UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1970

TC Publication 479

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United States Production and Sales, 1970

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

U.S. GOVERNMENT PRINTING OFFICE
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TC Publication 479

UNITED STATES TARIFF COMMISSION

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Introduction

This is the fifty-fourth annual report of 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 more than 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 1970 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

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.

Combined production of all synthetic organic chemicals, tars, tar crudes, and crude products from petroleum and natural gas in 1970 was 233,110 million pounds--an increase of 4.2 percent over the output in 1969 (see table 1). Sales of these materials in 1970, which totaled 128,478 million pounds, valued at $13,638 million, were 5.6 percent larger than in 1969 in terms of quantity and 2.2 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 1970, production of all synthetic organic chemicals, including cyclic intermediates and finished chemical products, totaled 138,322 million pounds, or 2.7 percent more than the output in 1969. Production increased for only three subgroups of products, however: Medicinal chemicals (214 million pounds) was 7.2 percent more than in 1969; miscellaneous chemicals (79,257 million pounds) was 4.7 percent more; and plastics and resin materials (19,210 million pounds) was 3.5 percent more. Production of subgroups which declined in 1970 compared with 1969 included flavor and perfume materials (100 million pounds) down 16.7 percent, organic pigments (57 million pounds) down 7.4 percent, and pesticides and related materials (1,034 million pounds) down 6.4 percent.

TABLE 1.--Synthetic organic chemicals and their raw materials: U.S. production and sales, 1969 and 1970

Chemical	Production			Sales					
				Quantity			Value		
	1969	1970	Increase or decrease (-), 1970 over 1969[1]	1969	1970	Increase or decrease (-), 1970 over 1969[1]	1969	1970	Increase or decrease (-), 1970 over 1969[1]
	Million pounds	*Million pounds*	*Percent*	*Million pounds*	*Million pounds*	*Percent*	*Million dollars*	*Million dollars*	*Percent*
Grand total[2]	223,684	233,110	4.2	121,616	128,478	5.6	13,345	13,638	2.2
Tar	7,688	7,609	-1.0	3,772	3,712	-1.6	37	36	-2.0
Tar crudes	9,996	9,300	-7.0	6,644	6,533	-1.7	141	132	-6.4
Crude products from petroleum and natural gas	71,315	77,879	9.2	39,240	43,439	10.7	1,001	1,061	6.0
Synthetic organic chemicals, total[2]	134,685	138,322	2.7	71,961	74,794	3.9	12,166	12,409	2.0
Cyclic intermediates	28,571	28,257	-1.1	12,398	12,976	4.7	1,208	1,260	4.3
Dyes	240	235	-2.4	221	223	1.1	385	390	1.3
Organic pigments	61	57	-7.4	51	47	-7.1	133	123	-7.6
Medicinal chemicals	200	214	7.2	145	155	6.7	462	510	10.4
Flavor and perfume materials	120	100	-16.7	104	92	-11.6	94	89	-4.8
Plastics and resin materials	18,557	19,210	3.5	15,922	17,074	7.2	3,175	3,266	2.9
Rubber-processing chemicals	303	298	-1.7	229	228	-.7	144	149	3.1
Elastomers (synthetic rubbers)	4,524	4,438	-1.9	3,918	3,820	-2.5	1,060	1,032	-2.6
Plasticizers	1,382	1,336	-3.3	1,275	1,239	-2.8	266	235	-11.7
Surface-active agents	3,901	3,886	-.4	1,988	2,061	3.7	370	387	4.7
Pesticides and related products	1,104	1,034	-6.4	929	881	-5.1	851	870	2.2
Miscellaneous chemicals	75,720	79,257	4.7	34,782	35,998	3.5	4,018	4,097	1.9

[1] Percentages calculated from figures rounded to thousands.
[2] Because of rounding, figures may not add to the totals shown.

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 1970 was 138,322 million pounds, or 2.7 percent more than the output of 134,685 million pounds reported for 1969 and 32.1 percent more than the output of 104,711 million pounds reported for 1967 (see table 2). Sales of synthetic organic chemicals in 1970 amounted to 74,794 million pounds, valued at $12,409 million, compared with 71,961 million pounds, valued at $12,166 in 1969 and 55,177 million pounds, valued at $10,438 million in 1967. Production of all cyclic products (intermediates and finished products combined) in 1970 totaled 43,245 million pounds, or 0.9 percent less than the 43,656 million pounds reported for 1969 and 29.2 percent more than the 33,479 million pounds reported for 1967. Production of all acyclic products in 1970 totaled 95,077 million pounds, or 4.4 percent more than the 91,028 million pounds reported for 1969 and 33.5 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, 1969 and 1970

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

Chemical	1967[1]	1969	1970	Increase, or decrease (-)	
				1970 over 1967	1970 over 1969
				Percent	*Percent*
Organic chemicals, cyclic and acyclic, grand total:					
Production	104,711,357	134,684,910	138,322,426	32.1	2.7
Sales	55,176,823	71,960,615	74,793,892	35.6	3.9
Sales value	10,438,453	12,166,311	12,409,252	18.9	2.0
Cyclic, total:					
Production	33,479,469	43,656,481	43,245,465	29.2	-.9
Sales	19,328,628	23,927,329	24,571,197	27.1	2.7
Sales value	4,610,293	5,393,830	5,470,865	18.7	1.4
Acyclic, total:					
Production	71,231,888	91,028,429	95,076,961	33.5	4.4
Sales	35,848,195	48,033,286	50,222,695	40.1	4.6
Sales value	5,828,160	6,772,481	6,938,387	19.0	2.4
1. Cyclic Intermediates					
Production	20,793,132	28,570,871	28,257,042	35.9	-1.1
Sales	9,461,180	12,398,249	12,976,217	37.2	4.7
Sales value	1,000,359	1,208,447	1,260,395	26.0	4.3
2. Dyes					
Production	206,240	240,208	234,526	13.7	-2.4
Sales	198,592	220,886	223,218	12.4	1.1
Sales value	332,049	385,301	390,429	17.6	1.3
3. Organic Pigments					
Production	53,322	61,011	56,524	6.0	-7.4
Sales	42,867	50,794	47,166	10.0	-7.1
Sales value	108,354	133,149	122,965	13.5	-7.6
4. Medicinal Chemicals					
Cyclic:					
Production	110,129	126,418	132,190	20.0	4.6
Sales	70,120	88,113	87,308	24.5	-.9
Sales value	348,873	425,235	465,354	33.4	9.4
Acyclic:					
Production	69,941	73,616	82,281	17.6	11.8
Sales	56,804	56,689	67,206	18.3	18.6
Sales value	36,402	36,585	44,705	22.8	22.2

See footnote at end of table.

TABLE 2.--Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, 1967, 1969 and 1970--Continued

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

Chemical	1967[1]	1969	1970	Increase, or decrease (-)	
				1970 over 1967	1970 over 1969
				Percent	*Percent*
5. Flavor and Perfume Materials					
Cyclic:					
Production	57,978	61,353	52,543	-9.4	-14.4
Sales	47,285	48,721	42,916	-9.2	-11.9
Sales value	52,866	52,873	52,045	-1.6	-1.6
Acyclic:					
Production	53,558	59,037	47,778	-10.8	-19.1
Sales	49,311	54,843	48,587	-1.5	-11.4
Sales value	40,495	40,753	37,057	-8.5	-9.1
6. Plastics and Resin Materials					
Cyclic:					
Production	5,033,497	6,435,204	6,799,570	35.1	5.7
Sales	4,224,121	5,386,791	5,793,962	37.2	7.6
Sales value	1,036,940	1,238,301	1,298,725	25.2	4.9
Acyclic:					
Production	8,759,452	12,122,045	12,410,349	41.7	2.4
Sales	7,753,242	10,535,093	11,280,347	45.5	7.1
Sales value	1,635,690	1,936,452	1,967,356	20.3	1.6
7. Rubber-Processing Chemicals					
Cyclic:					
Production	220,139	254,792	255,477	16.1	.3
Sales	169,970	194,012	196,485	15.6	1.3
Sales value	116,318	127,268	133,534	14.8	4.9
Acyclic:					
Production	43,994	48,687	42,814	-2.7	-12.1
Sales	30,878	35,480	31,376	1.6	-11.6
Sales value	15,477	17,208	15,425	-.3	-10.4
8. Elastomers (Synthetic Rubbers)					
Cyclic:					
Production	2,297,637	2,591,720	2,454,462	6.8	-5.3
Sales	1,940,099	2,172,843	1,998,632	3.0	-8.0
Sales value	439,580	520,141	485,092	10.4	-6.7
Acyclic:					
Production	1,524,908	1,932,337	1,983,114	30.0	2.6
Sales	1,321,945	1,744,740	1,821,293	37.8	4.4
Sales value	434,657	539,365	547,236	25.9	1.5
9. Plasticizers					
Cyclic:					
Production	929,871	1,022,941	998,475	7.4	-2.4
Sales	865,084	946,984	937,504	8.4	-1.0
Sales value	167,827	164,709	143,736	-14.4	-12.7
Acyclic:					
Production	332,908	359,290	337,601	1.4	-6.0
Sales	296,767	327,618	301,612	1.6	-7.9
Sales value	93,142	101,161	91,100	-2.2	-9.9

See footnote at end of table.

TABLE 2.--Synthetic organic chemicals: Summary of U. S. production and sales of intermediates and finished products, 1967, 1969 and 1970--Continued

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

Chemical	1967[1]	1969	1970	Increase, or decrease (-)	
				1970 over 1967	1970 over 1969
				Percent	*Percent*
10. Surface-Active Agents					
Cyclic:					
Production	1,418,444	1,566,958	1,572,505	10.9	.4
Sales	852,238	894,017	916,922	7.6	2.6
Sales value	95,810	116,271	106,662	11.3	-8.3
Acyclic:					
Production	2,060,851	2,334,063	2,313,681	12.3	-.9
Sales	897,786	1,094,098	1,144,535	27.5	4.6
Sales value	220,877	253,504	280,539	27.0	10.7
11. Pesticides and Related Products					
Cyclic:					
Production	823,158	819,436	727,133	-11.7	-11.3
Sales	681,532	666,038	601,755	-11.7	-9.7
Sales value	627,742	697,167	701,558	11.8	.6
Acyclic:					
Production	226,505	284,945	306,942	35.5	7.7
Sales	215,831	262,625	279,159	29.3	6.3
Sales value	159,301	153,999	168,756	5.9	9.6
12. Miscellaneous Chemicals					
Cyclic:					
Production	1,535,922	1,905,569	1,705,018	11.0	-10.5
Sales	775,540	859,881	749,112	-3.4	-12.9
Sales value	283,575	324,968	310,370	9.4	-4.5
Acyclic:					
Production	58,159,771	73,814,409	77,552,401	33.3	5.1
Sales	25,225,631	33,922,100	35,248,580	39.7	3.9
Sales value	3,192,119	3,693,454	3,786,213	18.6	2.5

[1] Standard reference base period for Federal Government general-purpose index numbers.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1970 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	211	Rubber-processing chemicals	35
Dyes	47	Elastomers (synthetic rubbers)	37
Organic pigments	35	Plasticizers	60
Medicinal chemicals	104	Surface-active agents	210
Flavor and perfume materials	50	Pesticides and related products	88
Plastics and resin materials	264	Miscellaneous chemicals	321

Tars

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 1970 was almost entirely coal tar which amounted to 761 million gallons, or 1.0 percent less than the 769 million gallons produced in 1969 (see table 1[1]). U.S. production of water-gas and oil-gas tars was not reported to the Commission for 1969 or 1970; production of these tars amounted to 21 million gallons in 1968, according to trade publications. Sales of coal tar in 1970 amounted to 371 million gallons, valued at $36 million, compared with 377 million gallons, valued at $37 million, in 1969.

Consumption of tar in 1970 amounted to 767 million gallons, of which 658 million gallons was consumed in distillation and (by tar distillers only) in other uses. Tar used as fuel amounted to 108 million gallons. A lesser amount, 1.6 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, naphthalene, creosote oil, and pitch of tar. Some of these products are identical with those obtained from petroleum. Data for materials derived from petroleum are included, for the most part, with the statistics for like materials derived from coke-oven gas and tars, and are shown in tables 1 and 1B.

Domestic production of industrial and specification grades of benzene reported by coke-oven operators and petroleum refinery operators[2] in 1970 amounted to 1,134 million gallons--4.4 percent less than the 1,185 million gallons reported for 1969. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum operators in 1970 amounted to 654 mil-

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[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.

lion gallons, valued at $143 million, compared with 675 million gallons, valued at $148 million, in 1969. In 1970 the output of toluene[2] (including material produced for use in blending in aviation fuel) amounted to 830 million gallons--9.2 percent more than the 759 million gallons reported for 1969. Sales of toluene in 1970 were 430 million gallons, valued at $77 million, compared with 418 million gallons, valued at $76 million, in 1969. The output of xylene[2] in 1970 (including that produced for blending in motor fuels) was 538 million gallons, compared with 382 million gallons in 1969. About 99 percent of the 538 million gallons of xylene produced in 1970 was obtained from petroleum sources.

Production of crude naphthalene in 1970 (including 291 million pounds of petroleum-derived naphthalene) amounted to 719 million pounds, compared with 854 million pounds in 1969. In 1970 the output of creosote oil for wood preservation was 129 million gallons (100 percent creosote basis), compared with 137 million gallons in 1969. Production of road tar in 1970 was 53 million gallons, compared with 60 million gallons in 1969.

Some of the products obtained from tars and included in the statistics in table 1 are derived 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. It is estimated, that, after duplication has been eliminated insofar as possible, the net value of the output (from all sources) of these products and of tar burned as fuel was $634 million in 1970, compared with $640 million in 1969 and $574 million in 1968. The total value of sales of those products derived from coke-oven gas and tars shown in table 1 (exclusive of coal tar itself), amounted to $132 million in 1970, compared with $141 million in 1969.

TABLE 1.--Tar and tar crudes: U.S. production and sales, 1970

[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 any 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. Tariff Commission]

Product	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value[1]
				1,000 dollars	
Tar[2]: Coke-oven operators	1,000 gal--	760,926	371,203	35,804	$0.10
Crude light oil:[3] Coke-oven operators	1,000 gal--	244,107	98,060	11,888	.12
Intermediate light oil: Coke-oven operators	1,000 gal--	5,066	1,187	102	.09
Light-oil distillates:					
Benzene, specification and industrial grades, total[3 4]	1,000 gal--	1,133,520	653,977	143,331	.22
Coke-oven operators	1,000 gal--	93,492	92,117	19,793	.21
Petroleum operators	1,000 gal--	1,040,028	561,860	123,538	.22
Toluene, all grades, total[3 4]	1,000 gal--	829,607	430,478	77,378	.18
Coke-oven operators	1,000 gal--	17,041	16,765	3,093	.18
Petroleum operators	1,000 gal--	812,566	413,713	74,285	.18
Xylene, all grades[3 4]	1,000 gal--	537,637	453,913	75,794	.17
Coke-oven operators	1,000 gal--	4,501	4,752	945	.20
Petroleum operators	1,000 gal--	533,136	449,161	74,849	.17
Solvent naphtha, total	1,000 gal--	4,539	...	...	...
Coke-oven operators	1,000 gal--	3,707	3,288	536	.16
Tar distillers	1,000 gal--	832	...	...	...
Naphthalene, crude (tar distillers and coke-oven operators), total[5]	1,000 lb---	428,086	...	...	...
Solidifying at--					
Less than 74° C	1,000 lb---	19,364	10,209	160	.02
74° C. to less than 79° C	1,000 lb---	408,722	...	...	...
Crude tar-acid oils:[3] Coke-oven operators	1,000 gal--	18,989	18,804	3,195	.17
Creosote oil (Dead oil) (tar distillers and coke-oven operators) (100% creosote basis), total[6]	1,000 gal--	128,933	121,812	22,686	...
Distillate as such (100% creosote basis)	1,000 gal--	103,374	97,861	15,892	.16
Creosote content of coal-tar solution (100% creosote basis)[7]	1,000 gal--	25,559	23,951	[7]6,794	(7)
All other distillates, total	1,000 gal--	90,038	60,855	13,602	.22
Coke-oven operators, total	1,000 gal--	7,956	6,227	982	.16
From light oil	1,000 gal--	4,693	3,019	698	.23
Other[8]	1,000 gal--	3,263	3,208	284	.09
Tar distillers[9]	1,000 gal--	82,082	54,628	12,620	.23
Tar, road	1,000 gal--	53,005	53,785	7,289	.14
Tar, refined, for other uses	1,000 gal--	9,712	9,565	2,263	.24
Pitch of tar (tar distillers and coke-oven operators), total	1,000 tons	1,758	1,292	46,401	35.91
Soft (water softening point less than 110° F.)	1,000 tons	628	322	8,250	25.62
Medium (water softening point 110° F. to 160° F.)	1,000 tons	231	203	8,858	43.64
Hard (water softening point over 160° F.)[10]	1,000 tons	899	767	29,293	38.19

[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 Tariff 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

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. Tariff Commission.

TABLE 1.--Tar and tar crudes: U.S. production and sales, 1970--Continued

Footnotes for table 1--Continued

companies. Production of benzene, toluene, and xylene by tar distillers decreased in 1970, compared with 1969. The annual production statistics for petroleum operators on benzene, toluene, and xylene are not comparable with the combined monthly production figures, due to fiscal year revisions.

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

[5] Statistics represent combined data for the commercial grades of naphthalene. Because of conversion of naphthalene from one grade to another, the figures may include some duplication.

[6] Statistics include data only for creosote oil sold for, or used in, wood preserving.

[7] In 1970, production of coal tar solution containing creosote (100% solution basis) amounted to 38,676 thousand gallons; sales were 39,593 thousand gallons, valued at 6,794 thousand dollars, with a unit value of $0.17 per gallon.

[8] Includes data for crude sodium phenolate.

[9] Includes data for crude light oil, benzene, toluene, xylene, ethylbenzene, rubber-reclaiming oils, pyridine crude bases, crude tar-acid oils, crude cresylic acid, methylnaphthalene, crude tar for other uses, and sales of solvent naphtha and naphthalene solidifying at 74° C. to less than 79° C.

[10] Includes hard pitch and pitch emulsion.

TABLE 1A.--Tar: U.S. production and consumption, 1969 and 1970

(In thousands of gallons)

Product	1969	1970
PRODUCTION		
Coal tar from coke-oven byproduct plants, total[1]	768,766	760,926
CONSUMPTION		
Total	765,886	767,299
Tar consumed by distillation, total	667,150	657,731
Coal tar distilled or topped by coke-oven operators[1]	282,785	280,892
Coal tar, water-gas tar, and oil-gas tar distilled by tar distillers[2]	384,365	376,839
Tar consumed chiefly as fuel[1]	98,065	107,967
Coal tar consumed at coke-oven plants for roads and upkeep[1]	671	1,601

[1] Reported to the Division of Fossil Fuels, U.S. Bureau of Mines.

[2] Reported to U.S. Tariff 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 or as fuel by tar distillers.

TABLE 1B.--Tar and tar crudes: Summary of U.S. production of specified products, 1967, 1969-1970

Chemical	Unit of quantity	1967[1]	1969	1970	Increase, or decrease (-)	
					1970 over 1967	1970 over 1969
					Percent	*Percent*
Tar[2]	1,000 gal--	780,334	768,766	760,926	-2.5	-1.0
Benzene:[3]						
Coke-oven operators	1,000 gal--	90,642	101,695	93,492	3.1	-8.1
Petroleum operators	1,000 gal--	878,704	1,083,653	1,040,028	18.4	-4.0
Total	1,000 gal--	969,346	1,185,348	1,133,520	16.9	-4.4
Toluene:[3]						
Coke-oven operators	1,000 gal--	19,357	19,603	17,041	-12.0	-13.1
Petroleum operators	1,000 gal--	624,454	739,855	812,566	30.1	9.8
Total	1,000 gal--	643,811	759,458	829,607	28.9	9.2
Xylene:[3]						
Coke-oven operators	1,000 gal--	5,488	5,246	4,501	-18.0	-14.2
Petroleum operators	1,000 gal--	[4]449,349	[4]376,596	[4]533,136	18.6	41.6
Total	1,000 gal--	454,837	381,842	537,637	18.2	40.8
Naphthalene:						
Crude[5]	1,000 lb---	520,991	495,863	428,086	-17.8	-13.7
Petroleum naphthalene, all grades	1,000 lb---	376,679	357,637	290,545	-22.9	-18.8
Total	1,000 lb---	897,670	853,500	718,631	-19.9	-15.8
Creosote oil (Dead oil):[6]						
Distillate as such (100% creosote basis)	1,000 gal--	108,832	118,316	103,374	-5.0	-12.6
Creosote content of coal-tar solution (100% creosote basis)	1,000 gal--	17,402	18,598	25,559	46.9	37.4
Total	1,000 gal--	126,234	136,914	128,933	2.1	-5.8

[1] Standard reference base period for Federal Government general-purpose index numbers.
[2] Includes 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 to avoid disclosure of the operations of individual companies. 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] 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, 1970

[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:	
*Benzene, specification and industrial grades[1]	ACY, KPP.
*Toluene, all grades[1]	ACY, KPP.
*Xylene, all grades[1]	ACY.
*Solvent naphtha[1]	ACY, NEV, PAI.
*All other light-oil distillates[1]	ACY, KPT. PAI.
Pyridine crude bases[1]	ACP, KPT.
*Naphthalene, crude, solidifying at--	
*Less than 74° C[1]	COP.
*74° C. to less than 79° C:[1]	
74° C. to less than 76° C	KPT.
76° C. to less than 79° C	ACP, KPT.
Methylnaphthalene	KPT.
*Crude tar-acid oils:[1]	
Tar-acid content 5% to less than 24%	ACP, KPT, RIL.
Tar-acid content 24% to 50%	ACP, RIL, WTC.
Cresylic acid, crude	ACP, KPT, PRD.
*Creosote oil (Dead oil):	
*Distillate as such[1]	ACP, CBT, COP, HUS, KPT, RIL, WTC.
*Creosote in coal-tar solution[1]	ACP, KPT, RIL, WTC.
*All other distillate products[1]	ACP, KPT.
*Tar, road	ACP, KPT, RIL.
Tar for other uses:	
Crude	KPT.
*Refined[1]	ACP, KPT, RIL.
*Pitch of tar:	
*Soft (water softening point less than 110° F.)[1]	ACP, KPT, WTC.
*Medium (water softening point 110° F. to 160° F.)[1]	ACP, CBT, COP, KPT, RIL, WTC.
*Hard (water softening point above 160° F.)[1]	ACP, HUS, KPT, RIL.
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, July 30, 1971, entitled "Coke Producers in the U.S. in 1970".

TABLE 3.--Tar and tar crudes: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of tar and tar crudes to the U.S. Tariff Commisson for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company	Code identification	Name of company
ACP	Allied Chemical Corp., Plastics Div.	KPT	Koppers Co ., Inc., Organic Materials Div.
ACY	American Cyanamid Co.		
CBT	Samuel Cabot, Inc.	NEV	Neville Chemical Co.
COP	Coopers Creek Chemical Corp.		
HUS	Husky Briquetting, Inc.	PAI	Pennsylvania Industrial Chemical Corp.
		PRD	Productol Chemical Co., Inc.
JEN	Jennison-Wright Corp.	RIL	Reilly Tar & Chemical Corp.
KPP	Sinclair-Koppers Co.	WTC	Witco Chemical Co., Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

Crude products that are derived from petroleum and natural gas[1] 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. Notwithstanding these duplications, the statistics are sufficiently accurate to indicate trends in the industry and to serve as a basis for general comparison. 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, depending on prevailing economic conditions; but 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 77,879 million pounds in 1970, or 9.2 percent more than the 71,315 million pounds reported for 1969 (table 1).[2] The larger output in 1970 is accounted for chiefly by increased production of ethylene, propane, xylenes, and ethane. Sales of crude chemicals from petroleum in 1970 amounted to 43,439 million pounds, valued at $1,061 million, compared with 39,240 million pounds, valued at $1,001 million, in 1969.

The output of aromatic and naphthenic products from petroleum amounted to 21,079 million pounds in 1970, compared with 19,134 million pounds in 1969. Sales in 1970, which amounted to 13,571 million pounds, valued at $323 million, were 1803 million pounds larger, and valued at $22 million more, than those in 1969. The output of 1^0 and 2^0 benzene from petroleum amounted to 7,675 million pounds in 1970--4.0 percent less than the 7,997 million pounds produced in 1969. The output of toluene in 1969 was 5,907 million pounds--9.8 percent more than the 5,379 million pounds produced in 1969. Production of xylene was 3,844 million pounds in 1970, compared with 2,715 million pounds in 1969. These figures include toluene and xylene used in blends in aviation and motor-grade gasolines. Production of naphthalene, 291 million pounds in 1970 was 67,092 thousand pounds less than production in 1969. The output of 24.7 million pounds of naphthenic acids in 1970 was 3.3 million pounds less than that produced 1969.

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[1] Statistics on aromatic chemicals from coal tar are reported in "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.

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Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 56,800 million pounds in 1970, compared with 52,182 million pounds in 1969. Sales of these products were 29,868 million pounds, valued at $738 million, in 1970 compared with 27,472 million pounds, valued at $701 million in 1969. The statistics on production of acetylene include only acetylene produced from hydrocarbons and used as raw material in the production of other chemicals. Total production of acetylene for chemical synthesis is reported to the U.S. Bureau of the Census. In 1970, production of acetylene from hydrocarbon sources, amounted to 472 million pounds. Production of ethylene was 18,089 million pounds in 1970--10.1 percent more than the 16,436 million pounds produced in 1969. The output of propylene and propane-propylene mixture was 6,641 million pounds in 1970--8.2 percent less than the 7,235 million pounds produced in 1969. Production of 1,3-butadiene, one of the principal ingredients of S-type synthetic rubber, was 3,101 million pounds in 1970, compared with the output of 3,123 million pounds in 1969, the largest on record.

The following tabulation shows the number of companies that reported production of organic chemical crudes in 1970.

