-2,5-diamine, monohydrochloride-----	EKT, FMT, IDC.
2,5-Dihydroxy-p-benzenedisulfonic acid dipotassium salt.	EK.
2,5-Dihydroxybenzenesulfonic acid-----	EK.
p-Dimethylaminobenzenediazonium chloride-----	ESA, FMT, IDC.
2,5-Dimethylbenzothiazole-----	FMT.
4N-(2',6'-Dimethylmorpholinyl)benzenediazonium chloride.	IDC.
p-Diphenylaminediazonium sulfate-----	FMT.
p-(N-Ethylbenzimidobenzenediazonium chloride)-----	ESA, FMT.
*p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride.	ESA, FMT, IDC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Photographic chemicals--Continued	
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate-----	IDC.
Hydroquinone (Hydroquinol)-----	EKT.
p[(2-Hydroxyethyl)methylamino]benzenediazonium chloride.	ESA, FMT, IDC.
N-(2-Hydroxyethyl)- β -resorcyllamide-----	MRT.
1-Hydroxy-3-(4'-hexadecenyl-4-sulfo-2-(N-n-octadecyl)- naphthamide.	x.
2-Hydroxynaphthoic ethylamide-----	FMT.
1-(3-Hydroxyphenyl)urea-----	FMT.
4-Methoxy-1-naphthol-----	x.
p-Methylaminophenol sulfate-----	EK.
5-Methylbenzotriazole-----	EK.
5-Methyl-1,7-dihydroxy-1,3,4-triazaindolizine-----	FMT.
4-Methyl-1-phenyl-3-pyrazolidinone-----	WAY.
2-Methylthiazoline-----	FMT.
p-Morpholinyl-2,5-dibutoxybenzenediazonium chloride----	IDC.
6-Nitrobenzimidazole-----	EK, FMT.
p-(N-Phenyl)aniline, diazoniumformaldehyde polymer- mixture, zinc chloride salt.	IDC.
1-Phenyl-3-pyrazolidine-----	CGY.
1-Phenyl-3-pyrazolidone-----	WAY.
4-Phenylpyrocatechol-----	x.
1-Phenyl-2-tetrazole-5-thiol-----	FMT.
4N-(1-Pyrrolidyl)-m-toluenediazonium chloride-----	IDC.
2-Resorcylic acid monoethanolamide-----	FMT.
2,2',4,4'-Tetrahydroxydiphenyl sulfide-----	FMT.
1-(2,4,6-Trichlorophenyl)-3-p-nitroanilino-2- pyrazolin-5-one.	EKT.
All other-----	FMT, IDC, NES, x.
Phthalic acid, lead salt, dibasic-----	NTL.
Picramic acid, sodium salt-----	SDC.
*Pinene (α - and β -)-----	ARZ, CBY, GLD, HN, HPC, NCI.
α -Pinene, P ₂ S ₅ treated-----	ARZ, HN, NCI.
Pinene, sulfate-----	HPC.
Pinene, wood-----	HPC.
Piperazine, ethoxylated-----	GAF.
Poly-4-(2-acryloxyethoxy)-2-hydroxybenzophenone-----	ACY.
Polydodecylbenzenesulfonic acid, calcium salt-----	CO.
*Polyethylene terephthalate-----	DUP, EK, EKT, FND, FRF, GYR.
Polyvinyl phthalate-----	EK.
Propyl gallate-----	EKT, HSH.
Pyrogallol (Pyrogallic acid)-----	HSH, MAL.
2-Pyrrolidinone-----	GAF.
Resorcinol monobenzoate-----	EKT.
Rosin acid salts:	
Calcium resinate-----	CBY, HN.
Calcium zinc resinate-----	CBY.
Zinc resinate-----	HN.
All other-----	SHP.
Salicylanilide-----	FIN, PCW.
Salicylic acid, lead salt-----	NTL.
Sodium cresoxide (Cresylic acid, sodium salt)-----	DEX, GOC.
Sodium ferric ethylenediaminedihydroxyphenylacetate-----	CGY.
Sucrose ferzoate-----	VEL.
Sulfosalicylic acid-----	MON.
Tall oil, chemically modified-----	ZGL.
Tall oil salts (Linoleic-rosin acid salts):	
Calcium manganese tallate-----	MCI.
Calcium tallate-----	CCA, CCC, HN, MCI, TRO, WTC.
*Cobalt tallate-----	CCA, CCC, FER, HN, MCI, SHP, TRO, WTC.
*Copper tallate-----	CCA, MCI, SHP.
Iron tallate-----	CCA.
Lead manganese tallate-----	MCI.
*Lead tallate-----	CCA, CCC, FER, HN, MCI, SHP, WTC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Tall oil salts (Linoleic-rosin acid salts)--continued	
*Manganese tallate-----	CCA, CCC, FER, HN, MCI, SHP, WTC.
Zinc tallate-----	MCI.
All other-----	WTC.
Tall oil, chemically modified-----	ZGL.
Tannic acid-----	MAL.
*Tanning materials, synthetic:	
Cresol phenol formaldehyde condensate-----	DA.
Hydroxytoluenesulfonic acid, formaldehyde condensate (Cresol-formaldehyde sulfonate), sodium salt.	CGY, DA.
1-Naphthalenesulfonic acid, formaldehyde condensate and salt.	DA.
2-Naphthalenesulfonic acid, formaldehyde condensate and salt.	AKS, GRD, HN, RH.
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated).	RH.
Styrene-maleic anhydride interpolymers, partial sodium salt.	DUP.
Terpene hydrocarbons, monocyclic (Solvenol)-----	HPC.
Tetrabromobisphenol A-----	GTL.
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine-----	DOW.
1,2,3,4-Tetrahydronaphthalene (Tetralin)-----	DUP, UCC.
Tetrahydrothiophene-----	PAS.
Tetrahydrothiophene-1,1-dioxide (Sulfolane)-----	PLC.
Tetrakis[methylene-3-(3',5'-di-tert-butyl-4'-hydroxy- phenyl)propionate]methane.	CGY.
1,3,6,8-Tetranitrocarbazole-----	SDC.
Tetraphenyltin-----	x.
Tetraphenyltin chloride-----	x.
Tetraphenyltin hydroxide-----	x.
Tetraphenyltin phosphine-----	x.
Tetraphenyltin succinic acid-----	TX.
Textile chemicals, other than surface-active agents:	
Dimethyloldihydroxy ethylene urea-----	x.
1-((Octadecyloxy)methyl)pyridinium chloride-----	DUP.
Phenol, sulfurated-----	GAF.
Tetrahydro-3,5-bis(methoxymethyl)-4H-1,3,5-oxadiazin- 4-one (1,3-Bis(methoxymethyl)uron).	DEX.
2,2',4,4'-Tetrahydroxybenzophenone-----	GAF.
Tri(Phenylloxymethyl)trimethylloxymethylmelamine-----	x.
2,2'-Thiobis(4,6-dichlorophenol)-----	SDH.
[2,2'-Thiobis(4-octylphenolate)]-n-butylamine nickel----	ACY.
4,4'-Thiodiresorcinol-----	BKC.
Thiophene-----	PAS.
Thymidine and derivatives-----	PLB.
p-Toluquinone-----	EK.
o-Toluidine formaldehyde hydrochloride-----	RBC.
Triallyl cyanurate-----	ACY.
3,4',5-Tribromosalicylanilide-----	FIN, PCW, WW.
3,4,4'-Trichlorocarbanilide-----	MON.
1,2,3-Triketohydrindene hydrate-----	PIC.
Trimethylaminopropyl piperazine-----	JCC.
3,5,5-Trimethyl-2-cyclohexen-1-one (Isophorone)-----	ENJ, UCC.
2,4,6-Trinitroresorcinol and lead derivative-----	REM.
s-Trioxane-----	CEL.
Triphenyl sulfonium chloride-----	ASH.
Uridine derivatives-----	PLB.
Vinyl norbornene-----	UCC.
1-Vinyl-2-pyrrolidinone, monomer and polymer-----	GAF.
1-Vinyl-2-pyrrolidinone - ethylacrylate, copolymer-----	GAF.
1-Vinyl-2-pyrrolidinone - methylacrylic acid- dimethylamine ethyl ester, copolymer.	GAF.
1-Vinyl-2-pyrrolidinone - vinyl acetate, copolymer-----	GAF.
1-Vinyl-2-pyrrolidinone - other copolymers-----	GAF.
All other-----	ABB, ACS, AMB, ALB, ALD, ARA, AZT, BKL, CCA, DUP, EK, EKT, EVN, FMT, GAF, GIV, HMY, IDC, JCC, MON, PD, PFN, PIC, RSA, SHP, SM, TCH, WBC, UCC, x, x.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC	
<i>Cellulose Esters and Ethers</i>	
Cellulose esters:	
*Cellulose acetate-----	AV, CEL, DUP, EKT.
Cellulose acetate butyrate-----	EKT.
Cellulose acetate propionate-----	EKT.
Cellulose propionate-----	CEL.
Cellulose ethers:	
Hydroxyethylcellulose-----	UCC, x.
Hydroxypropylcellulose-----	x.
Methylcellulose-----	DOW.
*Sodium carboxymethylcellulose, 100%-----	BAS, BUK, DUP, KON, WMP, x.
All other-----	UCC.
<i>Lubricating Oil Additives</i>	
*Phosphorodithioates (Thiophosphates):	
Di-2-ethylhexylphosphorodithioic acid-----	SFA.
Di-N-propylphosphorodithioic acid-----	SFA.
Zinc dialkyl dithiophosphate-----	ATR, ENJ.
Zinc di(butylhexyl) phosphorodithioate-----	ORO.
Zinc dihexyl phosphorodithioate-----	MON, SM.
Zinc hydrocarbon dithiophosphate-----	LUB.
Zinc isopropyl hexyl phosphorodithioate-----	TX.
Sulfur compounds:	
Aliphatic hydrocarbon sulfides-----	LUB.
Chlorosulfurized sperm oil-----	CCW.
Phosphosulfurized polybutene-----	ENJ.
*Sulfurized lard oil-----	ATR, CCW, GOC, QCP, WBG.
Sulfurized sperm oil and substitutes-----	CCW.
Other sulfur compounds-----	ATR, CCW, HK, TX.
All other-----	ALD, ALX, ATR, ENJ, GOC, LUB, MON, ORO, SM, UCC, x, x.
<i>Nitrogenous Compounds</i>	
Acetamide-----	ACS.
Acetamidine hydrochloride-----	MRK.
Acetamidoethanol (N-Acetyl-ethanolamine)-----	ALB, RBC.
Acetone semicarbazone-----	NOR.
Acetonitrile-----	EKX, MON, SOH.
Acrylamide monomer-----	ACY.
Acrylamide, dimethylaminomethyl acrylamide and methylmethacrylate, polymer.	GAF.
*Acrylonitrile-----	ACY, DUP, MON, SOH, UCC.
Adiponitrile-----	DUP, MON.
β -Alanine-----	HFT.
1-Allyl-3,3-bis(2-hydroxyethyl)thiourea-----	IDC.
1-Allyl-3-(2-hydroxyethyl)-2-thiourea-----	FMT, IDC.
Allyl isothiocyanate, non-perfume grade-----	OPC.
*Amines:	
Allylamines-----	SHC.
Bis-hexamethylenetriamine amine-----	DUP.
*Butylamines:	
n-Butylamine, mono- -----	PAS, UCC, VGC.
Di-n-butylamine-----	PAS, UCC, VGC.
Diisobutylamine-----	ATP, PAS, VGC.
sec-Butylamine, mono- -----	PAS, VGC.
tert-Butylamine, mono- -----	MON, RH.
Tri-n-butylamine-----	PAS, UCC, VGC.
n-Butylethylamine-----	PAS.
Diethylaminopropylamine-----	UCC.
*Diethylenetriamine-----	DOW, JCC, UCC.
N,N-Diethylethylenediamine-----	ALB, GCY.
N ¹ ,N ¹ -Diethyl-1,4-pentanediamine (Novoldiamine)-----	SDH.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
<i>*Amines--Continued</i>	
Di-(methoxyethyl)hydroxylamine-----	x.
Dimethylaminopropylamine-----	JCC, UCC.
1,3-Dimethylbutylamine-----	PAS.
Dipropylenetriamine-----	UCC.
Ethylamine blends-----	PAS.
<i>*Ethylamines:</i>	
Diethylamine-----	AIP, PAS, UCC, VGC.
Diethylamine hydrochloride-----	BKL, EK.
Ethylamine hydrochloride-----	EK.
Ethylamine, mono- -----	AIP, PAS, UCC, VGC.
Triethylamine-----	AIP, PAS, UCC, VGC.
<i>*Ethylenediamine</i> -----	
(2-Ethylhexyl)amine, mono- -----	DOW, JCC, UCC.
Hexamethylenimine-----	VGC.
*1,6-Hexanediamine (Hexamethylenediamine)-----	DUP.
2-Hydroxypropylethylenediamine-----	CEL, DUP, ELP, MON.
3,3'-Iminobispropylamine-----	UCC.
<i>Isopropylamines:</i>	
Diisopropylamine-----	JCC.
Isopropylamine, mono- -----	AIP, UCC, VGC.
<i>Methylamines:</i>	
β-Chloroallyl-N-methylamine-----	AIP, UCC, VGC.
*Dimethylamine-----	LIL.
Dimethylamine hydrochloride-----	AIP, COM, DUP, GAF.
Dimethylamine sulfate-----	EK, RSA.
*Methylamine, mono- -----	RH.
*Trimethylamine-----	AIP, COM, DUP, GAF.
n-Octylamine, mono- -----	AIP, COM, DUP, GAF.
Oleylamine-----	VGC.
Pentaethylenhexamine-----	x.
Pentylamines (Amylamines):	JCC, UCC.
Dipentylamine-----	PAS, VGC.
Pentylamine, mono- -----	PAS.
Tripentylamine-----	PAS.
Polyalkylene polyamines-----	NLC.
Polymericamine condensate-----	ONX.
1,2-Propanediamine (Propylenediamine)-----	UCC.
1,3-Propanediamine (1,3-Diaminopropane)-----	JCC, x.
<i>Propylamines:</i>	
*Dipropylamine-----	AIP, PAS, UCC, VGC.
*Propylamine, mono- -----	AIP, PAS, UCC, VGC.
Tripropylamine-----	PAS.
Tetraethylenepentamine-----	DOW, JCC, UCC.
N,N,N'-N'-Tetramethyl-1,3-butanediamine-----	UCC.
Tetramethylethylenediamine-----	RH.
*Triethylenetetramine-----	DOW, JCC, UCC.
Other amines-----	ALB, ALD, BPC, DUP, EK, NES, ONX, PAS, PIC, RSA, SM, UCC, VGC, x.
2-Amino-1-butanol-----	COM.
1-Aminoethanol (Acetaldehyde ammonia)-----	HEX.
Aminoethoxyethanol-----	JCC.
*2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)----	DOW, HDG, JCC, UCC.
2-Aminoethyl mercaptoacetate (Monoethanolamine thio- glycolate).	EVN.
2-Amino-2-ethyl-1,3-propanediol-----	COM.
Aminoguanidine bicarbonate-----	COM.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris- (hydroxymethyl)aminomethane).	COM.
2-Amino-2-methyl-1,3-propanediol-----	COM, JCC.
2-Amino-2-methyl-1-propanol-----	COM.
2-Amino-2-methyl-1-propanol hydrochloride-----	VAL.
2-Aminooctane-----	PAS.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
3-Aminopropanoic acid-----	DA.
Ammonium titanyl acetate-----	DUP.
1,1'-Azobisformamide-----	FMT, USR.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyro- nitrile).-----	DUP.
N-Bis(hydroxyethyl)amino alkanol-----	TX.
1,3-Bis(hydroxymethyl)urea (Dimethylolurea)-----	GLY, x.
N,O-Bis(trimethylsilyl)acetamide-----	PIC.
N,N-Bis-(trimethylsilyl)acetamide-----	ALD.
N,O-Bis-(trimethylsilyl)tri fluoroacetamide-----	PIC.
Biuret-----	DOW.
N-Bromoacetamide-----	ARA.
N-Bromosuccinimide (Succinibromimide)-----	ARA.
2,3-Butanedione monoxime-----	EK.
Butyldiethanolamine-----	PAS.
1-Butyl-3-ethyl-2-thiourea-----	PAS.
Butyl isocyanate-----	CWN, OTC, UPJ.
n-Butyronitrile-----	EKX.
*Caprolactam (2-Oxohexamethylenimine)-----	ACP, GNP, DBC.
Carbohydrazide-----	EK.
2-(2-Chloroacetamide) ethyl stearate-----	KF.
Chlorocholine chloride-----	ACY.
2-Chloro-N,N-dimethylethylamine (Dimethylamino ethyl chloride) hydrochloride.-----	HEX, MCH.
3-Chloro-N,N-dimethylpropylamine-----	SK.
2-Chloro-N,N-dimethylpropylamine hydrochloride-----	MCH.
3-Chloro-N,N-dimethylpropylamine hydrochloride-----	MCH.
2-Chloroethylamine, hydrochloride-----	NES.
3-Chloro-2-hydroxypropyltrimethyl, ammonium chloride-----	OTC.
Chloro-N-(2-hydroxyethyl)acetamide-----	KF.
N-Chlorosuccinimide (Succinichlorimide)-----	ARA.
2-Chloro-N,N-diethylethylamine hydrochloride-----	HEX, MCH.
2-Chlorotriethylamine hydrochloride-----	CGY.
Choline base-----	RH.
Choline bicarbonate-----	TCH.
Choline bisulfite-----	WAY.
Coco nitrile-----	ASH.
Coconut oil acids - ammonium condensate-----	PG.
Coconut oil amide-----	ARC.
Creating and creatinine-----	PFN.
Cyanoacetic acid-----	KF.
Cyanogen bromide-----	EK.
2-Dibutylaminoethanol-----	AAC, PAS.
1,3-Dibutyl-2-thiourea-----	PAS, RBC.
1,4-Dicyanobutene-----	DUP.
Diethanolamide/ester mixture-----	TX.
2-Diethylaminoethanol-----	AAC, DUP, PAS, UCC.
2-(2-Diethylaminoethoxy)ethanol-----	PAS.
2-Diethylaminoethyl acrylate-----	ABC, UCC.
2-Diethylaminoethyl methacrylate-----	DUP.
Diethyl carbonyl chloride-----	ASH.
Diethyldithiocarbamic acid, sodium salt-----	EK.
N,N-Diethyldodecanamide-----	EK.
Diethylhydroxylamine-----	PAS.
1,3-Diethyl-2-thiourea-----	PAS, RBC.
Diisopropylaminoethanol-----	PAS, UCC.
2-Diisopropylaminoethyl chloride hydrochloride-----	MCH.
N,N-Dimethylacetamide-----	DUP.
2-Dimethylaminoethanethiol hydrochloride-----	EVN.
*2-Dimethylaminoethanol-----	AAC, PAS, RH, UCC.
Dimethylaminoethyl acrylate-----	ABC.
Dimethylaminoethyl methacrylate-----	AAC, ABC.
Dimethylaminoethyl methacrylate, methyl chloride quaternary salt.-----	AAC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
Dimethylamino-2-propanol-----	PAS.
3-Dimethylaminopropionitrile-----	ACY, UCC.
3-Dimethylenedimethylpropionamide-----	UCC.
N,N-Dimethylformamide-----	AIP, DUP.
1,1-Dimethylhydrazine-----	FMP.
Dimethyl isocyanate-----	GNM.
2-Dimethyl-2-methyl-1-propanol-----	COM.
Dimethylthiocarbamoyl chloride-----	ALD.
2,5-Dithiobiurea-----	ACY, EK.
Dithiooxamide-----	MAL.
*Erucamide-----	ARC, ASH, FIN, HUM.
Erucamide - Lauramide-----	FIN.
*Ethanolamines:	
*2-Aminoethanol (Monoethanolamine)-----	DOW, GLY, JCC, MAT, OMC, UCC.
*2,2'-Aminodiethanol (Diethanolamine)-----	DOW, JCC, MAT, OMC, UCC.
Butyldiethanolamine-----	PAS.
*2,2,2'-Nitrilotriethanol (Triethanolamine)-----	DOW, JCC, MAT, OMC, UCC.
N-Octylethanolamine-----	x.
Triethanolamine phosphate, sodium salt-----	WAY.
Triethanolamine, propoxylated-----	JCC.
Ethoxymethylenemalononitrile-----	ALD, KF.
3-Ethoxypropionitrile-----	ACY, DIX.
Ethylallyl-(1-methylbutyl)cyanoacetate-----	PD.
Ethylallyl-(1-methyl-2-pentynol)cyanoacetate-----	LIL.
2-Ethylaminoethanol (Ethylmonoethanolamine)-----	PAS.
Ethyl cyanoacetate-----	KF.
Ethyl diazoacetate-----	ALD.
N,N'-Ethylene bis(stearamide)-----	CCW, CTN, DA, HUM.
Ethylenediamine sulfate-----	EK.
Ethyleneimine, monomer-----	DOW.
Ethyleneimine, polymer-----	DOW.
Ethylenethiourea-----	PAS.
Ethyl formylglycine-----	LIL.
5-(N-Ethyl-N-hydroxyethylamino)-2-pentanone-----	SDW.
Ethylmonoethanolamide, mixed-----	PAS.
Fish oil fatty acid amide-----	HUM.
Formamide-----	DUP.
Formamidine disulfide dihydrochloride-----	WAY.
Glycine (Aminoacetic acid)-----	CHT.
Glycine ethyl ester hydrochloride-----	BPC.
Glycolonitrile-----	KF.
4-Guanyl-1-nitrosoguanyl-1-tetrazine-----	REM.
*Hexamethylenediammonium adipate (Nylon salt)-----	CEL, DUP, MON.
Hydracrylonitrile (Ethylene cyanohydrin)-----	AAE.
Hydrazine hydrate (100%)-----	USR.
Hydroxyethyl carbamate-----	JCC.
Hydroxyethyl ethyleneimine-----	UCC.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris- (hydroxymethyl)nitromethane).-----	COM.
12-Hydroxystearamide-----	HUM.
Imino diacetic acid-----	HMP.
Isobutyronitrile-----	AIP.
Isocyanates, (complex)-----	MOB.
Isopropanolamines:	
1-Amino-2-propanol (Monoisopropanolamine)-----	DOW, UCC.
1,1'-Iminodi-2-propanol (Diisopropanolamine)-----	DOW, UCC.
1,1,1'-Nitrilotri-2-propanol (Triisopropanolamine)-----	DOW, UCC.
3-Isopropoxypropionitrile-----	DUP.
3-Isopropoxypropylamine-----	DUP.
2-Isopropylaminoethanol-----	PAS.
Isopropyl ethylthionocarbamate-----	DOW.
Ketimine, tetrafunctional-----	GNM.
Lactonitrile-----	MON.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
Lauroitrile (Dodecyl nitrile)-----	ASH.
Methacrylamide-----	x.
Methacrylic monomers, cationic-----	x.
Methacrylonitrile-----	SOH.
3-Methoxypropylamine-----	JCC.
N-Methylacetamide-----	ARS, EK.
N-Methylacetamide-N-sodium-----	ARS.
2-Methylaminoethanol (N-Methylethanolamine)-----	UCC.
Methylcarbamate-----	BKL, FMP.
Methyl cyanoacetate-----	KF.
Methyl α -cyanoacrylate-----	EKT.
N,N'-Methylenebis(acrylamide)-----	ACY, SOH.
Methyl isocyanate-----	OTC, UCC.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)-----	PAS, UCC.
2-Methylactonitrile (Acetone cyanohydrin)-----	RH, x.
2-Methyl-2-nitro-1,3-propanediol-----	COM.
2-Methyl-2-nitro-1-propanol-----	COM.
Methylpolyethanolamine-----	GAF.
N-Methyltaurine-----	GAF.
N-Methylurea-----	LIL, RSA.
*Nitriloacids and salts:	
(Diethylenetrinitrilo)pentaacetic acid-----	DAN, HMP.
(Diethylenetrinitrilo)pentaacetic acid, monosodium hydrogen ferric salt.	CGY.
*(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt.	CGY, DOW, HMP.
(Diethylenetrinitrilo)pentaacetic, sodium salt-----	CGY, RPC.
(Diethylenetrinitrilo)pentamethylenephosphonic acid, pentasodium salt.	WAY.
N,N-Dihydroxyethylglycine, sodium salt-----	DOW, HMP.
Ethanol diglycine, disodium salt-----	HMP.
(Ethylene-bis-nitrilo)dimethylene tetraphosphonic acid, sodium salt.	WAY.
(Ethylenedinitrilo)tetraacetic acid (Ethylenediamine- tetraacetic acid).	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt.	CGY, DOW.
(Ethylenedinitrilo)tetraacetic acid, diammonium salt---	DOW.
*(Ethylenedinitrilo)tetraacetic acid, disodium salt----	CGY, DOW, EK, HMP, RPC.
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate.	CGY, HMP.
*(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate.	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, manganese salt----	CGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt.	CGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, tetraammonium salt.	DOW.
(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt.	CGY, HMP.
*(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt--	CGY, CRT, DAN, DOW, HMP, JOR, RPC.
(Ethylenedinitrilo)tetraacetic acid, trisodium salt----	CGY, HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid-----	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, copper salt.	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, iron salt.	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, magnesium salt.	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, manganese salt.	HMP.
*(N-Hydroxyethylethylenedinitrilo)triacetic acid, tri- sodium salt.	CGY, CRT, DAN, DOW, HMP, RPC.
Nitrilotriacetic acid-----	HMP.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
*Nitriloacids and salts--Continued	
Nitrolotriacetic acid, trisodium salt-----	DOW, HMP, MON.
Nitrilo-tris-methylene triphosphonic acid-----	WAY.
Nitrilo-tris-methylene triphosphonic acid, sodium salt.	WAY.
Other-----	EK.
2-Nitro-1-butanol-----	COM.
Nitroethane-----	COM.
Nitromethane-----	COM.
1-Nitropropane-----	COM.
2-Nitropropane-----	COM.
*Nylon, 6 and 6/6 polymer for fiber-----	ALF, DBC, DUP, FND, FRF, MON.
Octadecyl isocyanate-----	CWN, MOB, UPJ.
Oleamide (Octadecene amide)-----	ARC, FIN, GLY, HUM.
Oleic acid - ethylenediamine condensate (amine/acid ratio=1/2).	CCW.
Oleonitrile (Octadecene nitrile)-----	ARC.
Oleoalhydroxamic acid-----	CTN.
Oleoalpalmitamide-----	FIN.
Oleal nitrate-----	SM.
*Pentaerythritol tetranitrate-----	COM, DUP, HPC.
Pentyl nitrate (Amyl nitrate) & hexyl nitrate-----	TNA.
*Polyacrylamide-----	ACY, DOW, HPC, NLC.
Polyacrylamide polymers other than polyacrylamide-----	ACY.
*Polyacrylonitrile-----	ACY, DBC, DUP, EKX, MON.
Polyacrylonitrile, hydrolyzed-----	NLC.
Polyalkylene amine-----	NLC.
Polyamide resin (flake)-----	MON.
Polyethoxy (Hydrogenated tallow) amide-----	ARC.
Polyethoxy oleamide-----	ARC.
Polyglycolamine-----	UCC.
Polyoxypropylenediamine-----	JCC.
n-Propyl carbamate-----	BKL.
Propyl isocyanate-----	OTC.
Ricinolamide-----	TKL.
Sarcosine (N-Methylaminoacetic acid)-----	CGY, HMP.
Semicarbazide hydrochloride-----	FMT.
Stearamide (Octadecane amide)-----	ARC, FIN, GLY, HUM.
Stearonitrile (Octadecanenitrile)-----	ARC, ASH.
Stearylceramide-----	FIN.
Tall oil diethylenetetramine and acetic acid-----	ACY.
Tall oil nitrile-----	ASH.
Tallow amide, hydrogenated-----	ARC.
Tallow nitrile-----	ARC, ASH.
Tallow nitrile, hydrogenated-----	ASH.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine-----	BAS.
Tetramethyl ammonium bromide-----	RSA.
Tetramethyl ammonium chloride-----	EK, RSA.
Tetramethyl ammonium hydroxide-----	RSA.
Tetramethylguanidine-----	ACY.
Thioacetamide-----	EK, RBC.
3,3'-Thiodipropionitrile-----	ACY, EVN.
N-Trimethylsilylacetamide-----	LIL, PIC.
Trisodiumhydroxyethylethylenediamine triacetate-----	CGY.
Tris-amino concentrate-----	COM.
*Urea in compounds or mixtures, 100% basis:	
*In feed compounds-----	ACN, AIP, AKL, APD, AGY, FTX, GCC, HKY, JDC, MSC, PPC, SOH, TER, TRI, VLN, WYC.
*In liquid fertilizer-----	ACN, ACP, APD, ARM, AGY, AIP, AKL, CFA, CHN, CNC, FCA, FTX, GCC, HKY, HPC, JDC, MSC, PLC, PPC, SNI, SOH, TER, TRI, VLN, WLC, WYC
*In solid fertilizer-----	ACN, AGY, AKL, APD, COL, GCC, HPC, JDC, MSC, OMC, PPC, SNO, SOH, TER, TRI, VLN, WLC, WYC.
In plastics-----	BOR, OMC, TRI.
*All other-----	CHP, DUP, MSC, PPC, SOH, SNO, SNW, TER, WYC.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in tables 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
Urea ammonium nitrate solution-----	WYC.
Urea - urethane copolymer-----	DUP.
All other nitrogenous compounds-----	AAC, ALB, ALD, DSO, EK, EVN, FMT, GAF, ICI, IDC, JCC, KF, LIL, PD, PFN, PFZ, RSA, S, SBC, SDW, TKL, VLN.
<i>Acids, Acid Anhydrides, and Acyl Halides</i>	
*Acetic acid, synthetic, 100%-----	ATR, BOR, CEL, EKT, FMP, MON, PUB, UCC.
*Acetic anhydride, 100%:	
From acetic acid-----	CEL, EKT, FMP.
From ethylene-----	UCC.
*Acrylic acid-----	BFG, CEL, DBC, UCC.
*Adipic acid-----	ACP, CEL, DUP, ELP, MON, RH.
Azelaic acid-----	EMR.
Behenic acid-----	ASH.
Bromobutyric acid-----	GTL.
2-Bromododecanoic acid-----	DUP.
α -Bromo (mixed) lauric stearic acid-----	DUP.
tert-Butylacetyl chloride-----	ALD.
tert-Butylperoxymaleic acid-----	WTL.
Butyric acid-----	CEL, EKT, UCC.
Butyric anhydride-----	EKT.
Castor oil fatty acids, dehydrated-----	DA, NTL.
Chloroacetic acid, mono- -----	BUK, DOW, HPC.
Chloroacetyl chloride-----	DOW.
Citric acid-----	MLS, PFZ.
Crotonic acid (2-Butenoic acid)-----	EKT.
Decanoyl chloride-----	WTL.
2,2-Dichloropropionic acid-----	DOW.
Dimer acid (C-36 aliphatic dibasic acid)-----	AZS.
Dimethylpropionic acid-----	COM.
Di-n-propylacetic acid and chloride-----	CTN.
Dipropylmalonic acid-----	CTN.
Dodecanedioic acid-----	DUP.
*Dodecenylsuccinic anhydride-----	ACS, DIX, HMY.
Dodecylsuccinic anhydride-----	HN.
Erucic acid-----	ASH.
2-Ethylbutyric acid (Diethylacetic acid)-----	UCC.
2-Ethylhexanoic acid (α -Ethylcaproic acid)-----	EKT, UCC.
2-Ethylhexanoyl chloride-----	AZT, WTL.
*Formic acid, 90%-----	CEL, DUP, UCC.
*Fumaric acid-----	ACS, HN, MON, PFZ, USS.
Gluconic acid, tech-----	PFZ, PMP.
Glutaric anhydride-----	UCC.
Glycolic acid (Hydroxyacetic acid)-----	DUP.
n-Hexadecenylsuccinic anhydride-----	HMY.
n-Hexanoic acid-----	UCC.
1-Hydroxyethylidene-1,1-diphosphonic acid-----	WAY.
Isethionic acid (2-Hydroxyethanesulfonic acid)-----	GAF, WTC.
Isoascorbic acid-----	MRK, PFZ.
Isobutyric acid-----	EKT, EKX.
Isobutyric anhydride-----	EKT.
Isobutyryl chloride-----	EK, WTL.
Iso-octadecenylsuccinic anhydride-----	HMY.
Itaconic acid (Methylenesuccinic acid)-----	PFZ.
2-Keto-D-gluconic acid-----	MRK.
Lactic acid-----	CLN, MON.
*Lauroyl chloride-----	GAF, HK, ONX, TEK, UOP, WTL.
Maleic acid-----	ACS, PFN, PFZ.
*Maleic anhydride-----	ACS, HN, KPT, MON, PTT, RCI, USS.
Malic acid-----	ACS, EK.
Malonic acid-----	KF.
Mercaptoacetic acid (Thioglycolic acid)-----	EVN, HAB.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Acids, Acid Anhydrides, and Acyl Halides--Continued</i>	
3-Mercaptopropionic acid-----	EVN.
Mercaptosuccinic acid (Thiomalic acid)-----	EVN.
Methacrylic acid-----	DUP, RH.
Methanesulfonic acid-----	EK, PAS.
Methanesulfonyl chloride-----	PAS.
2-Methylvaleric acid (2-Methylpentanoic acid)-----	UCC.
Neodecanoic acid-----	ENJ.
Neodecanoyl chloride-----	WTL.
Neopentanoic acid-----	ENJ.
Nonanoic acid (Pelargonic acid)-----	EMR, GIV.
Nonenylsuccinic anhydride-----	HMY.
Oleic acid-----	ASH.
Octanoyl chloride-----	HK.
Octenylsuccinic anhydride-----	HMY.
Oleoyle chloride-----	GAF, HRT.
Oxalic acid-----	ACS, PFZ.
Palmitoyl chloride-----	GAF, OPC.
Peroxyacetic acid-----	FMB, UCC.
Pivaloyl chloride-----	AZT, WTL.
*Polyacrylic acid-----	AAE, DA, RH.
Polygalacturonic acid-----	SKG.
*Propionic acid-----	CEL, COM, EKT, UCC.
Propionic anhydride-----	EKT, UCC.
Propionyl chloride-----	EK.
Sebacic acid-----	RH, WTH.
Sebacoyl chloride-----	EK, WTL.
Stearoyl chloride-----	EK, GAF, UOP.
Succinic acid-----	ACS.
Succinic anhydride-----	ACS, ORO.
Tetrahydroxysuccinic acid (Dioxytartaric acid)-----	ACY.
Thioacetic acid-----	EK, EVN.
Thiolacetic acid-----	EVN.
3,3'-Thiodipropionic acid-----	CCW, EVN.
Trichloroacetic acid-----	DOW.
Valeric acid-----	UCC.
All other-----	ABB, ALD, AMB, EK, ENJ, EVN, GAF, HMY, LIL, PAS, PFN, PLC, QKO, RH, SHA, WAY.
<i>Salts of Organic Acids</i>	
*Acetic acid salts:	
Aluminum acetate-----	ACY, UCC.
Ammonium acetate-----	ACS, BKC, MAL.
Barium acetate-----	ACS, BKC, MAL.
Calcium acetate-----	ACS, MAL.
Cobalt acetate-----	HSH, SHP.
*Copper acetate-----	ACS, BKC, SHP, UCC.
Lead acetate-----	BKC, MAL.
Lead subacetate-----	BKC, MAL.
Lead tetraacetate-----	ARA.
Magnesium acetate-----	BKC, SHP.
Manganese acetate-----	HSH, SHP.
Mercuric acetate-----	MAL.
Nickel acetate-----	BKC, HSH, SHP.
*Potassium acetate-----	ACS, BKC, MAL, SFI, UCC.
Silver acetate-----	MAL, NTL.
*Sodium acetate-----	ACS, BKC, CEL, CHP, DAN, EKT, MAL, UCC, WSN.
Sodium diacetate-----	UCC.
*Zinc acetate-----	ACS, BKC, HSH, MAL, SHP, UCC.
*Zirconium acetate-----	HSH, SNW, TZC.
Other acetic acid salts-----	ALD, LIL, MHI.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
Acrylic acid, sodium salt-----	AAE.
Adipic acid, ammonium salt-----	ASH.
*Allylsulfonic acid, sodium salt-----	IOC, NES, SAL, UOP.
Chloroacetic acid, sodium salt-----	DOW.
Citric acid salts:	
Ammonium citrate-----	MAL, PFZ.
Calcium citrate-----	PFZ.
Ferric ammonium citrate-----	MAL, PFZ.
Ferric citrate-----	MAL.
Potassium citrate-----	MLS, PFZ.
Sodium citrate-----	MLS, PFZ.
Other citric acid salts-----	EK.
Diethyl chlorophosphate-----	SFA.
*2-Ethylhexanoic acid (α -Ethylcaproic acid) salts:	
Aluminum 2-ethylhexanoate-----	PFZ, WTC.
Barium 2-ethylhexanoate-----	CCA, PFZ.
Cadmium 2-ethylhexanoate-----	CCA.
*Calcium 2-ethylhexanoate-----	CCA, FER, HN, MCI, PFZ, SW, TRO, WTC.
*Cobalt 2-ethylhexanoate-----	CCA, FER, HN, MCI, SW, TRO, WTC.
Copper 2-ethylhexanoate-----	CCA.
Dibutyltin di-2-ethylhexanoate-----	x.
Iron 2-ethylhexanoate-----	CCA, HN.
*Lead 2-ethylhexanoate-----	CCA, CCC, FER, HN, MCI, NTL, SW, WTC.
Lithium 2-ethylhexanoate-----	WTC.
*Manganese 2-ethylhexanoate-----	CCA, HN, MCI, SW.
Nickel 2-ethylhexanoate-----	MCI, WTC.
Potassium 2-ethylhexanoate-----	CCA.
Rare earths 2-ethylhexanoate-----	CCA.
Stannous 2-ethylhexanoate-----	WTC.
Strontium 2-ethylhexanoate-----	CCA.
*Zinc 2-ethylhexanoate-----	CCA, FER, HN, MCI, SW, WTC.
*Zirconium 2-ethylhexanoate-----	CCA, FER, HN, TRO, WTC.
Formic acid salts:	
Aluminum formate-----	WSN.
Ammonium formate-----	ACS.
Calcium formate-----	COM.
Chromic formate-----	GAF.
Copper formate-----	CTN.
Lead formate-----	NTL.
Sodium formate, refined-----	ACS, BKC.
*Sodium formate, tech-----	CEL, COM, HPC.
Fumaric acid, lead salt-----	NTL.
Glucoheptonic acid salts: Sodium glucoheptanoate-----	PFN.
Gluconic acids salts: *Sodium gluconate-----	PFZ, PMP, SFI.
Glycolic acid, sodium salt-----	SAL.
9H-Hexadecafluorononanoic acid, ammonium salt-----	DUP, WTC.
Humic acids, sodium salts-----	NLC.
Isoascorbic acid, sodium salt-----	MRK, PFZ.
*Lactic acid salts:	
Ammonium lactate-----	TCC.
Calcium lactate-----	SHF.
Sodium lactate-----	MAL, REH, PFN.
Other-----	PFN, REH.
Lauric acid salts: Zinc laurate-----	SNW, x.
Linoleic acid salts:	
Calcium linoleate-----	CCA, SHP.
Cobalt linoleate-----	SHP.
Iron linoleate-----	SHP.
Lead manganese linoleate-----	SDH.
Manganese linoleate-----	SHP.
Maleic acid salts: Lead (tribasic) maleate-----	NTL.
Mercaptoacetic acid (Thioglycolic acid) salts:	
Ammonium mercaptoacetate-----	EVN, HAB, TNI.
Antimony mercaptoacetate-----	CCA.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
Mercaptoacetic acid (Thioglycolic acid) salts--Continued	
Calcium mercaptoacetate-----	EVN.
Dibutyltin-bis-iso octyl mercaptoacetate-----	x.
Dibutyltin mercaptoacetate-----	CCA.
Potassium mercaptoacetate-----	EVN.
Sodium mercaptoacetate-----	EVN.
Mercaptopropionic acid, dibutyltin salt-----	CCA.
Methacrylic acid, sodium salt-----	AAE.
Neodecanoic acid salts:	
Cadmium neodecanoate-----	CCA.
Calcium neodecanoate-----	CCA, MCI.
Cobalt manganese neodecanoate-----	MCI.
Cobalt neodecanoate-----	MCI.
Lead cobalt neodecanoate-----	MCI.
Lead neodecanoate-----	MCI.
Lithium neodecanoate-----	MCI.
Manganese neodecanoate-----	MCI.
Zinc neodecanoate-----	CCA, MCI.
Zirconium neodecanoate-----	MCI.
*Octanoic acid (Caprylic acid) salts:	
Aluminum octanoate-----	DA.
Barium cadmium octanoate-----	CCA
Stannous octanoate-----	CCW, x.
Zinc octanoate-----	BKC.
Other-----	DA.
*Oleic acid salts:	
Aluminum oleate-----	SHP, WTC.
Ammonium oleate-----	ARS, SHP.
Chromium oleate-----	SHP.
Copper oleate-----	SHP, WTC.
Lead oleate-----	NOC.
Stannous oleate-----	CCW, x.
Other oleic acid salts-----	CHP.
Oxalic acid salts:	
Ammonium oxalate-----	ACS, PFZ.
Ferric ammonium oxalate-----	PFZ.
Ferrous oxalate-----	BKL.
Potassium oxalate-----	BKC, PFZ.
Sodium oxalate-----	BKC.
*Palmitic acid salts:	
Aluminum palmitate-----	DA, WTC.
Zinc palmitate-----	ACY, DA, WTC.
Phosphorodithioic acid salts (Dithiophosphates):	
Sodium di-sec-butyl diethyl phosphorodithioate-----	ACY.
Sodium di-sec-butyl phosphorodithioate-----	ACY.
Sodium diethyl phosphorodithioate-----	ACY.
Sodium dihexyl phosphorodithioate-----	ACY.
Sodium diisopropyl phosphorodithioate-----	ACY.
Polyacrylic acid salts:	
Ammonium polyacrylate-----	BFG.
Sodium ammonium polyacrylate and copolymers-----	BFG.
Sodium polyacrylate-----	ALC, BFG, DA, JOR, RH.
Polymethacrylic acid, sodium salt-----	GRD.
Propionic acid salts:	
*Calcium propionate-----	HFT, PFZ, UCC, WSN.
*Sodium propionate-----	HFT, PFZ, UCC, WSN.
Ricinoleic acid salts:	
Calcium ricinoleate-----	NTL.
Lithium ricinoleate-----	NTL.
Sodium ethyl oxalacetate-----	FMP.
Sodium polypectate-----	SKG.
Sodium sorbitol borate-----	ICI.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
*Stearic acid salts:	
*Aluminum stearates:	
*Aluminum distearate-----	ACY, DA, JTC, MAL, NOC, PEN, WTC.
*Aluminum monostearate-----	DA, JTC, MAL, NOC, WTC.
*Aluminum tristearate-----	DA, JTC, MAL, NOC, PEN, WTC.
Ammonium stearate-----	DA, NOC, WTC.
*Barium stearate-----	DA, NOC, PEN, WTC.
Cadmium stearate-----	WTC.
*Calcium stearate-----	ACY, DA, HN, JTC, MAL, NOC, PEN, WTC.
Cobalt stearate-----	WTC.
Copper stearate-----	NOC.
Ferric stearate-----	WTC.
Lead stearate-----	DA, NOC, WTC.
Lead stearate, dibasic-----	NTL.
Lithium stearate-----	DA, PEN, WTC.
*Magnesium stearate-----	ACY, DA, JTC, MAL, NOC, PEN, WTC.
Nickel stearate-----	WTC.
Silver stearate-----	PEN.
*Zinc stearate-----	ACY, DA, HN, JTC, MAL, NOC, PEN, PLS, WTC.
All other-----	CHP, DA, SNW.
Succinic acid, sodium salt-----	MAL.
Sulfoacetic acid, disodium salt-----	EK.
Sulfosuccinic acid, trisodium salt-----	STP.
Tartaric acid salts:	
Antimony potassium tartrate-----	PFZ.
Potassium sodium tartrate-----	PFZ.
Sodium bitartrate-----	PFZ.
Valeric acid, ammonium salt-----	RSA.
Xanthic acid salts:	
Potassium amylxanthate-----	DOW.
Potassium ethylxanthate-----	DOW.
Potassium hexylxanthate-----	DOW.
Potassium isopropylxanthate-----	DOW.
Potassium pentylxanthate-----	ACY.
Sodium n-butylxanthate-----	KCC, USR.
Sodium sec-butylxanthate-----	DOW.
Sodium ethylxanthate-----	DOW.
Sodium isobutylxanthate-----	DOW.
Sodium isopropylxanthate-----	DOW.
All other salts of organic acids-----	ACY, ALD, BAX, BKC, CCA, CCW, CHP, CRN, CTN, DA, DUP, EK, EVN, GAF, HMP, KCH, MCI, MLS, NTL, PFN, RSA, SDW, SHF, SHP, SNW, UCC, WSN, x.
<i>Aldehydes and Ketones</i>	
Acetaldehyde-----	CEL, EKT, EKX, PUB, SHC, UCC.
*Acetone:	
*From cumene-----	ACP, CLK, DOW, GP, GYR, MON, SHC, SKO, SOC, UCC, USS.
From isopropyl alcohol-----	EKT, ENJ, SHC, UCC.
Other-----	CEL, DIX.
Acetone, crude-----	OCC.
Acrolein (Acrylaldehyde)-----	SHC, UCC.
*2-Butanone (Methyl ethyl ketone)-----	ATR, CEL, DIX, ENJ, SHC, UCC.
*Butyraldehyde-----	CEL, EKX, UCC.
Chloral (Trichloroacetaldehyde)-----	DA, MTO.
5-Chloro-2-pentanone-----	SDW.
1-Chloro-1-penten-3-one (8-Chlorovinyl ethyl ketone)-----	ABB.
Chloro-2-propanone (Chloroacetone)-----	EK, MRK.
Crotonaldehyde-----	CEL, EKT, UCC.
1,3-Dihydroxy-2-propanone (Dihydroxyacetone)-----	BAX.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)-----	EKX.
Di-n-propyl ketone-----	ORT.
2-Ethylbutyraldehyde-----	UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Aldehydes and Ketones--Continued</i>	
2-Ethylhexanal (α -Ethylcaproaldehyde)-----	EKX, UCC.
*Formaldehyde (37% by weight)-----	ACP, BOR, CBD, CEL, COM, DUP, GAF, GOC, GP, HKD, HN, HPC, MON, RCI, RH, UCC, WCL.
Glutaraldehyde-----	UCC.
Glyoxal-----	UCC.
2-Heptanone (Methyl amyl ketone)-----	UCC.
3-Heptanone (Ethyl butyl ketone)-----	UCC.
Hexaldehyde-----	UCC.
2,5-Hexanedione (Acetylacetone)-----	ARS, UCC.
*4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)-----	CEL, SHC, UCC.
Isobutyraldehyde-----	EKX, OXC, UCC.
Isopentaldehyde, mixed isomers-----	UCC.
Isovalerone (Diisobutyl ketone)-----	UCC.
Lactide (3,6-Dimethyl-2,5,p-dioxanedione)-----	CLN.
Methacrolein-----	ALD.
4-Methoxy-4-methyl-2-pentanone-----	SHC.
2-Methylbutyraldehyde-----	UCC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)-----	EKT.
Methylnonyl ketone-----	ORT.
*4-Methyl-2-pentanone (Methyl isobutyl ketone)-----	CEL, EKT, ENJ, SHC, UCC.
Methylpentenal-----	UCC.
4-Methyl-3-penten-2-one (Mesityl oxide)-----	SHC, UCC.
2-Methylvaleraldehyde (2-Methylpentaldehyde)-----	UCC.
n-Nonyl ketone-----	ARC.
3-Octanone (Ethyl amyl ketone)-----	SHC.
Paraformaldehyde-----	CEL, HN.
2,4-Pentanedione (Acetylacetone)-----	UCC.
2-Pentanone (Methyl propyl ketone)-----	UCC.
3-Pentanone (Diethyl ketone)-----	HEX, ORT.
Propionaldehyde-----	EKX, UCC.
Pseudoionone-----	RDA.
Tetrahydropseudoionone-----	CEL.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)-----	UCC.
Valeraldehyde-----	UCC.
All other-----	ALD, ARC, EK, LIL, UCC.
<i>Alcohols, Monohydric, Unsubstituted</i>	
Alcohols C11 or lower, unmixed:	
Allyl alcohol-----	FMP, SHC.
Amyl alcohols:	
2-Methyl-1-butanol-----	CPS, UCC.
1-Pentanol-----	UCC.
2-Pentanol-----	UCC.
Butyl alcohols:	
Primary:	
*Iso (Isopropylcarbinol)-----	CEL, DBC, EKX, OXC, SHC, UCC.
*Normal (n-Propylcarbinol)-----	CEL, CO, DBC, EKX, OXC, SHC, TNA, UCC.
Secondary (Methylethylcarbinol)-----	CEL, ENJ, SHC.
Tertiary (Trimethylcarbinol)-----	SHC, x.
1-Decanol-----	CO, PG.
2,6-Dimethyl-4-heptanol (Diisobutylcarbinol)-----	UCC.
*Ethyl alcohol, synthetic-----	EKX, ENJ, HPC, PUB, SHC, UCC, USI.
2-Ethyl-1-butanol-----	UCC.
*2-Ethyl-1-hexanol-----	CEL, DBC, EKX, OXC, SHC, UCC.
2-Ethyl-4-methyl-1-pentanol-----	EKX.
Heptyl alcohol-----	EKX.
*Hexyl alcohol-----	CO, ENJ, TNA.
*Isodecyl alcohol-----	ENJ, TID, UCC, USS.
Isononyl alcohol-----	ENJ.
*Iso-octyl alcohol-----	ENJ, TID, USS.
*Isopropyl alcohol-----	ATR, CEL, ENJ, SHC, UCC.
*Methanol, synthetic-----	AIP, BOR, CEL, DUP, GP, HN, HPC, MON, RH.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Alcohols, Monohydric, Unsubstituted--Continued</i>	
*Alcohols C ₁₁ or lower, unmixed--Continued	
Methyl amyl alcohol-----	UCC.
3-Methyl-1-butanol-----	UCC.
2-Methyl-1-pentanol-----	EKX, UCC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)-----	SHC.
1-Octanol-----	PG, WTH.
2-Octanol (sec-Capryl alcohol)-----	RH.
3-Pentanol-----	EK.
*Propyl alcohol (Propanol)-----	CEL, EKX, UCC.
2-Propyn-1-ol-----	GAF.
*Alcohols, C ₁₂ or higher, unmixed:	
1-Decanol-----	CO, PG.
Dodecyl alcohol (Lauryl alcohol) (95%)-----	CO, PG.
1-Hexadecanol (Cetyl alcohol) (95%)-----	CO, GIV, PG.
Hexadecyl alcohols, other-----	ENJ.
*1-Octadecanol (Stearyl alcohol) (95%)-----	CO, PG.
cis-9-Octadecen-1-ol (Olel alcohol)-----	ASH, DUP.
1-Tetradecanol (Myristyl alcohol)-----	CO.
1-Tridecanol-----	ENJ.
2,6,8-Trimethyl-4-nonanol-----	UCC.
*Mixtures of alcohols:	
*C ₁₁ and lower only-----	CEL, CO, EKX, ENJ, PUB, TNA.
*C ₁₂ and higher only-----	ASH, CO, GLY, SHC, TNA, UCC.
All other monohydric alcohols, unsubstituted (including mixtures).	ALD, CEL, CO, EKX, GYR, PG, TNA, UCC.
<i>Polyhydric Alcohols and Their Esters and Ethers</i>	
*Polyhydric alcohols:	
2,2-Bis(bromomethyl)-1,3-propanediol-----	DOW.
1,2(and 1,3)-Butanediol-----	CEL.
1,4-Butanediol-----	GAF.
2-Butene-1,4-diol-----	GAF.
2-Butyne-1,4-diol-----	GAF.
3-Chloro-1,2-propanediol (Glycerol- α -chlorohydrin)-----	EVN.
1,10-Decanediol-----	ASH.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)-----	EKX.
*Ethylene glycol-----	BAS, CAU, CEL, DIX, DOW, DUP, EKX, JCC, MAT, NWP, OMC, PPG, SHC, UCC.
2-Ethyl-1,3-hexanediol-----	UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Tri-methylolpropane).	CEL.
*Glycerol, synthetic-----	DOW, FMP, SHC.
1,6-Hexanediol-----	CEL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Tri-methylolethane).	COM.
Mannitol-----	ICI.
3-Mercapto-1,2-propanediol (Thioglycerol)-----	EVN.
*2-Methyl-2,4-pentanediol (Hexylene glycol)-----	CEL, SHC, UCC.
2-Methyl-2-propyl-1,3-propanediol-----	BKL.
*Pentaerythritol-----	CEL, COM, HN, HPC, RCI.
1,5-Pentanediol-----	UCC.
*Propylene glycol (1,2-Propanediol)-----	CEL, DOW, JCC, OCC, OMC, UCC.
*Sorbitol-----	BRD, ICI, MRK, PFZ.
2,2,4-Trimethyl-1,3-pentanediol-----	EKX.
All other-----	GLY, ICI, PHR, PIC.
*Polyhydric alcohol esters:	
1,3-Butanediol dimethacrylate-----	SAR.
2-(2-Butoxyethoxy)ethyl acetate-----	EKT, UCC.
2-Butoxyethyl acetate-----	UCC.
1,3-Butyleneglycol diacetate-----	SAR.
Diethylene glycol chloroformate-----	PD.
2-Diisopropylaminoethyl methacrylate-----	DUP.
2-(2-Ethoxyethoxy)ethyl acetate-----	EKT, UCC.
2-Ethoxyethyl acetate-----	ENJ, UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Polyhydric Alcohols and their Esters and Ethers--Continued</i>	
*Polyhydric alcohol esters--Continued	
*Ethylene glycol diacetate-----	CPS, EKT, UCC.
Ethylene glycol dimercaptoacetate-----	EVN.
Ethylene glycol dimethacrylate-----	SAR.
Ethylene glycol hydroxyacetate-----	CCA.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol tri- methacrylate.	SAR.
Glyceryl diacetate (Diacetin)-----	ARC, HAL.
Glyceryl monoacetate (Monoacetin)-----	ARC, HAL.
Glyceryl monothioglycolate-----	EVN.
Glyceryl triacetate (Triacetin)-----	ARC, EKT, UCC.
Glycol adipate-----	x.
1,6-Hexanediol diacrylate-----	SAR.
Hexylene glycol diacetate-----	UCC.
Hydroxyethyl acrylate-----	DOW.
Hydroxypropyl acrylate-----	DOW.
Lanolin acetate-----	CRN.
Lanolin alcohol acetate-----	CRN.
2-Methoxyethyl acetate-----	UCC.
2-Methoxyethyl carbamate-----	VAL.
Monoglyceride lactate-----	PG.
Pentaerythritol caprylate-----	PVO.
Pentaerythritol pelargonate-----	PVO.
Pentaerythritol stearate-----	GLY.
Pentaerythritol tetraacrylate-----	SAR.
Pentaerythritol tetrakis(3-mercaptopropionate)-----	EVN.
Polyethylene glycol dimethacrylate-----	SAR.
Polymercaptopolyesters-----	CCW.
Sucrose octa-acetate-----	HFT, PD.
2-Sulfoethyl methacrylate-----	DOW.
Tetraethylene glycol diacrylate-----	AAE, SAR.
Tetraethylene glycol dimethacrylate-----	SAR.
Triethylene glycol diacrylate-----	AAE, UCC.
Triethylene glycol dimethacrylate-----	SAR.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate-----	EKX, UCC.
Trimethylolpropane triacrylate-----	AAE, SAR.
All other-----	ALD, CCW, EK, EKX, EVN, PFN, PG, SAR SHC, UCC, USB.
*Polyhydric alcohol ethers:	
Bis(2-butoxyethyl) ether (Diethylene glycol di-n- butyl ether).	UCC.
Bis(2-ethoxyethyl) ether (Diethylene glycol diethyl ether).	UCC.
Bis(hydroxyethyl) ether butynediol-----	GAF.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether).	ASL.
Bis(2-methoxyethyl) ether (Diethylene glycol dimethyl ether).	ASL.
*2-Butoxyethanol (Ethylene glycol monobutyl ether)-----	CEL, DOW, EKX, OMC, SHC, UCC.
*2-(2-Butoxyethoxy)ethanol (Diethylene glycol monoiso- butyl ether).	DOW, EKX, JCC, OMC, SHC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether).	DOW, OMC, UCC.
1-Butoxyethoxy-2-propanol-----	UCC.
N-Butoxypropanol polyalkylene glycol-----	UCC.
Diethoxytetraglycol-----	UCC.
*Diethylene glycol-----	BAS, CEL, DIX, DOW, EKX, JCC, MAT, NWP, PPG, SHC, UCC.
Diethylene glycol, borated-----	GLY, JCC.
Diethylene glycol monobutyl ether-----	OMC.
Dimethoxyethane (Ethylene glycol dimethyl ether)-----	ASL.
*Dipropylene glycol-----	CEL, DOW, JCC, OCC, OMC, UCC.
Di-tributyletherethylene glycol-----	EKX.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Polyhydric Alcohols and Their Esters and Ethers--Continued</i>	
Polyhydric alcohol ethers--Continued	
Di-tri-isobutyl ether-----	EKX.
*2-Ethoxyethanol (Ethylene glycol monoethyl ether)-----	CEL, DOW, EKX, JCC, OMC, SHC, UCC.
*2-(2-Ethoxyethoxy)ethanol (Diethylene glycol mono- ether).-----	CEL, DOW, EKX, JCC, OMC, SHC, UCC.
*2-[2-(Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether).-----	DOW, OMC, UCC.
Ethylene glycol monoisobutyl ether-----	EKX.
Glycerol tri(polyoxypropylene) ether-----	BAS, UCC.
2-(Hexyloxy)ethanol-----	UCC.
2-[2-(Hexyloxy)ethoxy]ethanol-----	UCC.
2-Isobutoxyethanol-----	UCC.
2-(2-Isobutoxyethoxy)ethanol (Diethylene glycol monoisobutyl ether).-----	EKX.
1-Isobutoxy-2-propanol (Propylene glycol isobutyl ether).-----	DOW.
*2-Methoxyethanol (Ethylene glycol monomethyl ether)----	DOW, EKX, JCC, OMC, PPG, SHC, UCC.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol mono- methyl ether).-----	DOW, EKX, JCC, OMC, PPG, SHC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether).-----	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Tri ethylene glycol dimethyl ether).-----	ASL.
Methoxypolyethylene glycol-----	UCC.
1-Methoxy-2-propanol-----	DOW, UCC.
3-(3-Methoxypropoxy)propanol-----	DOW, UCC.
3-[3-(3-Methoxypropoxy)propoxy]propanol-----	DOW.
Polyethoxyethylsorbitol-----	GLY.
Polyethoxylated-1,4-butanediol-----	TCH.
Polyethoxypolypropoxy butanol-----	JCC.
Polypropoxybutyl ether-----	DA, JCC.
*Polyethylene glycol-----	ABC, BAS, DA, DOW, DUP, GAF, HDG, JCC, MAT, NLC, OMC, TCH, UCC.
Polyglycols, ethylene glycol, and glycol ether, mixed- Polyoxypropylene polyoxyethylene glycol, mixed-----	DOW.
*Polypropylene glycol-----	JCC.
Polytetramethylene ether glycol-----	BAS, DOW, JCC, HDG, NLC, OMC, TCH, UCC.
Propylene glycol mixed ether-----	DUP, QKO.
Sorbitol, ethoxylated-----	DOW.
Sorbitol, propoxylated-----	ICI.
*Tetraethylene glycol-----	ICI.
1,1,3,3-Tetramethoxypropane-----	DOW, EKX, JCC, OMC, UCC.
2,2'-Thiodiethanol (Thiodiglycol)-----	KF.
*Triethylene glycol-----	HAB, UCC.
	CEL, DIX, DOW, EKX, JCC, MAT, NWP, OMC, PPG, SHC, UCC.
*Tripropylene glycol-----	DOW, HDG, OMC, UCC.
All other-----	ALD, CAU, CEL, CHT, EK, EKX, GAF, NLC, PFN, SAR, UCC, x.
<i>Esters of Monohydric Alcohols</i>	
Allyl methacrylate-----	SAR.
Amyl acetates, 90%:	
Isopentyl acetate (Isoamyl acetate)-----	CPS, UCC.
n-Pentyl acetate-----	PFW, PUB.
Bis(2-chloroethyl)(2-chloroethyl) phosphonate-----	x.
Butyl acetates:	
*Iso-----	CEL, EKX, ENJ, UCC.
*Normal-----	CEL, EKT, PUB, SHC, UCC.
Secondary-----	EKT, ENJ, PUB, SHC.
*Butyl acrylate-----	CEL, DBC, RH, UCC.
Butyl chloroacetate-----	MON.
sec-Butyl chloroformate-----	CTN.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols</i>	
Butyl formate-----	CPS.
Butyl lactate-----	COM.
Butyl maleate, mono-----	TCH.
Butyl methacrylate-----	x.
tert-Butyl peroxyacetate-----	AZT, WTL.
*tert-Butyl peroxy-2-ethylhexanoate-----	AZT, WTC, WTL.
tert-Butyl peroxyisobutyrate-----	AZT, WTL.
tert-Butyl peroxyisopropylcarbonate-----	PPG, WTL.
tert-Butyl peroxyneodecanoate-----	WTC, WTL.
*tert-Butyl peroxy-pivalate-----	AZT, WTC, WTL.
tert-Butyl peroxy-3,3,5-trimethyl cyclohexane-----	WTL.
Cetyl lactate-----	VND.
Diallyl maleate-----	FMP.
Di(sec-butyl) chloroformate-----	WTL.
Dibutyl fumarate-----	MON, PFZ, RCI, USS.
*Dibutyl maleate-----	MON, RCI, RUB, USS.
Di(sec-butyl) peroxydicarbonate-----	WTL.
Dicyclohexyl peroxydicarbonate-----	WTL.
Diethyl sec-butylethylmalonate-----	ABB.
Diethyl sec-butylmalonate-----	ABB.
Diethyl carbonate (Ethyl carbonate)-----	CTN, FMP.
Diethyl diethylmalonate (Diethyl malonic ester)-----	LIL.
Diethyl (ethoxymethylene)malonate-----	KF.
Diethyl ethylisopentylmalonate-----	LIL.
Diethyl ethylmalonate (Ethyl malonic ester)-----	LIL.
Diethyl ethyl(1-methylbutyl)malonate-----	ABB.
Di(2-ethylhexyl) chloroformate-----	WTL.
Di(2-ethyl-1-hexyl) fumarate-----	RUB.
Di(2-ethyl-1-hexyl) maleate-----	HRT, RUB.
Di(2-ethyl-1-hexyl) peroxydicarbonate-----	WTL.
Diethyl ketomalonate-----	ALD.
Diethyl maleate-----	ACY, MRK, UCC.
*Diethyl malonate (Malonic ester)-----	ABB, KF, LIL.
*Diethyl (1-methylbutyl)malonate-----	ABB, CTN, LIL.
Diethyl methylmalonate-----	CTN.
Diethyl oxalate (Ethyl oxalate)-----	FMP.
Diisobutyl maleate-----	RUB.
Diisodecyl maleate-----	RUB.
Diisononyl maleate-----	RUB.
Diisopropyl peroxydicarbonate (Isopropyl percarbonate)---	PPG.
Dilauryl maleate-----	EFH.
*Dilauryl 3,3'-thiodipropionate-----	ACY, CCW, EVN, HAB.
Dimethyl carbonate-----	CTN.
2,5-Dimethylhexane-2,5-diperoctoate-----	DUP, WTC.
Dimethyl maleate-----	AAC, ABC.
Dimethyl malonate-----	KF.
Di-(4-methyl-2-pentyl)maleate-----	ABC.
Dimyristyl 3,3'-thiodipropionate-----	CCW, EVN.
*Diocetyl maleate-----	MON, RCI, USS.
Di-n-propyl peroxydicarbonate-----	WTL.
*Distearyl 3,3'-thiodipropionate-----	ACY, CCW, EVN, HAB.
Dithiobis(stearyl propionate)-----	EVN.
Ditridecyl maleate-----	RUB.
Di(tridecyl) 3,3'-thiodipropionate-----	ACY, EVN.
*Ethyl acetate (85%)-----	CEL, EKT, EKX, ENJ, MON, PUB, UCC.
Ethyl acetoacetate-----	EKT, UCC.
*Ethyl acrylate-----	CEL, DBC, RH, UCC.
Ethyl chloroacetate-----	DOW, MON.
Ethyl chloroformate-----	CTN, FMP, OTC.
Ethyl chlorothiol formate-----	SFA.
Ethylene carbonate-----	JCC.
2-Ethyl-1-hexyl acetate-----	EKT, UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols--Continued</i>	
*2-Ethyl-1-hexyl acrylate-----	CEL, DBC, UCC.
2-Ethyl-1-hexyl methacrylate-----	x.
Ethyl silicate (Tetraethoxysilane)-----	UCC.
Ethyl sulfate (Diethyl sulfate)-----	UCC.
Ethyl thioglycolate-----	EVN.
Fatty acid esters, not included with plasticizers or surface-active agents:	
Butyl palmitate-----	AAE, CBY.
tert-Butylperoxy neodecanoate-----	WTC.
Dimethyl brassylate-----	EMR.
Ethylhexyl stearate-----	TCH.
n-Hexyl caprylate-----	ARC.
Isopropyl ester of lanolin-----	CRN.
Isopropyl linoleate-----	VND.
Methyl esters of coconut oil-----	PG.
Methyl esters of cottonseed oil-----	BFR.
Methyl esters of tallow-----	CHL, HUM, PG.
Methyl 12-hydroxystearate-----	HUM, NTL.
Methyl myristate-----	HUM, LAK, PG.
Myristyl myristate-----	VND.
All other-----	HUM, LIL, ROB.
Glycidyl acrylate-----	AAE.
Glycidyl methacrylate-----	AAE.
Hexyl acetate-----	CPS.
Isoamyl ethylmalonate-----	LIL.
Isobutyl acrylate-----	RH, UCC.
Isobutyl chloroformate-----	CTN.
Isobutyl isobutyrate-----	EKX.
Isodecyl acrylate-----	UCC.
*Iso-octyl mercaptoacetate-----	CCW, EVN, HAB.
Iso-octyl 3-mercaptopropionate-----	EVN.
*Isopropyl acetate-----	CEL, EKT, ENJ, UCC.
Isopropyl chloroformate-----	CTN, PPG.
Isostearyl neopentanoate-----	VND.
Lauryl lactate-----	VND.
Lauryl methacrylate-----	x.
Maleic esters and copolymers-----	GAF.
Methallylidene diacetate-----	UCC.
Methyl acetate-----	EK, GRD, MON, UCC.
Methyl acetoacetate-----	EKT.
Methyl acrylate, monomer-----	CEL, RH.
Methyl amylacetate-----	PUB.
Methyl borate-----	SFS.
Methyl chloroacetate-----	DOW.
Methyl chloroformate-----	CTN.
Methyl dichloroacetate-----	PD.
Methyl formate-----	CEL, DUP.
*Methyl methacrylate, monomer-----	ACY, DUP, RH.
4-Methyl-2-pentyl acetate-----	SHC, UCC.
Methyl sulfate (Dimethyl sulfate)-----	DUP.
Methyl vinyl acetate-----	UCC.
Myristyl lactate-----	VND.
*Phosphorus acid esters:	
Bis(2-ethylhexyl) hydrogen phosphate-----	SM, UCC.
Bis(2-ethylhexyl) hydrogen phosphite-----	SM.
Butyl hydrogen phosphates-----	SM.
Dibutyl butylphosphonate-----	SM.
Dibutyl hydrogen phosphite-----	SM.
Didodecyl hydrogen phosphate-----	DUP.
Diethyl ethylphosphonate-----	SM.
Diethyl hydrogen phosphite-----	SM.
Diethyl phosphorochloridothionate-----	SFA.
Dimethyl hydrogen phosphite-----	SM.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols--Continued</i>	
*Phosphorus acid esters--Continued	
Dimethyl methylphosphonate-----	SM.
Dimethyl (2-oxoheptyl)phosphonate-----	ALD.
Dimethyl phosphorochloridothionate-----	SFA.
Dioleoyl hydrogen phosphite-----	SM.
2-Ethylhexyl hydrogen phosphate-----	SM.
Methyl dihydrogen phosphate-----	HK.
Iso-octyl hydrogen phosphate-----	SM.
Oleoyl hydrogen phosphate-----	SM.
Trialkyl phosphites-----	WES.
Tri(butoxyethyl)phosphate-----	HN.
Tributyl phosphate-----	COM, FMP, HN.
Tributyl phosphite-----	SM.
Triethyl phosphite-----	SFA, SFS, SM.
Triiso-octyl phosphite-----	SM.
Triisopropyl phosphite-----	SM.
Trimethyl phosphite-----	SFA, SFS, SM.
Tris(2-chloroethyl) phosphite-----	SM.
Tris(chloroisopropyl) thionophosphate-----	TNA.
Tris(2,3-dibromopropyl) phosphate-----	DOW, MCH, NES.
Tris(1,3-dichloro-2-propyl) phosphorothioate-----	SM.
All other-----	MON, SM, TNA.
*Propyl acetate-----	CEL, EKT, UCC.
Propylene carbonate-----	JCC.
Sodium methylpropyl carbinol-----	LIL.
Stearyl methacrylate-----	x.
Tetraethyl silicate-----	UCC.
1,1,3,3-Tetramethyl butylhydroperoxide-----	WTL.
1,1,3,3-Tetramethylbutyl peroxy-2-ethylhexanoate-----	WTL.
Tetraoctyl orthosilicate-----	MON.
Titanic acid esters:	
Bis(2-[bis(2-hydroxyethyl)amino]ethyl) diisopropyl titanate.	DUP.
Tetrabutyl titanate-----	DUP.
Tetraisopropyl titanate-----	DUP.
Tetrakis(2-ethylhexyl) titanate-----	DUP.
Other-----	DUP.
Triethyl orthoacetate-----	EK, KF.
Triethyl orthoformate-----	KF.
Triethyl orthopropionate-----	KF.
Triisodecyl orthoformate-----	KF.
Trimethyl orthoformate-----	KF.
*Vinyl acetate, monomer-----	BOR, CEL, DUP, NSC, UCC, USI.
All other-----	ALD, BAX, CEL, CTN, DUP, EK, EKX, EMR, EVN, KF, PD, RH, TNI, UCC, USS, VND.
<i>Halogenated Hydrocarbons</i>	
1-Bromobutane (n-Butyl bromide)-----	ABB, MCH.
2-Bromobutane (sec-Butyl bromide)-----	ABB.
Bromochloromethane-----	DOW.
1-Bromo-3-chloropropane (Trimethylenedichlorobromide)-----	MCH.
2-Bromo-2-chloro-1,1,1-trifluoroethane-----	ICI.
Bromoethane (Ethyl bromide)-----	DOW, GTL, MCH.
1-Bromo-3-methylbutane-----	LIL.
1-Bromo-3-methyl-2-butene-----	SDW.
1-Bromo-octadecane-----	DUP, HMY.
1-Bromo-octane (n-Octyl bromide)-----	MCH.
2-Bromopentane (1-Methylbutyl bromide)-----	ABB, LIL.
1-Bromopropane (n-Propyl bromide)-----	EK.
Bromotrichloromethane-----	MCH.
Bromotrifluoromethane-----	DUP.
*Carbon tetrachloride-----	ACS, DA, DOW, FMB, FRO, SFI.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Halogenated Hydrocarbons--Continued</i>	
Carbon tetrachloride crude-----	TNA.
*Chlorinated paraffins:	
Less than 35% chlorine-----	DA, HK.
*35%-64% chlorine-----	CCH, DA, DVC, HPC, ICI, NEV.
65% or more chlorine-----	DA, DVC, NEV.
2-Chloro-1,3-butadiene-----	DUP.
1-Chlorobutane (n-Butyl chloride)-----	PUB, UCC.
1-Chloro-1,1-difluoroethane-----	ACS, DUP, PAS.
*Chlorodifluoromethane-----	ACS, DUP, KAI, PAS, RCN.
*Chloroethane (Ethyl chloride)-----	AME, DOW, DUP, HPC, PPG, SHC, TNA.
*Chloroform-----	ACS, DA, DOW, DUP, FRO, SFI.
*Chloromethane (Methyl chloride)-----	ACS, CO, DCC, DOW, DUP, FRO, TNA, UCC.
2-Chloro-2-methylpropane (tert-Butyl chloride)-----	EK.
3-Chloro-2-methylpropene (Methallyl chloride)-----	FMP.
Chloropentafluoroethane-----	DUP.
3-Chloropropene (Allyl chloride)-----	DOW, SHC.
Chlorotrifluoroethylene (Trifluorovinyl chloride)-----	ACS, MMM.
Chlorotrifluoromethane-----	DUP.
*1,2-Dibromoethane (Ethylene dibromide)-----	DOW, GTL, MCH, PPG, TNA.
Dibromomethane (Methylene bromide)-----	DOW.
1,4-Dibromopentane-----	PD.
1,2-Dibromo-1,1,2,2-tetrafluoroethane-----	DUP.
Dichlorobutadiene-----	DUP.
1,3-Dichloro-2-butene-----	DUP.
1,4-Dichlorobutene-----	DUP.
*Dichlorodifluoromethane-----	ACS, DUP, KAI, PAS, RCN, UCC.
*1,2-Dichloroethane (Ethylene dichloride)-----	ACS, AME, BAS, BFG, CO, DA, DOW, FRO, PPG, SHC, TNA, UCC.
*Dichloromethane (Methylene chloride)-----	ACS, DA, DOW, DUP, FRO, SFI.
1,2-Dichloropropane (Propylene dichloride)-----	BAS, DOW, JCC.
2,3-Dichloropropene-----	DOW.
Dichlorotetrafluoroethane-----	ACS, DUP.
1,1-Difluoroethane-----	ACS, DUP.
Difluorotetrachloroethane-----	DUP.
Diiodomethane (Methylene iodide)-----	NTB, SDW.
Hexafluoro-2-propane-----	DUP.
Hexafluoropropylene, monomer-----	DUP, PAS.
*Iodoethane (Ethyl iodide), tech-----	EK, FMT, RSA.
*Iodomethane (Methyl iodide)-----	EK, FMT, RSA.
1-Iodoperfluorohexane-----	DUP.
Lauryl chlorides-----	AZT.
Octafluorocyclobutane-----	DUP.
n-Octyl bromide-----	MCH.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)-----	DOW.
*Tetrachloroethylene (Perchloroethylene)-----	DA, DOW, FRO, HK, PPG, SFI, TNA.
Tetrafluoroethylene, monomer-----	DUP, TKL.
Tetrafluoroethylene, polymer-----	DUP.
Tetrafluoromethane-----	DUP.
*1,1,1-Trichloroethane (Methyl chloroform)-----	DA, DOW, FRO, PPG, TNA.
1,1,2-Trichloroethane (Vinyl trichloride)-----	DOW.
*Trichloroethylene-----	DA, DOW, HK, PPG, TNA.
*Trichlorofluoromethane-----	ACS, DUP, KAI, PAS, RCN, UCC.
1,2,3-Trichloropropane-----	DOW, SHC.
1,2,3-Trichloropropene-----	DOW.
Trichlorotrifluoroethane-----	ACS, PAS, x.
Vinyl bromide (Bromoethylene)-----	DOW, TNA.
*Vinyl chloride, monomer (Chloroethylene)-----	ACS, AME, BFG, CO, DOW, HN, MNO, PPG, SHC, TNA, USR.
Vinyl fluoride-----	DUP.
Vinylidene chloride, monomer (1,1-Dichloroethylene)-----	DOW, FRO.
Vinylidene fluoride-----	DUP.
All other-----	ALD, DUP, EK, HMY, RSA, SDW, TKL.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>All Other Miscellaneous Acyclic Chemicals</i>	
Acetyl peroxide-----	AZT, CHT, WTL.
Aluminum isopropoxide (Aluminum isopropylate)-----	KCH.
Butadiene monoxide-----	ALD.
*2-Butanone peroxide-----	AZT, CAD, NOC, RCI, WTC, WTL.
tert-Butyl hydroperoxide-----	AZT, CAD, NOC, OCC, WTC, WTL.
*tert-Butyl peroxide (Di-tert-butyl peroxide)-----	AZT, CAD, NOC, SHC, WTC, WTL.
Butyrolactone-----	GAF.
Caprolactone-----	UCC.
*Carbon disulfide-----	ACS, FMB, PAS, PPG, SFI.
2-Chloroethanol (Ethylene chlorohydrin)-----	UCC.
Decanoyl peroxide-----	WTC, WTL.
Dialdehyde starch-----	MLS.
2,3-Dibromopropanol-----	GTL.
2,5-Dimethyl-2,5-bis(2-ethyl-1-hexanoylperoxy)hexane-----	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane-----	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3-----	WTL.
*Epoxides, ethers, and acetals:	
Acetone dimethylacetal (2,2-Dimethoxypropane)-----	DOW.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)---	AAC, DIX.
Allyloxymethoxytriglycol-----	ARA.
Bis(2-chloroethoxy)methane (Dichloroethylformal)-----	TKL.
Bis(2-chloroethyl) ether (Dichlorodiethyl ether)-----	DOW.
Bis(2-chloro-1-methylethyl) ether (Dichloroisopropyl ether).	DOW.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)-----	DOW.
Butylene oxide-----	DOW.
Butyl ether (Di-n-butyl ether)-----	PUB, UCC.
Butyl vinyl ether-----	GAF.
2-Chloroethyl vinyl ether-----	AAC, UCC.
Chloromethyl methyl ether-----	RH.
2,2-Dichloro-1,1-difluoroethyl methyl ether-----	DOW.
Dimercaptodiethyl ether-----	EVN, USR.
Epichlorohydrin-----	DOW, SHC, x.
Epichlorohydrin polymer-----	NLC.
1,2-Epoxy-3-(tolylloxy)propane-----	DOW.
*Ethylene oxide-----	BAS, CAU, CEL, DOW, EXX, JCC, MAT, NWP, OMC, PPG, SHC, SNO, UCC.
Ethyl ether:	
Absolute-----	MAL, USI.
*Tech-----	EKX, ENJ, HPC, USI.
*U.S.P-----	MAL, OMS, USI.
Ethyl vinyl ether-----	GAF, UCC.
Glycidol (2,3-Epoxy-1-propanol)-----	DIX.
Isobutyl vinyl ether-----	GAF.
*Isopropyl ether-----	ENJ, SHC, UCC.
Methyl ether (Dimethyl ether)-----	UCC.
Methyl vinyl ether-----	GAF.
*Propylene oxide-----	BAS, CEL, DOW, JCC, OCC, OMC.
Triglycol dichloride-----	RH.
Vinyl methoxytriglycol-----	UCC.
Other-----	ALD, EK, GAF, ICI, SHC, UCC.
Epoxy curing agents-----	SHC.
Ethanethiol-----	EK.
2-(Ethylmercapto)ethanol-----	PLC.
Fats and oils, chemically modified-----	ABB, DOM.
Fatty acids, hydrogenated-----	GLY.
Fatty acids, non-hydrogenated-----	GLY.
Glucono-delta-lactone-----	PFZ.
Glutaraldehyde bis(sodium bisulfite)-----	EK, FMT, IDC.
n-Hexadecyl disulfide-----	PAS.
Hydrocarbons:	
n-Decane-----	HMY, PLC.
n-Dodecane-----	HMY, PLC.
1-Dodecene-----	HMY.