Chemical group	*Number of companies*
Tar crudes	13
Petroleum crudes	74

TABLE 1.--Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1970

[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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	77,879,080	43,438,980	1,060,947	$0.024
AROMATICS AND NAPHTHENES[2]				
Total	21,079,182	13,570,825	322,799	.024
Benzene (1° and 2°)	7,675,406	4,146,527	123,538	.030
Naphthalene, all grades	290,545	201,474	10,562	.052
Naphthenic acid, total	24,662	19,044	1,691	.089
Acid number less than 150	10,269	...	...	...
Acid number 150 and over	14,393	...	...	...
Toluene, all grades, total	5,907,400	3,007,740	74,285	.025
Nitration grade, 1°	4,184,190	2,382,466	60,683	.025
Pure commercial grade, 2°	427,505	...	...	...
All other[3]	1,295,705	625,274	13,602	.022
Xylenes, mixed, total	3,843,910	3,238,451	74,849	.023
Xylene, 3°	513,640	504,044	12,017	.024
Xylene, 5°	592,179	569,741	14,002	.025
All other[3]	2,738,091	2,164,666	48,830	.023
All other aromatics and naphthenes[4]	3,337,259	2,957,589	37,874	.013
ALIPHATIC HYDROCARBONS				
Total	56,799,898	29,868,155	738,148	.025
C_2 hydrocarbons, total	23,523,203	...	...	...
Acetylene[5]	471,685	...	...	...
Ethane	4,962,433	3,523,887	30,707	.009
Ethylene	18,089,085	5,046,920	156,053	.031
C_2 and C_3 hydrocarbons, mixed	2,128,452	...	...	...
C_3 hydrocarbons, total	15,426,916	9,993,278	157,356	.016
Propane	8,786,067	6,894,751	74,749	.011
Propylene[6]	6,640,849	3,098,527	82,607	.027
C_4 hydrocarbons, total	10,472,783	6,658,458	266,722	.040
1,3-Butadiene, grade for rubbers (elastomers)	3,101,437	1,947,218	163,967	.084
Butadiene and butylene fractions	743,492	409,320	12,846	.031
n-Butane	2,757,102	1,276,126	13,278	.010
1-Butene	58,139	50,183	2,554	.051
1-Butene and 2-butene mixtures[7]	1,594,461	1,621,445	43,894	.027
Isobutane	809,500	211,152	2,224	.011
Isobutylene	580,746	327,194	12,600	.039
All other[8]	827,906	815,820	15,359	.019
C_5 hydrocarbons, total	1,142,935	490,584	16,391	.033
Isoprene (2-Methyl-1,3-butadiene)	351,610	65,778	6,700	.102
Pentenes, mixed	330,105	...	...	...
All other[9]	461,220	424,806	9,691	.023

See footnotes at end of table.

TABLE 1.--Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1970--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	4,105,609	4,155,028	110,919	$0.027
Alpha olefins[10]	185,055	129,662	8,105	.062
Diisobutylene (Diisobutene)	36,032	...	...	...
Heptenes, mixed	138,640	72,889	2,396	.033
Hexanes and other C_6 hydrocarbons	275,863	230,173	7,394	.032
Nonene (Tripropylene)	323,782	224,411	8,429	.038
n-Paraffins, total	1,015,611	520,960	16,997	.033
Carbon chain length, C_{10}-C_{14}	508,199	...	...	...
Other	507,412	520,960	16,997	.033
Polybutene[11]	155,338	145,877	9,678	.066
Tetrapropylene	371,866	180,226	6,213	.034
Hydrocarbon derivatives[12]	117,091	113,775	9,096	.080
All other[13]	1,486,331	2,537,055	42,611	.017

[1] Calculated from rounded figures.

[2] The chemical raw materials designated as aromatics are in some cases identical with those obtained from the distillation of coal tar; however, the statistics given in the table above relate only to such materials as are derived from petroleum and natural gas. Statistics on production or sales of benzene, toluene, xylene, and naphthalene from all sources are given in tables 1 and 1B of "Tar and Tar Crudes".

[3] Includes toluene and xylene used as solvents, as well as that which is blended in aviation and motor gasolines.

[4] Includes data for 90-percent benzene, 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 2-butene, mixed butylenes, and mixed olefins.

[9] Includes data for isopentane, pentenes, and C_5 hydrocarbon mixtures.

[10] Includes data for the following molecular weight ranges: C_6-C_7; C_8-C_{10}; C_{11}-C_{15}; C_{15}-C_{20}; and C_{16}-C_{30}.

[11] Includes compounds having a molecular weight of 3,000 or less.

[12] Includes data for butyl, ethyl, methyl, and miscellaneous mercaptans.

[13] Includes data for acetylene (sales only), ethane-ethylene mixture, heptane, methane, octanes, and hydrocarbon mixtures.

TABLE 2.--Crude products from petroleum and natural gas for chemical conversion for which U.S. production or sales were reported, identified by manufacturer, 1970

[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, APR, ASH, ATR, CCP, CPI, CSD, CSO, CSP, DLH, ENJ, GOC, GRS, HES, MOC, MON, PLC, PPR, SHC, SHO, SKO, SM, SNT, SOG, SUN, TOC, TX, UCC, UOC, VPT.
*Benzene, 2°	DOW, SHO, SOC.
Cresylic acid, crude	PRD.
*Naphthalene, all grades	ASH, COL, MON, SUN, TID.
*Naphthenic acids:	
*Acid number lower than 150	ATR, SOC, SUN, TX.
Acid number 150-199	ATR, PRD, SOC, SUN.
Acid number 200-224	ATR, PRD, SOC.
Acid number 225-249	SOC.
Sodium carbolate and phenate, crude	ATR.
*Toluene:	
*Nitration grade, 1°	ASH, ATR, CCP, CSD, CSP, DLH, ENJ, GOC, HES, MOC, MON, PLC, PPR, SHC, SHO, SNT, SOG, SUN, TOC, TX, UCC, UOC, VPT.
*Pure commercial grade, 2°	ATR, CPI, DOW, ENJ, LEN, MON, UCC.
Solvent grade, 90%	CO, FG, SKO.
All other	ACC, ATR, ELP, GRS, PLC, SM, SOC, SUN, TX.
*Xylenes, mixed:	
Aviation grade	CSD, CSO.
*3° grade	DLH, MOC, PPR, UOC.
*5° grade	ASH, HES, SOG, TX.
All other	ATR, CCP, CPI, CSD, CSP, ENJ, HCR, LEN, MON, PPR, SHC, SHO, SNT, SOC, STY, TOC, UCC, VPT.
All other aromatics, naphthenes, distillates and solvents	ACC, ACU, ATR, CBN, CPI, CPX, DUP, ELP, ENJ, FG, GOC, JCC, LEN, MOC, MON, OMC, PLC, PPR, SHC, SOC, SOG, SOI, TX, USI, VPT.
ALIPHATIC HYDROCARBONS	
C_1 hydrocarbon: Methane	CCP, MON.
*C_2 hydrocarbons:	
*Acetylene	DOW, DUP, MNO, MON, UCC, x.
*Ethane	ACU, ATR, CCP, ENJ, MON, PAN, PLC, SHO, SM, TX, USI.
*Ethylene	ACU, ATR, BFG, CBN, CCP, CO, CPX, DOW, DUP, EKX, ELP, ENJ, GOC, JCC, KPP, MON, OMC, PLC, SHC, SM, SNO, UCC, USI.
*C_2 and C_3 hydrocarbons, mixed	ATR, CSO, ENJ, PLC.
*C_3 hydrocarbons:	
*Propane	AMO, APR, ASH, ATR, CCP, COR, CPI, CSD, CSO, CSP, ENJ, GOC, GRS, JCC, MOC, OMC, PAN, PLC, SHC, SHO, SM, SNT, SOG, SOI, SUN, TX, UOC, USI.
*Propane-propylene mixture	GOC.
*Propylene	ACU, AMO, ASH, ATR, BFG, CBN, CCP, CO, COR, CPX, CSO, CSP, DOW, DUP, EKX, ELP, ENJ, GOC, JCC, KPP, MOC, MON, PLC, SHO, SIO, SM, SNT, SOG, SOI, SUN, TX, UCC, UOC.
*C_4 hydrocarbons:	
*1,3-Butadiene, grade for rubbers (elastomers)	APL, ATR, CBN, CPY, DOW, DUP, ELP, ENJ, FRS, MON, PLC, PTT, SBI, SHC, SHO, SM, SOC, TID, TUS, UCC.
*Butadiene and butylene fractions	ACU, ATR, CO, CPX, DOW, EKX, GOC, GYR, KPP, PLC, SHC, SHO, SOC, UCC.
*n-Butane	ATR, COR, CPI, CSD, CSP, GRS, OMC, PAN, PLC, SHO, SM, SNT, SOC, SOG, 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, 1970--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, CSO, ENJ, GOC, PLC, PTT, SHO, SOC, TX, UOC.
*Isobutane	ATR, CSP, ELP, OMC, PAN, PLC, SHO, SUN, TX, USI.
*Isobutylene	ATR, ENJ, OCC, SHO, UOC.
All other	APR, BFG, ENJ, JCC, MON, PLC, SM, USI.
*C_5 hydrocarbons:	
Isopentane (2-Methylbutane)	APR, PAN, PLC, SHO, SM.
*Isoprene (2-Methyl-1,3-butadiene)	APL, ENJ, GYR, MON, SHC.
n-Pentane	APR, PLC.
*Pentenes, mixed	ENJ, GYR, MON, TX.
All other	PLC, UCC, USI.
*C_6 hydrocarbons:	
Hexane	ENJ, PLC, SOG.
Neohexane (2,2-Dimethylbutane)	PLC.
All other	APR, PLC, SWC, UOC.
C_7 hydrocarbons:	
n-Heptane	EKX, PLC, SOG.
*Heptenes, mixed	CSD, ENJ, GOC, HOU, SOI, TID.
All other	ENJ, HCR, PLC, TX, UCC. UOC.
C_8 hydrocarbons:	
*Diisobutylene (Diisobutene)	ATR, PTT, TX.
n-Octane	SOG.
All other	ENJ, PLC.
Hydrocarbons, C_9 and above:	
*Nonene (Tripropylene)	ATR, ENJ, GOC, HOU, UOC.
*Polybutene	ACC, CSD, SOC, SOI.
*Tetrapropylene	ATR, CO, COR, ENJ, GOC, SOC, SUN, TX, UOC.
Tridecene concentrate	ENJ.
Triisobutylene	ATR.
All other	ATR, CO, EKX, ENJ, GOC, HCR, HOU, KPP, PLC, SOC, SUN, TID, 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}	ENJ, GOC, SOC.
All other	EKX, GOC, SOC.
*n-Paraffins--Carbon chain length:	
C_6-C_9	SOG.
C_9-C_{15}	SOG.
*C_{10}-C_{14}	ENJ, SOG, UCC.
C_{10}-C_{16}	CO.
All other	ATR, UCC.
*Hydrocarbon derivatives:	
1-Butanethiol	PAS, PLC.
tert-Butyl-mercaptan (2-Methyl-2-propanethiol)	PAS, PLC.
Cyclohexyl mercaptan	PAS.
Di-tert-butyl disulfide	PLC.
Di-tert-nonylpolysulfide	PAS.
Ethyl mercaptan (Ethanethiol)	PAS.
Isopropyl mercaptan	PAS.
Methyl mercaptan (Methanethiol)	ACC, PAS.
tert-Nonyl mercaptan	PAS.
n-Propyl mercaptan (1-Propanethiol)	PAS, PLC.
All other	EKX, PAS, PLC, UCC.
Mixtures, not elsewhere classified	GYR, MON.

TABLE 3.--Crude products from petroleum and natural gas for chemical conversion: Directory of manufacturers, 1970

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. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

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

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 1970 almost half 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 (table 1)[1] in 1970--28,257 million pounds--was 1.1 percent less than the output of 28,571 million pounds reported for 1969, the largest output on record. The smaller output of cyclic intermediates in 1970 reflects the decreased demand by the chemical products industries, particularly those industries that produce plastics materials, dyes, pigments, and plasticizers. Sales of cyclic intermediates in 1970 amounted to 12,976 million pounds, valued at $1,260 million, compared with 12,398 million pounds, valued at $1,208 million, in 1969. In terms of quantity, sales of cyclic intermediates in 1970 were 4.7 percent larger than those in 1969 and in terms of value, 4.3 percent larger.

Production of ethylbenzene in 1970 was 4,827 million pounds, or 1.6 percent less than the 4,907 million pounds reported for 1969. Output of styrene in 1970 was 4,335 million pounds, a decrease of 6.7 percent from the 4,648 million pounds in 1969. Other intermediates whose production exceeded 1 billion pounds in 1970 were cumene (1,983 million pounds), cyclohexane (1,841 million pounds), phenol (1,755 million pounds), p-xylene (1,590 million pounds), dimethyl terephthalate (1,447 million pounds), and terephthalic acid (1,329 million pounds). The output of other large-volume intermediates in 1970 compared with 1969 were: Ortho-xylene, 799 million pounds (6.1 percent less than in 1969); phthalic anhydride, 734 million pounds (3.4 percent less); cyclohexanone, 714 million pounds (1.5 percent larger); straight chain alkylbenzenes, 553 million pounds (4.5 percent larger); nitrobenzene, 548 million pounds (13.1 percent larger); and isocyanates, 513 million pounds (21.7 percent larger). Production of chlorobenzene amounted to 485 million pounds (19.4 percent less than in 1969), and production of aniline was 398 million pounds, an increase of 19.3 percent over 1969. The above 16 chemicals accounted for 84 percent of the total output of cyclic intermediates in 1970.

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

TABLE 1.--Cyclic intermediates: U.S. production and sales, 1970

[Listed below are all cyclic intermediates 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 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	28,257,042	12,976,217	1,260,395	$0.10
Acetanilide, tech	4,221	317	79	.25
Acetoacetanilide	4,006	3,917	1,659	.42
o-Acetoacetanisidide	644	686	677	.99
o-Acetoacetotoluidide	839	937	507	.54
Acetophenone, tech	814	...	...	...
Alkylbenzenes[2]	553,166	536,487	53,834	.10
3'-Aminoacetanilide	13	...	...	...
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	187	...	...	...
5-Amino-2-(p-aminoanilino)benzenesulfonic acid	10	...	...	...
1-Aminoanthraquinone and salt	955	...	...	...
2-Aminoanthraquinone and salt	536	...	...	...
2-Amino-p-benzenedisulfonic acid [SO_3H=1]	18	...	...	...
1-Amino-2-bromo-4-hydroxyanthraquinone	260	...	...	...
1-Amino-2-bromo-4-p-toluidinoanthraquinone	24	...	...	...
1-Amino-5-chloroanthraquinone	62	...	...	...
1-Amino-2,4-dibromoanthraquinone	435	...	...	...
4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4-Acid)	498	...	...	...
N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide	24	...	...	...
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	497	...	...	...
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)	376	...	...	...
5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed)	50	...	...	...
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	90	...	...	...
2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	39	...	...	...
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	264	...	...	...
Aniline (Aniline oil)	398,362	194,857	22,368	.11
7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid)	34	...	...	...
Anilinomethanesulfonic acid and salt	522	...	...	...
8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	129	...	...	...
o-Anisidine	1,845	...	...	...
Anisole, tech	298	80	36	.45
1-Benzamido-5-chloroanthraquinone	45	...	...	...
7H-Benz[de]anthracen-7-one (Benzanthrone)	1,881	300	452	1.51
2-Benzothiazolethiol, sodium salt	32,477	...	...	...
[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione	681	...	...	...
1,4-Bis[1-anthraquinonylamino]anthraquinone	58	...	...	...
3-Bromo-7H-benz[de]anthracene-7-one (3-Bromobenzanthrone)	197	...	...	...
1-Bromo-4-(methylamino)anthraquinone	24	...	...	...
Camphosulfonic acid	271	...	...	...
1-Chloroanthraquinone	127	...	...	...
2-Chloroanthraquinone	531	...	...	...
Chlorobenzene, mono-	484,914	66,755	3,699	.06
o-(p-Chlorobenzoyl)benzoic acid	523	...	...	...
1-Chloro-2-methylanthraquinone	266	...	...	...
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	88,854	...	...	...
4-Chloro-3-nitrobenzenesulfonamide	431	...	...	...
4-Chloro-3-nitrobenzenesulfonyl chloride	426	...	...	...
α-Chlorotoluene (Benzyl chloride)	75,131	19,667	2,657	.14
Cresols, total[3]	91,414	94,436	20,260	.21
o-Cresol	23,110	22,226	3,411	.15
(m,p)-Cresol	41,007	46,984	7,192	.15
All other[4]	27,297	25,226	9,657	.38
Cresylic acid, refined[3]	98,334	75,217	11,573	.15
Cumene	1,983,349	1,200,395	45,591	.04
Cyclohexane	1,841,052	1,795,881	61,522	.03

See footnotes at end of table.

TABLE 1.--Cyclic intermediates: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Cyclohexanol	...	10,156	1,396	$0.14
Cyclohexanone	714,470	33,777	3,800	.11
1,4-Diaminoanthraquinone	72	...	...	...
2,6-Diaminoanthraquinone	158	...	...	...
1,4-Diamino-2,3-dihydroanthraquinone	651	...	...	...
4,4'-Diamino-2,2'-stilbenedisulfonic acid	7,571	...	...	...
4,5'-Dibenzamido-1,1'-iminodianthraquinone	77	...	...	...
1,5-Dichloroanthraquinone	52	...	...	...
o-Dichlorobenzene	66,219	35,074	3,503	.10
p-Dichlorobenzene	69,606	69,669	6,165	.09
3,3'-Dichlorobenzidine base and salts	3,656	3,492	4,227	1.21
2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	135	...	...	...
2,5-Dichlorosulfanilic acid	81	...	...	...
Dicyclopentadiene (includes cyclopentadiene)	66,841	36,220	1,489	.04
p-(Diethylamino)benzaldehyde	44	...	...	...
N,N-Diethylaniline	2,342	1,556	814	.52
9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid	37	30	102	3.40
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt	315	...	...	...
9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt	234	...	...	...
9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt	363	...	...	...
9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt)	1,507	...	...	...
1,4-Dihydroxyanthraquinone (Quinizarin)	1,610	115	123	1.07
1,5-Dihydroxyanthraquinone (Anthrarufin)	112	...	...	...
1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin)	217	...	...	...
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	404	...	...	...
N,N-Dimethylaniline	...	9,954	1,985	.20
N,N-Dimethylbenzylamine	93	65	91	1.40
2,2-Dimethyl-1,1'-bianthraquinone	134	...	...	...
2,4-Dinitroaniline	196	135	107	.79
4,4'-Dinitrostilbene-2,2'-disulfonic acid	10,161	...	...	...
2,4(and 2,6)-Dinitrotoluene	296,503	...	...	...
Diphenylamine	29,423	14,646	3,581	.24
1,4-Di-p-toluidinoanthraquinone	108	...	...	...
Divinylbenzene	3,204	2,654	1,771	.67
p-Dodecylphenol	10,453	...	...	...
N-Ethylaniline, refined	682	...	...	...
Ethylbenzene[5]	4,827,273	512,673	19,413	.04
N-Ethyl-N-phenylbenzylamine	872	...	...	...
Hippuric acid	1,099	1,105	985	.89
Hydroquinone, tech	13,681	13,152	10,144	.77
p-Hydroxybenzenesulfonic acid	8,049	8,179	924	.11
4-Hydroxymetanilamide	135	...	...	...
3-Hydroxy-2-methylcinchoninic acid	179	...	...	...
3-Hydroxy-2,7-naphthalenedisulfonic acid, potassium & sodium salts	1,343	824	751	.91
7-Hydroxy-1,3-naphthalenedisulfonic acid and sodium salt	968	21	15	.71
6-Hydroxy-2-naphthalenesulfonic acid and sodium salt	458	...	...	...
N-(7-Hydroxy-1-naphthyl)acetamide	23	...	...	...
1,1'-Iminobis[4-aminoanthraquinone]	79	...	...	...
1,1'-Iminobis[5-benzamidoanthraquinone]	22	...	...	...
7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid]	20	...	...	...
1,1'-Iminobis[4-nitroanthraquinone]	66	...	...	...
1,1'-Iminodianthraquinone (1,1'-Dianthrimide)	82	...	...	...
Isocyanic acid derivatives, total	512,802	415,018	143,012	.34
Polymethylene polyphenylisocyanate	132,028	82,394	28,320	.34
Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	304,900	287,134	91,107	.32
Other isocyanic acid derivatives	75,874	45,490	23,585	.52
4,4'-Isopropylidenediphenol (Bisphenol A)	202,171	72,931	12,201	.17

See footnotes at end of table.

TABLE 1.--Cyclic intermediates: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Leuco quinizarin (1,4,9,10-Anthratetrol)	103	...	...	...
Melamine	68,477	...	...	...
dl-p-Mentha-1,8-diene (Limonene)	7,956	...	...	...
Metanilic acid (m-Aminobenzenesulfonic acid)	1,202	...	...	...
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	176	...	...	...
3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	81	66	97	$1.47
α-Methylstyrene	19,063	12,737	789	.06
Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude)	...	1,786	161	.09
3'-Nitroacetanilide	15	...	...	...
4'-Nitroacetanilide	277	...	...	...
Nitrobenzene	547,680	...	...	...
m-Nitrobenzenesulfonic acid and sodium salt	3,654	2,165	803	.37
p-Nitrophenol and sodium salt	32,600	19,312	6,429	.33
4'-(p-Nitrophenyl)acetophenone	42	...	...	...
5-Nitro-o-toluenesulfonic acid [SO_3H=1]	9,025	...	...	...
5-Nitro-o-toluidine [NH_2=1]	99	95	120	1.26
Nonylphenol	78,134	32,138	3,564	.11
1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone	399	...	...	...
Phenol, grand total[3]	1,755,278	769,010	53,998	.07
Natural, from coal tar and petroleum	47,071	28,685	2,503	.09
Synthetic, total	1,708,207	740,325	51,495	.07
From cumene	1,167,168	542,220	37,387	.07
Other synthetic	541,039	198,105	14,108	.07
Phenylacetonitrile (α-Tolunitrile)	...	572	292	.51
p-Phenylazoaniline (C.I. Solvent Yellow 1) and hydrochloride	324	...	...	...
Phthalic anhydride	734,020	440,846	40,126	.09
Picolines, total[3]	4,479	2,839	997	.35
2-Picoline (α-Picoline)	...	852	298	.35
Other picolines	4,479	1,987	699	.35
Salicylaldehyde	3,820	2,668	2,677	1.00
Salicylic acid, tech	38,786	7,543	3,097	.41
Styrene, all grades	4,335,313	2,013,221	130,311	.06
Terephthalic acid	1,328,953	...	...	...
Terephthalic acid, dimethyl ester	1,446,937	729,802	103,734	.14
1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative	149	...	...	...
3,3'-Thiobis[7H-benz[de]anthracen-7-one]	24	...	...	...
Toluene-2,4-diamine (4-m-Tolylenediamine)	132,760	...	...	...
o-(p-Toluoyl)benzoic acid	226	...	...	...
4-(o-Tolylazo)-o-toluidine (C.I. Solvent Yellow 3)	290	46	38	.83
1,2,4-Trichlorobenzene	9,344	9,531	1,185	.12
1,3,3-Trimethyl-Δ^2,α-indolineacetaldehyde	168	...	...	...
1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)	332	...	...	...
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic] (J acid Urea)	205	...	...	...
Violanthrone (Dibenzanthrone)	430	...	...	...
m-Xylene	99,301	...	...	...
o-Xylene	798,706	777,145	23,069	.03
p-Xylene	1,590,209	1,293,937	81,971	.06
All other cyclic intermediates	2,680,748	1,629,380	365,424	.22

[1] Calculated from rounded figures.

[2] Includes straight-chain dodecylbenzene, tridecylbenzene and other striaght-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 U.S. Tariff 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.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970

[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)
5-Acetamido-2-aminobenzenesulfonic acid	GAF.
3-[(2-Acetamido-4-aminophenyl)azo]-1,5-naphthalenedisulfonic acid.	TRC.
2,2'-[(5-Acetamido-2-ethoxyphenyl)imino]diethanol	AAP.
2,2'-[(3-Acetamidophenyl)imino]diethanol	AAP.
α-Acetamido-p-toluenesulfonamide	SDW.
*Acetanilide, tech	CTN, EKT, MRK, SAL.
Acetic acid, phenyl ester	UCC.
*Acetoacetanilide	FMP, HST, UCC.
*o-Acetoacetanisidide	FMP, HST, UCC.
*o-Acetoacetotoluidide	FMP, HST, UCC.
2',4'-Acetoacetoxylidide	HST.
1'-Acetonaphthone	GIV.
Acetone phenylhydrazone	DUP.
*Acetophenone, tech	ACP, SKO, UCC.
p-Acetotoluidide	EK.
p-Acetylbenzenesulfonamide	LIL.
p-Acetylbenzenesulfonic acid, sodium salt	LIL.
p-Acetylbenzenesulfonylurethane	LIL.
N-Acetylsulfanilyl chloride	ACY, CTN, MRK, SAL.
Adenine	KF.
*Alkylbenzenes:	
Dodecylbenzene (including tridecylbenzene):	
*Straight chain	BRP, CO, MON, UCC, WCC.
Other	CO, SOC.
Alkylphenols, mixed	GAF, ORO.
Alkylpiperazines, mixed	HOU.
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	AAP, GAF, TRC.
*4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	ACS, DUP, GAF, TRC.
3'-Amino-o-acetophenetidide	AAP.
3'-Aminoacetophenone	CTN, SDH.
4'-Aminoacetophenone	EK.
*5-Amino-2-(p-aminoanilino)benzenesulfonic acid	GAF, TRC, YAW.
1-Amino-4-(3-amino-4-sulfoanilino)-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid.	TRC.
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-anisamide	PCW.
3-Amino-p-anisanilide	PCW.
*1-Aminoanthraquinone and salt	AAP, ACY, DUP, GAF, ICI, MAY, TRC.
*2-Aminoanthraquinone and salt	ACS, ACY, GAF, TRC.
5(and 8)-Amino-1-anthraquinonesulfonic acid	ICI.
N-(4-Amino-1-anthraquinonyl)anthranilic acid	GAF.
N-(5-Amino-1-anthraquinonyl)anthranilic acid	DUP.
4-Aminoantipyrine	VPC.
6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9).	ACY, TRC.
Aminoazoxylene toluene homologues	ACS.
p-Aminobenzamide	SDH.
1-Amino-4-benzamidoanthraquinone	MAY, TRC.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
1-Amino-5-benzamidoanthraquinone	ACY, GAF, ICI.
7-[p-(p-Aminobenzamido)benzamido]-4-hydroxy-2-naphthalenesulfonic acid.	CMG, TRC.
7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid--	CMG, GAF.
*2-Amino-p-benzenedisulfonic acid [SO_3H=1]	ACS, DUP, ICC.
o-Aminobenzenethiol	FIS, FMT.
2-Aminobenzimidazole	EK.
p-Aminobenzoic acid, tech	DUP.
p-Aminobenzoic acid, 2-(dimethylamino)ethyl ester	SDW.
4-Aminobenzophenone	DUP.
2-Amino-6-benzothiazolecarboxylic acid	DUP.
2-(m-Aminobenzoyl)-o-acetanisidide	GAF.
2-Amino-1-bromo-3-chloroanthraquinone	ICI.
1-Amino-4-bromo-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid and sodium salt.	ICI, TRC.
*1-Amino-2-bromo-4-hydroxyanthraquinone	AAP, DUP, TCD.
1-Amino-4-bromo-2-methylanthraquinone	ICI.
*1-Amino-2-bromo-4-p-toluidinoanthraquinone	ACS, GAF, ICI.
*1-Amino-5-chloroanthraquinone	ACY, DUP, ICI, TRC.
1-Amino-8-chloroanthraquinone	DUP.
2-Amino-1-chloroanthraquinone	DUP.
2-Amino-3-chloroanthraquinone	GAF, ICI.
4-Amino-6-chloro-m-benzenedisulfonamide	ABB, MRK.
4-Amino-6-chloro-m-benzenedisulfoamide hydrochloride	ABB.
2-Amino-6-chlorobenzothiazole hydrochloride	DUP.
o-(3-Amino-4-chlorobenzoyl)benzoic acid	AAP, ICI.
2-Amino-5-chloro-4-ethylbenzene	ACY.
1-Amino-2-chloro-4-hydroxyanthraquinone	TRC.
2-Amino-4-chlorophenol	SW.
2-Amino-6-chloropyrazine	ACY.
3-Amino-6-chloropyridazine	ACY.
2-Amino-5-chloro-p-toluenesulfonic acid [SO_3H=1]	ACY, HSC.
6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=1]	DUP, HSC, SW.
*1-Amino-2,4-dibromoanthraquinone	AAP, DUP, ICI, TCD.
5(and 8)-Amino-6,8(and 5,7)-dibromo-9,10-dihydro-9,10-dioxo-1-anthracenesulfonic acid.	ICI.
1-Amino-2,4-dichloroanthraquinone	TRC.
2-Amino-5,6-dichlorobenzothiazole	SDC.
6-Amino-2,4-dichloro-m-cresol	EK.
4'-Amino-2'5'-diethoxybenzanilide	GAF.
1-Amino-9,10-dihydro-9,10-dioxo-2-anthroic acid	DUP.
1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfonamido-2-anthracenesulfonic acid, sodium salt.	AAP, DUP, GAF.
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-dimethylbenzyl)phenol	TRC.
3-Amino-9-ethylcarbazole	SDC.
N-(2-Aminoethyl)-N-ethyl-m-toluidine	WAY.
3-Amino-α-ethylhydrocinnamic acid	SDW.
N-[2-(4-Amino-N-ethyl-m-toluidino)ethyl]methanesulfonamide, hemisulfate.	WAY.
N-Aminohexamethyleneimine	FMP.
2-Amino-3-hydroxyanthraquinone	ACS, GAF.
1-Amino-4-hydroxy-2-methoxyanthraquinone	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
3-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (2R acid) monosodium salt.	ACS.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (H acid), monosodium salt.	ACS.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4-Acid)--	ACS, GAF, TRC.
6-Amino-4-hydroxy-2-naphthalenesulfonic acid (Gamma acid), sodium salt.	DUP, TCD, TRC.
7-Amino-4-hydroxy-2-naphthalenesulfonic acid (J acid), sodium salt	TCD, TRC.
2-(2-Amino-5-hydroxy-7-sulfo-1-naphthylazo)-5-nitro-benzoic acid.	TRC.
1-(6-Amino-1-hydroxy-3-sulfo-2-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
4-Amino-3-(β-methanesulfonamidoethyl)-N,N-diethylaniline hydrochloride.	EKT.
*N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfon-amide.	AAP, DUP, GAF.
5-Amino-6-methoxy-2-naphthalenesulfonic acid----------	TRC.
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid--------	DUP, TRC.
8-Amino-6-methoxyquinoline----------	SDW.
4-[(4-Amino-5-methoxy-o-tolyl)azo]-4-hydroxy-2,7-naphtha-lenedisulfonic 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-naphthalenedisul-fonic acid.	ACS, TRC.
4'-Amino-N-methylacetanilide----------	ACS, GAF.
1-Amino-2-methylanthraquinone----------	ICI.
4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stil-benedisulfonic acid.	TRC.
2-Amino-3-methylpyridine----------	RIL.
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----------	ACS, TRC.
2-Amino-5-methyl-1,3,4-thiadiazole----------	ACY.
1-Amino-2-methyl-4-p-toluidinoanthraquinone----------	ICI.
4-Aminonaphth[2,3-c]acridan-5,8,14-trione----------	DUP.
6-Aminonaphth[2,3-c]acridan-5,8,14-trione----------	DUP.
2-Amino-1,5-naphthalenedisulfonic acid----------	ACY, SDH.
3-Amino-1,5-naphthalenedisulfonic acid (C acid)----------	GAF, TCD, TRC.
3-Amino-2,7-naphthalenedisulfonic acid----------	ACS, TRC.
4-Amino-1,6-naphthalenedisulfonic acid----------	DUP.
*6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)------	ACS, TCD, TRC.
*7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)------	ACS, ACY, DUP, TCD, TRC.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid)----	DUP.
2-Amino-o-naphthalenesulfonic acid (Tobias acid)----------	ACY, SW.
4-Amino-1-naphthalenesulfonic acid (Naphthionic acid)------	ACS, ACY, DUP.
4-Amino-1-naphthalenesulfonic acid, sodium salt----------	ACY, DUP.
4(and 5)-Amino-1-naphthalenesulfonic acid----------	TRC.
5-Amino-1-naphthalenesulfonic acid (Laurent's acid)--------	ACS, TCD.
5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)------	ACS.
*5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed).	ACS, DUP, TRC.
*6-Amino-2-naphthalenesulfonic acid (Broenner's acid)-------	ACS, SNA, TRC.
8-Amino-1-naphthalenesulfonic acid (Peri acid)----------	ACS, TCD, TRC.
8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)------	ACS.
7-Amino-1,3,6-naphthalenetrisulfonic acid----------	DUP.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid)----	ACS.
5(and 8)-Amino-2-naphthol----------	GAF.
8-Amino-2-naphthol----------	TRC.
1-Amino-2-naphthol hydrochloride----------	EK.
2-(4-Amino-1-naphthylazo)-4-(1,1,3,3-tetramethylbutyl)-phenol.	GAF.
2-Amino-4-nitroacetanilide----------	SDC.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
3-Amino-5-(m-nitrobenzamide)-p-toluenesulfonic acid	GAF.
*2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	ACS, GAF, TRC.
2-Amino-6-nitrobenzothiazole	ICC.
2-Amino-4-nitrophenol	DUP.
4-Amino-2-nitrophenol	ACY.
2-Amino-(p-nitrophenylazo)naphthalene	AAP.
d-2-Amino-1-(p-nitrophenyl)-1,3-propanediol	PD.
l-2-Amino-1-(p-nitrophenyl)-1,3-propanediol	PD.
*4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	ACS, GAF, TCD, TRC.
2-Amino-5-nitrothiazole	PCW.
3'-Aminooxanilic acid	CMG.
4'-Aminooxanilic acid	DUP.
3-Amino-2-oxazolidinone	NOR.
5-Amino-2-[(2-oxo-5-benzimidazolinyl)amino]benzenesulfonic acid.	DUP.
o-Aminophenol	SDC, TRC.
p-Aminophenol	SDC.
2-(p-Aminophenoxy)ethanol hydrochloride	GAF.
(p-Aminophenyl)acetic acid	EK.
m-[(p-Aminophenyl)azo]benzenesulfonic acid	DUP, TRC.
p-[(p-Aminophenyl)azo]benzenesulfonic acid	ACS, ACY, DUP, TRC.
7-[(4-Aminophenyl)azo]-1,3-naphthalenedisulfonic acid	TRC.
4-[(p-Aminophenyl)azo]-1-naphthylamine	ACS.
5-[(p-Aminophenyl)azo]salicylic acid	TRC.
5-[(p-Aminophenyl)azo]salicylic acid, sodium salt	ACS.
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.
S-(4-Aminophenyl)thiosulfuric acid, sodium salt	SDC.
1-(Aminopropyl)cyclohexylamine	ABB.
3-Aminopyrazole-4-carboxamide sulfate	KF.
2-Aminopyridine	NEP, RIL.
3-Aminopyridine	NEP, RIL.
4-Aminopyridine	RIL.
2-Aminopyrimidine	ACY.
3-Aminoquinoline	EK.
5-Aminosalicylic acid	AAP, TRC.
2-Amino-4-(1,1,3,3-tetramethylbutyl)phenol hydrochloride	GAF.
2-Aminothiazole	ACY, MRK.
3-Amino-p-toluamide	SDH, x.
α-Amino-p-toluenesulfonamide	SDW.
4-Amino-m-toluenesulfonic acid [SO_3H=1]	ACY, DUP, GAF.
6-Amino-m-toluenesulfonic acid [SO_3H=1]	DUP, HSC, SNA.
5-Amino-2-p-toluidinobenzenesulfonic acid	DUP, 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.
16-Aminoviolanthrone	ACY.
5-Amino-2,4-xylenesulfonic acid	DUP.
*Aniline (Aniline oil)	ACS, ACY, DUP, FST, MOB, RUC, USR.
Aniline hydrochloride	ACY.
6-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl gamma acid).	DUP.
*7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid).	CMG, DUP, TRC.
*Anilinomethanesulfonic acid and salt	AAP, ACS, ACY, ATL, DUP, TRC, VPC.
*8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	ACS, DUP, EK, SDC, TCD.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
8-Anilino-1-naphthalene sulfonic acid, magnesium salt	EK.
p-Anilinophenol	SDC.
o-Anisaldehyde	ASL.
*o-Anisidine	AAP, DUP, MON.
p-Anisidine	DUP, MON.
o-Anisidinomethanesulfonic acid	ATL, GAF, TRC, VPC.
*Anisole, tech	CTN, DUP, GIV, LIL, OPC, PIT.
4-(o-Anisylazo)-o-anisidine	AAP.
3-(o-Anisylazo)benzenesulfonic acid, sodium salt	ACS.
Anthracene, refined	ACP.
Anthranilic acid (o-Aminobenzoic acid)[1]	ACS, DUP, SW.
Anthra[1,9-cd]pyrazol-6(2H)-one (Pyrazoleanthrone)	DUP, GAF, TRC.
Anthraquinone, 100%	DUP, 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, TRC.
N,N'-(1,5-Anthraquinonylene)dioxamic acid	GAF, SW.
(1-Anthraquinonyl)-1,2-hydrazinedisulfonic acid, disodium salt.	DUP.
Arsanilic acid and salt, tech	ABB, FLM.
4',4'''-Azobis[4-biphenylcarboxylic acid]	DUP, GAF, TRC.
3,3'-Azoxydianiline	GAF.
Barbituric acid, sodium derivative	ABB.
Benzaldehyde, tech	BPC, HN, VEL.
4-[(4-Benzamido-1-anthraquinonyl)amino]naphth-[2,3-c]acridan-5,8,14-trione.	DUP.
N-(5-Benzamido-1-anthraquinonyl)-p-toluenesulfonamide	ICI.
1-Benzamido-4-bromoanthraquinone	AAP.
1-Benzamido-4-chloroanthraquinone	GAF.
*1-Benzamido-5-chloroanthraquinone	ACY, GAF, ICI, MAY, TRC.
1-(4-Benzamido-2,5-diethoxyphenyl)-3-[methyl-3-(2-sulfo-ethyl)triazene].	GAF.
4-Benzamido-5-hydroxy-2,7-naphthalenedisulfonic acid	TRC.
7-Benzamido-4-hydroxy-2-naphthalenesulfonic acid	TRC.
N-(4-Benzamido-6-methoxy-m-tolyl)-N-(methylazo)glycine	GAF.
Benzanilide	DUP, EK, PCW.
Benz(a)anthracene	EK.
Benz(a)anthracene-7,12-dione	EK.
*7H-Benz[de]anthracen-7-one (Benzanthrone)	AAP, ACS, ACY, ATL, DUP, GAF, ICI, MAY, SDC, TRC.
m-Benzenedisulfonic acid	KPT, UPF.
Benzenesulfinic acid, sodium salt	GAF.
Benzenesulfonamide	NES.
Benzenesulfonic acid	NES, UPF.
Benzenesulfonic acid, methyl ester	EK.
Benzenesulfonyl chloride	NES.
1,2,4,5-Benzenetetracarboxylic-1,2:4,5-dianhydride	DUP, PCR.
1,2,4-Benzenetricarboxylic acid	EK.
1,3,5-Benzenetricarboxylic acid (Trimesic acid)	ACC.
1,2,4-Benzenetricarboxylic acid, 1,2-anhydride (Trimellitic anhydride).	ACC.
1,3,5-Benzenetricarboxylic acid, triphenyl ester	BJL.
Benzhydrol (Diphenylmethanol)	HEX, UOP.
Benzidine hydrochloride and sulfate	ACS, LAK.
2-Benzofuranacetonitrile	EK.
Benzoic acid, tech[1]	HN, MON, PFZ, VEL.
Benzoic anhydride	EK.
Benzoin	BPC.
α-Benzoin oxime	RSA.
Benzonitrile	VEL.
Benzophenonetetracarboxylic dianhydride	GOC.
*2-Benzothiazolethiol, sodium salt	ACY, GYR, MON, USR.

See footnotes at end of table.