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TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>All other Miscellaneous Acyclic Chemicals--Continued</i>	
Hydrocarbons--Continued	
n-Eicosane-----	HMY.
Hexadecane-----	HMY.
n-Hexane-----	HMY.
Myrcene-----	IFF, NCI.
n-Nonane-----	HMY, PLC.
n-Octadecane-----	HMY.
1-Octadecene-----	HMY.
n-Octane-----	HMY, PLC.
1(and 2)-Octene-----	HMY, PLC.
Terpine hydrocarbons-----	CBY.
Tri-decane-----	PLC.
Other-----	HMY, PLC.
Hydrogenated tallow glycerides-----	CHL, GLY.
Hydroxypropyl methacrylate-----	CPV.
Lauroyl peroxide-----	AZT, WTL, WTC.
2-Mercaptoethanol-----	TCH.
Methylal (Dimethoxymethane)-----	CEL.
2-Methyl-2-hydroxymethylpropyl-2-methyl-2-hydroxy methyl propionate.	UCC.
Methyl sulfide (Dimethyl sulfide)-----	CRZ.
Methyl sulfoxide-----	CRZ.
Organo-aluminum compounds:	
Diethylaluminum chloride-----	TNA, TSA.
Diethylaluminum iodide-----	TSA.
Diisobutylaluminum chloride-----	TNA, TSA.
Diisobutylaluminum hydride-----	TSA.
Ethylaluminum chlorides-----	TNA, TSA.
Ethylaluminum sesquichloride-----	TNA, TSA.
Isopropenylaluminum-----	TSA.
Methylaluminum sesquichloride-----	TNA.
Triethylaluminum-----	TNA, TSA.
Triisobutylaluminum-----	TNA, TSA.
Trimethylaluminum-----	TNA.
Organo-Boron compounds:	
Boron fluoride - ethyl ether complex-----	ACS.
Triethylborane-----	TSA.
Trimethoxyboroxine-----	SFS.
Trimethyl borate-----	MHI.
Organo-lead compounds:	
Mixed lead alkyds-----	TNA.
*Tetraethyllead-----	DUP, PPG, TNA.
Tetramethyllead-----	DUP, NLC, TNA.
Tetra(methyl-ethyl)lead-----	DUP, PPG.
Organo-lithium compounds:	
n-Butyllithium-----	FTE.
sec-Butyllithium-----	FTE.
Organo-magnesium halides-----	ARA.
Organo-mercury compounds-----	EK, NTB.
*Organo-silicon compounds:	
Aminopropyltriethoxysilane-----	UCC.
Chloropropyltrimethoxysilane-----	UCC.
α-Chloropropyltrichlorsilane-----	UCC.
Chlorotrimethylsilane-----	DCC, UCC.
Dichlorodimethylsilane-----	DCC, UCC.
Dichloromethylsilane-----	DCC, UCC.
Dichloromethylvinylsilane-----	UCC.
α-Glycidoxypropyltrimethoxy silane-----	UCC.
Mercaptopropyltrimethoxysilane-----	UCC.
α-Methacryloxypropyltrimethoxy silane-----	UCC.
Methyltriethoxysilane-----	UCC.
Polyoxyalkylenes silicone-----	UCC.
Silicone greases-----	DCC, SPD.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1973--CONTINUED