TABLE 2.-- Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers identification codes (according to list in table 3)
1H-Benzotriazole	FMT, SW.
2H-3,1-Benzoxazine-2,4(1H)-dione	SW.
2-Benzoxazolinone-6-sulfonyl chloride	SDC.
o-Benzoylbenzoic acid	ACY, DUP, GAF.
Benzoyl chloride	HK, VEL.
2-Benzoyl-4-sulfobenzoic acid	DUP.
N-Benzylacetamide	SDW.
Benzylamine	ARS, MLS.
4-(Benzylamino)-6-chloro-m-benzenedisulfonic acid	ABB.
2-(Benzylamino)ethanol	MLS.
p-(Benzylamino)phenol	EK.
4-Benzyl-6-chloro-3-keto-2-methyl-7-sulfamyl-1,2,4-benzyl-thiadiazine-1,1-dioxide.	ABB.
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.
5-(Benzylethylamino)-o-toluenesulfonic acid	ACS.
N-Benzyl-N-ethyl-m-toluidine	ACS, DUP.
3-Benzyl-1,2,3,4,5,6-hexahydro-8-hydroxy-cis-6,11-dimethyl-2,6-methano-3-benzazocine hydrobromide.	SDW.
4,4'-Benzylidenedi-o-toluidine	ACY.
4,4'-Benzylidinedi-2,5-xylidine	ACS.
Benzylidene phthalide	LIL.
p-(Benzyloxy)phenol	EK.
1-Benzyl-4-phenylisonipecotic acid	SDW.
1-Benzyl-4-phenylisonipecotonitrile	SDW.
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, ICI, MAY.
[1,1'-Binaphthalene]-8,8'-dicarboxylic acid	ACS.
Biphenyl	DOW, GOC, MON, SNT.
2-Biphenylamine	NES.
3,3',4,4'-Biphenyltetramine	AAP.
2,2'-Biquinoline	EK.
*1,4-Bis[1-anthraquinonylamino]anthraquinone	ACY, DUP, GAF, MAY, TRC.
1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-Bis-[5-chloro-1-anthraquinonylamino]anthraquinone (mixed).	TRC.
1,5-Bis[1-anthraquinonylamino]anthraquinone	DUP.
2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone	WAY.
1,4-Bis[(5-benzamido-1-anthraquinonyl)amino]anthraquinone	ICI.
2,3-Bis(bromomethyl)quinoxaline	EK.
Bis(chlorosulfonyl)phthalocyaninedisulfonic acid, copper derivative.	TRC.
4,4'-Bis[diethylamino]benzhydrol, 2,6-naphthalenedi-sulfonate.	GAF.
4,4-Bis(diethylamino)benzhydrol salt, 2,7-naphthalenedi-sulfonic acid mixture.	TRC.
4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base)	DSC, SDH.
4-Bis[(p-diethylaminophenyl)methyl]-2,7-naphthalenedi-sulfonic acid, leuco form.	TRC.
4,4'-Bis[dimethylamino]benzhydrol (Michler's hydrol)	SDH.
4,4'-Bis[dimethylamino]benzophenone (Michler's ketone)	DSC, DUP.
3'-[Bis(2-hydroxyethyl)amino]acetanilide	GAF.
3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester	DUP.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
3'-[Bis(2-hydroxyethyl)amino]methanesulfonanilide, di-acetate ester.	DUP.
4,4'-Bis[(p-hydroxyphenyl)azo]-2,2'-stilbenedisulfonic acid (C.I. Direct Yellow 4).	TRC.
4,4-Bis(p-methoxyphenyl)-3-hexanone	LIL
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.
m-Bromoaniline	EK.
p-Bromoaniline	EK.
m-Bromoanisole	EK.
p-Bromoanisole	OPC.
*3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone)	ACY, ATL, DUP, GAF, MAY, TRC.
Bromobenzene, mono-	DOW.
p-Bromobenzenesulfonyl chloride	EK.
o-Bromobenzoic acid	EK.
Bromochlorobenzene	DOW.
6-Bromo-5-chlorobenzoxazolone	SW.
2-Bromodibenzofuran	GAF.
4-Bromo-1,2-dichlorobenzene	EK.
2-Bromo-4,6-dinitroaniline	AAP, SDC, TCD, TRC.
Bromoethylbenzene	RSA.
2-Bromo-3'-hydroxyacetophenone benzoate	SDH.
1-Bromo-4-iodobenzene	EK.
*1-Bromo-4-(methylamino)anthraquinone	AAP, ACS, DUP, ICI.
6-Bromo-3-methyl-7H-dibenz[f,ij]isoquinoline-2,7-(3H)-dione.	AAP, GAF, ICI.
3-(Bromomethyl)thiophene	SDW.
1-Bromonaphthalene	EK.
2-Bromo-4'-nitroacetophenone	GAF.
1-Bromo-2-nitrobenzene	EK.
N-(4-Bromopentyl)phthalimide	SDW.
p-Bromophenol	EK.
(p-Bromophenyl)acetonitrile	BPC
p-Bromophenylhydrazine hydrochloride	EK.
2-Bromopyridine	RIL.
4-Bromoresorcylic acid	PCW.
α-Bromotoluene	EK.
o-Bromotoluene	EK, RSA.
p-Bromotoluene	BPC, EK.
2-Bromo-1,3,5-triethylbenzene	DUP.
p-Butoxyphenol	ABB.
4-[3(p-Butoxyphenoxy)propyl]morpholine	ABB.
p-Butylaniline	DUP.
2-tert-Butylanthraquinone	DUP.
p-tert-Butylbenzaldehyde	GIV.
n-Butylbenzene	PLC.
sec-Butylbenzene	PLC.
tert-Butylbenzene	EK, PLC.
p-tert-Butylbenzoic acid	SHC.
o-(p-tert-Butylbenzoyl)benzoic acid	DUP.
4-Butyl-o-cresol	PRD.
2-tert-Butyl-p-cresol	ACY.
6-tert-Butyl-m-cresol	KPT, PRD.
(n-Butylcyclopentadienyl)cyclopentadienyliron	ARA.
2'-tert-Butyl-4',6'-dimethylacetophenone	GIV.
4-Butyl-α-(dimethylamino)-o-cresol	RH.
Butyl-p-(p-ethoxyphenoxycarbonyl)phenyl carbonate	EK.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
2-tert-Butyl-4-ethylphenol	ACY.
5-tert-Butylisophthalic acid	x.
N^1-Butyl-4-methoxymetanilamide	ALL.
2-tert-Butyl-5-methylanisole	GIV.
o-sec-Butylphenol	DOW, TNA.
p-sec-Butylphenol	DOW.
o-tert-Butylphenol	TNA.
p-tert-Butylphenol	DOW, PRD, SCN, UCC.
Butylphenols, mixed	DOW.
tert-Butylstyrene	DOW.
p-tert-Butyltoluene	GIV, SHC.
5-tert-Butyl-m-xylene	GIV.
6-tert-Butyl-2,4-xylenol	PRD.
Camphoric acid	FIN, SEL.
Camphoric anhydride	SEL.
*Camphosulfonic acid	KF, LIL, OTC, SEL.
Carbazole, refined	SDC.
1-(4-Carbonyl-o-anisyl)-3-methyl-3-(2-sulfoethyl)triazene	GAF.
N,N'-Carbonylbis[4-methoxymetanilic acid]	GAF.
N,N'-Carbonylbis[4-methoxy-6-nitrometanilic acid]	GAF.
N-[(3-Carboxy-4-chlorophenyl)sulfonyl]anthranilic acid	TRC.
3-Carboxy-3(and 4)-hydroxybenzenediazonium sulfate	GAF.
4-(2-Carboxyphenylazo)-3-methyl-1-phenyl-2-pyrazolin-5-one.	ACS.
[(o-Carboxyphenyl)thio]ethylmercury	LIL.
Cedrene	GIV.
2'-Chloroacetoacetanilide	FMP, UCC.
2'-Chloroacetophenone	EK.
4'-Chloroacetophenone	LIL.
4'-(Chloroacetyl)acetanilide	DUP.
m-Chloroaniline	DUP, GAF.
o-Chloroaniline	DUP, MON.
p-Chloroaniline	DUP, MON.
3-(o-Chloroanilino)propionitrile	DUP.
5-Chloro-o-anisidine [NH_2=1] (4-Chloro-o-anisidine [OCH_3=1]).	ALL.
*1-Chloroanthraquinone	ACY, DUP, GAF, ICI, MAY, TRC.
*2-Chloroanthraquinone	ACS, ACY, GAF, TRC.
N-(5-Chloro-1-anthraquinonyl)-p-toluenesulfonamide	ICI.
o-Chlorobenzaldehyde	HN, PD.
p-Chlorobenzaldehyde	HN.
Chloro-7H-benz[de]anthracen-7-one (Chlorobenzathrone)	ACY, TRC.
*Chlorobenzene, mono-	ACS, DOW, DVC, HK, HKD, MON, MTO, OMC, PPG, SCC.
p-Chlorobenzenesulfinic acid	TRC.
p-Chlorobenzenesulfonamide	ACY.
p-Chlorobenzenesulfonic acid	MTR, NES.
o-Chlorobenzoic acid	HN.
7-Chlorobenzo[b]thiophen-3(2H)-one	ACS.
5-Chloro-2-benzoxazolinone	SW.
*o-(p-Chlorobenzoyl)benzoic acid	ACS, ACY, DUP, ICI.
p-Chlorobenzoyl chloride	HN.
4,4'-(o-Chlorobenzylidene)di-2,5-xylidine	GAF.
α-(p-Chlorobenzyl)-α-phenyl-1-pyrrolidinepropanol hydrochloride.	LIL.
Chloro(p-chlorophenyl)phenylmethane	OPC.
Chlorocyclohexane	ACY, ARA.
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.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
2-Chloro-1,4-dihydroxyanthraquinone	HSH.
4'-Chloro-2',5'-dimethoxyacetoacetanilide	PCW.
4-Chloro-2,5-dimethoxyaniline	PCW.
4-Chloro-N,N-dimethyl-3-nitrobenzenesulfonamide	EKT.
[(4-Chloro-2,5-dimethylphenyl)thio]acetic acid	ACS.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	SDC.
3-Chloro-4,6-dinitrobenzenesulfonic acid	TRC.
4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt	SDC.
3-Chlorodiphenylamine	SK.
Chlorodiphenylmethane	OPC.
n-(2-Chloroethyl)-4-(2-chloro-4-nitrophenylazo)-N-ethyl-aniline.	GAF.
4-[(2-chloroethyl)ethylamino]-o-toluidine	AAP.
p-[(2-Chloroethyl)methylamino]benzaldehyde	GAF, TRC.
Chloroformic acid, benzyl ester	CTN, EK, RSA.
Chloroformic acid, phenyl ester	CTN, EK, OTC.
1-Chloro-4-hydroxyanthraquinone	ICI.
4-Chloro-5-hydroxy-2,7-naphthalenedisulfonic acid	GAF.
5'-Chloro-3-hydroxy-2-naphth-o-anisidide	PCW.
3-Chloro-4-hydroxyquinoline-3,4-carbonic acid	SDH.
4-Chlorometanilic acid	DUP.
5-Chlorometanilic acid	ACS.
6-Chlorometanilic acid	AAP.
5-Chloro-2-methoxybenzenediazonium chloride	GAF.
N-[(5-Chloro-2-methoxyphenyl)azo]sarcosine	ATL.
p-(Chloromethyl)anisole	SDW.
*1-Chloro-2-methylanthraquinone	ACS, ACY, CMG, DUP, TRC.
6-Chloro-4-methylbenzo[b]thiophene-2-ol	ACY.
4-Chloro-7-methylbenzo[b]thiophen-3(2H)-one	ACS
4-(Chloromethyl)-1,2-dimethylbenzene	BPC.
4-(Chloromethyl)-1,3-dimethylbenzene	BPC.
1-(Chloromethyl)naphthalene	BPC.
4-Chloro-N-methyl-3-nitrobenzenesulfonamide	TRC.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide	ABB.
5-Chloro-2-(N-methylsulfamyl)-4-sulfamyl-N-benzylaniline	ABB
4-Chloro-3-(methylsulfonyl)nitrobenzene	TRC.
Chloronaphthalenes	KPS.
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	DUP, SDC.
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	DUP, SDC.
1-Chloro-5-nitroanthraquinone	ACY, DUP, TRC.
4-Chloro-3-nitrobenzaldehyde	GAF.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	AAP, DUP, MON, UPM.
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)	DUP, UPM.
*1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	AAP, DUP, MON, UPM.
2-Chloro-5-nitrobenzenesulfinic acid	TRC.
2-Chloro-5-nitrobenzenesulfonamide	AAP.
*4-Chloro-3-nitrobenzenesulfonamide	AAP, DUP, EKT, GAF, ICC, TRC.
2-Chloro-5-nitrobenzenesulfonic acid	ACS, TRC.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt	DUP, GAF.
4-Chloro-3-nitrobenzenesulfonic acid	ACS, GAF, TRC.
*4-Chloro-3-nitrobenzenesulfonyl chloride	AAP, DUP, EKT, SAL, SDC.
2-Chloro-4-nitrobenzoic acid	SAL.
2-Chloro-5-nitrobenzoic acid	TRC.
4-Chloro-3-nitrobenzoic acid	PCW.
o-(4-Chloro-3-nitrobenzoyl)benzoic acid	AAP, ICI.
4-Chloro-3-nitrocinnamic acid	GAF.
4-Chloro-3-nitrophenyl methyl sulfone	TRC.
2-Chloro-4-nitrotoluene	DUP.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
2-Chloro-6-nitrotoluene	DUP.
4-Chloro-2-nitrotoluene	DUP.
4-Chloro-3-nitrotoluene	BUC.
α-Chloro-m-nitrotoluene	EK.
o-Chlorophenol	DOW, x.
p-Chlorophenol	DOW, MON.
2-Chlorophenothiazine	SK.
(p-Chlorophenoxy)acetic acid	EK.
(p-Chlorophenyl)acetonitrile	ARS, OPC.
4-Chloro-o-phenylenediamine	FMT.
(o-Chlorophenyl)hydrazine	GAF.
3-(o-Chlorophenyl)-5-methyl-4-isoxazolecarbonyl chloride	ARS, OTC.
3-(o-Chlorophenyl)-5-methyl-4-isoxazole carboxylic acid	ARS.
1-(p-Chlorophenyl)-3-methyl-2-pyrazolin-5-one	TRC.
p-Chlorophenyl methyl sulfone	TRC.
2-Chloro-4-phenylphenol	DOW.
1-[4-(p-Chlorophenyl)-3-phenyl-2-buteny1]pyrrolidine hydrobromide.	LIL.
4-Chlorophthalic acid	SW.
(3-Chloropropenyl)benzene (Cinnamyl chloride)	SDW.
1-(3-Chloropropyl)-4-methylpiperazine	SK.
N^1-(6-Chloro-3-pyridazinyl)sulfanilamide	ACY.
7-Chloro-4-quinolinol	SDW.
4-Chlororesorcinol	AAP, GAF.
5-Chlorosalicylic acid	PCW.
Chlorostyrene, mono-	DOW.
2-Chloro-5-sulfamoylbenzoic acid	TRC.
2-Chlorothiophene	FIS.
m-Chlorotoluene	HK.
o-Chlorotoluene	HN.
p-Chlorotoluene	HN.
*α-Chlorotoluene (Benzyl chloride)	BPC, HN, MQN, VEL.
3-Chloro-o-toluidine [NH_2=1]	DUP.
3-Chloro-p-toluidine [NH_2=1]	DUP.
4-Chloro-o-toluidine [NH_2=1] and hydrochloride	BUC, PCW.
5-Chloro-o-toluidine [NH_2=1] (4-Chloro-o-toluidine [CH_3=1]).	DUP.
5-Chloro-o-toluidine hydrochloride [NH_2=1]	ATL, SDH.
N-[(5-Chloro-o-tolyl)azo]sarcosine	ATL.
[(4-Chloro-o-tolyl)thio]acetic acid	ACY, GAF.
[(5-Chloro-o-tolyl)thio]acetic acid	ACS.
4-Chloro-α,α,α-trifluoro-3-nitrotoluene	PCW.
p-Chloro-α,α,α-trifluorotoluene	HK.
6-Chloro-α,α,α-trifluoro-m-toluidine	PCW.
Chlorotriphenylmethane	EK.
α-Chloro-o-xylene	BPC.
α-Chloro-p-xylene	BPC.
2-Chloro-p-xylene	DUP.
4-Chloro-2,5-xylenesulfonyl chloride	ACS.
4-Chloro-3,5-xylenol	OTA.
Cholesteryl nonanoate	EK.
Cholesteryl oleyl carbonate (Mesomorphic)	EK.
Cholestyramine resin	MRK.
Cholic acid	WIL.
Cinnamoyl chloride	ARS, x.
*Cresols:[2]	
m-Cresol	KPT, PRD.
*o-Cresol:	
From coal tar	KPT, PRD.
From petroleum	KPT, MER, NPC, PRD, SW.
p-Cresol	HPC, SW.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table)
Cresols, mixed:[2]	
*(m,p)-Cresol:	
From coal tar	ACP, KPT, PRD.
From petroleum	MER, NPC, PIT, PRD.
(o,m,p)-Cresol:	
From coal tar	ACP, KPT.
From petroleum	NPC.
Other	SW.
*Cresylic acid, refined:[3]	
*From coal tar	ACP, KPT, PRD.
*From petroleum	MER, NPC, PIT, PRD.
*Cumene	ASH, CLK, CSP, DOW, GOC, HPC, MOC, MON, PLC, SHC, SKO, SNT, SOC, TX.
p-Cumylphenol	PCW.
4-[(2-Cyanoethyl)ethylamino]-o-tolualdehyde	DUP, GAF.
p-[(2-Cyanoethyl)methylamino]benzaldehyde	DUP, GAF.
*Cyclohexane	ASH, ATR, CO, CSD, ENJ, GOC, GRS, PLC, PPR, SWC, TX, UOC.
1,2-Cyclohexanedicarboxylic anhydride	ACS.
1,3-Cyclohexanedione	PD.
Cyclohexane oxide	USR.
*Cyclohexanol	ACP, CEL, CNP, DUP, EKT, MON.
*Cyclohexanone	ACP, CEL, CNP, DBC, DUP, MON.
Cyclohexanone oxime	ACP, ACS, CNP.
Cyclohexene	PLC, USR.
4-Cyclohexene-1-carboxaldehyde	UCC.
4-Cyclohexene-1,2-dicarboximide	CHO.
4-Cyclohexene-1,2-dicarboxylic anhydride	PTT.
Cyclohexylamine	ABB, MON, VGC.
Cyclohexyl-2-propanone	GIV.
N-Cyclohexyltaurine, sodium salt	GAF.
Cyclopentadienyliron	ARA.
Cyclopentamine base	LIL.
Cyclopentanepropionic acid	ARA.
Cyclopentanol	LIL.
Cyclopentene	ARA, PLC.
(2-Cyclopenten-1-yl)-2-propanone	LIL.
p-Cymene	ACS, HN, x.
Decabromobiphenyl	MCH.
Deoxycholic acid	WIL.
Diacenaphthol[1,2-j:1,2-l]fluoranthene (Decacyclene)	SDC.
1,5(and 1,8)-Diacetamidoanthraquinone	AAP.
3,5-Diacetamido-2,4,6-triiodobenzoic acid	SDW.
3'-[Di(2-acetoxyethyl)amino]-p-acetophenetidide	TRC.
N^2,N^2-Diallylmelamine	ACY.
*1,4-Diaminoanthraquinone	ACS, CMG, DUP, TRC.
1,5-Diaminoanthraquinone	GAF, TRC.
1,5(and 1,8)-Diaminoanthraquinone	AAP, TRC.
*2,6-Diaminoanthraquinone	AAP, GAF, ICI, TRC, VPC.
3,3'-Diaminobenzanilide	TRC.
3,4-Diaminobenzanilide	SW.
2,4-Diaminobenzenesulfonic acid [SO_3H=1]	ACS, DUP, TRC.
2,5-Diaminobenzenesulfonic acid [SO_3H=1]	TRC.
4,4'-Diamino-1,1'-bianthraquinone-3,3'-disulfonic acid.	TRC.
4,4'-Diamino-2,2'-biphenyldisulfonic acid	ACS, ACY.
1,3-Diaminocyclohexane	DUP.
3,7-Diamino-4,6-dibenzothiophenedisulfonic acid, 5,5-dioxide, disodium salt.	ACY.
1,5-Diamino-2,6-dibromo-4,8-di-p-toluidinoanthraquinone.	ICI.
1,4-Diamino-2,3-dichloroanthraquinone	AAP, DUP.
*1,4-Diamino-2,3-dihydroanthraquinone	AAP, ACY, ATL, CMG, DUP, GAF, HSH, ICC, ICI, MAY, TRC.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
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-anthracenedicarboximide.	DUP.
1,5-Diamino-4,8-dihydroxyanthraquinone	VPC.
4,5-Diamino-1,8-dihydroxyanthraquinone	ICI.
2,7-Diamino-3,6-dinitrofluoren-9-one	BJL.
2,4-Diamino-6-phenyl-s-triazine	RH, VEL.
2,6-Diaminopyridine	NEP, RIL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid	ACS, ACY, CGY, GAF, SDH, TRC, VPC.
3,5-Diamino-p-toluenesulfonic acid [SO_3H=1]	GAF.
4,6-Diamino-m-toluenesulfonic acid [SO_3H=1]	ACS.
3,5-Diamino-2,4,6-triiodobenzoic acid	SDW.
1,4:3,6-Dianhydroglucitol	APD.
1,5-Dianilino-9,10-dihydro-9,10-dioxo-2,6-anthracenedicarboxylic acid.	ACS.
2,5-Dianilinoterephthalic acid	SDC.
Diarylguanidine	DUP.
p-Diazo-N,N-dimethylaniline-1-amino-8-naphthol-3-sulfonate-6-sulfonic acid, sodium salt.	IDC.
5(and 3)-Diazo-6-oxo-1,3(and 1,4)-cyclohexadiene-1-carboxylic acid.	DUP.
1,5-Dibenzamidoanthraquinone	GAF, TRC.
6,11-Dibenzamido-16H-dinaphtho[2,3-α,2',3'-i]carbazole-5,10,15,17-tetrone.	ICI.
*4,5'-Dibenzamido-1,1'-iminodianthraquinone	ACY, GAF, ICI, MAY, TRC.
4",5-Dibenzamido-4-methoxy-1,1'-iminodianthraquinone	SDH.
2-Dibenzofuranol	GAF.
1,5-Dibenzoylnaphthalene	ACY, DUP, GAF, TRC, VPC.
3'-(N,N-Dibenzyl)amino-p-acetanisidide	SDC.
N,N'-Dibenzylethylenediamine	WYT.
N,N'-Dibenzylethylenediamine diacetate	WYT.
3,4-Dibenzyloxybutyrophenone	SDW.
N,N-Dibenzylsulfanilic acid	ICI.
2,4'-Dibromoacetophenone	EK, NES.
3,9-Dibromo-7H-benz[de]anthracen-7-one	DUP, MAY, TRC.
ar-Dibromobenzene	DOW.
m-Dibromobenzene	EK.
4,4'-Dibromobenzil	NES.
2,6-Dibromo-4-nitroaniline	SDC.
2,6-Dibromo-4-nitrophenol	SW.
α,α-Dibromo-p-nitrotoluene	DUP.
5,13-Dibromo-8,16-pyranthrenedione	DUP, ICI.
3,5-Dibromo-3'-trifluoromethylsalicylanilide	PCW.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate	ALL.
2,6-Di-tert-butyl-p-benzoquinone	NES.
1,1'-Di-n-butyldicyclopentadienyliron	ARA.
2,6-Di-tert-butyl-4-nonylphenol	GAF.
2,4-Di-tert-butylphenol	DOW.
Dibutyltin bis(cyclohexylmaleate)	x.
3',4'-Dichloroacetophenone	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	ACS, DUP, GAF, ICI, TRC.
1,5(and 1,8)-Dichloroanthraquinone	DUP.
1,8-Dichloroanthraquinone	GAF, ICI.
Dichlorobenzanthrone	ACY.
m-Dichlorobenzene	EK, OMC.
*o-Dichlorobenzene	ACS, DOW, DUP, HKD, MON, NEV, PPG, SCC, SVT.
*p-Dichlorobenzene	ACS, DOW, DVC, MON, NEV, PPG, SCC, SVT.
o(and p)-Dichlorobenzene	DVC.
2,5-Dichlorobenzenesulfonyl chloride	ACS.
*3,3'-Dichlorobenzidine base and salts	ACS, CWN, LAK.
2,2'-Dichlorobenzil	MTO.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
2,4-Dichlorobenzoic acid	HN.
4,4'-Dichlorobenzophenone	NES.
4,7-Dichlorobenzo[b]thiophen-3(2H)one	ACS.
2,4-Dichlorobenzoyl chloride	HN.
2,5-Dichlorobenzoyl chloride	GAF.
Dichlorobenzyl chloride	BPC.
4,4-(2,6-Dichlorobenzylidene)-di-2,6-xylidine	DUP.
7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone	ICI.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbonitrile.	ARA.
Dichlorodiphenylsilane	DCC.
2',7'-Dichlorofluorescein	EK.
2-(5,8-Dichloro-1-hydroxy-2-naphthylazo)-1-phenol-4-sulfonamide.	TRC.
5,14-Dichloroisoviolanthrone	ICI.
*2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid.	ACY, CMG, TRC, VPC.
Dichloromethylphenylsilane	DCC.
2,6-Dichloro-4-nitroaniline	CWN, EKT, HSH, SW, TRC.
1,2-Dichloro-4-nitrobenzene	DUP, MON, SDC.
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)	DUP, SDC, VPC.
2,5-Dichloro-3-nitrobenzoic acid	GAF.
2,5-Dichloro-3-nitrobenzoic acid, ammonium salt	GAF.
2,4-Dichlorophenol	DOW, MON.
3-(2',6'-Dichlorophenyl)-5-methyl-4-isoxazolecarbonyl chloride.	APD, OTC.
[(2,5-Dichlorophenyl)thio]acetic acid	ACS.
2,6-Dichloropyrazine	ACY.
3,6-Dichloropyridazine	ACY.
4,7-Dichloroquinoline	PD, SDW.
*2,5-Dichlorosulfanilic acid [SO_3H=1]	ACS, CMG, DUP, VPC.
2,5-Dichloro-4-sulfobenzenediazonium sulfate	TRC.
2,6-Dichlorotoluene	GAF.
m,α-Dichlorotoluene	BPC.
p,α-Dichlorotoluene	HN.
Dichloroxylene	BPC.
Dicyclohexylamine	ABB, MON, VGC.
Dicyclohexylcarbodiimide	CWN.
1,3-Dicyclohexyl-2-thiourea	ABB.
*Dicyclopentadiene (includes cyclopentadiene)	ENJ, GOC, MON, UCC, VEL.
Dicyclopentadiene dioxide	VEL.
Didodecylbenzene	CO.
p-Diethoxybenzene	GAF.
2,5-Diethoxy-4-morpholinobenzenediazonium chloride, zinc chloride.	ALL.
*p-(Diethylamino)benzaldehyde	ACS, DUP, GAF, TRC.
3'-[2-(Diethylamino)ethyl]-4'-hydroxyacetanilide	PD.
α-[(2-Diethylamino)ethyl]-α-phenylcyclohexanemethanol, hydrochloride.	ACY.
7-Diethylamino-4-methylcoumarin	GAF.
m-(Diethylamino)phenol (N,N-Diethyl-3-aminophenol)	ACY, DUP.
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.
1,1'-Diethyl-4,4'-carbocyanine iodide (Cryptocyanine)	EK.
N,N-Diethylcyclohexylamine	DUP.
α,α'-Diethyl-4,4'-dimethoxystilbene	LIL.
N,N-Diethylmetanilic acid	DUP.
N^1,N^1-Diethyl-4-methoxymetanilamide	PCW.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
N,N-Diethyl-p-nitrosoaniline	EK.
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, RSA.
N,N-Diethyl-p-toluidine	RSA.
6,15-Dihydro-5,9,14,18-anthrazinetetrone	TRC.
10,11-Dihydro-5H-dibenzo[a,d]cyclohepten-5-one	LIL.
*9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid.	AAP, ACS, 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.	DUP, GAF, ICI, TRC.
9,10-Dihydro-9,10-dioxo-1,5(and 1,8)-anthracenedisulfonic acid and salt.	DUP, TRC.
*9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt.	GAF, ICI, TRC.
*9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt.	AAP, GAF, ICI, TRC, VPC.
*9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt).	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC.
9,10-Dihydro-9,10-dioxo-2-anthracenesulfonic acid and salt (Silver salt).	DUP, TRC.
3,4-Dihydro-3,4-dioxo-1-naphthalenesulfonic acid, sodium salt.	EK.
[Dihydrogen 3,3''-phthalocyaninedisulfonate(2-)]copper	ICI.
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.	ICI.
9,10-Dihydro-1-nitro-9,10-dioxo-2-anthroic acid	DUP, GAF.
1,4-Dihydro-4-oxo-2,6-pyridinedicarboxylic acid	SDW.
*1,4-Dihydroxyanthraquinone (Quinizarin)	AAP, ACY, DUP, GAF, HSH, ICC, MAY, TRC.
*1,5-Dihydroxyanthraquinone (Anthrarufin)	ACS, GAF, TRC.
1,5(and 1,8)-Dihydroxyanthraquinone	CMG, TRC.
1,8-Dihydroxyanthraquinone (Chrysazin)	GAF, TRC.
2,6-Dihydroxyanthraquinone (Anthraflavic acid)	GAF, TRC.
2,4-Dihydroxybenzaldehyde	EK.
2,5-Dihydroxybenzenesulfonic acid, potassium salt	NES.
2,4-Dihydroxybenzophenone	DUP.
1,5-Dihydroxy-4,8-dinitroanthraquinone	TRC, VPC.
*1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin).	DUP, GAF, ICI.
3,4-Dihydroxyhydrocinnamic acid, ethyl ester	BJL.
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid).	ACS.
6,7-Dihydroxy-2-naphthalenesulfonic acid	IDC.
11β,21-Dihydroxypregna-4,17(20)-cis-dien-3-one	UPJ.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalenedisulfonic acid, trisodium salt.	EK.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	ACY, DUP, GAF, ICI, MAY.
m-Diiodobenzene	EK.
3,5-Diiodosalicylic acid	EK.
Diisopropylbenzene	DOW.
N,N'-Diisopropyl-p-phenylenediamine	DUP, USR.
2,5-Dimethoxyaniline	EKT, PCW.
1,5(and 1,8)-Dimethoxyanthraquinone	TRC.
2,5-Dimethoxybenzaldehyde	CWN.
m-Dimethoxybenzene	ACY, ARS.
p-Dimethoxybenzene	ASL.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
3,3'-Dimethoxybenzidine (o-Dianisidine)	ALL, CWN, SDH.
3,3'-Dimethoxybenzidine hydrochloride	ALL, CWN.
N,N'-[(3,3'-Dimethoxy-4,4'-biphenylylene)bis(azo)]bis-(N-methyltaurine).	GAF.
2,5-Dimethoxy-β-methyl-β-nitrostyrene	x.
2,5-Dimethoxy-α-methylphenethylamine hydrobromide	x.
N-(3,4-Dimethoxy-α-methylphenethyl)-2-(4-ethoxy-3-methoxyphenyl)acetamide.	LIL.
1,4-Dimethoxy-2-nitrobenzene	PCW.
2,5-Dimethoxy-4'-nitrostilbene	x.
3,4-Dimethoxyphenethylamine (Homoveratrylamine)	LIL.
4-(2',5'-Dimethoxyphenethyl)aniline hydrochloride	UPJ.
N-(3,4-Dimethoxyphenethyl)-2-(3,4-dimethoxyphenyl)-acetamide.	LIL.
(3,4-Dimethoxyphenyl)acetic acid	LIL.
(3,4-Dimethoxyphenyl)acetonitrile	LIL.
1-(3,4'-Dimethoxyphenyl)-2-aminopropane	LIL.
1-(3,4'-Dimethoxyphenyl)-2-nitropropene	LIL.
2,5-Dimethoxytetrahydrofuran	HEX.
16,17-Dimethoxyviolanthrone	ICI, MAY.
1,5-Dimethylaminoanthraquinone	AAP.
p-(Dimethylamino)benzaldehyde	TRC.
m-(Dimethylamino)benzoic acid	NES, SDH.
α-(Dimethylamino)-p-cresol	TKL.
6-Dimethylamino-2-[2,5-dimethyl-1-phenyl-3-pyrryl)-vinyl]-1-methyl-1-quinolinium methyl sulfate.	x.
2-[[2-(Dimethylamino)ethyl]-2-thenylamino]pyridine (nonmedicinal grade).	ABB.
2-[[2-(Dimethylamino)ethyl]-3-thenylamino]pyridine	SDW.
5-Dimethylaminonaphthalenesulfonyl chloride	EK.
m-(Dimethylamino)phenol	ACY.
*N,N-Dimethylaniline	ACS, ACY, DSC, DUP.
7,12-Dimethylbenz[a]anthracene	EK.
3,3'-Dimethylbenzidine (o-Tolidine)	ALL, CWN.
3,3'-Dimethylbenzidine hydrochloride	CWN, DUP, EK.
*N,N-Dimethylbenzylamine	ARS, MLS, RH, SW.
α,α-Dimethylbenzyl hydroperoxide	CLK.
4-(α,α-Dimethylbenzyl-2-phenylazophenol	TRC.
*2,2'-Dimethyl-1,1'-bianthraquinone	ACS, ACY, DUP, GAF, ICI, TRC.
5,5-Dimethyl-1,3-cyclohexanedione	AAP.
N,N-Dimethylcyclohexylamine	ABB, DUP, EKT.
5,5-Dimethylhydantoin	GLY.
2,3-Dimethylindole	DUP.
2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydrochloride.	IDC.
N,N-Dimethyl-1-naphthylamine	EK.
N,N-Dimethyl-p-nitrosoaniline	ACY.
6,6-Dimethyl-2-norpinene-2-ethanol	RDA.
N,N-Dimethyl-p-phenylenediamine	EKT.
N,N-Dimethyl-p-phenylenediamine hydrochloride	EK.
N,N-Dimethyl-p-phenylenediamine sulfate	EK.
1,4-Dimethylpiperazine	JCC.
N,N-Dimethylsulfanilamide	PCW.
N,N-Dimethylsulfanilic acid	AAP, GAF.
Dimethyl-5-sulfoisophthalate	x.
N,N-Dimethyl-p-toluidine	EK, RSA.
2,4-Dinitroacetanilide	SDC.
*2,4-Dinitroaniline	AAP, ACY, SDC.
p-(2,4-Dinitroanilino)phenol	GAF, SDC.
1,5(and 1,8)-Dinitroanthraquinone	AAP, TRC.
N,N'-(2,4-Dinitro-1,5-anthraquinonylene)dioxamic acid	TRC.
3,3'-Dinitrobenzanilide	TRC.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
3',4-Dinitrobenzanilide	AAP.
m-Dinitrobenzene	DUP.
2,4-Dinitrobenzenesulfonic acid	EK, TRC.
2,4-Dinitrobenzenesulfonic acid, sodium salt	EK.
3,5-Dinitrobenzoic acid	SAL.
3,5-Dinitrobenzoyl chloride	EK.
3,3'-Dinitro-4,4'-biacetanilide	AAP.
10,10'-Dinitro[3,3'-bi-7H[de]anthracene]-7,7'-dione	DUP, MAY.
Dinitrocaprylphenol	RH.
2,4-Dinitrocumene	DUP.
3,5-Dinitro-N,N-dipropylsulfanilamide	SDC.
1-(3,5-Dinitro-2-hydroxyphenylazo)-2-naphthol	TRC.
2,4-Dinitrophenol, tech	AAP, SDC.
(2,4-Dinitrophenyl)hydrazine	EK.
3,5-Dinitrosalicylic acid	EK, SAL.
*4,4'-Dinitrostilbene-2,2'-disulfonic acid	ACY, CGY, DUP, GAF, SDH, TCD, TRC.
2,4-Dinitrotoluene	ACS, DUP, RUC.
*2,4(and 2,6)-Dinitrotoluene	DUP, MOB, UCC.
Dinonylphenol	GAF, JCC.
2,4-Di-tert-pentylphenol	PAS, PRD.
Di-tert-pentylphenoxyacetyl chloride	EK.
2-(2,4-Di-tert-pentylphenoxy)butyric acid	EK.
1,5-Diphenoxyanthraquinone	VPC.
Diphenylacetaldehyde	ARA.
Diphenylacetic acid	ARA.
Diphenylacetonitrile, tech	FIS.
*Diphenylamine	ACY, DUP, FST, ORO, RUC, USR.
2,8-Diphenylanthra[1,2-d:6,5-d']bisthiazole-6,12-dione	GAF, ICI.
2,5-Diphenyl-p-benzoquinone	EK.
Diphenylcarbamyl chloride	EK.
1,1-Diphenylethylene	EK.
N,N'-Diphenylethylenediamine	RPC.
2,5-Diphenyloxazole	ARA, EK.
1,3-Diphenyl-1,3-propanedione	EK, RSA.
4,4'-Dithiodianiline	SDC.
2,2'-Dithiodibenzoic acid	LIL, SW.
*1,4-Di-p-toluidinoanthraquinone	ACS, ATL, GAF, ICI, TRC.
1,5-Di-p-toluidinoanthraquinone	ICI.
1,8-Di-p-toluidinoanthraquinone	ICI.
2,5-Di-p-toluidinoterephthalic acid	SDC.
*Divinylbenzene	DOW, FG, KPP.
p-Dodecylaniline	MON.
Dodecylbenzene. (See Alkylbenzenes.)	
Dodecylbenzyl chloride	CO.
Dodecylmethylbenzyl chloride	RH.
*p-Dodecylphenol	GAF, MON, x.
Eosin (2',4',5',7'-Tetrabromofluorescein)	ICC.
1,2-Epoxy-3-(2-biphenylyl)propane	NES.
o-Ethoxybenzoic acid	ACY.
4-Ethoxy-3-methoxybenzaldehyde	LIL.
4-Ethoxy-3-methoxybenzyl alcohol	LIL.
1-(4-Ethoxy-3-methoxybenzyl)-6,7-dimethoxy-3-methyliso-quinone.	LIL.
(4-Ethoxy-3-methoxyphenyl)acetic acid	LIL.
2-Ethoxy-1-naphthoyl chloride	WYT.
4-Ethoxy-o-phenylenediamine	TRC.
N'-(6-Ethoxy-3-pyridazinyl)sulfanilamide	ACY.
3-(Ethylamino)-p-cresol	DUP.
*N-Ethylaniline, refined	ACS, ACY, DUP, SDH.
2-(N-Ethanilino)ethanol	DUP, EKT.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride	DUP.
α-(N-Ethylanilino)-m-toluenesulfonic acid	GAF, SDH, WJ.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
α-(N-Ethylanilino)-p-toluenesulfonic acid	ACS, TRC.
2-Ethylanthraquinone	ACS, DUP.
*Ethylbenzene	ATR, CSD, CSP, DOW, ENJ, FG, KPP, MCB, MON, SHC, SKC, SNT, SOG, STY, TOC, UCC.
Ethylbenzyl chloride	BPC.
N-Ethyl-1-cyclohexen-1-ylamine	x.
N-Ethylcyclohexylamine	ABB, PAS.
3,3'-Ethylenedioxydiphenol	IDC.
Ethylene glycol dibenzenesulfonate	NES.
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.
*N-Ethyl-N-phenylbenzylamine	ACS, DUP, SDH.
9-Ethyl-3-nitrocarbazole	SDC.
α-Ethyl-3-nitrocinnamic acid	SDW.
N-[2-(N-Ethyl-4-nitroso-m-toluidino(ethyl]methane-sulfonamide.	WAY.
p-Ethylphenol	ACY.
Ethylphenylmalonic acid, diethyl ester	BPC, MAL.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine) (MEP)	UCC.
1-Ethylpiperidine	RIL.
2-Ethylpyridine	RIL.
6-Ethyl-1,2,3,4-tetrahydro-1,1,4,4-tetramethyl-naphthalene.	GIV.
N-Ethyl-m-toluidine	DUP.
N-Ethyl-o-toluidine	DUP.
3-(N-Ethyl-m-toluidino)propionitrile	DUP, ICC.
α-(N-Ethyl-m-toluidino)-m-toluenesulfonic acid	GAF.
1-Ethynyl-1-cyclohexanol	CUC, EKT.
Fluoren-9-one	EK.
Fluorescein (3',6'-Dihydroxyfluoran)	ICC.
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	QKO.
Furfuryl alcohol	QKO.
Furfurylamine	MLS.
N-Glycolylarsanilic acid, sodium salt	SDW.
Hexabromobenzene	MCH.
Hexabromobiphenyl	MCH.
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.
Hexadecachlorophthalocyanine, copper complex	TRC.
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	CEL, DUP.
*Hippuric acid	BPC, HEX, NES.
p-Hydrazinobenzenesulfonic acid	GAF, WJ.
Hydrazobenzene	HEX.
Hydroquinone, di(β-hydroxyethyl) ether	CTN.
*Hydroquinone, tech	CRS, DA, DUP, EKT.
β-Hydroxy-p-acetophenetidide	GAF, TRC,
3'-Hydroxyacetophenone	CTN, SDH.
3'-Hydroxyacetophenone benzoate	SDH.
p-Hydroxybenzaldehyde	DOW.
*p-Hydroxybenzenesulfonic acid	DOW, MON, PRD, UPF.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Hydroxybenzoic acid	HN.
Hydroxybenzoic acid, mixed	HN.
3'-Hydroxy-2-(N-benzyl-N-methylamino)acetophenone	SDW.
4-Hydroxycoumarin	ABB.
3-[N-(2-Hydroxyethyl)anilino]propionitrile	DUP, ICC.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, acetate	EKT.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, benzoate	DUP.
N-β-Hydroxyethyl-2,4-dihydroxybenzamide	IDC.
N-β-Hydroxyethyl-3,5-dihydroxybenzamide	PCW.
N-[7-Hydroxy-8-[2-hydroxy-5-(methylsulfamoylphenyl)azo]-1-naphthyl]acetamide.	TRC.
6'-Hydroxy-5'-[(2-hydroxy-5-nitrophenyl)azo]-m-acetotoluidide.	TRC.
N-[7-Hydroxy-8-[(2-hydroxy-5-nitrophenyl)azo]-1-naphthyl]acetamide.	TRC.
7-Hydroxy-8-[[4'-[(p-hydroxyphenyl)azo]-4-biphenylyl]-azo]-1,3-naphthalenedisulfonic acid.	TRC.
*4-Hydroxymetanilamide	ACS, CMG, DUP, TRC, VPC.
4-Hydroxymetanilic acid	ACS, CWN, TRC.
N-(4-Hydroxymetanilyl)anthranilic acid	TRC.
3'-Hydroxy-2-(methylamino)acetophenone	CTN.
4-Hydroxy-1-methylcarbostyril	ICC.
*3-Hydroxy-2-methylcinchoninic acid	AAP, DUP, GAF, ICC, TRC.
4-Hydroxy-N[1]-methylmetanilamide	TRC.
4-Hydroxy-5-methyl-m-phenetidine hydrochloride	UPJ.
N-(Hydroxymethyl)phthalimide	ACY.
3-Hydroxy-N-(3-N-morpholinopropyl)-2-naphthamide	IDC.
*3-Hydroxy-2,7-naphthalenedisulfonic acid, dipotassium salt.	TCD.
*3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt	ACS, ACY, GAF, TRC, WJ.
*7-Hydroxy-1,3-naphthalenedisulfonic acid	DUP, TCD, TRC.
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt	ACS, ACY.
4-Hydroxy-2-naphthalenesulfonamide	GAF.
4-Hydroxy-1-naphthalenesulfonic acid	ACS, DUP.
*6-Hydroxy-2-naphthalenesulfonic acid	ACS, SNA, TMS.
*6-Hydroxy-2-naphthalenesulfonic acid, sodium salt	ACY, TRC, WJ.
8-Hydroxy-1-naphthalenesulfonic acid	VPC.
4-Hydroxy-2-naphthalenesulfonic acid, benzenesulfonate sodium salt.	GAF.
1-Hydroxy-2-naphthalenesulfonic acid, potassium salt	EK.
3-Hydroxy-2-naphthanilide (Naphthol AS)	ATL.
1-Hydroxy-2-naphthoic acid	ACS.
3-Hydroxy-2-naphthoic acid (B.O.N.)	BUC, PCW.
3-Hydroxy-2-naphthoic acid, methyl ester	PCW.
1-Hydroxy-2-naphthoic acid, phenyl ester	EK.
3-Hydroxy-2-naphtho-o-toluidide	ATL, PCW.
N-(2-Hydroxy-1-naphthyl)acetamide	ACY.
*N-(7-Hydroxy-1-naphthyl)acetamide	CMG, 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.
2,2'-(2-Hydroxy-4-nitrophenylimino)diethanol	WAY.
2-Hydroxy-4-n-octoxybenzophenone	CCW.
2-(m-Hydroxyphenoxy)ethanol	BJL.
o-[(p-Hydroxyphenyl)azo]benzoic acid	EK.
3-[4-(4'-Hydroxyphenylazo)-2,5-dimethoxyphenylazo]-benzenesulfamic acid.	TRC.
3-Hydroxy-4-(phenylazo)-2-naphthoic acid	ICC.
11α-Hydroxyprogesterone	UPJ.
4-Hydroxypropiophenone	MLS.
2-Hydroxy-4-sulfo-1-naphthalenediazonium hydroxide, inner salt.	ACY.
1-Hydroxy-4-p-toluidinoanthraquinone	GAF, ICI.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
2-Imidazolidinone	VAL.
2-Imidazolidinone modifications	RH.
*1,1'-Iminobis[4-aminoanthraquinone]	ACY, DUP, GAF, ICI, TRC.
1,1'-Iminobis[4-benzamidoanthraquinone]	ACY.
*1,1'-Iminobis[5-benzamidoanthraquinone]	GAF, ICI, TRC.
*7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid]	ACS, CMG, DUP, TRC.
*1,1'-Iminobis[4-nitroanthraquinone]	ACY, DUP, ICI, TRC.
*1,1'-Iminodianthraquinone (1,1'-Dianthrimide)	ACY, DUP, GAF, ICI, MAY, TRC.
1-Indanone	EK.
Indole-2,3-dione	ACS.
Indophenol, sodium salt	EK.
5-Iodoanthranilic acid	SDW.
o-Iodobenzoic acid	RSA.
Isobutylbenzene	PLC, TNA.
*Isocyanic acid derivatives:	
Bitolylene diisocyanate (TODI)	UPJ.
p-Chlorophenyl isocyanate	MOB.
Cyclohexyl isocyanate	OTC.
Dianisidine diisocyanate (DADI)	CWN, UPJ.
Dicyclohexylmethane-4,4-diisocyanate	DUP.
Diphenylmethane-4,4'-diisocyanate (MDI)	ACS, DUP, MOB, UPJ.
p-Methoxyphenyl isocyanate	OTC.
Phenylisocyanate	MOB.
Polyisocyanates (complex)	MOB.
*Polymethylene polyphenylisocyanate	KAI, MOB, UPJ.
Toluene 2,4-diisocyanate	DUP, MOB, UCC.
Toluene 2,4- and 2,6-diisocyanate (65/35 mixture)	DUP, MOB.
*Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	ACS, DUP, MOB, OMC, RUC, UCC, WYN.
Other	DUP, EK, MOB, UPJ.
Isonicotinic acid, methyl ester	RIL.
Isonicotinonitrile	RIL.
Isooctylphenol	PRD.
Isophthalic acid (Benzene-1,3-dicarboxylic acid)	ACC.
Isophthalic acid, diallyl ester	FMP.
Isophthalic acid, dimethyl ester	MTR.
Isophthalic acid, diphenyl ester	BJL.
Isophthaloyl chloride	DUP.
4,4'-Isopropylidenebis[2,6-dibromophenol] (Tetrabromobisphenol A).	DOW.
4,4'-Isopropylidenebis[2,6-dibromophenol]diacetate	MCH.
5,5'-Isopropylidenebis(2-hydroxy-m-xylene-α,α'-diol)	ARK.
*4,4'-Isopropylidenediphenol (Bisphenol A)	DOW, GE, MON, SHC, UCC.
4,4'-Isopropylidenediphenol, ethoxylated	APD.
4,4'-Isopropylidenediphenol, propoxylated	APD.
o-Isopropylphenol	TNA.
p-Isopropylphenol	PRD.
Isopropylphenols, mixed	FMP.
4-Isopropyl-m-phenylenediamine	DUP.
Isoviolanthrone (Isodibenzanthrone)	ACY, DUP, GAF, TRC.
*Leuco quinizarin (1,4,9,10-Anthratetrol)	AAP, ACS, ACY, EKT, HSH, ICC, TRC.
2,4-Lutidine	ACP, KPT, RIL.
2,6-Lutidine	RIL.
3,4-Lutidine	UCC.
Malonanilide	KF, PCW.
Mandelonitrile	KF.
*Melamine	ACN, ACY, ASH, PPC.
*dl-p-Mentha-1,8-diene (Limonene)	ARZ, GIV, HN, NCI.
p-Mentha-1,4(8)-diene	GIV.
p-Menth-1-ene	GIV.
o-Mercaptobenzoic acid (Thiosalicylic acid)	AMB, LIL, WAY.
*Metanilic acid (m-Aminobenzenesulfonic acid)	ACY, DUP, TRC.
6-(2'-Methoxybenzenesulfonamido)-2-benzoxazolinone	SDC.
4-Methoxymetanilic acid	GAF, VPC.
6-Methoxymetanilic acid	GAF.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
4'-Methoxy-2-(p-methoxyphenyl)acetophenone	CTN.
N-(2-Methoxy-1-naphthyl)acetamide	TRC.
6-Methoxy-8-nitroquinoline	SDW.
(p-Methoxyphenyl)acetic acid	UOP.
5-[N-(2'-Methoxy)phenyl]-2-aminophenol	SDC.
4-Methoxy-m-phenylenediamine sulfate	WAY.
6-Methoxy-2-(phenylthio)quinoline	EK.
4'-Methoxypropiophenone	LIL.
1-(Methylamino)anthraquinone	AAP, ACS, ACY, ICI.
1-(Methylamino)-4-p-toluidinoanthraquinone	GAF, ICI.
N-Methylaniline	DUP.
3-(N-Methylanilino)propionitrile	DUP.
5-Methyl-o-anisidine [NH_2=1]	SDC.
m-Methylanisole	GIV.
N-Methylanthranilic acid	GIV, ICC.
2-Methylanthraquinone	ACS, ACY.
3-Methylbenzo[f]quinoline	ACY.
2-Methylbenzothiazole	FMT.
N-Methylbenzylamine	MLS, SDW.
Methylbenzyl ether	UCC.
5-(1-Methylbutyl)barbituric acid	LIL.
3-Methylcholanthrene	EK.
Methylcyclohexane	PLC.
4-Methylcyclohexanone	EK.
Methylcyclopentadiene	ENJ.
N-Methyldicyclohexylamine	ABB.
4-Methyl-α,α-diphenyl-1-piperazine ethanol, dihydrochloride.	ABB.
N-Methyleneaniline	DUP.
4,4'-Methylenebis[2-chloroaniline]	DUP.
4,4'-Methylenebis[N,N-diethylaniline]	ACY, GAF, SDH, TRC.
4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)	ACY, DUP, SDH.
4,4'-Methylenebis(3-hydroxy-2-naphthoic acid), disodium salt.	PD.
2,2'-Methylenebis(6-nonyl-p-cresol)	ACY.
4,4'-Methylenedianiline	ACS, DOW, DUP, MOB.
5,5'-Methylenedisalicylic acid	HN.
Methylhydroquinone	EKT.
2-Methylindole	TRC.
2-Methylindole-3-carboxaldehyde	GAF.
6-Methyl-2-(2-methyl-6-quinolyl)-7-benzothiazolesulfonic acid.	DUP.
N-Methyl-4'-nitroacetanilide	ACS, GAF.
N-Methyl-p-nitroaniline	EK.
5-Methyl-4-nitro-o-anisidine	PCW.
4-Methyl-2-nitroanisole	SDC.
2-Methyl-1-nitroanthraquinone	GAF, ICI.
2-Methyl-5-nitroimidazole	RDA.
N-Methyl-N-nitroso-p-toluenesulfonamide	ALD, EK.
2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	VEL.
Methylnorbornene-2,3-dicarboxylic anhydride, isomers	ACS.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide	CMG, TRC, VPC.
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide	CMG.
*p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid.	AAP, ACY, GAF, TRC, VPC.
3-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,5-naphthalenedisulfonic acid,	TRC.
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO_3H=1].	CMG, VPC.
2-Methyl-5-phenylbenzoxazole	EK.
1-Methyl-1-phenylhydrazine	EK.
1-Methyl-2-phenylindole-3-carboxaldehyde	GAF.
1-Methyl-4-phenylisonipecotic acid	SDW.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid	ARS.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid hydrochloride.	ARS.
*3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	ACY, DUP, GAF, SDH, VPC.
Methyl phenyl sulfide (Thioanisole)	PIT.
4-Methyl-1-piperazineacetic acid, methyl ester	ABB.
1-Methyl-4-piperidinol	ARA.
3-(α-Methylpiperidine)propanol	LIL.
Methylpyrazine	DUP.
1-Methylpyrrole	DUP.
8-Methylquinoline	EK.
*α-Methylstyrene	ACP, CLK, DOW, HPC, PCC, SKO.
ar-Methylstyrene (Vinyltoluene)	DOW.
2-(Methylsulfonyl)-4-nitroaniline	TRC.
4-(Methylthio)-m-cresol	CRZ.
3-Methylthiophene	SDW.
p-(Methylthio)phenol	CRZ.
3-Methyl-1-(thiosulfophenyl)-2-pyrazolin-5-one, sodium salt.	SDC.
3-Methyl-6-p-toluidino-7H-dibenz[f,ij]isoquinoline-2,7(3H)-dione.	GAF, ICI.
1-Naphthaldehyde	BLK.
*Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude).	KPT, RIL, WTC.
1,5-Naphthalenediol (1,5-Dihydroxynaphthalene)	ACS.
2,7-Naphthalenedisulfonic acid	ACS, DUP, TRC.
1-Naphthalenesulfonic acid	TRC.
1-Naphthalenesulfonic acid, sodium salt	TRC.
2-Naphthalenesulfonic acid	ACY, EK, NES.
2-Naphthalenesulfonic acid. sodium salt	ACY.
1-Naphthalenesulfonyl chloride	EK.
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, DUP.
p-Naphtholbenzein	EK.
1,2-Naphthoquinone	EK.
Naphthostyril	ACS.
Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid	ACS, GAF, TRC.
1-Naphthylamine (α-Naphthylamine)	ACS, DUP.
1-Naphthylamine hydrochloride	GAF.
p-(2-Naphthylamino)phenol (N-(p-Hydrophenyl)-2-naphthylamine).	SDC.
N-(1-Naphthyl)ethylenediamine dihydrochloride	RSA.
(2-Naphthyloxy)acetic acid	APD.
(2-Naphthyloxy)acetic acid, sodium salt	APD.
Nicotinonitrile (3-Cyanopyridine)	NEP, RIL.
Nitroaceanthra[2,1-a]aceanthrylene-5,13-dione	ICI.
*3'-Nitroacetanilide	AAP, GAF, TRC.
*4'-Nitroacetanilide	GAF, SAL, TRC.
2'-Nitro-p-acetanisidide	DUP.
4'-Nitro-o-acetanisidide	DUP.
3'-Nitro-p-acetophenetidide	AAP.
3'-Nitroacetophenone	CTN, SDH.
m-Nitroaniline	ACY, x.
o-Nitroaniline	AAP, MON.
p-Nitroaniline	AAP, MON, SAL.
2-(o-Nitroanilino)ethanol	AAP.
2-Nitro-p-anisidine [NH_2=1]	DUP.
4-Nitro-o-anisidine [NH_2=1]	DUP, SDH.
5-Nitro-o-anisidine [NH_2=1]	BUC.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
o-Nitroanisole	DUP, MON.
p-Nitroanisole	DUP.
5-Nitroanthranilic acid	TRC.
1-Nitroanthraquinone	ACY.
2-(4-Nitro-2-anthraquinonyl)anthra[2,3-d]-oxazole-5,10-dione.	ACS, GAF.
m-Nitrobenzaldehyde	SDH.
3'-Nitrobenzanilide	AAP.
*Nitrobenzene	ACS, ACY, DUP, FST, MOB, MON, RUC.
*m-Nitrobenzenesulfonic acid	ACY, DUP.
*m-Nitrobenzenesulfonic acid, sodium salt	ACS, GAF, MON, MRA.
p-Nitrobenzenesulfonyl chloride	EK.
5-Nitro-2-benzimidazolinone	DUP.
m-Nitrobenzoic acid	SAL, SDH, WAY.
m-Nitrobenzoic acid, sodium salt	SAL, WAY.
p-Nitrobenzoic acid	DUP.
2-(m-Nitrobenzoyl)-o-acetanisidide	GAF.
m-Nitrobenzoyl chloride	ARS, HK.
p-Nitrobenzoyl chloride	HK.
p-Nitrobenzyl alcohol	EK.
4-(p-Nitrobenzyl)pyridine	EK.
4'-Nitro-4-biphenylcarboxylic acid	DUP, TRC.
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	FIS.
1-Nitronaphthalene	DUP.
3-Nitro-1,5-naphthalenedisulfonic acid	GAF, TRC.
4-Nitronaphthalic anhydride	ACS.
7(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid.	ACS, GAF, TRC.
4-Nitrooxanilic acid	DUP.
p-Nitrophenethyl alcohol	PCW.
o-Nitrophenol	MON.
*p-Nitrophenol	DUP, MON, SDC, UPM.
*p-Nitrophenol, sodium salt	MON, UPM.
*4'(p-Nitrophenyl)acetophenone	DUP, FIS, GAF.
4-[(p-Nitrophenyl)azo]-o-anisidine	AAP.
2-Nitro-p-phenylenediamine	WAY.
4-Nitro-o-phenylenediamine	DUP, FMT.
(p-Nitrophenyl)hydrazine	EK, RSA.
2,2'-[(m-Nitrophenyl)imino]diethanol	DUP.
2,2'-[(m-Nitrophenyl)imino]diethanol, diacetate ester	DUP.
2-(p-Nitrophenyl)-1-octadecyl-5-benzimidazolesulfonic acid.	GAF.
1-(m-Nitrophenyl)-5-oxo-pyrazoline-3-carboxylic acid	DUP, VPC.
3-Nitrophthalic acid	EK.
3-Nitrophthalic anhydride	EK.
5-Nitrosalicylaldehyde	EK.
3(and 5)-Nitrosalicyclic acid	GAF.
1-Nitroso-2-naphthol	EK.
p-Nitrosophenol	ACY, SDC.
4-Nitrostilbene	GAF.
m-Nitrotoluene	DUP, FST.
o-Nitrotoluene	DUP, FST.
p-Nitrotoluene	DUP, FST.
Nitrotoluene mixtures	DUP, FST.
p-Nitrotoluenesulfonic acid	CGY.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
3-Nitro-p-toluenesulfonic acid [SO_3H=1]	CMG, TCD.
*5-Nitro-o-toluenesulfonic acid [SO_3H=1]	ACS, ACY, DUP, GAF, SDH, TRC.
3-Nitro-p-toluic acid, methyl ester	SDH.
2-Nitro-p-toluidine [NH_2=1]	ABB, DUP, SW.
*5-Nitro-o-toluidine [NH_2=1]	BUC, DUP, PCW, SDH.
5-Nitro-2-p-toluidinobenzenesulfonic acid	TRC.
16-Nitroviolanthrone	GAF, ICI, MAY.
4-Nitro-m-xylene	DUP.
*Nonylphenol	GAF, JCC, MON, RH, STP.
5-Norbornene-2,3-dicarboxylic anhydride	VEL.
Octylphenol	RH.
p-Octylphenyl acid phosphate	SM.
Oxalacetic acid, diethyl ester, (p-sulfophenyl)-hydrazone.	TRC.
Oxanilide	EK.
*1-[7-Oxo-7H-benz[de]anthracene-3-yl)]anthraquinone	ACY, DUP, GAF, ICI, MAY, TRC.
1,1'-[(7-Oxo-7H-benz[de]anthracen-3,9-xylene)diimino]-dianthraquinone.	ACY, ICI, MAY, TRC.
5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	AAP.
4,4'-Oxydianiline	x.
Penicillin, N-ethylpiperidine salt	MRK.
Pentachloropyridine	DOW.
α,α,α,α',α'-Pentachloro-o-xylene	x.
1,1,3,3,5-Pentamethylindan	GIV.
o-Pentylphenol (o-Amylphenol)	PAS.
p-tert-Pentylphenol	PAS, PRD.
3,4,9,10-Perylenetetracarboxylic acid	ACS, GAF.
3,4,9,10-Perylenetetracarboxylic-3,4:9,10-di(3-amino-phenylimide).	SDC.
3,4,9,10-Perylenetetracarboxylic-3,4:9,10-diimide	ACS, SDC.
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, PRD.
82%-84%	ACP, KPT.
U.S.P	MAL.
All other	ACP, KPT.
*From petroleum	MER, NPC, PIT, PRD.
*Synthetic:	
By caustic fusion: U.S.P	MON, RCI.
From chlorobenzene by liquid-phase hydrolysis: U.S.P	DOW.
From chlorobenzene by vapor-phase hydrolysis: U.S.P	HKD, UCC.
*From cumene by oxidation: U.S.P	ACP, CLK, HPC, MON, PCC, SHC, SKO, SOC, UCC.
Phenolsulfonaphthalein	EK.
Phenolsulfonaphthalein, sodium salt	EK.
Phenolsulfonic acid, lithium salt	SAL.
Phenoxyacetic acid, sodium salt	ABB, ARA, BPC.
2-Phenoxypropanol	ARS.
2-Phenoxypropionic acid	ARS.
2-Phenoxypropionyl chloride	ARS, OPC.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Phenylacetic acid (α-Toluic acid)	BPC, GIV, MAL.
Phenylacetic acid, ethyl ester, tech	BPC.
Phenylacetic acid, methyl ester	BPC.
Phenylacetic acid, potassium salt	BPC, OPC.
Phenylacetic acid, sodium salt	BPC, OPC.
*Phenylacetonitrile (α-Tolunitrile)	BPC, OPC, SDW, UOP.
4'-Phenylacetophenone	DUP, GAF, NES.
Phenylacetyl chloride	BJL.
N-Phenylanthranilic acid	SDW.
2-Phenylanthra[2,3-d]oxazole-5,10-dione	GAF.
Phenolarsine oxide	EK.
*p-Phenylazoaniline (C.I. Solvent Yellow 1) and hydrochloride.	ACS, ACY, GAF, TRC.
4-(Phenylazo)diphenylamine	EK.
4-(Phenylazo)-1-naphthylamine	DUP.
5-(Phenylazo)salicylic acid	TRC.
1-Phenyl-1,3-butanedione	EK.
α-Phenyl-o-cresol	RBC.
1-Phenylcyclopentanecarboxylic acid	SK.
N,N'-p-Phenylenebis[acetamide]	ACY.
m-Phenylenediamine	ACY, DUP.
o-Phenylenediamine	DUP, SW, TRC.
p-Phenylenediamine	ACY, SDC.
d-Phenylephrine base	SDW.
dl-Phenylephrine base	SDW.
2-Phenylethenesulfonic acid, sodium salt	SHL.
Phenyl ether (Diphenyl oxide)	DOW.
d(-)Phenylglycine	BKL, KF, OTC.
d-(-)Phenylglycine, N-carboxy anhydride	OTC.
Phenylglycine, sodium salt	ACS.
d(-)Phenylglycl hydrochloride	KF, OTC.
5-Phenylhydantoin	ABB.
Phenylhydrazine hydrochloride	EK.
2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine)	EKT.
3,3'-[(Phenyl)imino]dipropionitrile	DUP.
Phenylmalonic acid, diethyl ester	BPC.
o-Phenylphenol	DOW, RCI.
o-Phenylphenol, chlorinated	DOW.
o-Phenylphenol, sodium salt	DOW.
p-Phenylphenol	DOW.
N-Phenyl-1-p-phenylenediamine	USR.
Phenylphosphinic acid	SFA.
Phenylphosphonothioic dichloride	SFI.
Phenylphosphorous dichloride	SFI.
1-Phenylpiperazine	RSA.
1-Phenyl-1,2-propanedione, 2-oxime	NEP, ORT.
Phenyl-2-propanone	ORT, SK.
N-3-Phenylpropyl-p-toluidine	EK.
dl-Phenylsuccinic acid	PD.
Phenyl sulfide	EK.
Phenyl sulfone	NES.
1-Phenyl-2-thiourea	EK.
Phenylundecanoic acid	EK.
Phloroglucinol	MRT.
1(2H)-Phthalazinone	x.
Phthalic acid	EK, SW.
Phthalic acid, diallyl ester	FMP.
Phthalic acid, monopotassium salt	EK.
*Phthalic anhydride	ACP, GRH, KPS, KPT, MON, PCC, PTO, RCI, SOC, STP, SW, UCC.
Phthalide	ACS, FMT.
Phthalimide	DUP, SW.
Phthalimide, potassium salt	EK, SDW.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
[Phthalocyaninato(2-)]copper	GAF, ICI, TRC.
Phthalocyanine, copper complex, di-(and tri)-chloro methyl.	TRC.
Phthaloyl chloride (Phthalyl chloride)	DUP, MON.
*Picolines:[2]	
*2-Picoline (α-Picoline)	ACP, KPT, NEP, RIL, UCC.
3-Picoline (β-Picoline)	NEP, RIL.
4-Picoline (γ-Picoline)	NEP, RIL, UCC.
Picoline (3,4-mixture)	ACP, KPT.
Picolinic acid	NEP.
Picolinonitrile (2-Cyanopyridine)	NEP, RIL.
3-Picolylamine	RIL.
Picric acid (Trinitrophenol)	SDC.
2-Pipecoline	LIL.
2,5-Piperazinedione	EK.
Piperidine	ABB, DUP, MRK, RIL.
3-Piperidinopropiophenone hydrochloride	ACY, SDW.
Polychlorobiphenyl	MON.
Poly(methylenephenylene) polyamine	KAI.
Primuline base	DUP.
Primulinesulfonic acid	ATL.
Propiophenone	ORT, UOP.
2-Propyl-4-amino-5-methoxymethylpyrimidine amino	MRK.
n-Propylbenzene sulfonate	NES.
8,16-Pyranthrenedione	ICI, TRC.
Pyridine, refined:[2]	
2° Pyridine	ACP, KPT, NEP, RIL.
Other grades	KPT.
Pyridine hydrochloride	EK.
3-Pyridinemethanol	RIL.
Pyridine-N-oxide	RIL.
2-Pyrimidinol	CGY.
2(1H)-pyrimidinone	VAL.
2-Pyrrolidinone	GAF.
3-(1-Pyrrolidinyl)propiophenone hydrochloride	LIL.
Quinaldine	ACS, ACY.
Quinoline:	
1° and 2° Quinoline	ACP, KPT.
Other grades	EK, KPT.
2,4-Quinolinediol	PCW.
Quinophthalone (Quinoline yellow, base)	ACS.
3-Quiniclidinol	APD.
Resorcinol, monoacetate (non-medicinal grade)[1]	AAP.
Resorcinol, tech[1]	KPT, UPF.
β-Resorcylaldehyde	UPF.
β-Resorcylic acid	ACY, KPT.
*Salicylaldehyde	DOW, HN, MTR, RDA.
Salicylaldehyde oxime	EK.
Salicylanilide	CFC.
*Salicylic acid, tech	CFC, DOW, HN, MON, SDH.
Salicylic acid, ammonium chromium complex	TRC.
Salicylic acid, sodium-chromium complex	TRC.
Salicylic acid, sodium salt (crude)	DOW.
Salicylideneaminoguanidine oleate	DUP.
*Styrene, all grades	ACC, CSD, DOW, ELP, ENJ, FG, KPP, MCB, MON, SHC, SKC, SNT, UCC.
Sulfaguanidine, tech	SAL.
5-Sulfamoylanthranilic acid	TRC.
Sulfanilamide, tech	SAL.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt	ACS, ACY, CTN.
5-Sulfoanthranilic acid	ICI.
o-Sulfobenzoic acid, cyclic anhydride	EK.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
m-Sulfobenzoic acid, monosodium salt	EK.
p-Sulfobenzoic acid, potassium salt	NES.
5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt.	PCW.
5-Sulfoisophthalic acid, sodium salt	PCW.
Sulfonylbis[N-methylaniline]	SDC.
4,4'-Sulfonyldianiline	RSA.
N-5'-Sulfonyldianthranilic acid	TRC.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)	MON, SW, UPF.
Sulfonyldiphenol, mixed isomers	UPF.
4-Sulfophthalic acid	CWN, HSC.
*Terephthalic acid	ACC, DUP, EKT, SM.
*Terephthalic acid, dimethyl ester	ACC, DUP, EKT, HPC.
Terephthalic acid, diphenyl ester	BJL.
Terephthaloyldiacetic acid, diethyl ester	PCW.
Terphenyl (Phenylbiphenyl)	MON.
Tetraaminobenzophenone	BJL.
Tetraaminodiphenyl ether	BJL.
1,2,4,5-Tetraaminobenzene tetrahydrochloride	BJL.
[4,4',4'',4'''-Tetraaminophthalocyaninato(2)]copper	SDC.
3',3'',5',5''-Tetrabromophenolphthalein, ethyl ester	EK.
Tetrabromophthalic anhydride	MCH.
Tetrabromo-8,16-pyranthrenedione	ACS, GAF.
1,4,5,8-Tetrachloroanthraquinone	DUP, GAF.
1,2,4,5-Tetrachlorobenzene	DOW, HK.
1,2,4,5-Tetrachloro-3-nitrobenzene	SDH.
Tetrachlorophthalic anhydride	MON.
Tetrachloroviolanthrone	GAF.
Tetrahydrofuran	DUP, QKO.
Tetrahydrofurfuryl methacrylate	SAR.
1,4,5,8-Tetrahydroxyanthraquinone	ICC.
*1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative	ACS, GAF, ICC, TCD, TRC.
1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone (Pentanthrimide).	GAF.
1,2,3,5-Tetramethylbenzene (Isodurene)	SNT.
1,2,4,5-Tetramethylbenzene (Durene)	SNT.
p-(1,1,3,3-Tetramethylbutyl)phenol	GAF, SCN.
3,3',5,5'-Tetramethyldiphenoquinone	DUP.
N,N,N',N'-Tetramethyl-p-phenylenediamine dihydrochloride.	EK.
[4,4'4'',4'''-Tetranitrophthalocyaninato(2)]copper	SDC.
2-(2-Thenylamino)pyridine	ABB.
Thiobenzamide	EK.
*3,3'-Thiobis[7H-benz[de]anthracen-7-one]	DUP, GAF, MAY, TRC.
1,1'-Thiobis[2-naphthol]	ACY.
2,2'-Thiobis[5-nitrobenzenesulfonic acid]	GAF.
4,4'-Thiodianiline	ACY.
6,6-Thiodimetanilic acid	ACS, GAF.
2-Thiopheneacetyl chloride	LIL.
2-Thiophenecarboxaldehyde	ABB.
sym-Thymol	GIV, KPT.
*Toluene-2,4-diamine (4-m-Tolylenediamine)	ACS, ACY, DUP, GAF, OMC, RUC, TRC, UCC.
Toluene-2,5-diamine sulfate	WAY.
Toluene-2,4-disulfonic acid	GAF.
o-Toluenesulfonamide	MON.
p-Toluenesulfonamide	MON.
o(and p)-Toluenesulfonic acid	EK, MON, SW, UPF,
p-Toluenesulfonic acid	TEN, UPF.
p-Toluenesulfonic acid, methyl ester	ICI.
p-Toluenesulfonic acid, monohydrate	NES.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Toluenesulfonyl chloride	MON.
α-Toluenesulfonyl fluoride	EK.
m-Toluic acid	BPC, CWL.
o-Toluic acid	BPC, CWL.
p-Toluic acid	BPC, CWL, EK.
m-Toluidine	DUP.
o-Toluidine	DUP, FST.
o-Toluidine hydrochloride	AAP, ACY.
p-Toluidine	DUP.
p-Toluidine hydrochloride	EK.
Toluidines, mixed	DUP.
m-Toluidinomethanesulfonic acid	VPC.
o-Toluidinomethanesulfonic acid	GAF, TRC, VPC.
8-p-Toluidino-1-naphthalenesulfonic acid	ACS.
*o-(p-Toluoyl)benzoic acid	ACS, ACY, DUP.
N-(p-Tolylazo)sarcosine	BUC, GAF.
*4-(o-Tolylazo)-o-toluidine (C.I. Solvent Yellow 3)	ACY, ALL, DUP, GAF, SDH.
4-(o-Tolylazo)-o-toluidine hydrochloride	GAF.
1-p-Tolyldodecane	x.
2,2'-(m-Tolylimino)diethanol	EKT.
2,2'-(m-Tolylimino)diethanol, diacetate ester	SDC.
p-Tolylmercuric chloride	EK.
Tolyltriazole	SW.
3,4',5-Tribromosalicylanilide	PCW, SW.
1,2,3(and 1,2,4)-Trichlorobenzene	DVC, PPG.
*1,2,4-Trichlorobenzene	DOW, HK, SVT.
N,2,6-Trichloro-p-benzoquinoneimine	EK.
1,2,4-Trichloro-5-nitrobenzene	PCW.
Trichlorophenylsilane	DCC, UCC.
α,α,α-Trichlorotoluene (Benzotrichloride)	HK, VEL.
α,2,4-Trichlorotoluene	HN.
α,3,4-Trichlorotoluene	HN.
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	ACY, CGY, NIL.
1,3,5-Triethylbenzene	DUP.
2-(Trifluoromethyl)phenothiazine	SK.
α,α,α-Trifluoro-N-phenyl-m-toluidine (3-(Trifluoromethyl)diphenylamine).	SK.
α,α,α-Trifluorotoluene	HK.
α,α,α-Trifluoro-m-toluidine	SW.
α,α,α-Trifluoro-o-toluidine	SW.
1,2,4-Trihydroxyanthraquinone	GAF.
Trihydroxybiphenyl	PCW.
1,2,3-Trimethylbenzene (Hemimellitine)	SNT.
1,2,4-Trimethylbenzene (Pseudocumene)	PLC, SNT.
1,3,5-Trimethylbenzene (Mesitylene)	SNT.
3,5,5-Trimethylcyclohexanol	ARS.
2,3,3-Trimethyl-3H-indole	GAF, TRC.
*1,3,3-Trimethyl-∇^2,α-indolineacetaldehyde	ACS, DUP, GAF, TRC, VPC.
*1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)	ACS, DUP, GAF, TRC, VPC.
Trimethylphenylammonium iodide	EK.
α,α',2-Trimethyl-1,4-piperazinediethanol	WYN.
2,4,6-Trimethylpyridine	KPT, RIL.
1,3,5-Trinitrobenzene	EK.
2,4,6-Trinitrobenzenesulfonic acid	EK.
2,4,7-Trinitrofluoren-9-one	EK.
2,4,6-Trinitroresorcinol, lead derivative	EK.
Triphenylamine	EK.
Triphenylmethane	EK.
Triphenylmethanol	EK.
α,α',α''-Tris(dimethylamino)mesitol	RH, TKL.
Tris(2-methyl-1-aziridinyl)phosphine oxide	ARS, ICC.
Tri-o-tolylphosphine	EK.
Tri-p-tolylphosphine	EK.