Chemical	Manufactures' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>All Other Miscellaneous Acyclic Chemicals--Continued</i>	
*Silicone fluids-----	DCC, ORO, SPD, UCC.
Trichloromethylsilane-----	DCC.
Trichlorovinylsilane-----	UCC.
Vinyl(tris-2-methoxyethoxy)silane-----	UCC.
Other organo-silicon compounds-----	PLC, SFS, SWS, UCC.
Organo-tin compounds:	
Bis(tributyltin) oxide-----	CCW, x.
Dibutyltin dichloride-----	CCW, x.
Dibutyltin dilaurate-----	CCA.
Dibutyltin maleate-----	CCA.
Dibutyltin methoxide-----	CCA.
Dibutyltin oxide-----	x.
Organo-tin mercaptide-----	CCW.
Tributyltin chloride-----	PCW, x.
Tributyltin fluoride-----	x.
Other-----	CCA, x.
Organo-zinc compounds-----	TSA.
Oxidized hydrocarbon mixtures-----	ALX.
Perchloromethanethio (Perchloromethyl mercaptan)-----	SFC.
*Phosgene (Carbonyl chloride)-----	ACS, CTN, DUP, MOB, OMC, OTC, PPG, RUC, UPJ, UCC, VDM.
Pine oil, synthetic-----	CBY, GLD, NCI.
Polyethylene adipate-----	BKL.
β -Propiolactone-----	CEL.
Rare sugars-----	PFN, RSA.
Sodium ethoxide-----	FMP.
Sodium formaldehyde bisulfite-----	EK, IDC.
Sodium formaldehyde sulfoxylate-----	DA, RH.
*Sodium methoxide (Sodium methylate)-----	DA, OMC, RBC.
Sodium succinaldehyde bisulfite-----	x.
Succinyl peroxide-----	WTL.
Tetrakis(hydroxymethyl)phosphonium chloride-----	HK.
Trioctylphosphine oxide-----	EK.
Zinc formaldehyde sulfoxylate-----	DA.
Other-----	ALD, ALX, BKL, BJI, CEL, DUP, EK, FER, GNM, GYR, HMY, NLC, PD, PIC, PLC, RSA, SAR, SDW, SFS, TNA, VND, WTL, x, x, x.