TABLE 2.--Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Tropine	CTN.
m-Ureidoaniline	ICI.
*7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea).	CMG, GAF, TCD, TRC, VPC.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	GIV, LIL, SLV.
Veratryl alcohol (3,4-Dimethoxybenzyl alcohol)	LIL.
p-Vinylbenzenesulfonic acid, sodium salt	DUP.
2-Vinylcyclohexene	UCC.
5-Vinyl-2-picoline (MVP)	PLC.
2-Vinylpyridine	RIL.
4-Vinylpyridine	RIL.
Vinyltoluene	FG.
*Violanthrone (Dibenzanthrone)	ACS, ACY, ATL, DUP, GAF, ICI, MAY, SDC, TRC.
Xanthene-9-carboxylic acid	MAL.
*m-Xylene	ATR, SNT, SOC.
*o-Xylene	ASH, ATR, CCP, CPI, CSD, CSO, CSP, DLH, ENJ, MON, PPR, SNT. SOC, SUN, TOC.
*p-Xylene	ACC, ATR, CSD, CSO, ENJ, HCR, PPR, SHC, SHO, SNT, SOC, SOG, TOC.
2,5-Xylenesulfonic acid	EK, NES.
Xylenesulfonic acid, mixed isomers	NES.
Xylenol crystals	ACP.
2,6-Xylenol	GE.
Xylenols:	
Medium b.p	NPC.
Not classified as to b.p	KPT.
Xylidines:	
2,4-Xylidine (m-4-Xylidine)	DUP.
2,6-Xylidine	DUP.
Original mixture	DUP.
4-(2,4-Xylylazo)-o-toluidine	ACS.
4-(2,5-Xylylazo)-o-toluidine	ACY.
4-(2,4-Xylylazo)-2,5-xylidine	ACS.
4-(Xylylazo)xylidines, mixed	GAF.
All other cyclic intermediates	AAP, ACY, ALL, ARA, CUC, CWN, DUP, EK, GAF, HMY, HN, ICC, JCC, LIL, MON, MRK, OPC, PCW, PRD, RH, SCH, SW, UCC, VEL, WTC, x, x, x.