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TABLE 3.--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1973

ALPHABETICAL DIRECTORY BY CODE

[Names of miscellaneous chemical manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
AAC	Alcolac Chemical Corp.	CGY	Ciba-Geigy Corp. &
AAE	American Aniline & Extract Co., Inc.		Ciba Pharmaceutical Co.
ABB	Abbott Laboratories	CHH	Charles Hansen's Laboratory, Inc.
ABC	Balchem Corp.	CHL	Chemol, Inc.
	Allied Chemical Corp.:	CHN	Cherokee Nitrogen Co.
ACN	Agricultural Div.	CHP	C. H. Patrick & Co., Inc.
ACP	Plastics Div.	CHT	Chattem Drug & Chemical Co., Chattem
ACS	Specialty Chemicals Div.		Chemicals Div.
ACY	American Cyanamid Co.	CLK	Clark Chemical Corp.
AGY	Agway, Inc., Olean Nitrogen Complex	CLN	Standard Brands, Inc., Clinton Corp.
AIP	Air Products & Chemicals, Inc.		Processing Co. Div.
AKL	Arkla Chemical Corp.	CNC	Columbia Nitrogen Corp.
AKS	Arkansas Co., Inc.	CNP	Nipro Inc.
ALB	Ames Laboratories, Inc.	CO	Continental Oil Co.
ALC	Alco Chemical Corp.	COL	Collier Carbon & Chemical Corp.
ALD	Aldrich Chemical Co., Inc.	COM	Commercial Solvents Corp.
ALF	Allied Chemical Corp., Fibers Div.	CP	Colgate-Palmolive Co.
ALX	Alox Corp.	CPS	CPS Chemical Co.
AMB	American Bio-Synthetic Corp.	CPV	Cook Paint & Varnish Co., Inc.
AME	American Chemical Corp.	CRN	CPC International, Inc.
APD	Atlas Powder Co., Subsidiary of Tyler	CRT	Crest Chemical Corp.
	Corp.	CRZ	Crown Zellerbach Corp., Chemical Products
ARA	Arapahoe Chemicals, Inc. Subsidiary of		Div.
	Syntex (U.S.A.), Inc.	CTN	Chemetron Corp., Organic Chemical Div.
ARC	Armak Co.	CWN	Upjohn Co., Fine Chemical Div.
ARD	Ardmore Chemical Co., Inc.		
ARM	USS Agri-Chemicals, Div. of U. S. Steel Corp.	DA	Diamond Shamrock Corp.
ARS	Arsynco, Inc.	DAN	Dan River, Inc.
ARZ	Arizona Chemical Co.	DBC	Dow Badische Co.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	DCC	Dow Corning Corp.
ASL	Ansul Chemical Co.	DEX	Dexter Chemical Corp.
ATR	Atlantic Richfield Co., ARCO Div.	DIX	Dixie Chemical Co.
AV	FMC Corp., Fiber Div.	DLI	Dawe's Laboratories, Inc.
AZS	AZ Products Co. Div. of AZS Corp.	DOL	Dole Co., Div. of Castle & Cook, Inc.
AZT	Dart Industries, Inc., Aztec Chemicals Div.	DOM	Dominion Products, Inc.
		DOW	Dow Chemical Co.
BAS	BASF Wyandotte Corp.	DSO	DeSoto, Inc.
BAX	Baxter Laboratories, Inc.	DUP	E. I. DuPont de Nemours & Co., Inc.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical	DVC	Dover Chemical Corp.
	Co. Div.		
BFR	Pace National Corp.	EFH	E. F. Houghton & Co.
BJL	Burdick & Jackson Laboratories, Inc.	EK	Eastman Kodak Co.:
BKC	J. T. Baker Chemical Co.	EKT	Tennessee Eastman Co. Div.
BKL	Millmaster Onyx Corp., Millmaster Chemical	EKX	Texas Eastman Co. Div.
	Co. Div., Berkeley Chemical Dept.	ELP	El Paso Products Co.
BOR	Borden Co., Borden Chemical Co. Div.	EMR	Emery Industries, Inc.
BPC	Stauffer Chemical Co., Specialty Chemical	ENJ	Exxon Chemical Co. U.S.A.
	Div., Benzol Products	ESA	East Shore Chemical Co., Inc.
BRD	Lonza, Inc.	EVN	Evans Chemetics, Inc.
BUK	Buckeye Cellulose Corp.		
		FCA	C. F. Industries, Inc.
CAD	Noury Chemical Corp.	FER	Ferro Corp.:
CAU	Calcasieu Chemical Corp.		Ferro Chemical Div.
CBD	Chembond Corp.		Grant Chemical Div.
CBY	Crosby Chemicals, Inc.	FIN	Fine Organics, Inc.
CCA	Cincinnati Milacron Chemicals, Inc.		FMC Corp.:
CCC	Chase Chemical Corp.	FMB	Industrial Chemical Div.
CCH	Pearsall Chemical Corp.	FMP	Industrial Chemical Div.
CCW	Cincinnati Milacron Chemicals, Inc.	FMT	Fairmount Chemical Co., Inc.
CEL	Celanese Corp.:	FRF	Firestone Synthetic Fibers Co. Div.
	Celanese Chemical Co.	FRO	Vulcan Materials Co., Chemicals Div.
	Celanese Fibers Co.	FTE	Foot Mineral Co.
CFA	Cooperative Farm Chemicals Association	FTX	CF Industries, Inc., Fremont Nitrogen
			Complex

TABLE 3.--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of company	Code	Name of company
GAF	GAF Corp., Chemical Div.	MMM	Minnesota Mining & Manufacturing Co.
GAN	Gane's Chemical Works, Inc.	MNO	Monochem, Inc.
GCC	W. R. Grace & Co., Agricultural Chem. Group	MOB	Mobay Chemical Co.
GFS	G. Frederick Smith Chemical Co.	MON	Monsanto Co.
GIV	Givaudan Corp.	MOR	Marathon Morco, Co.
GLD	SCM Corp. Glidden-Durkee Div.	MRK	Merck & Co., Inc.
GLY	Glyco Chemicals, Inc.	MRT	Morton Chemical Co., Div. of Morton-Norwich Products, Inc.
GNM	General Mills Chemicals, Inc.	MSC	Mississippi Chemical Corp.
GOC	Gulf Oil Corp., Gulf Oil Chemicals Co.-U.S.	MTO	Montrose Chemical Corp. of California
GP	Georgia-Pacific Corp.		
GPR	Grain Processing Corp.		
GRD	W. R. Grace & Co., Polymers & Chemicals Div.	NCI	Union Carbide Corp., Chemical Div.
GRH	W. R. Grace & Co., Hatco Chemical Div.	NEP	Nepera Chemical Co.
GRO	Millmaster Onyx Corp., A. Gross & Co. Div.	NES	Nease Chemical Co., Inc.
GTL	Great Lakes Chemical Corp.	NEV	Neville Chemical Co.
GYR	Goodyear Tire & Rubber Co.	NLC	Nalco Chemical Co.
		NOC	Norac Co., Inc. and Mathe Chemical Co. Div.
HAB	Halby Products Co., Inc.	NOR	Norwich Pharmacal Co.
HAL	C.P. Hall Co. of Illinois	NSC	National Starch & Chemical Corp.
HDG	Hodag Chemical Corp.	NTB	National Biochemical Co.
HEX	Hexagon Laboratories, Inc.	NTL	NL Industries, Inc.
HFT	Hoffman-Taff, Inc.	NW	Northwestern Chemical Co.
HK	Hooker Chemicals & Plastic Corp.:	NWP	Northern Petrochemicals Co.
HKD	Durez Plastics Div.		
HKY	Hawkeye Chemical Co.	OCC	Oxirane Chemical Co.
HMP	W. R. Grace & Co., Dewey & Almy Chemical Div., Organic Chemical	OH	Airco, Inc., Ohio Medical Product Div.
HMV	Humphrey Chemical Co.	OMC	Olin Corp.
HN	Tenneco Chemicals, Inc.	OMS	E. R. Squibb & Sons, Inc.
HPC	Hercules, Inc.	ONX	Millmaster Onyx Corp., Onyx Chemical Co.
HRT	Hart Products Corp.	OPC	Orbis Products Corp.
HSB	Harshaw Chemical Co., Div. of Kewanee Oil Co.	ORO	Chevron Chemical Co.
HST	American Hoechst Corp.	ORT	Roehr Chemicals, Inc.
HUM	Kraftco Corp., Humko Products Chemical Div.	OTC	Storj Chemical Corp.
		OXC	Oxochem Enterprises
ICI	ICI America, Inc.	PAR	Pennzoil Co., Penneco Div.
IDC	Industrial Dyestuff Co.	PAS	Pennwalt Corp.
IFF	International Flavors & Fragrances, Inc.	PCW	Pfister Chemical Works
IOC	Ionac Chemical Co. Div. of Sybron Corp.	PD	Parke, Davis & Co.
		PEN	CPC International, Inc., S. B. Penick Div.
JCC	Jefferson Chemical Co., Inc.	PFN	Pfanstiehl Laboratories, Inc.
JDC	Nipak, Inc.	PFW	Polak's Frutal Works, Inc.
JFR	George A. Jeffrey's & Co., Inc.	PFZ	Pfizer, Inc.
JOR	Jordan Chemical Co.	PG	Procter & Gamble Co.
JTC	Joseph Turner & Co.	PHR	Pharmachem Corp.
		PIC	Pierce Chemical, Inc.
KAI	Kaiser Aluminum & Chemical Corp., Kaiser Chemicals Div.	PLB	P-L Biochemicals, Inc.
KCC	Kennecott Copper Corp., Chino Mines Div.	PLC	Phillips Petroleum Co. & Phillips Pacific Chemical Co.
KCH	Joseph Ayers, Inc.	PLS	Plastics Engineering Co.
KCU	Kennecott Copper Corp., Utah Copper Div.	PHP	Premier Malt Products, Inc.
KF	Kay-Fries Chemicals, Inc.	PPC	Premier Petrochemical Co.
KON	H. Kohnstamm & Co., Inc.	PPG	Pittsburgh Plate Glass Co.
KPT	Koppers Co., Inc., Organic Materials Div.	PRD	Productol Chemical Co., Inc.
		PTT	Petro-Tex Chemical
LAK	Lakeway Chemical, Inc.	PUB	Publicker Industries, Inc.
LAM	LaMotte Chemical Products Co.	PVO	PVO International, Inc.
LEM	Napp Chemicals, Inc.		
LIL	Eli Lilly & Co., Inc.	QCP	Quaker Chemical Corp.
LUB	Lubrizol Corp.	QKO	Quaker Oats Co.
MAL	Mallinckrodt Chemical Works	RBC	Fike Chemicals, Inc.
MAT	Koch Chemical Co.	RCI	Reichhold Chemicals, Inc.
MCH	Michigan Chemical Corp.	RCN	Racon, Inc.
MCI	Mooney Chemicals, Inc.	RDA	Rhodia, Inc.
MHI	Ventron Corp.	REH	Reheis Chemical Co. Div. of Armour Pharmaceutical Co.
MLS	Miles Laboratories, Inc., Marshall Div. & Summer Div.	REM	Remington Arms Co., Inc.
		RH	Rohm & Haas Co.
		ROB	Robeco Chemicals, Inc.

TABLE 3.--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1973--CONTINUED

Code	Name of company	Code	Name of company
RPC	Millmaster Onyx Corp., Refined-Onyx Div.	TCH	Emery Trylon Chemicals Div. Industries Inc.
RSA	R.S.A. Corp.	TEK	Teknor Apex Co.
RJB	Hooker Chemical Corp., Ruco Div.	TER	Terra Chemicals International, Inc.
RUC	Rubicon Chemicals, Inc.	TID	Getty Oil Co.
S	Sandoz, Inc., Sandoz Colors & Chemical Div.	TKL	Thiokol Chemical Corp.
SAL	Salsbury Laboratories	TNA	Ethyl Corp.
SAR	Sartomer Industries, Inc.	TNI	The Gillette Co., Chemical Div.
SBC	Scher Bros.	TRI	Triad Chemicals
SCH	Schering Corp.	TRO	Troy Chemical Co.
SDC	Martin-Marietta Corp., Sodeyco Div.	TSA	Texas Alkyls, Inc.
SDH	Sterling Drug, Inc.:	TX	Texaco, Inc.
SDW	Hilton-Davis Chemical Co. Div.	TZC	Tizon Chemical Corp.
SFA	Winthrop Laboratories Div.	UCC	Union Carbide Corp.
SFC	Stauffer Chemical Co.:	UOP	Universal Oil Products Co., UOP Chemical Div.
SFI	Agricultural Div.	UPJ	Upjohn Co.
SFS	Calhio Chemicals, Inc. Div.	UPM	Universal Oil Products Co.
SHA	Industrial Div.	USB	U.S. Borax Research Corp.
SHC	Specialty Chemical Div.	USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.
SHF	Shanco Plastics & Chemical Co.	USR	Uniroyal, Inc., Chemical Div.
SHP	Shell Oil Co., Shell Chemical Co. Div.	USS	USS Chemicals Div. of U.S. Steel Corp.
SK	Kraftco Corp., Humko Sheffield Div.	VAL	Valchem
SKG	Shepherd Chemical Co.	VDM	Van De Mark Chemical Co.
SKO	Smith, Kline & French Laboratories	VEL	Velsicol Chemical Corp., Inc.
SM	Sunkist Growers, Inc.	VGC	Virginia Chemicals, Inc.
SNI	Skelly Oil Co.	VLN	Valley Nitrogen Producers, Inc.
SNO	Mobil Oil Corp., Mobil Chemical Co.:	VND	Van Dyk & Co., Inc.
SNW	Chemical Coatings Div.	WAG	West Agro Chemical, Inc.
SOC	Industrial Chemical Div.	WAY	Phillip A. Hunt Chemical Corp., Wayland Chemical Div.
SOH	Kaiser Aluminum & Chemical Corp., Kaiser Agricultural Chemicals Div.	WBC	Worthington Biochemical Corp.
SPD	SunOlin Chemical Co.	WBG	White & Bagley Co.
SPR	Sun Chemical Corp., Chemical Div.	WCL	Wright Chemical Co.
STP	Standard Oil Co. of California, Chevron Chemical Co.	WES	Borg-Warner Corp., Weston Chemical Div.
SW	Vistron Corp.	WLC	Agrico Chemical Co.
SWS	General Electric Co., Silicon Products Dept.	WM	Inolex Corp.
SYP	Scientific Protein Laboratories	WMP	Essex International, Inc.
TAE	Stepan Chemical Co.	WSN	Mallinckrodt Chemical Works, Washine Div.
TCC	Sherwin-Williams Co.	WTC	Witco Chemical Co., Inc.
	Stauffer Chemical Co., SWS Silicones Div.	WTH	Union Camp Corp., Harchem Div.
	Dart Industries, Inc., Synthetic Products Co. Div.	WTL	Pennwalt Corp., Lucidal Div.
		WYC	Wycon Chemical Co.
		ZGL	Carolina Processing Corp.

Note.--Complete names and addresses of the above reporting companies are listed in Table 1 of the Appendix.

APPENDIX

DIRECTORY OF MANUFACTURERS

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. International Trade Commission for 1973 are listed below alphabetically, together with their identification codes as used in table 2 of the 14 individual sections of this report]

Identi- fication code	Name of company	Office address
AEP	A & E Plastic Pak Co., Inc-----	14505 E. Proctor Ave., Industry, CA 91747.
AZS	AZS Corp.: AZ Products Co. Div-----	2525 S. Combee Rd., Eaton Park, FL 33840.
ABB	Lancaster Chemical Co. Div-----	Broad & 13th St., Carlstadt, NJ 07072.
ABS	Abbott Laboratories-----	14th St. and Sheridan Rd., N. Chicago, IL 60664.
UDW	Abex Corp., American Brakelok Div-----	2401 S. Loudoun St., Winchester, VA 22601.
	Accent International, Inc., Sub. of William Underwood Co.	One Red Devil Lane, Watertown, MA 02172.
WLC	Agrico Chemical Co-----	P. O. Box 3166, Tulsa, OK 74101.
AGY	Agway, Inc., Olean Nitrogen Div-----	1446 Buffalo St., Olean, NY 14760.
OH	Airco, Inc., Ohio Medical Products Div-----	3030 Airco Dr., Madison, WI 53701.
AIP	Air Products & Chemicals, Inc., Chemicals Group	656E Swedesford Rd., Wayne, PA 19087.
ALC	Alco Chemical Corp.-----	Trenton Ave. and William St., Philadelphia, PA 19134.
AAC	Alcolac, Inc-----	3440 Fairfield Rd., Baltimore, MD 21226.
ALD	Aldrich Chemical Co., Inc-----	940 W. St. Paul Ave., Milwaukee, WI 53233.
ALL	Alliance Chemical Co., Inc-----	33 Avenue P, Newark, NJ 07105.
ASC	Allied Chemical Corp.-----	Columbian Rd., Morristown, NJ 07960.
ALF	Fibers Div-----	1 Times Square, New York, NY 10036.
ACP	Plastics Div-----	P. O. Box 2365R, Morristown, NJ 07960.
ACS	Specialty Chemicals Div-----	P. O. Box 1219R, Morristown, NJ 07960.
ACU	Union Texas Petroleum Div-----	P. O. Box 2120, Houston, TX 77001.
ACN	Agricultural Dept-----	P. O. Box 2120, Houston, TX 77001.
ALX	Alox Corp-----	3943 Buffalo Ave., Niagara Falls, NY 14302.
ALP	Alpha Laboratories, Inc-----	1685 S. Fairfax St., Denver, CO 80222.
AMC	Amchem Products, Inc. Div. of Rorer- Amchem, Inc.	Brookside Ave., Ambler, PA 19002.
AES	Amerace Corp., Penetone Div-----	74 Hudson Ave., Tenafly, NJ 07670.
AAE	American Aniline & Extract Co., Inc-----	Venango and F Sts., Philadelphia, PA 19134.
AMB	American Bio-Synthetics Corp-----	710 W. National Ave., Milwaukee, WI 53204.
MAR	American Can Co-----	American Lane, Greenwich, CT 06830.
AME	American Chemical Corp-----	2112 E. 223d St., P. O. Box 1110, Long Beach, CA 90810.
AC	American Color & Chemical Corp-----	P. O. Box 3063, Paterson, NJ 07509.
ACY	American Cyanamid Co-----	Wayne, NJ 07470.
HST	American Hoechst Corp-----	129 Quidnick St., Coventry, RI 02816.
AMO	American Oil Co. (Texas)-----	200 Randolph Dr., Chicago, IL 60680.
APF	American Petrofina Co. of Texas-----	P. O. Box 849, Port Arthur, TX 77604.
ASY	American Synthetic Rubber Corp-----	P. O. Box 360, Louisville, KY 40201.
ALB	Ames Laboratories, Inc-----	200 Rock Lane, Milford, CT 06460.
ACC	Amoco Chemical Corp-----	200 E. Randolph Dr., Chicago, IL 60601.
SOI	Amoco Oil Co. (Maryland)-----	200 E. Randolph Dr., Chicago, IL 60601.
PAN	Amoco Production Co-----	P. O. Box 591, Tulsa, OK 74102.
ASL	Ansul Chemical Co-----	1 Stanton St., Marinette, WI 54143.
APX	Apex Chemical Co., Inc-----	200 S. 1st St., Elizabethport, NJ 07206.
APO	Apollo Colors, Inc-----	899 Skokie Blvd., Northbrook, IL 60062.
ARA	Arapahoe Chemicals, Inc. Sub. /Syntex (U.S.A.), Inc.	2855 Walnut St., Boulder, CO 80302.
KPP	ARCO/Polymers, Inc-----	1500 Market St., Philadelphia, PA 19101.
ARD	Ardmore Chemical Co., Inc-----	840 Valley Brook Ave., Lyndhurst, NJ 07071.
ARN	Arenol Chemical Corp-----	40-33 23d St., Long Island City, NY 11101.
HAB	Argus Chemical Corp-----	633 Court St., Brooklyn, NY 11236.
ARZ	Arizona Chemical Co-----	Wayne, NJ 07470.
AKS	Arkansas Co., Inc-----	185 Foundry St., Newark, NJ 07105.
AKL	Arkla Chemical Corp-----	P. O. Box 825, Helena, AK 72342.
ARC	Armak Co-----	300 S. Wacker Dr., Chicago, IL 60606.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identification code	Name of company	Office address
AGP	Armour-Dial, Inc-----	P. O. Box 4309, Chicago, IL 60606.
ARP	Armour Pharmaceutical Co-----	Greyhound Tower, Phoenix, AZ 85077.
ARK	Armstrong Cork Co-----	Liberty and Charlotte Sts., Lancaster, PA 17604.
ARL	Arol Chemical Products Co-----	649 Ferry St., Newark, NJ 07105.
ARS	Arsynco, Inc-----	P. O. Box 8, Carlstadt, NJ 07072.
ASH	Ashland Oil, Inc-----	1401 Winchester Ave., Ashland, KY 41101 and P. O. Box 2458, Columbus, OH 43216.
	Ashland Chemical Co. Div-----	5200 Blazer Blvd., Dublin, OH 43215.
BLA	Astor Products, Inc., Blue Arrow Div-----	P. O. Box 2366, Jacksonville, FL 32203.
AST	Astra Pharmaceutical Products, Inc-----	Neponset St., Worcester, MA 01606.
ATL	Atlantic Chemical Corp-----	10 Kingsland Rd., Nutley, NJ 07110.
ATR	Atlantic Richfield Co-----	515 S. Flower St., Los Angeles, CA 90071.
ARD	Atlas Powder Co. Sub. of Tyler Corp-----	P. O. Box 87, Joplin, MO 64801.
APR	Atlas Processing Co-----	P. O. Box 9389, 3546 Midway St., Shreveport, LA 71109.
KCH	Joseph Ayers, Inc-----	Route #2, Bethlehem, PA 18017.
BAS	BASF Wyandotte Corp-----	100 Cherry Hill Rd., Parsippany, NJ 07054.
BRP	BP Oil Corp-----	270 Midland Bldg., Cleveland, OH 44115.
BKC	J. T. Baker Chemical Co-----	222 Red School Lane, Philipsburg, NJ 08865.
ABC	Balchem Corp-----	Intersections 6 and 284, State Hill, NY 10973.
BAL	Baltimore Paint & Chemical Corp-----	2325 Hollins Ferry Rd., Baltimore, MD 21230.
BAX	Baxter Laboratories, Inc-----	6301 Lincoln Ave., Morton Grove, IL 60053.
	Baychem Corp.:	
CHG	Chemagro Div-----	P. O. Box 4913, Station "F", Kansas City, MO 64120.
VPC	Verona Div-----	Iorio Ct., Union, NJ 07083.
BAO	Bayoil Co., Inc-----	2 Union St., Peabody, MA 01960.
BEE	Beecham, Inc-----	65 Industrial S., Clifton, NJ 07012.
BCM	Belding Chemical Industries-----	1430 Broadway, New York, NY 10018.
BLP	Belpport Co., Inc-----	553 Dawson Dr., Camarillo, CA 93010.
BME	Bendix Corp., Friction Materials Div-----	P. O. Box 238, Troy, NY 12180.
BEN	Bennett's-----	65 W. 1st S. St., Salt Lake City, UT 84110.
BDO	Benzenoid Organics, Inc-----	P. O. Box 157, Bellingham, MA 02019.
PDC	Berncolors-Poughkeepsie, Inc-----	75 N. Water St., Poughkeepsie, NY 12602.
BOC	Biocraft Laboratories, Inc-----	12 Industrial Way, Waldrich, NJ 07463.
BID	Bio-Derivatives Corp-----	646 Nassau Ave., Freeport, NY 11520.
BOR	Borden, Inc., Borden Chemical Div-----	50 W. Broad St., Columbus, OH 43215.
MCB	Borg-Warner Corp., Borg-Warner Chemicals-----	P. O. Box 1868, Parkersburg, WV 26101.
WES	Borg-Warner Corp., Weston Chemical Div-----	103 Spring Valley Rd., Montvale, NJ 07645.
BFP	Breddo Food Products Corp-----	18th and Kansas Avenue, Kansas City, KS 66105.
BRS	Bristol-Meyers Co., Bristol Laboratories Div.	P. O. Box 657, E. Syracuse, NY 13057.
BRU	M. A. Bruder & Sons, Inc-----	52d St. and Grays Ave., Philadelphia, PA 19143.
BUK	Buckeye Cellulose Corp-----	2899 Jackson Ave., Memphis, TN 38108.
BKM	Buckman Laboratories, Inc-----	1256 N. McLean Blvd., Memphis, TN 38108.
CD	Budd Co., Polychem Div-----	70 S. Chapel St., Newark, DE 19711.
BJL	Burdick & Jackson Laboratories, Inc-----	1953 S. Harvey St., Muskegon, MI 49442.
BUR	Burroughs & Wellcome Co-----	3030 Cornwallis Rd., Research Triangle Park, NC 27709.
FCA	C.F. Industries, Inc-----	P. O. Box 87, Harrison, TN 37341.
FTX	Fremont Nitrogen Complex-----	P. O. Box 68, RFD#3, Fremont, NB 68025.
CRN	CPC International, Inc-----	International Plaza, Englewood Cliffs, NJ 07632.
ACR	Acme Resin Co. Div-----	1401 Circle Avenue, Forest Park, IL 60130.
PEN	S. B. Penick Co-----	100 Church St., New York, NY 10007.
CPS	CPS Chemical Co-----	P. O. Box 162, Old Bridge, NJ 08857.
CBT	Samuel Cabot, Inc-----	One Union St., Boston, MA 02108.
CAU	Calcasieu Chemical Corp-----	P. O. Box 1522, Lake Charles, LA 70601.
CBM	Carborundum Co-----	P. O. Box 477, Niagara Falls, NY 14302.
CGI	Cargill, Inc-----	Cargill Bldg., Minneapolis, MN 55402.
ZGL	Carolina Processing Corp-----	P.O. Box 161, Severn, NC 27877.
CRS	Carus Corp., Carus Chemical Co. Div-----	1500 8th St., LaSalle, IL 61301.
DOL	Castle & Cook, Inc., Hawaii Region-----	P. O. Box 338, Honolulu, HI 96801.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
CEL	Celanese Corp.: Celanese Chemical Co----- Celanese Coatings & Specialties Co----- Celanese Fibers Co----- Celanese Plastics Co-----	1211 Avenue of Americas, New York, NY 10036. P. O. Box 1863, Louisville, KY 40202. P. O. Box 1414, Charlotte, NC 28232. 550 Broad St., Newark, NJ 07102.
CPR	Certified Processing Corp-----	Route 22 & Harding Terrace, Hillside, NJ 07205.
GRS	Champlin Petroleum Co-----	P. O. Box 9176, Corpus Christi, TX 78408.
CPP	Charmin Paper Products Co-----	6000 Center Hill Rd., Cincinnati, OH 45224.
SOG	Charter International Oil Co-----	P. O. Box 5008, Houston, TX 77012.
CCC	Chase Chemical Corp-----	3527 Smallman St., Pittsburgh, PA 15201.
CHT	Chattem Drug & Chemical Co., Chattem Chemicals Div.	1715 W. 38th St., Chattanooga, TN 37409.
CBD	Chembond Corp----- Chemed Corp.:	P. O. Box 270, Springfield, OR 97477.
GRC	Dubois Chemicals Div-----	Dubois Tower, Cincinnati, OH 45202.
GRL	Vestal Laboratories Div----- Chemetron Corp.:	4963 Manchester Ave., St. Louis, MO 63110.
TAE	Medical Products Div-----	1801 Lilly St., St. Louis, MO 63110.
CTN	Organic Chemicals Div-----	P. O. Box 480, Newport, TN 37821.
HSC	Pigments Div-----	491 Columbia Ave., Holland, MI 49423.
CI	Chem-Fleur, Inc-----	200 Pulaski St., Newark, NJ 07105.
CHF	Chemical Formulators, Inc-----	P. O. Box 26, Nitro, WV 25143.
CKL	Chemlek Laboratories, Inc-----	4040 W. 123d St., Alsip, IL 60658.
CHL	Chemol, Inc-----	P. O. Box 20687, Greensboro, NC 27420.
CPX	Chemplex Co-----	3100 Golf Rd., Rolling Meadows, IL 60008.
CHN	Cherokee Nitrogen Co-----	P. O. Box 429, Pryor, OK 74361.
ORO	Chevron Chemical Co-----	200 Bush St., San Francisco, CA 94120.
CPC	Childs Pulp Colors, Inc-----	5 Albany St., Springfield, MA 01101.
CHC	Choate Chemical Co., Div. of E.R. Carpenter	P. O. Box 58188, Houston, TX 77058.
CHH	CHR. Hansen's Laboratory, Inc-----	9015 W. Maple St., Milwaukee, WI 53214.
CGY	Ciba-Geigy Corp----- Agrochemical Div----- Ciba Pharmaceutical Co-----	444 Saw Mill River Rd., Ardsley, NY 10502. P. O. Box 11422, Greensboro, NC 27409. 556 Morris Ave., Summit, NJ 07901.
CCA & CCW	Cincinnati Milacron Chemicals, Inc-----	500 Jersey Ave., New Brunswick, NJ 08903 and West St., Reading, OH 45215.
CIN	Cindet Chemicals, Inc----- Cities Service Co.:	2408 Doyle St., Greensboro, NC 27406.
CBN	Columbia Div-----	3200 W. Market St., Akron, OH 44313.
TEN	Copperhill Operations-----	Copperhill, TN 37317.
LVE	Levey Div-----	630 Glendale-Milford Rd., Cincinnati, OH 45215.
CSO	Cities Service Oil Co-----	P. O. Box 300, Tulsa, OK 74102.
CBN	Petrochem Operations-----	P. O. Box 1522, Lake Charles, LA 70601.
CLK	Clark Chemical Corp-----	131st St. & Kedzie Ave., Blue Island, IL 60406.
CLY	W. A. Cleary Corp-----	P. O. Box 749, New Brunswick, NJ 08903.
CLI	Clintwood Chemical Co-----	4342 S. Wolcott Ave., Chicago, IL 60609.
CSP	Coastal States Petrochemical Co-----	P. O. Drawer 521, Corpus Christi, TX 78403.
CP	Colgate-Palmolive Co-----	300 Park Ave., New York, NY 10022.
COL	Collier Carbon & Chemical Corp-----	P. O. Box 60455, Los Angeles, CA 90060.
CLD	Colloids, Inc-----	394 Frelinghuysen Ave., Newark, NJ 07114.
CNC	Columbia Nitrogen Corp-----	P. O. Box 1483, Augusta, GA 30903.
CMP	Commercial Products Co., Inc-----	117 Ethel Ave., Hawthorne, NJ 07641.
COM	Commercial Solvents Corp-----	245 Park Ave., New York, NY 10017.
COR	Commonwealth Oil Refining Co., Inc-----	Petrochemical Complex, Ponce, PR 00731.
CPI	Commonwealth Petrochemicals, Inc-----	Petrochemical Complex, Ponce, PR 00731.
CNI	Conap, Inc-----	184 E. Union St., Allegany, NY 14706.
DAV	Conchemco, Inc-----	10000 Marshall Dr., Lenexa, KS 66201.
SED	Colony Paint-----	18th & Garfield Sts., Kansas City, MO 64127.
CNE	Eastern Div-----	P. O. Box 778, Baltimore, MD 21203.
CON	Concord Chemical Co., Inc-----	17th & Federal Sts., Camden, NJ 08105.
CWP	Consolidated Papers, Inc-----	Wisconsin Rapids, WI 54494.
CTL	Continental Chemical Co-----	270 Clifton Blvd., Clifton, NJ 07015.
CO	Continental Oil Co-----	Park Eighty Plaza East, Saddle Brook, NJ 07662.
CPV	Cook Paint & Varnish Co-----	1412 Knox St., N. Kansas City, MO 64116.
CFA	Cooperative Farm Chemicals Association-----	P. O. Box 308, Lawrence, KS 66044.
COO	Cooper Polymers, Inc-----	820 Woburn St., Wilmington, MA 01887.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
COP	Coopers Creek Chemical Corp-----	River Rd., W. Conshohocken, PA 19428.
CPY	Copolymer Rubber & Chemical Corp-----	P. O. Box 2591, Baton Rouge, LA 70821.
SWC	Corco Cyclohexane, Inc-----	Petrochemicals Complex, Ponce, PR 00731.
CSD	Cosden Oil & Chemical Co-----	P. O. Box 1311, Big Spring, TX 79720.
CRT	Crest Chemical Corp-----	225 Emmet St., Newark, NJ 07114.
CRD	Croda, Inc-----	51 Madison Ave., New York, NY 10010.
ALT	Crompton & Knowles Corp., Dyes & Chemical Div.	500 Pear St., Reading, PA 19603.
CBY	Crosby Chemicals, Inc-----	P. O. Box 460, Picayune, MS 39466.
CCP	Crown Central Petroleum Corp-----	1 N. Charles St., Baltimore, MD 21201.
MRA	Crown Metro, Inc-----	12 Dudley St., Providence, RI 02901.
CRZ	Crown Zellerbach Corp., Chemical Products Div.	Camas, WA 98607.
CTR	Customs Resins, Inc-----	Hyw #136, Henderson KY 42420.
DAN	Dan River, Inc-----	Danville, VA 24541.
AZT	Dart Industries, Inc.:	
RCC	Azetec Chemicals Div-----	555 Garden St., Elyria, OH 44035.
DYS	Rexene Polymers Co. Div-----	W. 115 Century Rd., Paramus, NJ 07652.
DLI	Davies-Young Co-----	2700 Wagner Place, Maryland Heights, MO 63043.
SYL	Dawe's Laboratories, Inc-----	450 State St., Chicago Heights, IL 60411.
DEG	Deering Milliken, Inc., Milliken Chemical Div.	P. O. Box 817, Inman, SC 29349.
DNS	Degen Oil & Chemical Co-----	200 Kellogg St., Jersey City, NJ 07305.
DEP	Dennis Chemical Co-----	2701 Papin St., St. Louis, MO 63103.
DSO	DePaul Chemical Co., Inc-----	44-27 Purvis St., Long Island City, NY 11101.
DEX	DeSoto, Inc-----	1700 S. Mt. Prospect Ave., Des Plaines, IL 60018.
HYC	Dexter Chemical Corp-----	845 Edgewater Rd., Bronx, NY 10474.
MID	Hysol Div-----	211 Franklin St., Olean, NY 14760.
DPI	Midland Div-----	E. Water St., Waukegan, IL 60030.
DA	Diamond Plastics, Inc-----	6421 Paramount Blvd., Long Beach, CA 90805.
PLN	Diamond Shamrock Corp-----	1100 Superior Ave., Cleveland, OH 44114.
DIX	Disogrin Industries Corp-----	Perimeter Rd.-Grenier Field, Manchester, NH 03130.
DPP	Dixie Chemical Co-----	3635 W. Dallas Ave., Houston, TX 77019.
BLS	Dixie Pine Products Co., Inc-----	P. O. Box 470, Hattiesburg, MS 39401.
DOM	Dobbs-Life Savers, Inc-----	Church St., Canajoharie, NY 13317.
DVC	Dominion Products, Inc-----	882 3d Ave., Brooklyn, NY 11232.
DBC	Dover Chemical Co-----	W. 15th & Davis Sts., Dover, OH 44623.
DOW	Dow Badische Chemical Co-----	602 Copper Rd., Freeport, TX 77541.
DCC	Dow Chemical Co-----	202 Dow Center, Midland, MI 48640.
DUP	Dow Corning Corp-----	P. O. Box 1592, Midland, MI 48640.
DSC	E. I. duPont de Nemours & Co., Inc-----	DuPont Bldg., Wilmington, DE 19898.
EPI	Dye Specialties, Inc-----	26 Journal Sq., Jersey City, NJ 07306.
EGR	Eagle Pitcher Industries, Inc., Ohio Rubber Co. Div.	P. O. Box 755, Denton, TX 76201.
ECC	Eagle River Chemical Corp-----	P. O. Box 2648, W. Helena, AR 72390.
EK	Eastern Color & Chemical Co-----	35 Livingston St., Providence, RI 02904.
EKT	Eastman Kodak Co-----	343 State St., Rochester, NY 14650.
EEX	Tennessee Eastman Co. Div-----	P. O. Box 511, Kingsport, TN 37662.
ESA	Texas Eastman Co. Div-----	P. O. Box 7444, Longview, TX 75601.
ECL	East Shore Chemical Co., Inc-----	1221 E. Barney Ave., Muskegon, MI 49443.
ELN	Eastside Chemical Laboratory-----	12880 NE. Bellevue-Redmond Rd., Bellevue WA 98005.
ELP	Elan Chemical Co-----	268 Doremus Ave., Newark, NJ 07105.
EMR	El Paso Products Co-----	P. O. Box 3986, Odessa, TX 79760.
TCH	Emery Industries, Inc-----	4300 Carew Tower, Cincinnati, OH 45202.
EMK	Trylon Chemicals Div-----	P. O. Box 628, Mauldin, SC 29662.
EN	Emkay Chemical Co-----	319 2d St., Elizabeth, NJ 07206.
ENO	Endo Laboratories, Inc-----	1000 Stewart Ave., Garden City, NY 11530.
EPC	Enenco, Inc-----	P. O. Box 398, Memphis, TN 38101.
ESS	Epoxylite Corp-----	1901 Via Buxton, Anaheim, CA 92806.
WMP	Essential Chemicals Group-----	28391 Essential Rd., Merton, WI 53056.
TNA	Essex International, Inc-----	1601 Wall St., Fort Wayne, IN 46804.
EVN	Ethyl Corp-----	330 S. 4th St., Richmond, VA 23217.
	Evans Chemetics, Inc-----	90 Tokeneke Rd., Darien, CT 06820.