[1] Producers of medicinal grade are listed in "Medicinal chemicals."
[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 1970*, July 30, 1971.

TABLE 3.--Cyclic intermediates: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of cyclic intermediates to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
AAP	American Aniline Products, Inc.
ABB	Abbott Laboratories
ACC	Amoco Chemical Corp.
	Allied Chemical Corp.:
ACP	Plastics Div.
ACS	Specialty Chemicals Div.
ACY	American Cyanamid Co.
ALD	Aldrich Chemical Co., Inc.
ALL	Alliance Chemical, Inc.
ALT	Crompton & Knowles Corp., Althouse Div.
AMB	American Bio-Synthetics Corp.
APD	Atlas Chemical Industries, Inc.
ARA	Arapahoe Chemical Div. of Syntex Corp.
ARK	Armstrong Cork Co.
ARS	Arsynco, Inc.
ARZ	Arizona Chemical Co.
ASH	Ashland Oil, Inc.
ASL	Ansul Chemical Co.
ATL	Atlantic Chemical Corp.
ATR	Atlantic Richfield Co., Arco Chemical Co. Div.
BJL	Burdick & Jackson Laboratories, Inc.
BKL	Millmaster Onyx Corp., Millmaster Chemical Div., Berkeley Chemical Dept.
BPC	Stauffer Chemical Co., Benzol Products Div.
BRP	BP Oil Corp.
BUC	Blackman-Uhler Chemical Co.
CCP	Crown Central Petroleum Corp.
CCW	Cincinnati Milacron Chemicals, Inc.
CEL	Celanese Corp.
CFC	Sun Chemical Corp.
CGY	Ciba-Geigy Corp.
CHO	Stauffer Chemical Co., Calhio Chemicals, Inc. Div.
CLK	Clark Oil & Refining Corp., Clark Chemical Co.
CMG	Nyanza, Inc.
CNP	Columbia Nipro Corp.
CO	Continental Oil Co.
CPI	Commonwealth Petrochemicals, Inc.
CRS	Carus Chemical Co., Inc.
CRZ	Crown Zellerbach Corp., Chemical Products Div.
CSD	Cosden Oil & Chemical Co.
CSO	Cities Service Oil Co.
CSP	Coastal States Petrochemical Co.
CTN	Chemetron Corp., Organic Chemical Div.
CUC	Air Reduction Co., Inc., Chemicals & Plastics Div.
CWL	Stauffer Chemical Co., Cowles Chemical Div.
CWN	Upjohn Co., Carwin Organic Chemicals
DA	Diamond Shamrock Corp.
DBC	Dow Badische Co.
DCC	Dow Corning Corp.
DLH	Amerada Hess Corp., Hess Oil & Chemical Div.
DOW	Dow Chemical Co.
DSC	Dye Specialties, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.
DVC	Dover Chemical Corp.
EK	Eastman Kodak Co.:
EKT	Tennessee Eastman Co. Div.
ELP	El Paso Products Co.
ENJ	Enjay Chemical Co.
FG	Foster Grant Co., Inc.
FIN	Fine Organics. Inc.
FIS	Fisher Chemical Co., Inc.
FLM	Fleming Laboratories, Inc.
FMP	FMC Corp., Organic Chemicals Div.
FMT	Fairmount Chemical Co., Inc.
FST	First Chemical Corp.
GAF	GAF Corp., Chemical Div.
GE	General Electric Co.
GIV	Givaudan Corp.
GLY	Glyco Chemicals, Inc.
GOC	Gulf Oil Corp., Gulf Oil Co. Chemical Co. - United States
GRH	W. R. Grace & Co.. Hatco Chemical Div.
GRS	Champlin Petroleum Co. Corpus Christi Refinery
GYR	Goodyear Tire & Rubber Co.
HCR	Hercor Chemical Corp.
HEX	Hexagon Laboratories, Inc.
HK	Hooker Chemical Corp.:
HKD	Durez Div.
HMY	Humphrey Chemical Co.
HN	Tenneco Chemicals, Inc.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Div.
HPC	Hercules, Inc.
HSC	Chemetron Corp., Pigments Div.
HSH	Harshaw Chemical Co. Div. of Kewanee Oil Co.
HST	American Hoechst Corp.
ICC	Inmont Corp.
ICI	ICI America, Inc.
IDC	Industrial Dyestuff Co.
JCC	Jefferson Chemical Co., Inc.
KAI	Kaiser Aluminum & Chemical Corp., Kaiser Chemicals Div.
KF	Kay-Fries Chemicals, Inc.
KPP	Sinclair-Koppers Co.
KPS	Koppers Pittsburgh Co.
KPT	Koppers Co., Inc., Organic Materials Div.
LAK	Lakeway Chemical Co.
LIL	Eli Lilly & Co. & Puerto Rico
MAL	Mallinckrodt Chemical Works
MAY	Otto B. May, Inc.
MCB	Borg-Warner Corp., Marbon Chemical Div.
MCH	Michigan Chemical Corp.
MER	Merichem Co.
MET	M & T Chemicals, Inc.
MLS	Miles Laboratories, Inc., Marschall Div.
MOB	Mobay Chemical Co.
MOC	Marathon Oil Co., Texas Refining Div.
MON	Monsanto Co.
MRA	Crown-Metro, Inc.
MRK	Merck & Co., Inc.
MRT	Morton Chemical Co.
MTO	Montrose Chemical Co.
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.
NCI	Union Camp Corp., Chemicals Div.

TABLE 3.--Cyclic intermediates: Directory of manufacturers, 1970--Continued

Code identification	Name of company
NEP	Nepera Chemical Co., Inc.
NES	Nease Chemical Co., Inc.
NEV	Neville Chemical Co.
NIL	Nilok Chemicals, Inc.
NOR	Norwich Pharmacal Co.
NPC	Northwest Petrochemical Corp.
OMC	Olin Corp.
OPC	Orbis Products Corp.
ORO	Chevron Chemical Co.
ORT	Roehr Chemicals, Inc.
OTA	Ferro Corp., Ottawa Chemical Div.
OTC	Ott Chemical Co.
PAS	Pennwalt Chemicals Corp.
PAT	Morton International, Inc., Morton Chemical Co. Div.
PCC	USS Chemicals, Div. of U.S. Steel Corp.
PCR	Princeton Chemical Research, Inc.
PCW	Pfister Chemical, Inc.
PD	Parke, Davis & Co.
PFZ	Pfizer, Inc.
PIT	Pitt-Consol Chemical Co.
PLC	Phillips Petroleum Co.
PPC	Premier Petrochemical Co.
PPG	PPG Industries, Inc.
PPR	Phillips Puerto Rico Core, Inc.
PRD	Productol Chemical Co., Inc.
PTO	Puerto Rico Chemical Co., Inc.
PTT	Petro-Tex Chemical Corp.
QKO	Quaker Oats Co.
RBC	Roberts Chemicals, Div. of Security Chemicals, Inc.
RCI	Reichhold Chemicals, Inc.
RDA	Rhodia, Inc.
RH	Rohm & Haas Co.
RIL	Reilly Tar & Chemical Corp.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.
RSA	R.S.A. Corp.
RUC	Rubicon Chemicals, Inc.
SAL	Salsbury Laboratories
SAR	Sartomer Resins, Inc.
SCC	Standard Chlorine of Delaware, Inc.
SCH	Schering Corp.
SCN	Schnectady Chemicals, Inc.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
	Sterling Drug, Inc.:
SDH	Hilton-Davis Chemical Co. Div.
SDW	Winthrop Laboratories Div.
SEL	Selney Co., Inc.
	Stauffer Chemical Co.:
SFA	Specialty Chemical Div.
SFI	Industrial Div.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHL	Nitine, Inc., Div. of Shulton, Inc.
SHO	Shell Oil Co.
SK	Smith, Kline & French Laboratories
SKC	Sinclair-Koppers Chemical Co.
SKO	Skelly Oil Co.
SLV	Sterwin Chemicals, Inc.
SM	Mobil Chemical Co.
SM	Mobil Oil Corp., Mobil Chemical Co. Div., Industrial Chemical Div.
SNA	Sun Chemical Corp., Ansbacher-Siegle Div.
SNT	Suntide Refining Co.
SOC	Standard Oil Co. of California, Chevron Chemical Co.
SOG	Charter International Oil Co.
STP	Stepan Chemical Co.
STY	Styrochem Corp.
SUN	Sun Oil Co.
SVT	Solvent Chemical Co., Inc.
SW	Sherwin-Williams Co.
SWC	Shell & Commonwealth Chemicals, Inc.
TCD	Tenneco Chemicals, Inc., Tenneco Colors
TEN	Cities Service Co., Copperhill Operations
TKL	Thiokol Chemical Corp.
TMS	Sterling Drug, Inc., Thomasset Color Div.
TNA	Ethyl Corp.
TOC	Tenneco Oil Co.
TRC	Toms River Chemical Corp.
TX	Texaco, Inc.
UCC	Union Carbide Corp.
UOC	Union Oil Co. of California
UOP	Universal Oil Products Co., UOP Chemical Div.
UPF	United States Pipe & Foundry Co.
UPJ	Upjohn Co.
UPM	Universal Oil Products Co.
USR	Uniroyal, Inc., Chemical Div.
VAL	Valchem
VEL	Velsicol Chemical Corp.
VGC	Virginia Chemicals, Inc.
VPC	Verona Corp.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
WCC	Witco Chemical Corp., Witfield Chemical Div.
WHC	Whittaker Corp., Narmco Research & Development Div.
WIL	Wilson & Co., Inc., Wilson Laboratories Div.
WJ	Warner-Jenkison Manufacturing Co.
WTC	Witco Chemical Co., Inc.
WYN	BASF - Wyandotte Corp.
WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.
YAW	Young Aniline Works, Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

Domestic 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 1970 amounted to 235 million pounds, or 2.4 percent less than the 240 million pounds produced in 1969 (table 1).[1] Sales of dyes in 1970 amounted to 223 million pounds, valued at $390 million, compared with 221 million pounds, valued at $385 million, in 1969. In terms of quantity, sales of dyes in 1970 were 1.0 percent larger than in 1969 and in terms of value, 1.3 percent larger. The average unit value of sales of all dyes in 1970 was $1.75 a pound, compared with $1.74 in 1969.

For many important dyes, production was larger in 1970 than in 1969. Acid Blue 9 production increased 75.9 percent, from 1,062,000 pounds in 1969 to 1,868,000 pounds in 1970; Basic Red 14 output increased 45.9 percent, from 414,000 pounds in 1969 to 604,000 pounds in 1970. Other important dyes whose output in 1970 was substantially larger than in 1969 were Direct Yellow 44 (30.4 percent increase), Disperse Blue 79 (22.1 percent increase), FD&C Red No. 2 (18.1 percent increase), Vat Green 1 (17.3 percent increase), and Vat Yellow 2 (12.0 percent increase).

On the other hand, the output of several important dyes was smaller in 1970 than in 1969. Production of Direct Yellow 106 was 983,000 pounds in 1970, or 48.5 percent less than the 1,909,000 pounds produced in 1969. Production of Direct Black 38 in 1970 was 4,125,000 pounds, or 32.5 percent less than the 6,112,000 pounds produced in 1969. The output of Vat Yellow 4 was 59.1 percent smaller in 1970 than in 1969; that of Disperse Yellow 3 was 28.3 percent smaller, that of Acid Yellow 151 was 25.0 percent smaller; that of Vat Brown 3 was 19.1 percent smaller; and that of Direct Blue 86 was 17.5 percent smaller.

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

Table 1A summarizes production and sales of dyes in 1970 by class of application. Five application classes of dyes accounted for approximately three-fourths of all the dyes produced. Vat dyes accounted for 24.1 percent of the total; direct dyes, for 13.7 percent; fluorescent brighteners, for 13.4 percent; disperse dyes, for 12.3 percent; and acid dyes, for 9.8 percent. Of these five classes of dyes, the output of fluorescent brighteners was 21.2 percent smaller in 1970 than in 1969; the output of direct dyes was 14.8 percent smaller; and the output of acid dyes was 5.9 percent smaller. The output of vat dyes, however, was 11.2 percent larger in 1970 than in 1969, and the output of disperse dyes was 13.7 percent larger.

Of the remaining classes, the output of solvent dyes in 1970 was 2.4 percent more than the 1969 production; that of azoic compositions was 2.5 percent larger in 1970 than in 1969; and that of food, drug, and cosmetic colors was 2.1 percent larger in 1970. Production of fiber-reactive dyes decreased 7.9 percent in 1970 from the 1969 output; mordant dyes decreased 19.2 percent in 1970; and basic dye output in 1970 was 2.9 percent less than the 1969 output.

Table 1B shows production and sales of dyes, by chemical class. In 1970, three chemical classes of dyes accounted for about two-thirds of all the dyes produced: Azo dyes accounted for 30.8 percent of the total; anthraquinone dyes, for 22.2 percent; and stilbene dyes, for 13.6 percent. The output of the azo dyes was 4.5 percent smaller in 1970 than in 1969, that of the stilbene dyes was 22.1 percent smaller, and that of the anthraquinone dyes, 0.2 percent larger. Of the remaining chemical classes for which statistics are published, the output of indigoid dyes was 43.8 percent larger in 1970 than in 1969; cyanine dyes, 41.0 percent larger; oxazine dyes, 10.4 percent larger; methine dyes, 8.0 percent larger; quinoline dyes, 7.6 percent larger; azoic dyes and components, 7.6 percent larger; and triarylmethane dyes, 7.4 percent larger. On the other hand, the output of thiazole dyes was 54.9 percent smaller in 1970 than in 1969; that of the nitro dyes was 22.7 percent smaller; that of the xanthene dyes was 20.0 percent smaller; and that of the phthalocyanine dyes was 11.3 percent smaller.

Table 1.--Dyes: U.S. production and sales, 1970

[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 manufacturers of each]

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	234,526	223,218	390,429	$1.75
ACID DYES				
Total	23,088	21,553	50,752	2.35
Acid yellow dyes, total	4,649	4,600	11,407	2.48
Acid Yellow 11	56	39	75	1.92
Acid Yellow 17	436	461	999	2.17
Acid Yellow 23	401	326	739	2.27
Acid Yellow 34	74	68	149	2.19
Acid Yellow 36	127	156	249	1.60
Acid Yellow 40	140	167	489	2.93
Acid Yellow 42	78	55	95	1.73
Acid Yellow 44	24	18	52	2.89
Acid Yellow 54	...	62	138	2.23
Acid Yellow 76	...	27	67	2.48
Acid Yellow 99	74	92	231	2.51
Acid Yellow 124	67	62	188	3.03
Acid Yellow 151	843	910	1,928	2.12
Acid Yellow 159	389	353	893	2.53
All other	1,940	1,804	5,115	2.84
Acid orange dyes, total	3,325	3,369	6,017	1.79
Acid Orange 7	554	567	614	1.08
Acid Orange 8	269	287	397	1.38
Acid Orange 10	257	306	415	1.36
Acid Orange 24	724	797	1,152	1.45
Acid Orange 60	155	155	399	2.57
Acid Orange 74	...	63	132	2.10
Acid Orange 116	546	491	1,078	2.20
All other	820	703	1,830	2.60
Acid red dyes, total	4,196	3,300	7,917	2.40
Acid Red 1	441	435	425	.98
Acid Red 4	102	105	229	2.18
Acid Red 14	97	85	143	1.68
Acid Red 18	130	133	156	1.17
Acid Red 26	52	...	...	...
Acid Red 37	61	50	151	3.02
Acid Red 73	186	222	619	2.79
Acid Red 85	193	154	310	2.01
Acid Red 88	707	305	448	1.47
Acid Red 89	30	19	28	1.47
Acid Red 99	113	81	160	1.98
Acid Red 114	237	221	535	2.42
Acid Red 115	35	39	81	2.08
Acid Red 119	29	11	33	3.00
Acid Red 137	139	149	528	3.54
Acid Red 151	510	429	970	2.26
Acid Red 182	43	52	166	3.19
Acid Red 186	14	17	58	3.41
All other	1,077	793	2,877	3.63
Acid violet dyes, total	354	415	1,026	2.47
Acid Violet 1	30	33	58	1.76
Acid Violet 3	57	65	129	1.98
Acid Violet 7	29	55	76	1.38

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
ACID DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Acid violet dyes--Continued				
Acid Violet 12	38	30	48	$1.60
Acid Violet 49	96	101	257	2.54
All other	104	131	458	3.50
Acid blue dyes, total	5,083	3,977	11,974	3.01
Acid Blue 7	...	31	119	3.84
Acid Blue 9	1,868	1,045	1,397	1.34
Acid Blue 25	259	215	1,249	5.81
Acid Blue 27	81	87	342	3.93
Acid Blue 40	133	110	483	4.39
Acid Blue 41	24	44	181	4.11
Acid Blue 45	393	462	1,433	3.10
Acid Blue 62	36	28	181	6.46
Acid Blue 78	19	32	226	7.06
Acid Blue 113	623	585	1,225	2.09
Acid Blue 118	48	52	102	1.96
Acid Blue 120	...	21	41	1.95
Acid Blue 158 and 158A	123	80	199	2.49
Acid Blue 230	...	37	245	6.62
All other	1,476	1,148	4,551	3.96
Acid green dyes, total	758	827	2,361	2.85
Acid Green 1	...	34	70	2.06
Acid Green 3	159	154	244	1.58
Acid Green 9	14	11	43	3.91
Acid Green 16	63	59	239	4.05
Acid Green 20	50	56	111	1.98
Acid Green 25	297	343	1,078	3.14
All other	175	170	576	3.39
Acid brown dyes, total	1,515	1,575	3,666	2.33
Acid Brown 14	789	819	1,409	1.72
All other	726	756	2,257	2.99
Acid black dyes, total	3,208	3,490	6,384	1.83
Acid Black 1	697	848	1,292	1.52
Acid Black 24	...	66	123	1.86
Acid Black 48	...	11	64	5.82
Acid Black 52	558	646	1,150	1.78
Acid Black 60	114	116	414	3.57
Acid Black 107	279	252	673	2.67
All other	1,560	1,551	2,668	1.72
AZOIC DYES AND COMPONENTS				
Azoic Compositions				
Total	2,632	1,874	3,703	1.98
Azoic Yellow 2	49	...	...	...
Azoic Orange 3	120	...	...	...
Azoic Red 1	479	...	...	...
Azoic Red 2	77	28	41	1.46
Azoic Red 6	213	...	...	...
Azoic Blue 3	263	201	365	1.82
Azoic Brown 9	266	198	320	1.62
Azoic black dyes	725	710	1,412	1.99
All other azoic compositions	440	737	1,565	2.12