APPENDIX

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
ENJ	Exxon Corp. and Exxon Chemical Co. U.S.A., Nevaman Div.	P. O. Box 3272, Houston, TX 77001 and Old Telegraph Rd., Odenton, MD 21113.
	FMC Corp.:	
FMN	Agricultural Chemical Div-----	100 Niagara St., Middleport, NY 14105.
AV	Fiber Div-----	1617 John F. Kennedy Blvd., Philadelphia, PA 19103.
FMB	Industrial Chemical Div-----	633 3d Ave., New York, NY 10017 and Sawyer Ave. & River Rd., Town of Tonawanda, NY 14150.
FMP	Industrial Chemical Div-----	633 3d Ave., New York, NY 10017.
FRP	FRP Co-----	P. O. Box 349, Baxley, GA 31513.
FAB	Fabricolor Manufacturing Corp-----	24-1/2 Van Houten St., P. O. Box 2398, Paterson, NJ 07505.
FMT	Fairmount Chemical Co., Inc-----	117 Blanchard St., Newark, NJ 07105.
KNK	Far-Best Corp., O. L. King Div-----	640 Gilman St., Berkeley, CA 94710.
FEL	Felton International, Inc-----	599 Johnson Ave., Brooklyn, NY 11237.
FER	Ferro Chemical Corp.:	
	Ferro Chemical Div-----	P. O. Box 46349, 7050 Krick Rd., Bedford, OH 44146.
	Grant Chemical Div-----	P. O. Box 263, Baton Rouge, LA 70821.
	Ottawa Chemical Div-----	700 N. Wheeling St., Toledo, OH 43605.
RBC	Fike Chemicals, Inc-----	P. O. Box 546, Nitro, WV 25143.
FIN	Fine Organics, Inc-----	205 Main St., Lodi, NJ 07644.
FNX	Finetex, Inc-----	418 Falmouth Ave., Elmwood Park, NJ 07407.
	Firestone Tire & Rubber Co.:	
FIR	Firestone Plastics Co. Div-----	P. O. Box 699, Pottstown, PA 19464.
FRF	Firestone Synthetic Fibers Co. Div-----	Hopewell, VA 23860.
FRS	Firestone Synthetic Rubber & Latex Co. Div-----	381 W. Wilbeth Rd., Akron, OH 44301.
FST	First Chemical Corp-----	P. O. Box 1427, Pascagoula, MS 39567.
FLM	Fleming Laboratories, Inc-----	P. O. Box 10373, Charlotte, NC 28201.
FLO	Florasynth Inc-----	900 Van Nest Ave., Bronx, NY 10462.
FTE	Foote Mineral Co-----	Route 100, Exton, PA 19341.
FOM	Formica Corp-----	120 E. 4th St., Cincinnati, OH 45202.
FG	Foster Grant Co., Inc-----	289 N. Main St., Leominster, MA 01453.
FCD	France, Campbell & Darling, Inc-----	209 N. Michigan Ave., Kenilworth, NJ 07033.
FRE	Freeman Chemical Corp-----	222 E. Main St., Port Washington, WI 53074.
FB	Fritzsche Dodge & Olcott, Inc-----	76 9th Ave., New York, NY 10011.
FLH	H. B. Fuller Co-----	2400 Kasota Ave., St. Paul, MN 55108.
FLW	Fuller-O'Brien Corp-----	450 E. Grand Ave., S. San Francisco, CA 94080.
GAF	GAF Corp-----	P. O. Box 6037, Chattanooga, TN 37401.
	Chemical Div-----	P. O. Box 12, Linden, NJ 07036.
GAN	Gane's Chemical Works, Inc-----	535 5th Ave., New York, NY 10017.
GE	General Electric Co-----	1 Plastics Ave., Pittsfield, MA 01201 and S. 2d St., Coshocton, OH 43812.
GEI	Insulating Materials Dept-----	1 Campbell Rd., Schenectady, NY 12306.
SPD	Silicone Products Dept-----	Waterford, NY 12188.
GNF	General Foods Corp., Maxwell House Div-----	1125 Hudson St., Hoboken, NJ 07030.
GLC	General Latex & Chemical Corp-----	666 Main St., Cambridge, MA 02139.
GNM	General Mills Chemicals, Inc-----	4620 W. 77th St., Minneapolis, MN 55435
GPM	General Plastics Manufacturing Co-----	3481 S. 35th St., Tacoma, WA 98409.
GNT	General Tire & Rubber Co., Chemical Div-----	1 General St., Akron, OH 44329.
GRG	P. D. George Co-----	5200 N. 2d St., St. Louis, MO 63147.
GP	Georgia-Pacific Corp-----	900 S.W. 5th Ave., Portland, OR 97240.
PSP	Bellingham Div-----	P. O. Box 1236, Bellingham, WA 98225.
GP	Chemical Div-----	P. O. Box 629, Plaquemine, LA 70764.
TID	Getty Oil Co-----	Delaware, DE 19706.
TNI	The Gillette Co., Chemical Div-----	P. O. Box 362, N. Chicago, IL 60064.
GIL	Gilman Paint & Varnish Co-----	216 W. 8th St., Chattanooga, TN 37402.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
GIV	Givaudan Corp-----	100 Delawanna Ave., Clifton, NJ 07014.
GLX	Glasflex Corp-----	P. O. Box 66, Sterling, NJ 07980.
GLY	Glyco Chemicals, Inc-----	51 Weaver St., Greenwich, CT 06830.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	6100 Oak Tree Blvd., Cleveland, OH 44131.
GYR	Goodyear Tire & Rubber Co-----	1144 E. Market St., Akron, OH 44316.
GOR	Gordon Chemical Co., Inc-----	88 Webster St., Worcester, MA 01603.
	W. R. Grace & Co.:	
GCC	Agricultural Chemicals Group-----	P. O. Box 277, Memphis, TN 38101.
HMP	Dewey & Almy Chemical Div., Organic Chemicals	Poisson Ave., Nashua, NH 03060.
GRH	Hatco Chemical Div-----	King George Post Rd., Fords, NJ 08863.
MRO	Marco Chemical Div-----	1711 W. Elizabeth Ave., Linden, NJ 07036.
GRD	Polymers & Chemicals Div-----	62 Whittemore Ave., Cambridge, MA 02140.
GPR	Grain Processing Corp-----	1600 Oregon St., Muscatine, IA 52761.
GRA	Great American Chemical Corp-----	650 Water St., Fitchburg, MA 01420.
GTL	Great Lakes Chemical Corp-----	P. O. Box 2200, West Lafayette, IN 47906.
GRW	Great Western Sugar Co-----	P. O. Box 5308, Terminal Annex, Denver, CO 80217.
GRV & SCF	Guardsman Chemical Coatings, Inc-----	1350 Steele Ave., S.W., Grand Rapids, MI 49502 and 1350 S. 15th St., Louisville, KY 40210
	Gulf Oil Corp.:	
PGU	Gulf Adhesives-----	632 N. Cannon Ave., Lansdale, PA 19446.
GOC	Gulf Oil Chemicals Co. - U. S-----	P. O. Box 2100, Houston, TX 77001.
GTH	Guth Corp-----	P. O. Box 302, Naperville, IL 60540.
HNC	H & N Chemical Co-----	90 Maltese Dr., Totowa, NJ 07512.
HLI	Haag Laboratories, Inc-----	14010 S. Seeley Ave., Blue Island, IL 60406.
HAL	C. P. Hall Co. of Illinois-----	7300 S. Central Ave., Chicago, IL 60638.
FOC	Handschy Chemical Co., Farac Oil and Chemical Div.	13601 S. Ashland Ave., Riverdale, IL 60627.
HAN	Hanna Chemical Coatings Corp-----	P. O. Box 147, Columbus, OH 43216.
HDM	Hardman, Inc-----	600 Cortlandt St., Belleville, NJ 07109.
HSB	Harshaw Chemical Co. Div. of Kewanee Oil Co.	40 Morris Ave., Bryn Mawr, PA 19010.
HRT	Hart Products Corp-----	173 Sussex St., Jersey City, NJ 07302.
HVG	Haveg Industries, Inc-----	900 Greenback Rd., Wilmington, DE 19808.
HKY	Hawkeye Chemical Co-----	P. O. Box 899, Clinton, IA 52733.
SCP	Henkel, Inc-----	480 Alfred Ave., Teaneck, NJ 07666
HCR	Hercor Chemical Corp-----	Petrochemical Complex, Ponce, PR 00731.
HPC	Hercules, Inc-----	910 Market St., Wilmington, DE 19899.
HER	Heresite & Chemical Co-----	822 S. 14th St., Manitowoc, WI 54220.
HES	Hess Oil Virgin Islands Corp-----	Kingshill P. O. Box 127, St. Croix, VI 00850.
HET	Heterochemical Corp-----	111 E. Hawthorne Ave., Valley Stream, NY 11580.
HEW	Hewitt Soap Co., Inc-----	333 Linden Ave., Dayton, OH 45403.
HEX	Hexagon Laboratories, Inc-----	3536 Peartree Ave., Bronx, NY 10475.
REZ	Hexcel Corp., Rezolin Div-----	20701 Nordhoff St., Chatsworth, CA 91311.
HDG	Hodag Chemical Corp-----	7247 N. Central Park Ave., Skokie, IL 60076.
HOF	Hoffmann-LaRoche, Inc-----	324-424 Kingsland St., Nutley, NJ 07110.
HFT	Hoffman-Taff, Inc-----	P. O. Box 1246 SSS, Springfield, MO 65805.
HK	Hooker Chemicals & Plastics Corp-----	MPO Box 8, Niagara Falls, NY 14302.
HKD	Durex Div-----	Walck Rd., N. Tonawanda, NY 14121.
RUB	Ruco Div-----	P. O. Box 456, Burlington, NJ 08016.
EFH	E. F. Houghton & Co-----	303 W. Lehigh Ave., Philadelphia, PA 19133.
HMY	Humphrey Chemical Co-----	Devine St., North Haven, CT 06473.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	P. O. Box 0, Lincoln, RI 02865.
HNT	Huntington Laboratories, Inc-----	P. O. Box 710, Huntington, IN 46750.
HUS	Husky Industries, Inc-----	62 Perimeter Center E., Atlanta, GA 30346.
HYN	Hynson, Westcott & Dunning, Inc-----	Charles and Chase Sts., Baltimore, MD 21201.
ICI	ICI America, Inc-----	Concord Pike & Murphy Rd., Wilmington, DE 19899.
RAY	ITT Rayonier, Inc-----	605 3d Ave., New York, NY 10016.
INP	INDPOL-----	8434 Rochester Ave., Cucamonga, CA 91730.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identification code	Name of company	Office address
IDC	Industrial Dyestuff Co-----	P. O. Box 4249, E. Providence, RI 02914.
INL	Inland Steel Co., Inland Steel Container Co.	4300 W. 130th St., Chicago, IL 60658.
ICC	Inmont Corp-----	150 Wagarau Rd., Hawthorne, NJ 07506.
ICF	ABI Div-----	5935 Milford Ave., Detroit, MI 48210.
WM	Inolex Corp-----	Jackson & Swanson Sts., Philadelphia, PA 19148.
WIL	Inolex Pharmaceutical Div-----	2600 Bond St., Park Forest South, IL 60466.
FSH	Insilco Corp., Frisch & Co. Div-----	88 E. 11th St., Paterson, NJ 07524.
IFF	International Flavors & Fragrances, Inc----	521 W. 57th St., New York, NY 10019.
IMC	International Minerals & Chemical Corp-----	IMC Plaza, Libertyville, IL 60948.
IPC	Interplastic Corp-----	2015 NE. Broadway St., Minneapolis, MN 55413.
IOC	Ionac Chemical Co. Div. of Sybron Corp-----	Birmingham, NJ 08011.
IRI	Ironsides Resins, Inc-----	270 W. Mound St., Columbus, OH 43216.
JCC	Jefferson Chemical Co., Inc-----	P. O. Box 53300, Houston, TX 77052.
JFR	George A. Jeffreys & Co., Inc-----	P. O. Box 709, Salem, VA 24153.
JEN	Jennison-Wright Corp-----	P. O. Box 691, Toledo, OH 43694.
JRG	Andrew Jergens Co-----	2535 Spring Grove Ave., Cincinnati, OH 45214.
JSC	Jersey State Chemical Co-----	59 Lee Ave., Haledon, NJ 07508.
JNS	S. C. Johnson & Son, Inc-----	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Co-----	2728 Empire Central, Dallas, TX 75235.
JOR	Jordan Chemical Co-----	1830 Columbia Ave., Folcroft, PA 19032.
JUL	Julian Associates, Inc-----	9352-58 W. Grand Ave., Franklin Park, IL 60131.
	Kaiser Aluminum & Chemical Corp.:	
SNI	Kaiser Agricultural Chemicals Div-----	P. O. Box 246, Savannah, GA 31402.
KAI	Kaiser Chemicals-----	P. O. Box 337, Gramercy, LA 70052.
KLM	Kalama Chemical Co-----	P. O. Box 427, Kalama, WA 98625.
KAL	Kali Manufacturing Co-----	427 Moyer St., Philadelphia, PA 19125.
KF	Kay-Fries Chemicals, Inc-----	360 Lexington Ave., New York, NY 10017.
KMP	Kelly-Moore Paint Co-----	1015 Commercial St., San Carlos, CA 94070.
	Kennecott Copper Corp.:	
KCC	Chino Mines Div-----	Hurley, MN 88043.
KCU	Utah Copper Div-----	P. O. Box 11299, Salt Lake City, UT 84111.
AMP	Kerr-McGee Chemical Corp-----	P. O. Box 25861, Oklahoma, OK 73125.
KYS	Keysor Century Corp-----	P. O. Box 308, Saugus, CA 91350.
KCW	Keystone Color Works, Inc-----	151 W. Gay Ave., York, PA 17403.
KNP	Knapp Products, Inc-----	187 Garibaldi Ave., Lodi, NJ 07644.
KND	Knoedler Chemical Co-----	651 High St., Lancaster, PA 17604.
MAT	Koch Chemical Co-----	P. O. Box 2256, Wichita, KS 67201.
KMC	Kohler-McLister Paint Co-----	P. O. Box 546, Denver, CO 80201.
KON	H. Kohnstamm & Co., Inc-----	161 Avenue of the Americas, New York, NY 10013.
KPT	Koppers Co., Inc-----	Koppers Bldg., Pittsburgh, PA 15219.
	Organic Material Div-----	Koppers Bldg., Pittsburgh, PA 15219.
	Roads Materials Div-----	Koppers Bldg., Pittsburgh, PA 15219.
	Krafto Corp.:	
HUM	Humko Products Div-----	P. O. Box 398, Memphis, TN 38101.
SHF	Humko Sheffield Chemicals-----	1099 Wall St., Lyndhurst, NJ 07071.
KYN	Kyanize Paints, Inc-----	2d & Boston Sts., Everett, MA 02149
LKL	Lakeside Laboratories Div. of Colgate-Palmolive Co.	1707 E. North Ave., Milwaukee, WI 53201.
LKY	Lake States Div. of St. Regis Paper Co-----	603 W. Davenport St., Rhinelander, WI 54501.
LAK	Lakeway Chemicals Inc-----	5025 Evanston Ave., Muskegon, MI 49443.
LAM	LaMotte Chemical Products Co-----	Chestertown, MD 21620.
LJR	Laurel Products Corp-----	2600 E. Tioga St., Philadelphia, PA 19134.
LEA	Leatex Chemical Co-----	2722 N. Hancock St., Philadelphia, PA 19133.
LEV	Lever Brothers Co-----	390 Park Ave., New York, NY 10022.
LVR	C. Lever Co., Inc-----	736 Dunks Ferry Rd., Cornwells Hgts., PA 19020.
LIL	Eli Lilly & Co-----	307 E. McCarty St., Indianapolis, IN 46206 and G.P.O. Box 4388, San Juan, PR 00936.
LNP	Liquid Nitrogen Processing Corp-----	415 King St., Malvern, PA 19355.
BRD	Lonza, Inc-----	22-10 Route 208, Fair Lawn, NJ 07410.
LJB	Lubrizol Corp-----	29400 Lakeland Blvd., Wickliffe, OH 44092.
MET	M and T Chemicals, Inc-----	Woodridge Rd. & Randolph Ave., P. O. Box 1104, Rahway, NJ 07065.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identification code	Name of company	Office address
MGR	Magruder Color Co., Inc-----	1 Virginia St., Newark, NJ 07114.
MAL	Mallinckrodt Chemical Works-----	3600 N. 2d St., St. Louis, MO 63147.
WSN	Washine Div-----	165 Main St., Lodi, NJ 07644.
TRD	Manufacturing Enterprises, Inc., Squibb Manufacturing, Inc., Trade Enterprises, Inc.	P. O. Box 609, Humacao, PR 00661.
MOR	Marathon Morco Co-----	P. O. Drawer C, Dickinson, TX 77539.
MOC	Marathon Oil Co., Texas Refining Div-----	P. O. Box 1191, Texas City, TX 77590.
MRB	Marblette Co-----	37-31 30th St., Long Island City, NY 11101.
MRD	Marden-Wild Corp-----	500 Columbia St., Somerville, MA 02143.
MRV	Marlowe-Van Loan Corp-----	1511 Joshua Circle, High Point, NC 27261.
SDC	Martin-Marietta Corp.: Sodyeco Div-----	P. O. Box 10098, Charlotte, NC 28201.
MRX	Max Marx Color & Chemical Co-----	192 Coit St., Irvington, NJ 07111.
MCA	Masonite Corp., Alpine Chemical Div-----	P. O. Box 2392, Gulfport, MS 39503.
MAY	Otto B. May, Inc-----	52 Amsterdam St., Newark, NJ 07105.
MCC	McCloskey Varnish Co-----	7600 State Rd., Philadelphia, PA 19136.
MGK	McLaughlin Gormley King Co-----	8810 10th Ave. N., Minneapolis, MN 55427.
MDJ	Mead Johnson & Co-----	2404 Penna. St., Evansville, IN 47721.
MLC	Melamine Chemicals, Inc-----	P. O. Box 748, Donaldsonville, LA 70346.
MRK	Merck & Co., Inc-----	126 E. Lincoln Ave., Rahway, NJ 07065.
MER	Merichem Co-----	1914 Haden Rd., Houston, TX 77015.
MCH	Michigan Chemical Corp-----	351 E. Ohio St., Chicago, IL 60611.
PPF	Midwest Manufacturing Corp-----	Oak St. & Bluff Rd., Burlington, IA 52601.
MLS	Miles Laboratories, Inc., Marschall Div. and Summer Div. Millmaster Onyx Corp.:	1127 Myrtle St., Elkhart, IN 46514.
GRO	A. Gross & Co. Div-----	652 Doremus Ave., Newark, NJ 07105.
BKL	Millmaster Chemical Div., Berkely Chemical Dept. Onyx Chemical Co. Div-----	99 Park Ave., New York, NY 10016.
ONX	Refined-Onyx Div-----	190 Warren St., Jersey City, NJ 07302.
RPC	Minnesota Mining & Manufacturing Co-----	624 Schuyler Ave., Lyndhurst, NJ 07071.
MMM	Miranol Chemical Co., Inc-----	3M Center, St. Paul, MN 55101.
MIR	Mississippi Chemical Corp-----	277 Coit St., Irvington, NJ 07111.
MSC	Mobay Chemical Co-----	P. O. Box 388, Yazoo City, MS 39194.
MOB	Mobil Oil Corp-----	Penn Lincoln Parkway, W. Pittsburgh, PA 15205.
SM	Mobil Chemical Co-----	P. O. Box 900, Dallas, TX 75221.
	Chemical Coatings Div-----	P. O. Box 3868, Beaumont, TX 77704.
	Industrial Chemicals Div-----	1024 South Ave., Plainfield, NJ 07062.
MOA	Mona Industries, Inc-----	P. O. Box 26683, Richmond, VA 23261.
MNO	Monochem, Inc-----	65 E. 23d St., Paterson, NJ 07524.
MNR	Monroe Chemical Co-----	P. O. Box 488, Geismar, LA 70734.
MON	Monsanto Co-----	Saville Ave. at 4th St., Eddystone, PA 19013.
	Bircham Bend Plant-----	2710 Lafayette St., Santa Clara, CA 95052 and 800 N. Lindbergh Blvd., St. Louis, MO 63166.
	Chocolate Bayou Plant-----	190 Grochmal Ave., Indian Orchard, MA 01051.
	Plastics Div-----	P. O. Box 711, Alvin, TX 77511.
	Springfield Plant-----	5100 W. Jefferson Ave., Trenton, MI 48183;
	Textiles Div-----	River Rd., Addyston, OH 45001 and P. O. Box 1311, Texas City, TX 77591.
LUE	Monsanto Flavor/Essence, Inc-----	730 Worcester St., Indian Orchard, MA 63166.
MTO	Montrose Chemical Corp. of California-----	800 N. Lindbergh Blvd., St. Louis, MO 63166.
MCI	Mooney Chemicals, Inc-----	427 Washington St., New York, NY 10013.
MCP	Moretex Chemical Products, Inc-----	500 S. Virgil Ave., Los Angeles, CA 90005.
MRT & PAT	Morton Chemical Co. Div. of Morton-Norwich Products, Inc.	2301 Scranton Rd., Cleveland, OH 44113.
MOT	Motomco, Inc-----	314 W. Henry St., P. O. 1799, Spartanburg, SC 29301.
PNX	Murphy-Phoenix Co-----	110 N. Wacker Dr., Chicago, IL 60606.
NTL	NL Industries, Inc-----	89 Terminal Ave., Clark, NJ 07066.
NLC	Nalco Chemical Co-----	9505 Cassius Ave., Cleveland, OH 44105.
LEM	Napp Chemicals, Inc-----	111 Broadway, New York, NY 10006.
NTB	National Biochemical Co-----	180 N. Michigan Ave., Chicago, IL 60601.
NTC	National Casein Co-----	199 Main St., Lodi, NJ 07644.
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.	3127 W. Lake St., Chicago, IL 60612.
		601 W. 80th St., Chicago, IL 60620.
		99 Park Ave., New York, NY 10016.

APPENDIX

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
NMC	National Milling & Chemical Co-----	4601 Flat Rock Rd., Philadelphia, PA 19127.
USI	National Petro Chemical Corp-----	99 Park Ave., New York, NY 10016.
NSC	National Starch & Chemical Corp-----	750 3d Ave., New York, NY 10017.
NES	Nease Chemical Co., Inc-----	P. O. Box 221, State College, PA 16801.
NEP	Nepera Chemical Co., Inc-----	Route 32, Harriman, NY 10926.
NEV	Neville Chemical Co-----	Neville Island, P. O., Pittsburgh, PA 15225.
NLO	Niklor Chemical Co-----	2060 E. 220th St., Long Beach, CA 90810.
NIL	Nilok Chemicals, Inc-----	2235 Langdon Farm Rd., Cincinnati, OH 45230.
JDC	Nipak, Inc-----	301 S. Harwood St., Dallas, TX 75221.
CNP	Nipro, Inc-----	P. O. Box 1483, Augusta, GA 30903.
NOC	Norac Co., Inc-----	405 S. Motor Ave., Azusa, CA 91703.
	Mathe Chemical Co. Div-----	169 Kennedy Dr., Lodi, NJ 07644.
NEO	Norda, Inc-----	475 10th Ave., New York, NY 10001.
NPV	Norris Paint & Varnish Co-----	P. O. Box 2023, Salem, OR 97308.
LMI	North American Chemical Co-----	19 Chestnut St., Cambridge, MA 02139.
MFG	North American Rockwell Corp-----	4501 Benefit Ave., Ashtabula, OH 44004.
ATP	Northern Fine Chemicals, Inc-----	93 Main St., Franklin, NJ 07416.
NWP	Northern Petrochemical Co-----	2400 Devon Ave., Des Plaines, IL 60018.
NW	Northwestern Chemical Co-----	120 N. Aurora St., W. Chicago, IL 60185.
NPC	Northwest Petrochemical Corp-----	P. O. Box 99, Anacortes, WA 98221.
NOR	Norwich Pharmacal Co-----	17 Eaton Ave., Norwich, NY 13815.
NCW	Nostrip Chemical Works, Inc-----	P. O. Box 160, Pedriachtown, NJ 08067.
CAD	Noury Chemical Corp-----	2153 Lockport-Olcott Rd., Burt, NY 14028.
NVT	Novamont Corp., Neal Works-----	P. O. Box 189, Kenova, WV 25530.
CMG	Nyanza, Inc-----	Maguno Rd., Ashland, MA 01721.
OBC	O'Brien Corp-----	2001 W. Washington Ave., South Bend, IN 46628.
OMC	Olin Corp-----	120 Long Ridge Rd., Stamford, CT 06904 and P.O. Box 991, Little Rock, AR 72203.
OPC	Orbis Products Corp-----	475 10th Ave., New York, NY 10008.
ORG	Organics, Inc-----	7125 N. Clark St., Chicago, IL 60628.
BSW	Original Bradford Soap Works, Inc-----	200 Providence St., W. Warwick, RI 02893.
OCF	Owens-Corning Fiberglas Corp-----	Fiberglas Tower, Toledo, OH 43659.
OCX	Oxirane Chemical Co-----	10801 Choate Rd., Houston, TX 77062.
OXC	Oxochem Enterprise-----	P. O. Box 27, King George Post Rd., Fords, NJ 08863.
PBI	PBI-Gordon Corp-----	300 S. 3d St., Kansas City, KS 66118.
PLB	P-L Biochemicals, Inc-----	1037 W. McKinley Ave., Milwaukee, WI 53205.
PPG	PPG Industries, Inc-----	1 Gateway Center, Pittsburgh, PA 15222.
PVO	PVO International, Inc., Chemical Specialties Div.	416 Division St., Boonton, NJ 07005.
BFR	Pace National Corp-----	500 7th Ave. S., Kirland, WA 98033.
AMR	Pacific Resins & Chemicals, Inc-----	1754 Thorne Rd., Tacoma, WA 93421.
PNT	Pantasote Co. of New York, Inc-----	26 Jefferson St., Passaic, NJ 07055.
PD	Parke Davis & Co-----	Jos. Campau at the River, Detroit, MI 48232.
PSC	Passaic Color & Chemical Co-----	28-36 Paterson St., Paterson, NJ 07501.
CHP	C. H. Patrick & Co., Inc-----	P. O. Box 2526, Greenville, SC 29602.
CCH	Pearsall Chemical Corp-----	P. O. Box 437, Houston, TX 77025.
PEK	Peck's Products Co-----	610 E. Clarence Ave., St. Louis, MO 63147.
PCH	Peerless Chemical Co-----	12416 Cloverdale Ave., Detroit, MI 48204.
PEL	Pelron Corp-----	7847 W. 47th St., Lyons, IL 60534.
PAI	Pennsylvania Industrial Chemical Corp-----	120 State St., Clairton, PA 15025.
PAS	Pennwalt Corp-----	3 Parkway, Philadelphia, PA 19102.
WTL	Lucidol Div-----	1740 Military Rd., Buffalo, NY 14240.
PAR	Pennzoil Co., Penreco Div-----	Union Bank Bldg., Butler, PA 16001.
PER	Perry & Derrick Co., Inc-----	2510 Highland Ave., Norwood, OH 45212.
UDI	Petrochemicals Co., Inc-----	P. O. Box 2199, Fort Worth, TX 76101.
PTT	Petro-Tex Chemical Corp-----	8600 Park Place Blvd., Houston, TX 77017.
PFN	Pfanstiehl Laboratories, Inc-----	1219 Glen Rock Ave., Waukegan, IL 60085.
PCW	Pfister Chemical, Inc-----	Linden Ave., Ridgefield, NJ 07657.
PFZ	Pfizer, Inc-----	235 E. 42d St., New York, NY 10017.
	Pfizer Pharmaceuticals, Inc-----	P. O. Box 628, Barcelonita, PR 00617.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1973--CONTINUED

Identification code	Name of company	Office address
PHR	Pharmachem Corp-----	719 Stefko Blvd., Bethlehem, PA 18018.
PLC	Phillips Petroleum Co-----	1602 Phillips Bldg., Bartlesville, OK 74003.
PPR	Phillips Puerto Rico Core, Inc-----	GPO Box 4129, San Juan, PR 00936.
PIC	Pierce Chemical Co-----	P. O. Box 117, Rockford, IL 61105.
PIL	Pilot Chemical Co-----	11756 Burke St., Santa Fe Springs, CA 90670.
PPL	Pioneer Plastics Corp-----	Pionite Rd., Auburn, ME 04210.
PIT	Pitt-Consol Chemical Co-----	Park Eighty Plaza East, Saddle Brook, NJ 07662.
PLS	Plastics Engineering Co-----	3518 Lakeshore Rd., Sheboygan, WI 53081.
PMC	Plastics Manufacturing Co-----	2700 S. Westmoreland Ave., Dallas, TX 75224.
PLX	Plex Chemical Corp-----	1205 Atlantic St., Union City, CA 94487.
PFW	Polak's Frutal Works, Inc-----	33 Sprague Ave., Middletown, NY 10940.
POL	Polymer Corp-----	2120 Fairmont Ave., Reading, PA 19603.
PII	Polymer Industries, Inc-----	Viaduct Rd., Springdale, CT 06879.
PYZ	Polyrez Co., Inc-----	Woodbury, NJ 08096.
PVI	Polyvinyl Chemical Ind. Div. of Beatrice Foods Co.	730 Main St., Wilmington, MA 01887.
PRT	Pratt & Lambert, Inc-----	P. O. Box 22, Buffalo, NY 14240.
PMP	Premier Malt Products, Inc-----	917 W. Juneau Ave., Milwaukee, WI 53201.
PPC	Premier Petrochemical Co-----	530 N. Witter, Pasadena, TX 77501.
PCR	Princeton Chemical Research, Inc-----	P. O. Box 651, Princeton, NJ 08540.
PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.	301 E. 6th St., Cincinnati, OH 45202.
PC	Proctor Chemical Co., Inc-----	P. O. Box 399, Salisbury, NC 28144.
PRD	Productol Chemical Co., Inc-----	13215 E. Penn St., Whittier, CA 90602.
PRC	Products Research & Chemical Corp-----	2919 Empire Ave., Burbank, CA 91504.
PUB	Publiker Industries, Inc-----	1429 Walnut St., Philadelphia, PA 19102.
PTO	Puerto Rico Chemical Co., Inc-----	P. O. Box 496, Arecibo, PR 00613.
PUE	Puerto Rico Olefins-----	Firm Delivery, Ponce, PR 00731.
PRX	Purex Corp-----	5101 Clark Ave., Lakewood, CA 90712 and 2258 Elston Ave., Chicago, IL 60614.
QCP	Quaker Chemical Corp-----	Lime & Elm Sts., Conshohocken, PA 19428.
QKO	Quaker Oats Co-----	345 Merchandise Mart Plaza, Chicago, IL 60654.
QUN	K. J. Quinn & Co., Inc-----	195 Canal St., Malden, MA 02148.
RSA	R.S.A. Corp-----	690 Sawmill River Rd., Ardsley, NY 10502.
RLS	Rachelle Laboratories, Inc-----	700 Henry Ford Ave., Long Beach, CA 90801.
RCN	Racon, Inc-----	P. O. Box 198, 6040 S. Ridge Rd., Wichita, KS 67201.
RAB	Raybestos-Manhattan, Inc-----	74 E. Main St., Stratford, CT 06497.
RED	Red Spot Paint & Varnish Co., Inc-----	110 Main St., Evansville, IN 47708.
REH	Reheis Chemical Co. Div. of Armour Pharmaceutical Co.	111 W. Clarendon Greyhound Tower, Phoenix, AZ 85077.
RCI	Reichhold Chemicals, Inc-----	525 N. Broadway, White Plains, NY 10602.
RIL	Reilly Tar & Chemical Corp-----	1615 Merchants Bank, Indianapolis, IN 46204.
REL	Reliance Universal, Inc. of Texas Resin Div-----	6901 Cavalcade St., Houston, TX 77001.
REM	Remington Arms Co., Inc-----	P. O. Box 21423, Louisville, KY 40221.
RSY	Resyn Corp-----	939 Barnum Ave., Bridgeport, CT 06602.
RDA	Rhodia, Inc-----	1401 W. Blancke St., Linden, NJ 07036.
RCD	Richardson Co., Organic Chemicals Div-----	120 Jersey Ave., New Brunswick, NJ 08903.
AMS	Ridgway Color & Chemical-----	2400 E. Devon Ave., Des Plaines, IL 60018.
RIK	Riker Laboratories, Inc., Sub. of 3M Co-----	75 Front St., Ridgway, PA 15853.
RSN	Rilsan Corp-----	19901 Nordhoff St., Northridge, CA 91324.
RT	F. Ritter & Co-----	139 Harristown Rd., Glen Rock NJ 07452.
RIV	Riverdale Chemical Co-----	4001 Goodwin Ave., Los Angeles, CA 90039.
ROB	Robeco Chemicals, Inc-----	220 E. 17th St., Chicago Heights, IL 60411.
RBT	Robintech, Inc-----	51 Madison Ave., New York, NY 10010.
MFG	Rockwell International Corp., Resin Plant-----	P. O. Box 2342, Fort Worth, TX 76102.
ORT	Roehr Chemicals, Inc-----	4501 Benefit Ave., Ashtabula, OH 44004.
RGC	Rogers Corp-----	52-20 37th St., Long Island City, NY 11101.
RH	Rohm & Haas Co-----	Rogers, CT 06263.
		Independence Mall West, Philadelphia, PA 19105.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
RUC	Rubicon Chemicals, Inc-----	P. O. Box 517, Geismar, LA 70734.
GLD	SCM Corp., Glidden-Durkee Div-----	900 Union Commerce Bldg., Cleveland, OH 44115 and 2333 Logan Blvd., Chicago, IL 60647.
NPR	Safeway Stores, Inc-----	8390 Capwell Dr., Oakland, CA 94604.
SLM	Salem Oil & Grease Co-----	60 Grove St., Salem, MA 01970.
SAL	Salsbury Laboratories-----	2000 Rockford Rd., Charles City, IA 50616.
S	Sandoz, Inc., Sandoz Color & Chemical Div---	P. O. Box 357, Fair Lawn, NJ 07410 and Route No. 10, P. O. Box 11, E. Hanover, NJ 07936.
S	Sandoz-Wander, Inc., Crop Protection Dept---	P. O. Box 207, Wasco, CA 93280.
SAR	Sartomer Industries, Inc-----	Gov. Printz Blvd. & Wanamaker Ave., Essington, PA 19029.
SCN	Schenectady Chemicals, Inc-----	P. O. Box 1046, Schenectady, NY 12301.
SBC	Scher Bros., Inc-----	P. O. Box 538, Allwood Station, Clifton, NJ 07012.
SCR	R. P. Scherer Corp-----	9425 Grinnell Ave., Detroit, MI 48213.
SCH	Schering Corp-----	1011 Morris Ave., Union, NJ 07083.
SCO	Scholler Bros., Inc-----	Collins and Westmoreland Sts., Philadelphia, PA 19134.
SPR	Scientific Protein Labs., Inc-----	P. O. Box 1409, Madison, WI 53701.
SPA	Scott Paper Co-----	Oconto Falls, WI 54154.
SEA	Seaboard Chemicals, Inc-----	30 Foster St., Salem, MA 01970.
SRL	G. D. Searle & Co-----	P. O. Box 5110, Chicago, IL 60680.
SEY	Seydel-Woolley & Co., Inc-----	762 Marietta Blvd. NW., Atlanta, GA 30318.
SKP	Shakespeare Co., Monofilament Div-----	P. O. Box 246, Columbia, SC 29202.
SHA	Shanco Plastics & Chemicals, Inc-----	111 Wales St., Tonawanda, NY 14150.
SHO	Shell Oil Co-----	P. O. Box 2463, Houston, TX 77001.
SHC	Shell Chemical Co. Div-----	One Shell Plaza, P. O. Box 2463, Houston, TX 77001.
SHP	Shepherd Chemical Co-----	4900 Beech St., Cincinnati, OH 45212.
SW	Sherwin-Williams Co-----	101 Prospect Ave. NW, Cleveland, OH 44115.
STD	George F. Siddall Co., Inc-----	P. O. Box 925, Spartanburg, SC 29301.
SIM	Simpson Timber Co-----	2301 N. Columbia Blvd., Portland, OR 97217.
SKC	Sinclair-Koppers Chemical Co-----	9822 La Porte Freeway, Houston, TX 77012.
SPC	Sinclair Paint Co., Div. of Insilco Corp---	3960 E. Washington Blvd., Los Angeles, CA 90023.
SKO	Skelly Oil Co-----	P. O. Box 1650, Tulsa, OK 74102.
GFS	G. Frederick Smith Chemical Co-----	867 McKinley Ave., Columbus, OH 43223.
SK	Smith, Kline & French Laboratories-----	1500 Spring Garden St., Philadelphia, PA 19101.
SBN	Sobin Chemical Co-----	P. O. Box 149, Orrington, ME 04474.
MTR	Sobin Chemicals, Inc., Montrose Chemical Div.	100 Listen Ave., Newark, NJ 07105.
SOL	Solar Chemical Corp-----	29 Fuller St., Leominster, MA 01453.
SLC	Soluol Chemical Co., Inc-----	Green Hill & Market Sts., W. Warwick, RI 02893.
SVT	Solvent Chemical Co., Inc-----	335-341 Commercial St., Malden, MA 02148.
STC	Sou-Tex Chemical Co., Inc-----	E. Catawba Ave., P. O. Box 866, Mount Holly, NC 28120.
SAC	Southeastern Adhesives-----	P. O. Box 791, Lenoir, NC 28645.
SOP	Southern Chemical Products Co-----	P. O. Box 205, Macon, GA 31202.
SOS	Southern Sizing Co-----	P. O. Box 90987, East Point, GA 30344.
SPL	Spaulding Fibre Co., Inc-----	310 Wheeler St., Tonawanda, NY 14150.
OMS	E. R. Squibb & Sons, Inc-----	Georges Rd., New Brunswick, NJ 08903.
STA	A. E. Staley Manufacturing Co-----	2200 Eldorado St., Decatur, IL 62525.
UBS	Staley Chemicals Div-----	320 Schuyler Ave., Kearny, NJ 07032.
CCL	Textile Div-----	6301 St. John Lane, Charlotte, NC 28210.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.	1251 Beaver Channel Parkway, Clinton, IA 52733.
SBI	Standard Brands Chemical Industries, Inc----	P. O. Drawer K, Dover, DE 19901.
SCC	Standard Chlorine of Delaware, Inc-----	1035 Belleville Turnpike, Kearny, NJ 07032.
SOC	Standard Oil Co. of California, Chevron Chemical Co.	200 Bush St., San Francisco, CA 94120.
SIO	Standard Oil Co. of Ohio-----	Midland Bldg., Cleveland, OH 44115.
STG	Stange Co-----	342 N. Western Ave., Chicago, IL 60612.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
	Stauffer Chemical Co.:	
SFA	Agricultural Div-----	636 California St., San Francisco, CA 94119.
SFC	Calhio Chemicals, Inc-----	636 California St., San Francisco, CA 94119.
SFF	Food Ingredients Div-----	636 California St., San Francisco, CA 94119.
SFI	Industrial Div-----	636 California St., San Francisco, CA 94119.
SFP	Plastics Div-----	636 California St., San Francisco, CA 94119.
SFS	Specialty Div-----	636 California St., San Francisco, CA 94119.
BPC	Benzol Products-----	Meadow Rd., Edison, NJ 08817.
SWS	SWS Silicones Div-----	636 California St., San Francisco, CA 94119.
STP & MYW	Stepan Chemical Co-----	RR #1, Elwood, IL 60421 and 100 West Hunter Ave., Maywood, NJ 07607.
NPI	National Polychemicals Div., Polychem Dept.	51 Eames St., Wilmington, MA 01887.
	Sterling Drug, Inc.:	
SDG	Glenbrook Laboratories Div-----	90 Park Ave., New York, NY 10016.
SDH	Hilton-Davis Chemical Co. Div-----	2235 Langdon Farm Rd., Cincinnati, OH 45237.
TMS	Thomasset Colors Div-----	120 Lister Ave., Newark, NJ 07105.
SDW	Winthrop Laboratories Div-----	90 Park Ave., New York, NY 10016.
SLV	Sterwin Chemicals, Inc-----	Military Rd., Rothschild, WI 54474.
OTC	Story Chemical Corp-----	500 Agard Rd., Muskegon, MI 49945.
WIC	Wica Chemicals Div-----	P. O. Box 506, Charlotte, NC 28230.
STY	Styrochem Corp-----	Petrochemical Complex, Ponce, PR 00731.
SBP	Sugar Beet Products Co-----	P. O. Box 1387, Saginaw, MI 48605.
SNA	Sun Chemical Corp-----	441 Tompkins Ave., Staten Island, NY 10305.
SNW	Chemical Div-----	P. O. Box 70, Chester, SC 29706.
SKG	Sunkist Growers, Inc-----	P. O. Box 7888, Valley Annex, Van Nuys, CA 91409.
SUN	Sun Oil Co-----	240 Radnor-Chester Rd., St. Davids, PA 19087.
SNO	Sun Olin Chemical Co-----	P. O. Box F, Claymount, DE 19703.
SNT	Suntide Refining Co-----	P. O. Box 2608, Corpus Christi, TX 78403.
BUK	Synalloy Corp., Blackman-Uhler Chemical Div.	P. O. Box 5627, Spartanburg, SC 29301.
FAR	Syncon Resins, Inc., Farnow Div-----	77 Jacobus Ave. S., Kearny, NJ 07032.
TCC	Tanatex Chemical Corp-----	P. O. Box 388, Lyndhurst, NJ 07071.
CST	Charles S. Tanner Co-----	1310 Barcelona Dr., Greenville, SC 29606.
TEK	Teknor Apex Co-----	505 Central Ave., Pawtucket, RI 02662.
HN	Tenneco Chemicals, Inc-----	Park Eighty Plaza West-One, Saddle Brook, NJ 07662.
CIK	Cal/Ink Div-----	711 Camelia St., Berkeley, CA 94710.
TOC	Tenneco Oil Co-----	P. O. Box 2511, Houston, TX 77001.
TER	Terra Chemicals International, Inc-----	507 6th St., Sioux City, IA 51121.
TX	Texaco, Inc-----	135 E. 42d St., New York, NY 10017.
TSA	Texas Alkyls, Inc-----	P. O. Box 600, Deer Park, TX 77536.
TUS	Texas-U.S. Chemical Co-----	P. O. Box 667, Port Neches, TX 77651.
TXC	Tex Chem Co., Inc-----	20-21 Wagaraw Rd., Fair Lawn, NJ 07410.
TCI	Texize Chemicals, Co-----	P. O. Box 368, Greenville, SC 29602.
TXT	Textilana Corp-----	12607 Cerise Ave., Hawthorne, CA 90250.
TXN	Textilana Nease, Inc-----	12607 Cerise Ave., Hawthorne, CA 90250.
SKT	Textron, Inc., Spencer Kellogg Div-----	120 Delaware Ave., Buffalo, NY 14240.
TKL	Thiokol Chemical Corp-----	P. O. Box 27, Bristol, PA 19007.
SOR	Thomason Industries, Inc., Southern Resin Div.	P. O. Drawer 1600, Fayetteville, NC 29302.
TMH	Thompson-Hayward Chemical Co-----	5200 Speaker Rd., Kansas City, MO 66110 and 2 E. Madison St., Waukegan, IL 60085.
TZC	Tizon Chemical Corp-----	Locktown Rd., Flemington, NJ 08822.
TRC	Toms River Chemical Corp-----	P. O. Box 71, Toms River, NJ 08753.
ACT	Arthur C. Trask Co-----	7666 W. 63d St., Summit, IL 60501.