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
AZOIC DYES AND COMPONENTS--Continued				
Azoic Diazo Components, Bases, (Fast Color Bases)	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	1,389	957	1,421	$1.48
Azoic Diazo Component 4, base	87	93	112	1.20
Azoic Diazo Component 10, base	24	19	46	2.42
Azoic Diazo Component 12, base	281	221	254	1.15
Azoic Diazo Component 32, base	294	207	329	1.59
All other azoic diazo components, bases	703	417	680	1.63
Azoic Diazo Components, Salts (Fast Color Salts)				
Total	2,055	2,531	2,616	1.03
Azoic Diazo Component 1, salt	27	43	47	1.09
Azoic Diazo Component 3, salt	416	544	348	.64
Azoic Diazo Component 5, salt	69	108	134	1.24
Azoic Diazo Component 6, salt	60	...	...	...
Azoic Diazo Component 8, salt	60	92	87	.95
Azoic Diazo Component 9, salt	177	247	165	.67
Azoic Diazo Component 10, salt	33	30	45	1.50
Azoic Diazo Component 11, salt	...	26	35	1.35
Azoic Diazo Component 12, salt	315	386	440	1.14
Azoic Diazo Component 13, salt	294	326	231	.71
Azoic Diazo Component 28, salt	178	191	173	.91
Azoic Diazo Component 44, salt	...	12	20	1.67
Azoic Diazo Component 48, salt	...	6	5	.83
Azoic Diazo Component 49, salt	86	98	271	2.77
All other azoic diazo components, salts	340	422	615	1.46
Azoic Coupling Components (Naphthol AS and Derivatives)				
Total	2,206	1,522	2,959	1.94
Azoic Coupling Component 4	23	18	42	2.33
Azoic Coupling Component 7	653	376	753	2.00
Azoic Coupling Component 8	...	9	30	3.33
Azoic Coupling Component 14	239	...	...	...
Azoic Coupling Component 18	...	253	291	1.15
Azoic Coupling Component 29	13	12	26	2.17
Azoic Coupling Component 34	...	32	60	1.88
Azoic Coupling Component 43	...	10	27	2.70
All other azoic coupling components	1,278	812	1,730	2.13
BASIC DYES				
Total	14,461	13,931	38,115	2.74
Basic yellow dyes, total	3,657	3,406	10,102	2.97
Basic Yellow 11	1,096	1,032	3,792	3.67
Basic Yellow 13	121	97	248	2.56
All other	2,440	2,277	6,062	2.66
Basic orange dyes, total	1,592	1,678	3,770	2.25
Basic Orange 1	225	276	380	1.38
Basic Orange 2	393	449	673	1.50
Basic Orange 21	838	788	2,116	2.69
All other	136	165	601	3.64

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
BASIC DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Basic red dyes, total	2,208	2,067	6,559	$3.17
Basic Red 9	...	17	63	3.71
Basic Red 13	34	45	137	3.04
Basic Red 14	604	506	1,388	2.74
Basic Red 18	232	...	...	...
All other	1,338	1,499	4,971	3.32
Basic violet dyes, total	3,328	2,970	6,975	2.35
Basic Violet 1	1,399	1,085	1,720	1.59
Basic Violet 4	21	26	99	3.81
Basic Violet 10	171	207	973	4.70
Basic Violet 16	281	253	798	3.15
All other	1,456	1,399	3,385	2.42
Basic blue dyes, total	2,343	2,285	7,304	3.20
Basic Blue 1	92	97	368	3.79
Basic Blue 5	16	17	103	6.06
All other	2,235	2,171	6,833	3.15
Basic Green 1	...	152	564	3.71
Basic Green 4	...	648	1,698	2.62
Basic Brown 1	176	156	238	1.53
Basic Brown 4	469	482	691	1.43
All other basic dyes	688	87	214	2.46
DIRECT DYES				
Total	32,246	32,577	54,035	1.66
Direct yellow dyes, total	10,712	10,685	19,044	1.78
Direct Yellow 4	531	486	960	1.98
Direct Yellow 5	199	222	637	2.87
Direct Yellow 6	493	479	844	1.76
Direct Yellow 11	2,614	2,582	2,815	1.09
Direct Yellow 12	210	230	763	3.32
Direct Yellow 26	18	10	28	2.80
Direct Yellow 28	121	189	395	2.09
Direct Yellow 29	67	66	161	2.44
Direct Yellow 44	1,219	1,193	2,175	1.82
Direct Yellow 50	369	397	842	2.12
Direct Yellow 84	1,019	1,007	1,753	1.74
Direct Yellow 105	...	241	550	2.28
Direct Yellow 106	983	1,088	1,897	1.74
All other	2,869	2,495	5,224	2.09
Direct orange dyes, total	2,020	1,978	4,950	2.50
Direct Orange 1	25	30	63	2.10
Direct Orange 8	144	138	230	1.67
Direct Orange 15	181	202	257	1.27
Direct Orange 26	68	51	116	2.27
Direct Orange 29	157	124	343	2.77
Direct Orange 34	89	96	243	2.53
Direct Orange 37	34	36	84	2.33
Direct Orange 39	174	160	362	2.26
Direct Orange 72	417	394	875	2.22
Direct Orange 73	102	112	481	4.29
Direct Orange 81	...	87	242	2.78
Direct Orange 102	218	248	698	2.81
All other	411	300	956	3.19

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DIRECT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Direct red dyes, total	3,421	3,508	7,880	$2.25
Direct Red 1	119	154	278	1.81
Direct Red 2	169	214	453	2.12
Direct Red 4	37	36	105	2.92
Direct Red 10	17	11	15	1.36
Direct Red 13	51	54	104	1.93
Direct Red 16	...	117	239	2.04
Direct Red 23	142	186	486	2.61
Direct Red 24	283	311	628	2.02
Direct Red 26	51	66	173	2.62
Direct Red 28	225	212	318	1.50
Direct Red 31	25	10	39	3.90
Direct Red 37	104	107	307	2.87
Direct Red 39	69	95	272	2.86
Direct Red 72	272	275	611	2.22
Direct Red 75	11	12	41	3.42
Direct Red 79	114	92	247	2.68
Direct Red 80	521	468	871	1.86
Direct Red 81	493	478	1,211	2.53
Direct Red 83	140	131	209	1.60
Direct Red 122	14	9	46	5.11
Direct Red 149	18	23	63	2.74
All other	546	447	1,164	2.60
Direct violet dyes, total	236	291	861	2.96
Direct Violet 1	...	7	14	2.00
Direct Violet 7	...	8	34	4.25
Direct Violet 9	117	156	354	2.27
Direct Violet 51	...	13	76	5.85
All other	119	107	383	3.58
Direct blue dyes, total	6,770	6,501	10,608	1.63
Direct Blue 1	374	331	680	2.05
Direct Blue 2	1,028	1,009	1,024	1.01
Direct Blue 6	531	477	342	.72
Direct Blue 8	...	37	78	2.11
Direct Blue 15	116	118	225	1.91
Direct Blue 22	...	14	32	2.29
Direct Blue 24	...	9	9	1.00
Direct Blue 25	53	51	138	2.71
Direct Blue 67	...	13	55	4.23
Direct Blue 71	36	51	159	3.12
Direct Blue 76	70	75	120	1.60
Direct Blue 78	72	88	285	3.24
Direct Blue 80	556	560	927	1.66
Direct Blue 86	851	816	1,259	1.54
Direct Blue 98	168	140	272	1.94
Direct Blue 120 and 120A	118	185	454	2.45
Direct Blue 126	142	151	485	3.21
Direct Blue 218	1,397	1,113	2,193	1.97
All other	1,258	1,263	1,871	1.48
Direct green dyes, total	828	932	2,057	2.21
Direct Green 1	186	201	248	1.23
Direct Green 6	479	500	708	1.42
All other	163	231	1,101	4.77
Direct brown dyes, total	1,840	1,827	2,788	1.53
Direct Brown 1	61	...	...	...
Direct Brown 1A	74	86	139	1.62
Direct Brown 2	220	229	367	1.60
Direct Brown 31	114	145	443	3.06

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DIRECT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Direct brown dyes--Continued				
Direct Brown 74	59	54	96	$1.78
Direct Brown 95	739	664	691	1.04
Direct Brown 111	57	74	264	3.57
Direct Brown 154	309	308	331	1.07
All other	207	267	457	1.71
Direct black dyes, total	6,419	6,855	5,847	.85
Direct Black 4	188	158	192	1.22
Direct Black 9	...	47	66	1.40
Direct Black 22	539	457	361	.79
Direct Black 38	4,125	4,786	3,291	.69
Direct Black 51	58	59	195	3.31
Direct Black 80	861	708	698	.99
All other	648	640	1,044	1.63
DISPERSE DYES				
Total	28,936	25,460	65,705	2.58
Disperse yellow dyes, total	6,886	6,334	12,932	2.04
Disperse Yellow 3	1,870	1,916	2,806	1.46
Disperse Yellow 5	...	36	130	3.61
Disperse Yellow 23	1,019	955	1,728	1.81
Disperse Yellow 33	234	269	414	1.54
Disperse Yellow 34	234	208	338	1.63
Disperse Yellow 42	1,038	938	1,685	1.80
Disperse Yellow 54	690	677	2,522	3.73
All other	1,801	1,335	3,309	2.48
Disperse orange dyes, total	4,072	3,114	5,558	1.78
Disperse Orange 3	142	142	246	1.73
Disperse Orange 5	201	182	420	2.31
Disperse Orange 17	246	205	225	1.10
Disperse Orange 25	406	323	584	1.81
All other	3,077	2,262	4,083	1.81
Disperse red dyes, total	4,098	3,643	11,830	3.25
Disperse Red 1	325	277	443	1.60
Disperse Red 5	66	69	89	1.29
Disperse Red 11	76	53	334	6.30
Disperse Red 13	14	16	24	1.50
Disperse Red 15	...	77	212	2.75
Disperse Red 17	234	194	263	1.36
Disperse Red 55	437	...	...	...
Disperse Red 60	878	791	2,751	3.48
Disperse Red 65	...	78	154	1.97
All other	2,068	2,088	7,560	3.62
Disperse violet dyes, total	878	724	2,370	3.27
Disperse Violet 1	148	123	366	2.98
Disperse Violet 4	44	31	114	3.68
Disperse Violet 27	129	126	224	1.78
All other	557	444	1,666	3.75
Disperse blue dyes, total	11,038	9,904	29,965	3.03
Disperse Blue 1	491	423	1,751	4.14
Disperse Blue 3	1,707	1,568	2,496	1.59
Disperse Blue 7	481	378	2,668	7.06
Disperse Blue 64	238	190	339	1.78
Disperse Blue 79	1,433	1,372	4,922	3.59
All other	6,688	5,973	17,789	2.98

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DISPERSE DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Disperse black dyes, total	1,522	1,401	2,327	$1.66
Disperse Black 1	238	237	443	1.87
All other	1,284	1,164	1,884	1.62
All other disperse dyes	442	340	723	2.13
FIBER-REACTIVE DYES				
Fiber-reactive dyes, total	2,235	2,683	11,728	4.37
Reactive yellow dyes	253	409	1,727	4.22
Reactive blue dyes	626	800	4,403	5.50
Reactive black dyes	171	171	564	3.30
All other reactive dyes	1,185	1,303	5,034	3.86
FLUORESCENT BRIGHTENING AGENTS				
Total	31,324	31,297	51,456	1.64
Fluorescent Brightening Agent 28	1,593	1,417	2,125	1.50
All other fluorescent brightening agents	29,731	29,880	49,331	1.65
FOOD, DRUG, AND COSMETIC COLORS				
Total	4,352	4,200	14,926	3.55
Food, Drug, and Cosmetic Dyes				
Total	4,118	3,969	13,416	3.38
FD&C Blue No. 1	101	105	1,045	9.95
FD&C Blue No. 2	34	33	294	8.91
FD&C Red No. 2	1,430	1,347	3,694	2.74
FD&C Red No. 3	225	200	1,857	9.29
FD&C Red No. 4	...	16	86	5.38
FD&C Violet No. 1	11	14	126	9.00
FD&C Yellow No. 5	1,239	1,207	3,259	2.70
FD&C Yellow No. 6	1,013	1,005	2,702	2.69
All other food, drug, and cosmetic dyes	65	42	353	8.40
Drug and Cosmetic and External Drug and Cosmetic Dyes				
Total	234	231	1,510	6.54
D&C Green dyes	30	30	385	12.83
D&C Red dyes, total	144	134	665	4.96
D&C Red No. 7	15	14	58	4.14
D&C Red No. 9	24	...	...	...
D&C Red No. 12	3	...	...	...
D&C Red No. 19	...	9	62	6.89
D&C Red No. 21	29	21	76	3.62
D&C Red No. 36	8	8	27	3.38
All other	65	82	442	5.39
D&C Yellow No. 5	12	12	39	3.25
All other drug & cosmetic and external drug & cosmetic dyes	48	55	421	7.65

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
MORDANT DYES	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	1,823	1,818	2,853	$1.57
Mordant yellow dyes, total	156	149	255	1.71
Mordant Yellow 1	21	28	45	1.61
Mordant Yellow 8	...	9	19	2.11
All other	135	112	191	1.71
Mordant orange dyes	203	177	290	1.64
Mordant red dyes	87	75	214	2.85
Mordant brown dyes, total	233	247	595	2.41
Mordant Brown 1	48	44	102	2.32
Mordant Brown 33	37	59	123	2.08
Mordant Brown 40	...	6	18	3.00
All other	148	138	352	2.55
Mordant black dyes, total	1,115	1,137	1,411	1.24
Mordant Black 11	754	767	955	1.25
Mordant Black 17	281	278	287	1.03
All other	80	92	169	1.84
All other mordant dyes	29	33	88	2.67
SOLVENT DYES				
Total	11,464	11,207	19,823	1.77
Solvent yellow dyes, total	1,136	1,170	2,573	2.20
Solvent Yellow 2	22	27	52	1.93
Solvent Yellow 3	...	27	41	1.52
Solvent Yellow 14	636	700	863	1.23
All other	478	416	1,617	3.89
Solvent orange dyes, total	628	581	1,190	2.05
Solvent Orange 3	62	38	69	1.82
Solvent Orange 7	56	84	131	1.56
All other	510	459	990	2.16
Solvent red dyes, total	2,392	2,579	4,666	1.81
Solvent Red 26	222	246	520	2.11
Solvent Red 49	53	52	346	6.65
All other	2,117	2,281	3,800	1.67
Solvent violet dyes	267	254	621	2.44
Solvent Blue 38	61	86	437	5.08
Solvent Green 3	137	57	230	4.04
Solvent Brown 12	17	15	43	2.87
All other solvent dyes	6,826	6,465	10,063	1.56

See footnotes at end of table.

Table 1.--Dyes: U.S. production and sales, 1970--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
VAT DYES	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	56,464	53,382	58,291	$1.09
Vat yellow dyes, total	6,255	5,538	8,610	1.55
Vat Yellow 2, 8-1/2	3,650	3,204	3,156	.99
Vat Yellow 4, 12-1/2	762	760	836	1.10
All other	1,843	1,574	4,618	2.93
Vat orange dyes, total	4,215	3,825	10,137	2.65
Vat Orange 1, 20%	1,672	1,661	4,618	2.78
Vat Orange 2, 12%	864	644	1,260	1.96
Vat Orange 9, 12%	330	192	438	2.28
Vat Orange 15, 10%	521	507	1,379	2.72
All other	828	821	2,442	2.97
Vat red dyes, total	1,599	1,410	2,687	1.91
Vat Red 1, 13%	821	613	1,103	1.80
Vat Red 13, 11%	124	107	367	3.43
Vat Red 32, 20%	57	54	217	4.02
All other	597	636	1,000	1.57
Vat violet dyes, total	800	595	1,439	2.42
Vat Violet 1, 11%	216	170	509	2.99
Vat Violet 9, 12%	...	92	326	3.54
Vat Violet 13, 6-1/4%	141	213	275	1.29
All other	443	120	329	2.74
Vat blue dyes, total	23,551	22,531	14,188	.63
Vat Blue 4, 10%	67	56	122	2.18
Vat Blue 6, 8-1/3%	3,236	3,151	3,905	1.24
Vat Blue 18, 13%	1,016	863	1,645	1.91
All other	19,232	18,461	8,516	.46
Vat green dyes, total	10,276	9,818	8,205	.84
Vat Green 1, 6%	4,303	4,664	3,274	.70
Vat Green 3, 10%	3,780	3,023	2,935	.97
Vat Green 9, 12-1/2%	744	979	853	.87
All other	1,449	1,152	1,143	.99
Vat brown dyes, total	3,979	4,046	7,299	1.80
Vat Brown 1, 11%	514	579	811	1.40
Vat Brown 3, 11%	879	950	1,688	1.78
All other	2,586	2,517	4,800	1.91
Vat black dyes, total	5,789	5,619	5,726	1.02
Vat Black 25, 12-1/2%	3,113	2,824	2,419	.86
Vat Black 27, 12-1/2%	768	783	1,091	1.39
All other	1,908	2,012	2,216	1.10
All other dyes[2]	19,851	18,226	12,046	.66

[1] Calculated from rounded figures.

[2] Includes oxidation bases, 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, 1970

Class of application	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	234,526	223,218	390,429	$1.75
Acid	23,088	21,553	50,752	2.35
Azoic dyes and components:				
Azoic compositions	2,632	1,874	3,703	1.98
Azoic diazo components, bases (Fast color bases)	1,389	957	1,421	1.48
Azoic diazo components, salts (Fast color salts)	2,055	2,531	2,616	1.03
Azoic coupling components (Naphthol AS derivatives)	2,206	1,522	2,959	1.94
Basic	14,461	13,931	38,115	2.74
Direct	32,246	32,577	54,035	1.66
Disperse	28,936	25,460	65,705	2.58
Fiber-reactive	2,235	2,683	11,728	4.37
Fluorescent brightening agents	31,324	31,297	51,456	1.64
Food, drug, and cosmetic colors	4,352	4,200	14,926	3.55
Mordant	1,823	1,818	2,853	1.57
Solvent	11,464	11,207	19,823	1.77
Vat	56,464	53,382	58,291	1.09
All other[2]	19,851	18,226	12,046	.66

[1] Calculated from rounded figures.
[2] Includes oxidation bases, 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 1B.--Dyes: U.S. production and sales, by chemical class, 1970

Chemical class	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	234,526	223,218	390,429	$1.75
Anthraquinone	51,965	48,855	99,661	2.04
Azo, total	72,166	69,846	141,501	2.03
Monazo	30,234	28,531	66,616	2.33
Disazo	23,590	23,205	45,645	1.97
Trisazo	7,964	8,646	9,664	1.12
Polyazo	2,033	2,009	3,296	1.64
Not specified	8,345	7,455	16,280	2.18
Azoic	8,282	6,884	10,699	1.55
Cyanine	725	603	1,636	2.71
Indigoid	7,507	6,603	3,552	.54
Methine	3,251	2,982	9,539	3.20
Nitro	1,739	1,633	2,847	1.74
Oxazine	393	406	1,489	3.66
Phthalocyanine	1,755	1,914	5,286	2.76
Quinoline	1,735	1,642	5,370	3.27
Stilbene	31,927	31,450	44,084	1.40
Thiazole	237	329	880	2.67
Triarylmethane	7,964	7,218	17,377	2.41
Xanthene	1,105	844	5,110	6.05
All other[2]	43,775	42,009	41,398	.99

[1] Calculated from rounded figures.
[2] Includes production and sales of acridine, aminoketone, azine, coumarin, indophenol, ketone imine, nitroso, oxazole, oxidation bases, sulfur, thiazine, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970