APPENDIX

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identi- fication code	Name of company	Office address
TRI	Triad Chemical-----	P. O. Box 310, Donaldsonville, LA 70346.
TRO	Troy Chemical Co-----	One Avenue L, Newark, NJ 07105.
JTC	Joseph Turner & Co-----	P. O. Box 88, Ridgefield, NJ 07657.
ARM	USS Agri-Chemicals Div of U.S. Steel Corp---	30 Pryor St. S.W., Atlanta, GA 30301.
USS	USS Chemicals Div. of U.S. Steel Corp-----	600 Grant St., Rm. 2880, Pittsburgh, PA 15219.
UHL	Paul Uhlich & Co., Inc-----	90 West St., New York, NY 10006.
UNG	Ungerer & Co-----	161 Avenue of the Americas, New York, NY 10013.
NCI	Union-Camp Corp-----	P. O. Box 6170, Jacksonville, FL 32205.
WTH	Harchem Div-----	P. O. Box 220, Dover, NJ 44622.
UCC	Union Carbide Corp-----	270 Park Ave., New York, NY 10017.
UOC	Union Oil Co. of California-----	200 E. Gulf Rd., Palatine, IL 60067.
USR	Uniroyal, Inc., Chemical Div-----	Emic Bldg., Naugatuck, CT 06770.
UNN	United Chemical Corp. of Norwood-----	P. O. Box 367, Endicott St., Norwood, MA 02062.
UNP	United Chemical Products Corp-----	York & Colgate Sts., Jersey City, NJ 07302.
UNO	United-Erie, Inc-----	438 Huron St. SE., Erie, PA 16512.
ROM	United Merchants & Manufacturers, Inc., Roma Chemical Div.	749 Quequechan St., Fall River, MA 02721.
USB	U.S. Borax Research Corp-----	3075 Wilshire Blvd., Los Angeles, CA 90005.
HLM	U.S. Industries, Inc., E. Helman Co. Div----	P. O. Box 5129, Akron, OH 44313.
USO	U.S. Oil Co-----	P. O. Box 4228, E. Providence, RI 02914.
UPF	U.S. Pipe & Foundry Co-----	3300 1st Ave. N., Birmingham, AL 35202.
UPL	U.S. Plywood WCM Operations, Shasta Area----	P. O. Box 2317, Redding, CA 96001.
UPM	Universal Oil Products Co-----	70 UOP Plaza, Algonquin & Mt. Prospect, Des Plaines, IL 60018.
UOP	UOP Chemical Div-----	State Highway 17, E. Rutherford, NJ 07073.
UPJ	Upjohn Co-----	7000 Portage Rd., Kalamazoo, MI 49001.
CWN	Fine Chemical Div-----	410 Sackett Point Rd., North Haven, CT 06473.
VAL	Valchem Chemical Div. of United Merchants & Manufacturers, Inc.	1407 Broadway, New York, NY 10018.
VSV	Valentine Sugars, Inc-----	726 Whitney Bldg., New Orleans, LA 70130.
VLN	Valley Nitrogen Producers, Inc-----	1221 Van Ness Ave., Fresno, CA 93717.
MNP	The Valspan Corp-----	1101 S. 3d St., Minneapolis, MN 55415.
VDM	Van DeMark Chemical Co., Inc-----	1 N. Transit Rd., Lockport, NY 14094.
VNC	Vanderbilt Chemical Corp-----	31 Taylor Ave., Bethel, CT 06801.
VND	Van Dyk & Co., Inc-----	Main & Williams Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp-----	341 E. Ohio St., Chicago, IL 60611.
MHI	Ventron Corp-----	12-16 Congress St., Beverly, MA 01915.
WRC	Wood Ridge Chemical-----	Park Place East, Wood Ridge, NJ 07075.
VIK	Viking Chemical Co-----	915 Midland Bank Bldg., Minneapolis, MN 55401.
VIN	Vineland Chemical Co-----	W. Wheat Rd., Vineland, NJ 08360.
VGC	Virginia Chemicals, Inc-----	3340 W. Norfolk Rd., Portsmouth, VA 23703.
SOH	Vistron Corp-----	Midland Bldg., Cleveland, OH 44115.
SIC	Silmar Div-----	12333 S. Van Ness Ave., Hawthorne, CA 90250.
VTM	Vitamins, Inc-----	401 N. Michigan Ave., Suite 2730, Chicago, IL 60611.
FRO	Vulcan Materials Co., Chemicals Div-----	P. O. Box 545, Wichita, KS 67201.
WJ	Warner-Jenkinson Manufacturing Co-----	2526 Baldwin St., St. Louis, MO 63106.
WAG	West Agro-Chemicals, Inc-----	501 Santa Fe St., Kansas City, MO 64105.
WCA	West Coast Adhesives Co-----	11104 NW. Front Ave., Portland, OR 97231.
EW	Westinghouse Electric Corp., Industrial Plastics Div., Chemical Products Plant.	Manor, PA 15665.
WVA	Westvaco Corp., Polychemicals Dept-----	P. O. Box 5207, N. Charleston, SC 29406.
WRD	Weyerhaeuser Co-----	118 S. Palmetto Ave., Marshfield, WI 54449.
WBG	White & Bagley Co-----	P. O. Box 706, Worcester, MA 01613.

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1973--CONTINUED

Identification code	Name of company	Office address
WHI	White & Hodges, Inc-----	576 Lawrence St., Lowell, MA 01852.
WHL	Whitmoyer Laboratories, Inc----- Whittaker Corp.:	19 N. Railroad St., Myerstown, PA 17067.
APT	Mol Rez Div-----	3134 California St. NE., Minneapolis, MN 55418..
WHC	Research & Development Div-----	3540 Aero Ct., San Diego, CA 92123.
WHW	Whittemore-Wright Co., Inc-----	62 Alford St., Boston, MA 02129.
WLN	Wilmington Chemical Corp-----	P. O. Box 66, Wilmington, DE 19899.
WTC	Witco Chemical Co., Inc-----	P. O. Box 305, Paramus, NJ 07652.
WAW	W. A. Wood Co-----	108 Spring St., Everett, MA. 02149.
WBC	Worthington Biochemical Corp-----	Halls Mills Rd., Freehold, NJ 07728.
WCL	Wright Chemical Co-----	Acme Station, Riegelwood, NC 28456.
WYC	Wycon Chemical Co-----	P. O. Box 1087, Colorado Springs, CO 80901.
WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.	P. O. Box 831, Paoli, PA 19301.
YAW	J. S. Young Co., Young Aniline Works Div----	2731 Boston St., Baltimore, MD 21224.

APPENDIX

U.S. IMPORTS OF BENZENOID CHEMICALS AND PRODUCTS

U.S. general imports of benzenoid chemicals and products entered under the Tariff Schedules of the United States (TSUS), schedule 4, part 1, subparts B and C are analyzed by the U.S. International Trade Commission annually and published in detail in a separate report.¹ General imports of benzenoid items entered in parts 1B and 1C totaled 390.6 million pounds with a foreign invoice value of \$300.0 million in 1973 compared with 322.0 million pounds with a foreign invoice value of \$246.7 million in 1972.

Benzenoid products that are "competitive" with similar domestic products, because they accomplish results substantially equal to those accomplished by the similar domestic product when used in substantially the same manner, are subject to a special basis of valuation for customs purposes known as the "American selling price." If "noncompetitive," the benzenoid products are valued for customs purposes on the basis of the "United States value." The essential difference between these two values is that "American selling price" is based on the wholesale price in the United States of the "competitive" domestic product, whereas "United States value" is based on the wholesale price in the United States of the imported product less most of the expenses incurred in bringing the product to the United States and selling it. When neither of these two valuation bases applies, then the "export value," "foreign value," or "constructed value" is used as the valuation basis under section 402 or 402a Tariff Act of 1930, as amended. The competitive status of benzenoid imports in 1973 is shown in table 2.

Industrial organic chemicals that are entered under part 1B consist chiefly of benzenoid intermediates and small quantities of acyclic compounds which are derived in whole or in part from benzenoid compounds. Also included are mixtures and small quantities of finished products not specially provided for in part 1C (e.g., rubber-processing chemicals). In terms of value, 39.2 percent of all the benzenoid imports under part 1B in 1973 came from West Germany; 19.2 percent, from Japan; 9.5 percent, from Switzerland; and 6.7 percent from Belgium.

Finished organic chemical products entered under part 1C include dyes, pigments, medicinals, flavor and perfume materials, pesticides, plastics materials, and certain other specified products. In terms of value 31.5 percent of all finished benzenoid imports under part 1C in 1973 came from West Germany; 18.4 percent, from Switzerland; 16.9 percent, from the United Kingdom; and 10.4 percent from Japan.

¹ *Imports of Benzenoid Chemicals and Products, 1973*, TC Publication 688, 1974 [processed].

SYNTHETIC ORGANIC CHEMICALS, 1973

TABLE 2.--BENZENOID CHEMICALS AND PRODUCTS: SUMMARY OF U.S. GENERAL IMPORTS ENTERED UNDER SCHEDULE 4, PARTS 1B AND 1C OF THE TSUS, AND ANALYSIS BY COMPETITIVE STATUS, 1973

Part and competitive status	Number of items	Quantity <i>1,000 pounds</i>	Percent of total quantity	Foreign invoice value <i>1,000 dollars</i>	Percent of foreign value	Unit foreign value <i>Per pound</i>
<u>Schedule 4, Part 1B</u>						
Total ¹ -----	735	205,899	100.0	101,932	100.0	\$0.50
Competitive:						
Duty based on ASP ² -----	379	155,209	75.4	63,764	62.5	.41
Noncompetitive:						
Duty based on U.S. value-----	267	19,010	9.3	20,964	20.6	1.10
Duty based on export value-----	86	29,953	14.5	15,354	15.1	.51
Competitive status not available-----	3	1,727	.8	1,850	1.8	1.07
<u>Schedule 4, Part 1C</u>						
Total ¹ -----	2,069	184,737	100.0	198,094	100.0	1.07
Competitive:						
Duty based on ASP ² -----	681	99,217	53.7	80,304	40.5	.81
Noncompetitive:						
Duty based on U.S. value-----	1,198	39,141	21.2	74,229	37.5	1.90
Duty based on export value-----	177	38,372	20.8	39,652	20.0	1.03
Competitive status not available-----	13	8,007	4.3	3,908	2.0	.49
<u>Summary (Schedule 4, Parts 1B and 1C)</u>						
Total ¹ -----	2,804	390,636	100.0	300,024	100.0	.77
Competitive:						
Duty based on ASP ² -----	1,060	254,426	65.1	144,068	48.0	.57
Noncompetitive:						
Duty based on U.S. value-----	1,465	58,151	14.9	95,193	31.7	1.64
Duty based on export value-----	263	68,325	17.5	55,006	18.3	.81
Competitive status not available-----	16	9,734	2.5	5,758	1.9	.59

¹ Detail may not add to total due to rounding.² American selling price.

Source: Compiled by the U.S. International Trade Commission from records of the U.S. Bureau of Customs.

Note:--The totals shown in this table differ from those given in the official statistics of the U.S. Department of Commerce chiefly because of differences in coverage and in the methods used in compiling the data. In general, the statistical coverage in 1973 varies from a low of 68 percent for flavors and perfumes to almost complete coverage for intermediates, dyes, pigments, and medicinals.

APPENDIX

TABLE 3.--CYCLIC INTERMEDIATES: GLOSSARY OF SYNONYMOUS NAMES

Common name	Standard (Chemical Abstracts) name
1,2,4-Acid-----	4-Amino-3-hydroxy-1-naphthalenesulfonic acid.
Acid yellow 9-----	6-Amino-3,4'-azodibenzenesulfonic acid.
p-Aminobenzenesulfonic acid-----	Sulfanilic acid and salt.
Amino G acid-----	7-Amino-1,3-naphthalenedisulfonic acid.
Amino I acid-----	6-Amino-1,3-naphthalenedisulfonic acid.
Amino R salt-----	3-Amino-2,7-naphthalenedisulfonic acid.
Aniline oil-----	Aniline.
Anthraflavic acid-----	2,6-Dihydroxyanthraquinone.
Anthrarufin-----	1,5-Dihydroxyanthraquinone.
Benzal chloride-----	α,α -Dichlorotoluene.
Benzanthrone-----	7H-Benz[de]anthracene-7-one.
Benzotrichloride-----	α,α,α -Trichlorotoluene.
Bisphenol A-----	4,4'-Isopronylidenediphenol.
B.O.N-----	3-Hydroxy-2-naphthoic acid.
Bromobenzanthrone-----	3-Bromo-7H-benz[de]anthracene-7-one.
Broenner's acid-----	6-Amino-2-naphthalenesulfonic acid.
C acid-----	3-Amino-1,5-naphthalenedisulfonic acid.
Chlorobenzanthrone-----	Chloro-7H-benz[de]anthracene-7-one.
Chromotropic acid-----	4,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
Chrysazin-----	1,8-Dihydroxyanthraquinone.
2-Cyanopyridine-----	Picolinonitrile.
3-Cyanopyridine-----	Nicotinonitrile.
Cyanuric chloride-----	2,4,6-Trichloro-s-triazine.
DADI-----	Dianisidine diisocyanate.
DBB-----	p-Dibutoxybenzene.
Decacyclene-----	Diacenaphtho[1,2-j:1,2'-k]fluoranthene.
Developer Z-----	3-Methyl-1-phenyl-2-pyrazolin-5-one.
o-Dianisidine-----	3,3'-Dimethoxybenzidine.
1,1'-Dianthrimide-----	1,1'-Iminodianthraquinone.
Dibenzanthrone-----	Violanthrone.
4,4'-Dihydroxydiphenylsulfone-----	4,4'-Sulfonyldiphenol.
Dimethyl POPOP-----	1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene.
4,5-Dinitrochrysazin-----	1,8-Dihydroxy-4,5-dinitroanthraquinone.
Durene-----	1,2,4,5-Tetramethylbenzene.
Fast Red G base-----	2-Nitro-p-toluidine [$\text{NH}_2=1$].
Fast Scarlet R base-----	5-Nitro-o-anisidine [$\text{NH}_2=1$].
G salt-----	7-Hydroxy-1,3-naphthalenedisulfonic acid.
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.
Hellimellitene-----	1,2,3-Trimethylbenzene.
J acid-----	7-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt.
J acid urea-----	7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid].
Koch's acid-----	8-Amino-1,3,6-naphthalenetrisulfonic acid.
MEP-----	5-Ethyl-2-picoline
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.

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TABLE 3.--CYCLIC INTERMEDIATES: GLOSSARY OF SYNONYMOUS NAMES--CONTINUED

Common name	Standard (Chemical Abstracts) name
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.
Pentaanthrimide-----	1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone.
Phenylbiphenyl-----	Terphenyl.
N-Phenyldiethanolamine-----	2,2'-[(Phenyl)imino]diethanol.
Phenyl J acid-----	7-Anilino-4-hydroxy-2-naphthalenesulfonic acid.
Phenyl peri acid-----	8-Anilino-1-naphthalenesulfonic acid.
POPOP-----	1,4-Bis[2-(5-phenyloxazolyl)]benzene.
Pseudocumene-----	1,2,4-Trimethylbenzene.
Pyrazoleanthrone-----	Anthra[1,9 cd]pyrazol-6(2H)-one.
Pyrazoleanthrone yellow-----	[3,3'-Bianthra[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-anthracene-sulfonic acid.
Quinoline yellow base-----	Quinophthalone.
R salt-----	3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt.
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.
o-Sulfobenzaldehyde-----	o-Formylbenzenesulfonic acid.
Thiosalicylic acid-----	o-Mercaptobenzoic acid.
Tobias acid-----	2-Amino-1-naphthalenesulfonic acid.
TODI-----	Bitolylene diisocyanate.
o-Tolidine-----	3,3'-Dimethylbenzidine.
α-Toluic acid-----	Phenylacetic acid.
α-Tolunitrile-----	Phenylacetoneitrile.
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.
Vinyltoluene-----	ar-Methylstyrene.