[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 4	SDH.
*Acid Yellow 11	ATL, BDO, CMG, VPC.
Acid Yellow 14	TRC.
*Acid Yellow 17	ACS, ACY, ATL, BDO, CMG, DUP, PDC, SDH, TCD, TRC, VPC.
*Acid Yellow 23	AAP, ACS, ACY, GAF, MRX, PDC, TRC, VPC, WJ, YAW.
Acid Yellow 25	GAF.
Acid Yellow 29	GAF, TRC.
*Acid Yellow 34	ACS, ATL, PDC.
*Acid Yellow 36	ACS, DUP, GAF, TRC.
Acid Yellow 38	ACS, GAF.
*Acid Yellow 40	ALT, ATL, DUP, TRC, VPC.
*Acid Yellow 42	AAP, ACY, GAF, VPC.
*Acid Yellow 44	AAP, GAF, VPC.
Acid Yellow 49	VPC.
*Acid Yellow 54	ACS, ACY, CMG, GAF, TCD, TRC, VPC.
Acid Yellow 59	VPC.
Acid Yellow 63	AAP, ACS.
Acid Yellow 65	ACS, ALT, FAB, TRC.
Acid Yellow 73	ACS, DUP, SDH.
*Acid Yellow 76	ACS, GAF, TRC.
Acid Yellow 79	VPC.
*Acid Yellow 99	ACS, CMG, GAF, TRC, VPC.
Acid Yellow 114	CMG, TRC.
Acid Yellow 121	GAF.
*Acid Yellow 124	ACS, ATL, DUP, TCD.
Acid Yellow 127	TRC.
Acid Yellow 128	ALT, TRC.
Acid Yellow 129	TRC.
Acid Yellow 135	GAF.
*Acid Yellow 151	ACY, ATL, DUP, FAB, GAF, TCD, TRC, VPC.
Acid Yellow 152	ACY.
*Acid Yellow 159	ACS, ALT, FAB, GAF, TRC.
Acid Yellow 174	DUP.
Acid Yellow 175	DUP.
Acid Yellow 181	GAF.
Other acid yellow dyes	ACY, ALT, CMG, DUP, GAF, TRC, VPC.
*Acid orange dyes:	
Acid Orange 1	GAF, TCD.
Acid Orange 2	ACS.
Acid Orange 4	ACY.
Acid Orange 6	ACS.
*Acid Orange 7	AAP, ACS, ACY, ATL, CPC, GAF, PDC, TCD, TRC, YAW.
*Acid Orange 8	ACS, ACY, ATL, DUP, GAF, TCD, TRC.
*Acid Orange 10	ACS, ACY, ATL, DUP, GAF, PDC, TRC, VPC, YAW.
Acid Orange 11	SDH.
Acid Orange 12	ACS.
Acid Orange 19	GAF.
*Acid Orange 24	ACS, ACY, DUP, GAF, TRC, YAW.
Acid Orange 31	AAP.
Acid Orange 45	ACS, TRC.
Acid Orange 51	CMG, DUP, TRC.
Acid Orange 52	ACS, ATL.
Acid Orange 56	GAF.
*Acid Orange 60	CMG, DUP, GAF, TCD, TRC.
Acid Orange 62	TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid orange dyes--Continued	
Acid Orange 63	GAF, TRC.
Acid Orange 64	ACS, ACY, DUP.
Acid Orange 69	ACY.
Acid Orange 72	GAF.
*Acid Orange 74	ACS, CMG, GAF, TRC.
Acid Orange 76	ACS, TRC.
Acid Orange 85	ACS.
Acid Orange 86	ACS, ALT, TRC.
*Acid Orange 116	ACS, ALT, FAB, GAF, TCD, TRC, YAW.
Acid Orange 119	TRC.
Acid Orange 128	DUP.
Acid Orange 132	DUP.
Other acid orange dyes	ALT, TRC, VPC.
*Acid red dyes:	
*Acid Red 1	ACS, ACY, ATL, BDO, DUP, GAF, SDH, TCD, TRC, VPC, YAW.
*Acid Red 4	AAP, ATL, BDO, CMG, DUP, GAF, PDC, TRC, VPC, YAW.
*Acid Red 14	ACS, ATL, GAF, PDC, YAW.
Acid Red 17	ACS, ATL, TRC.
*Acid Red 18	ACS, ATL, BDO, GAF, PDC, TRC.
*Acid Red 26	ACS, ACY, ATL, CPC.
Acid Red 27	ACS.
Acid Red 32	GAF.
Acid Red 33	YAW.
Acid Red 35	AAP, GAF.
*Acid Red 37	ATL, CMG, DUP, GAF, TCD, TRC.
Acid Red 42	CMG, GAF.
Acid Red 52	GAF.
Acid Red 57	ATL, TRC.
Acid Red 66	AAP, ATL, YAW.
*Acid Red 73	ACS, ACY, ATL, DUP, GAF, PSC, TRC, YAW.
Acid Red 80	GAF, ICI.
*Acid Red 85	ACS, ACY, ATL, DUP, GAF, PDC, TCD, TRC, VPC, YAW.
Acid Red 87	SDH.
*Acid Red 88	ACS, ACY, ATL, DUP, GAF, TRC, SDH, YAW.
*Acid Red 89	AAP, ATL, BDO, GAF, VPC.
Acid Red 97	ATL, GAF.
*Acid Red 99	ATL, CMG, FAB, TCD, TRC, YAW.
Acid Red 100	VPC.
Acid Red 104	AAP.
Acid Red 106	YAW.
Acid Red 111	ATL.
*Acid Red 114	ACS, ALT, ATL, DUP, GAF, PDC, TRC, VPC.
*Acid Red 115	ACS, ATL, GAF.
*Acid Red 119	ACS, ALT, ATL.
Acid Red 133	GAF.
Acid Red 134	TRC.
*Acid Red 137	ACS, ATL, DUP, GAF, TRC.
Acid Red 138	ALT.
*Acid Red 151	AAP, ACY, ALT, ATL, DUP, TCD, TRC, VPC, YAW.
Acid Red 167	ACS, ATL, DUP, TRC.
Acid Red 175	DUP.
Acid Red 178	DUP.
Acid Red 179	CMG.
*Acid Red 182	ACS, ACY, BDO, CMG, DUP, GAF, TCD.
Acid Red 183	CMG, TRC.
*Acid Red 186	ATL, CMG, GAF, VPC.
Acid Red 191	TRC.
Acid Red 194	TRC.
Acid Red 201	TRC.
Acid Red 207	ACS.
Acid Red 211	DUP.
Acid Red 212	TRC.
Acid Red 213	TRC.
Acid Red 217	ALT.
Acid Red 266	DUP, TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid red dyes--Continued	
Acid Red 292	ACY.
Acid Red 299	ALT, GAF, TRC.
Acid Red 309	TRC.
Acid Red 337	DUP.
Other acid red dyes	ALT, CMG, DUP, GAF, TCD, TRC, VPC.
*Acid violet dyes:	
*Acid Violet 1	BDO, CMG, GAF.
*Acid Violet 3	ACS, ACY, CMG, TRC, YAW.
*Acid Violet 7	AAP, ACS, ATL, BDO, CMG, GAF, TRC, VPC.
*Acid Violet 12	BDO, CMG, DUP, GAF.
Acid Violet 17	DUP, GAF, SDH.
Acid Violet 29	HSH.
Acid Violet 34	DUP, ICI.
Acid Violet 41	CMG.
Acid Violet 43	HSH, ICI.
*Acid Violet 49	ACS, ACY, SDH, TRC.
Acid Violet 56	CMG, GAF.
Acid Violet 76	ACS.
Other acid violet dyes	TRC.
*Acid blue dyes:	
Acid Blue 1	ACS, GAF.
*Acid Blue 7	ACS, ACY, GAF, SDH.
*Acid Blue 9	ACS, ACY, GAF, SDH.
Acid Blue 10	ACS.
Acid Blue 15	GAF.
Acid Blue 20	ACS.
Acid Blue 23	ACS, TRC.
*Acid Blue 25	ACS, ATL, BDO, CMG, DUP, GAF, TCD, TRC, VPC.
*Acid Blue 27	ALT, ATL, BDO, GAF.
Acid Blue 29	YAW.
Acid Blue 34	ACS.
*Acid Blue 40	ACS, ALT, ATL, BDO, DUP, GAF, ICI, TRC.
*Acid Blue 41	ACS, ATL, BDO, CMG, GAF.
Acid Blue 43	ACY, TRC.
*Acid Blue 45	ACS, ACY, ATL, CMG, DUP, GAF, TCD, TRC.
Acid Blue 47	ICI.
Acid Blue 48	HSC.
Acid Blue 58	DUP.
*Acid Blue 62	ACS, ALT, BDO, GAF, VPC.
Acid Blue 67	CMG.
Acid Blue 69	GAF.
Acid Blue 74	ACS, DUP.
*Acid Blue 78	ACS, ATL, BDO, DUP, GAF, ICI, TRC.
Acid Blue 80	ACS, ATL, TRC.
Acid Blue 81	ICI.
Acid Blue 83	GAF.
Acid Blue 89	ACS.
Acid Blue 90	TRC.
Acid Blue 92	ACS, YAW.
Acid Blue 93	ACY, HSC.
Acid Blue 102	TRC.
Acid Blue 104	ACS, GAF.
*Acid Blue 113	ACS, ALT, ATL, BDO, CMG, DUP, FAB, GAF, PDC, TCD, TRC, YAW.
*Acid Blue 118	ACS, ATL, TCD.
*Acid Blue 120	ACS, ATL, GAF.
Acid Blue 122	DUP.
Acid Blue 145	ACS, DUP.
*Acid Blue 158 and 158A	ACS, BDO, GAF, TCD, TRC, VPC.
Acid Blue 165	DUP.
Acid Blue 179	GAF.
Acid Blue 198	VPC.
Acid Blue 203	VPC.
Acid Blue 221	VPC.
*Acid Blue 230	ACS, DUP, TRC.
Acid Blue 231	TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dyes	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid blue dyes--Continued	
Acid Blue 232	VPC.
Acid Blue 255	DUP.
Acid Blue 264	VPC.
Other acid blue dyes	ACY, ALT, ATL, CMG, GAF, TCD, TRC, VPC.
*Acid green dyes:	
*Acid Green 1	ACS, ACY, DUP.
*Acid Green 3	ACS, ACY, GAF, TRC.
Acid Green 5	GAF.
*Acid Green 9	ACS, ACY, GAF.
Acid Green 12	ACS, GAF.
*Acid Green 16	ACS, GAF, SDH, TRC.
*Acid Green 20	ACS, ATL, BDO, GAF, PDC, TRC.
Acid Green 22	GAF.
*Acid Green 25	ACS, ALT, ATL, CMG, 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, VPC.
*Acid brown dyes:	
Acid Brown 1	GAF.
Acid Brown 6	GAF.
*Acid Brown 14	AAP, ACS, ACY, DUP, GAF, TRC, YAW.
Acid Brown 19	TRC.
Acid Brown 22	DUP.
Acid Brown 28	TRC.
Acid Brown 29	DUP.
Acid Brown 31	GAF.
Acid Brown 45	TRC.
Acid Brown 96	ACY.
Acid Brown 97	ACY.
Acid Brown 98	ACY, TRC, YAW.
Acid Brown 152	GAF.
Acid Brown 158	GAF.
Acid Brown 223	GAF.
Acid Brown 243	GAF.
Other acid brown dyes	ALT, CMG, DUP, GAF, VPC.
*Acid black dyes:	
*Acid Black 1	AAP, ACS, ACY, ATL, DUP, GAF, PDC, TCD, TRC, YAW.
Acid Black 2	ACS, ACY.
Acid Black 12	ACS.
*Acid Black 24	ACS, CMG, DUP, GAF.
Acid Black 26, 26A and 26B	ATL, DUP, TRC.
Acid Black 29	GAF.
*Acid Black 48	ACY, ICI, TRC.
*Acid Black 52	ACS, ATL, DUP, GAF, TCD, TRC.
Acid Black 58	DUP, TRC.
*Acid Black 60	BDO, CMG, TRC.
Acid Black 92	ACY.
*Acid Black 107	ACS, DUP, GAF, TRC.
Acid Black 108	GAF.
Acid Black 138	VPC.
Other acid black dyes	ALT, PDC, TCD.
AZOIC DYES AND COMPONENTS	
Azoic Compositions	
Azoic yellow dyes:	
Azoic Yellow 1	ALL, ATL.
*Azoic Yellow 2	ATL, BUC, x
Azoic Yellow 3	ATL.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dyes	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, GAF, x.
Azoic Orange 4	GAF.
Azoic Orange 10	BUC.
Azoic red dyes:	
*Azoic Red 1	ALL, ATL, BUC, x.
*Azoic Red 2	ALL, ATL, BUC, GAF, x.
*Azoic Red 6	ALL, ATL, BUC, 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, GAF.
Other azoic violet dyes	ALL.
Azoic blue dyes:	
Azoic Blue 2	ATL.
*Azoic Blue 3	ALL, ATL, BUC, GAF, HST, x.
Azoic Blue 6	ATL, GAF.
Azoic Blue 7	ATL, GAF.
Azoic Blue 8	ALL
Other azoic blue dyes	ALL.
Azoic green dyes:	
Azoic Green 1	ATL.
Other azoic green dyes	ALL, BUC, VPC.
Azoic brown dyes:	
Azoic Brown 3	x.
Azoic Brown 7	BUC.
*Azoic Brown 9	ALL, BUC, GAF, HST, VPC, x.
Azoic Brown 10	BUC.
Azoic Brown 26	GAF.
Other azoic brown dyes	ALL, GAF, VPC.
*Azoic black dyes:	
Azoic Black 1	HST.
Azoic Black 4	ATL, BUC, GAF.
Azoic Black 15	GAF.
Other azoic black dyes	ALL, 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	ALL, BUC, GAF, SDH.
Azoic Diazo Component 5, base	GAF.
Azoic Diazo Component 8, base	SDH.
Azoic Diazo Component 9, base	VPC.
*Azoic Diazo Component 10, base	ALL, BUC, GAF.
Azoic Diazo Component 11, base	PCW.
*Azoic Diazo Component 12, base	BUC, PCW, SDH.
Azoic Diazo Component 13, base	BUC.
Azoic Diazo Component 14, base	AAP.
Azoic Diazo Component 20, base	ALL, GAF.
Azoic Diazo Component 28, base	ALL, BUC.
*Azoic Diazo Component 32, base	AAP, ALL, ATL, BUC, DUP.
Azoic Diazo Component 42, base	PCW.
Azoic Diazo Component 44, base	BUC.
Azoic Diazo Component 46, base	ATL.
Azoic Diazo Component 48, base	CWN, GAF.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dyes	Manufacturers' identification codes (according to list in table 3)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Diazo Components, Salts (Fast Color Salts)	
*Azoic Diazo Component 1, salt	AAP, ALL, GAF, SDH
Azoic Diazo Component 2, salt	BUC, GAF.
*Azoic Diazo Component 3, salt	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 4, salt	ALL, BUC.
*Azoic Diazo Component 5, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 6, salt	AAP, BUC, GAF.
*Azoic Diazo Component 8, salt	AAP, ALL, BUC, GAF.
*Azoic Diazo Component 9, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 10, salt	ALL, BUC, GAF.
*Azoic Diazo Component 11, salt	AAP, ALL, BUC, GAF.
*Azoic Diazo Component 12, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 13, salt	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 14, salt	AAP.
Azoic Diazo Component 20, salt	ALL, BUC.
*Azoic Diazo Component 28, salt	ALL, BUC, GAF, SDH.
Azoic Diazo Component 32, salt	ALL, SDH.
Azoic Diazo Component 34, salt	ALL, GAF.
Azoic Diazo Component 35, salt	BUC, GAF.
Azoic Diazo Component 36, salt	AAP, GAF.
Azoic Diazo Component 37, salt	GAF.
Azoic Diazo Component 40, salt	BUC.
Azoic Diazo Component 41, salt	ALL, BUC, GAF.
Azoic Diazo Component 42, salt	GAF.
*Azoic Diazo Component 44, salt	ALL, BUC, GAF.
*Azoic Diazo Component 48, salt	BUC, GAF, SDH.
*Azoic Diazo Component 49, salt	AAP, ALL, BUC, GAF.
Azoic Diazo Component 51, salt	GAF.
Azoic Diazo Component 121, salt	GAF.
Azoic Coupling Components (Naphthol AS and Derivatives)	
Azoic Coupling Component 2	ATL, BUC, GAF, PCW.
Azoic Coupling Component 3	BUC, GAF, PCW.
*Azoic Coupling Component 4	ATL, BUC, GAF, PCW.
Azoic Coupling Component 5	BUC.
*Azoic Coupling Component 7	AAP, BUC, PCW.
*Azoic Coupling Component 8	ATL, BUC, PCW.
Azoic Coupling Component 10	ATL, PCW.
Azoic Coupling Component 11	BUC, PCW.
Azoic Coupling Component 12	BUC, PCW.
Azoic Coupling Component 13	GAF.
*Azoic Coupling Component 14	ATL, BUC, PCW.
Azoic Coupling Component 15	BUC, GAF.
Azoic Coupling Component 16	BUC, GAF.
Azoic Coupling Component 17	ATL, BUC, PCW.
*Azoic Coupling Component 18	AAP, ATL, BUC, GAF, PCW.
Azoic Coupling Component 19	BUC, GAF, PCW.
Azoic Coupling Component 20	BUC, GAF, PCW.
Azoic Coupling Component 21	ATL, BUC, PCW.
Azoic Coupling Component 23	PCW.
Azoic Coupling Component 24	GAF, PCW.
*Azoic Coupling Component 29	ATL, BUC, PCW.
*Azoic Coupling Component 34	ATL, BUC, PCW.
Azoic Coupling Component 35	BUC, PCW.
Azoic Coupling Component 36	GAF.
*Azoic Coupling Component 43	ATL, BUC, GAF.
Azoic Coupling Component 44	PCW.
Other azoic coupling components	ATL, GAF, VPC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--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, FAB, GAF, TRC, VPC.
*Basic Yellow 13	ACS, ATL, DUP, GAF.
Basic Yellow 15	DUP.
Basic Yellow 21	VPC.
Basic Yellow 24	BAS.
Basic Yellow 25	BAS.
Basic Yellow 26	ACY.
Basic Yellow 28	VPC.
Basic Yellow 29	DUP, VPC.
Basic Yellow 31	DUP.
Basic Yellow 37	ACY.
Basic Yellow 41	ACY.
Other basic yellow dyes	ATL, DUP, VPC.
*Basic orange dyes:	
*Basic Orange 1	ACS, ACY, DUP, GAF, PSC, TRC.
*Basic Orange 2	ACS, ACY, DSC, DUP, GAF, PSC, TRC.
Basic Orange 14	GAF.
Basic Orange 17	ACS.
*Basic Orange 21	ATL, ACS, DUP, FAB, GAF, VPC.
Basic Orange 22	ACS, GAF.
Basic Orange 24	DUP.
Basic Orange 25	DUP.
Basic Orange 26	DUP.
Basic Orange 27	VPC.
Basic Orange 31	ACY.
Basic Orange 39	DUP.
Other basic orange dyes	VPC.
*Basic red dyes:	
Basic Red 1	BAS, DUP.
Basic Red 2	ACS, DUP.
*Basic Red 9	ACY, DSC, HSC.
Basic Red 12	DUP.
*Basic Red 13	ACS, ATL, GAF, TRC, VPC.
*Basic Red 14	ACS, ACY, ATL, DUP, GAF, VPC.
Basic Red 15	ATL, DUP, GAF.
Basic Red 16	DUP.
Basic Red 17	DUP.
*Basic Red 18	DUP, GAF, VPC.
Basic Red 19	DUP.
Basic Red 22	ACY, TRC.
Basic Red 23	VPC.
Basic Red 29	BAS.
Basic Red 30	ACY.
Basic Red 47	DUP.
Basic Red 48	DUP.
Basic Red 49	DUP.
Other basic red dyes	EKT, TRC, VPC.
* Basic violet dyes:	
*Basic Violet 1	ACS, ACY, DSC, DUP, HSC, TCD.
Basic Violet 2	DSC.
Basic Violet 3	ACS, DSC, DUP, SDH.
*Basic Violet 4	ACS, DSC, DUP.
Basic Violet 7	GAF.
*Basic Violet 10	ACY, DUP, GAF.
Basic Violet 13	DSC.
Basic Violet 14	ACY, DSC.
Basic Violet 15	DUP.
*Basic Violet 16	ATL, DUP, FAB, GAF, TRC, VPC.
Basic Violet 18	ACY.
Basic Violet 24	DUP.
Basic Violet 27	ATL.
*Basic blue dyes:	
*Basic Blue 1	DSC, GAF, SDH, VPC.
Basic Blue 2	DSC.
Basic Blue 3	ACY, DUP, GAF.
*Basic Blue 5	DSC, SDH, VPC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
BASIC DYES--Continued	
*Basic blue dyes--Continued	
Basic Blue 6	ACS, ACY.
Basic Blue 7	DSC, DUP, SDH.
Basic Blue 9	ACS, ACY, DUP.
Basic Blue 11	DSC, SDH.
Basic Blue 21	DUP.
Basic Blue 22	ACS, DUP.
Basic Blue 25	VPC.
Basic Blue 26	DUP, SDH.
Basic Blue 35	DUP.
Basic Blue 39	DUP.
Basic Blue 41	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, TRC.
Basic Blue 87	DUP.
Basic Blue 94	DUP.
Basic Blue 97	DUP.
Other basic blue dyes	BAS, DUP, VPC.
Basic green dyes:	
*Basic Green 1	ACS, ACY, DSC, DUP, SDH.
Basic Green 3	DUP.
*Basic Green 4	ACS, ACY, DSC, DUP, SDH.
Basic Green 7	DSC.
Other basic green dyes	VPC.
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.
Basic Black dyes	ALT, DSC, VPC.
DIRECT DYES	
*Direct yellow dyes:	
*Direct Yellow 4	ACS, ACY, ATL, DUP, GAF, TCD, TRC, VPC.
*Direct Yellow 5	ACS, ACY, GAF.
*Direct Yellow 6	ACS, ACY, ATL, DUP, GAF, TRC.
Direct Yellow 7	ATL.
Direct Yellow 8	ACS, ATL, GAF.
Direct Yellow 9	ATL.
*Direct Yellow 11	ACS, ACY, ALT, DUP, GAF, TCD, TRC, VPC.
*Direct Yellow 12	ACS, ATL, DUP, FAB, GAF, TRC.
Direct Yellow 20	TRC.
Direct Yellow 23	DUP.
*Direct Yellow 26	ALT, ATL, TCD.
Direct Yellow 27	GAF.
*Direct Yellow 28	ACS, ATL, DUP, GAF, PDC, TRC.
*Direct Yellow 29	ATL, DUP, GAF.
Direct Yellow 34	ALT, GAF.
Direct Yellow 39	TRC.
Direct Yellow 41	ATL.
*Direct Yellow 44	ACS, ATL, DUP, FAB, GAF, TCD, TRC, VPC.
*Direct Yellow 50	ACS, ALT, ATL, DUP, FAB, GAF, HSH, TCD, TRC, VPC.
Direct Yellow 59	ACS, DUP.
Direct Yellow 63	DUP.
Direct Yellow 81	ATL.
*Direct Yellow 84	ACS, ATL, DUP, FAB, TCD, TRC.
Direct Yellow 103	ACS.
*Direct Yellow 105	ALT, GAF, TCD, TRC.
*Direct Yellow 106	ACS, ALT, FAB, GAF, TCD, TRC.
Direct Yellow 107	GAF.
Direct Yellow 114	ACY.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct yellow dyes--Continued	
Direct Yellow 117	TRC.
Direct Yellow 118	TRC.
Direct Yellow 119	DUP.
Direct Yellow 120	DUP, TCD.
Direct Yellow 121	TRC.
Direct Yellow 123	DUP.
Direct Yellow 125	ACY.
Direct Yellow 127	DUP.
Direct Yellow 131	DUP.
Other direct yellow dyes	AAP, ALT, ATL, DUP, GAF, HSH, TRC, VPC.
*Direct orange dyes:	
*Direct Orange 1	AAP, ACS, ATL, BDO, CMG, VPC.
Direct Orange 6	ACS.
*Direct Orange 8	ACS, ATL, DUP, GAF, TRC, YAW.
Direct Orange 10	AAP.
Direct Orange 11	GAF.
*Direct Orange 15	ACS, ACY, DUP, GAF, TRC.
*Direct Orange 26	ACS, ATL, CMG, DUP, GAF, HSH, TRC.
*Direct Orange 29	ATL, FAB, TCD, TRC, VPC.
*Direct Orange 34	ACS, ATL, CMG, DUP, GAF.
*Direct Orange 37	ACY, ATL, CMG, DUP, GAF.
*Direct Orange 39	ACY, ALT, ATL, CMG, DUP, FAB, GAF, TCD.
Direct Orange 59	DUP, GAF.
Direct Orange 61	TRC.
Direct Orange 67	ACS, VPC.
*Direct Orange 72	ACS, ALT, ATL, FAB, HSH, TCD, TRC. VPC.
*Direct Orange 73	DUP, GAF, TRC, VPC.
Direct Orange 74	DUP, HSH.
Direct Orange 78	VPC.
Direct Orange 79	DUP.
Direct Orange 80	DUP, VPC.
*Direct Orange 81	DUP, GAF, VPC.
Direct Orange 83	GAF.
Direct Orange 88	DUP.
*Direct Orange 102	ACS, ACY, ATL, DUP, GAF.
Direct Orange 110	TRC.
Other direct orange dyes	ALT, DUP, VPC.
*Direct red dyes:	
*Direct Red 1	ACS, ATL, DUP, GAF, TRC, YAW.
*Direct Red 2	ACS, ATL, DUP, FAB, TCD, TRC.
*Direct Red 4	ACS, ATL, TRC, VPC.
Direct Red 5	ACS.
Direct Red 7	ATL.
*Direct Red 10	AAP, ACS, ATL, YAW.
*Direct Red 13	ACS, ATL, DUP, GAF, TRC, YAW.
*Direct Red 16	ATL, DUP, TRC.
Direct Red 20	ACS, GAF.
*Direct Red 23	ACS, ATL, CMG, DUP, FAB, GAF, TCD, TRC, VPC.
*Direct Red 24	AAP, ACS, ATL, FAB, HSH, TCD, TRC, VPC.
*Direct Red 26	AAP, ACS, ATL, DUP, GAF, HSH, TRC, VPC.
*Direct Red 28	ACS, ATL, DUP, FAB, TRC, YAW.
*Direct Red 31	ACS, ATL, GAF, HSH, TRC.
Direct Red 32	ACS, DUP.
*Direct Red 37	ACS, ATL, DUP, GAF, TRC, YAW.
*Direct Red 39	ATL, DUP, GAF, TRC, YAW.
Direct Red 62	ATL, TRC.
*Direct Red 72	ACS, DUP, GAF, TRC.
Direct Red 73	ACS, ATL.
*Direct Red 75	ACS, CMG, DUP, GAF.
Direct Red 76	GAF.
*Direct Red 79	ATL, CMG, TCD, TRC, VPC.
*Direct Red 80	AAP, ACS, ALT, ATL, BDO, CMG, FAB, HSH, SDH, TCD, TRC, VPC.
*Direct Red 81	AAP, ACS, ACY, ATL, BDO, CMG, DUP, GAF, HSH, TCD, TRC, VPC, YAW.
*Direct Red 83	ACS, ALT, ATL, CMG, FAB, HSH, TCD, TRC, VPC.
Direct Red 84	ATL.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct red dyes--Continued	
Direct Red 95	VPC.
Direct Red 111	GAF.
Direct Red 117	DUP.
Direct Red 118	ATL.
*Direct Red 122	ATL, TRC, VPC.
Direct Red 123	ATL, GAF.
Direct Red 127 and 127A	ATL.
Direct Red 139	ATL, VPC.
*Direct Red 149	ATL, CMG, DUP.
Direct Red 152	CMG, DUP.
Direct Red 153	ATL.
Direct Red 209	TRC, VPC.
Direct Red 212	VPC.
Other direct red dyes	ALT, ATL, DUP, GAF, HSH, TCD, TRC.
*Direct violet dyes:	
*Direct Violet 1	AAP, ACS, ATL.
*Direct Violet 7	ACS, ATL, GAF.
*Direct Violet 9	ACS, ATL, DUP, GAF, TCD, TRC.
Direct Violet 14	ACS, ATL.
Direct Violet 22	DUP.
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.
Other direct violet dyes	ALT.
*Direct blue dyes:	
*Direct Blue 1	AAP, ACS, ACY, ATL, DUP, GAF, HSH, TCD, TRC, VPC, YAW.
*Direct Blue 2	AAP, ACS, ATL, DUP, FAB, GAF, HSH, TCD, TRC, VPC, YAW.
*Direct Blue 6	AAP, ACS, ACY, ATL, DUP, GAF, HSH, TCD, TRC, YAW.
*Direct Blue 8	ACS, ATL, DUP, GAF.
Direct Blue 14	ACS, ATL, TRC.
*Direct Blue 15	ACS, ATL, DUP, GAF, YAW.
*Direct Blue 22	ACS, ATL, CMG.
*Direct Blue 24	ATL, TCD, YAW.
*Direct Blue 25	ACS, ATL, GAF, TRC, YAW.
Direct Blue 26	ATL.
*Direct Blue 67	ACS, ATL, DUP, TRC.
*Direct Blue 71	ACS, ATL, GAF, TRC.
Direct Blue 74	DUP.
Direct Blue 75	TRC.
*Direct Blue 76	ACS, ALT, ATL, FAB, GAF, HSH, TCD, TRC, VPC, YAW.
*Direct Blue 78	ACS, ATL, CMG, DUP, TRC.
*Direct Blue 80	ACS, ALT, ATL, DUP, FAB, GAF, HSH, TCD, TRC.
Direct Blue 81	ATL.
*Direct Blue 86	AAP, ACS, ACY, ALT, ATL, DUP, FAB, GAF, ICC, ICI, SDH, TCD, TRC, VPC.
Direct Blue 87	ICI.
Direct Blue 91	TRC.
*Direct Blue 98	ALT, ATL, GAF, TRC, VPC.
Direct Blue 100	ALT, ATL, TCD.
Direct Blue 104	DUP.
*Direct Blue 120, 120A	ATL, DUP, TCD, TRC.
*Direct Blue 126	ATL, DUP, HSH, TRC, VPC.
Direct Blue 133	GAF.
Direct Blue 136	GAF.
Direct Blue 143	DUP.
Direct Blue 151	ATL, TRC.
Direct Blue 160	TRC.
Direct Blue 189	TCD, TRC.
Direct Blue 191	AAP, ALT, GAF.
Direct Blue 199	GAF.
*Direct Blue 218	ACS, ALT, ATL, DUP, FAB, GAF, TCD, TRC, VPC.
Direct Blue 224	ATL.
Direct Blue 238	ACY.
Direct Blue 263	DUP.
Other direct blue dyes	ALT, GAF, VPC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct green dyes:	
*Direct Green 1	AAP, ACS, ACY, ATL, DUP, FAB, GAF, TCD, TRC, YAW.
*Direct Green 6	AAP, ACS, ATL, FAB, GAF, TCD, TRC, YAW.
Direct Green 8	TRC.
Direct Green 12	TRC.
Direct Green 15	DUP.
Direct Green 26	DUP, TRC.
Direct Green 27	DUP, TRC.
Direct Green 28	TRC.
Direct Green 38	DUP, GAF.
Direct Green 39	GAF.
Direct Green 45	ATL, VPC.
Direct Green 47	ATL, DUP, GAF.
Direct Green 51	TRC.
Direct Green 69	TRC.
Other direct green dyes	ACY, ALT, DUP.
*Direct brown dyes:	
*Direct Brown 1	ACY, ATL, TCD.
*Direct Brown 1A	GAF, TRC, YAW.
*Direct Brown 2	AAP, ACS, ACY, ATL, DUP, GAF, HSH, TCD, TRC, YAW.
Direct Brown 6	ACS, TRC, YAW.
Direct Brown 27	ATL, GAF.
*Direct Brown 31	AAP, ACS, ATL, DUP, GAF, TRC, YAW.
Direct Brown 32	GAF.
Direct Brown 33	DUP.
Direct Brown 40	AAP.
Direct Brown 44	GAF, YAW.
Direct Brown 48	AAP.
Direct Brown 59	ACY, YAW.
*Direct Brown 74	AAP, ACS, DUP.
*Direct Brown 95	ACS, ATL, DUP, FAB, GAF, HSH, TCD, TRC, YAW.
Direct Brown 106	GAF.
*Direct Brown 111	DUP, GAF, TRC, VPC.
Direct Brown 112	ATL.
*Direct Brown 154	ACS, DUP, FAB, TRC, YAW.
Direct Brown 218	ACS, HSH.
Other direct brown dyes	ALT, VPC.
*Direct black dyes:	
*Direct Black 4	ACS, ATL, GAF, TCD, TRC, YAW.
Direct Black 8	TRC, YAW.
*Direct Black 9	ACS, ATL, DUP, GAF, TCD.
Direct Black 17	GAF.
Direct Black 19	ATL, TRC.
*Direct Black 22	ALT, ATL, DUP, GAF, TCD, TRC, VPC, YAW.
Direct Black 36	AAP.
Direct Black 37	AAP.
*Direct Black 38	AAP, ACS, ACY, ATL, FAB, GAF, HSH, TCD, TRC, YAW.
Direct Black 44	TRC.
*Direct Black 51	AAP, ACS, DUP, GAF, TRC.
Direct Black 56	ACS, TRC.
Direct Black 71	ATL.
Direct Black 75	GAF.
Direct Black 78	ACS, TCD.
*Direct Black 80	ACS, ATL, FAB, HSH, TCD, TRC, VPC, YAW.
Direct Black 190	TCD.
Other direct black dyes	ACY, ALT, ATL, HSH, TRC, YAW.
DISPERSE DYES	
*Disperse yellow dyes:	
Disperse Yellow 1	GAF.
Disperse Yellow 2	DUP.
*Disperse Yellow 3	AAP, ACS, ALT, DUP, GAF, HSH, ICC, TCD, TRC.
*Disperse Yellow 5	GAF, ICC, TCD.
Disperse Yellow 8	EKT, TRC.
*Disperse Yellow 23	AAP, ALT, DUP, EKT, GAF, ICC, TCD, TRC.
Disperse Yellow 31	GAF.
Disperse Yellow 32	DUP.
*Disperse Yellow 33	AAP, EKT, GAF, ICC, TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse yellow dyes--Continued	
*Disperse Yellow 34	AAP, EKT, ICC
*Disperse Yellow 42	AAP, ALT, DUP, EKT, GAF, ICC, MAY, TCD, TRC.
Disperse Yellow 50	TRC.
*Disperse Yellow 54	AAP, DUP, GAF, ICC, TRC.
Disperse Yellow 67	DUP.
Disperse Yellow 69	ACY.
Disperse Yellow 77	VPC.
Disperse Yellow 85	EKT.
Disperse Yellow 86	AAP, 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 106	GAF.
Disperse Yellow 125	SDC.
Other disperse yellow dyes	AAP, ALT, DUP, EKT, MAY, SDC, TRC, VPC.
*Disperse orange dyes:	
*Disperse Orange 3	AAP, ALT, DUP, GAF, HSH, ICC, TCD, TRC.
*Disperse Orange 5	AAP, EKT, GAF, SDC.
Disperse Orange 16	AAP.
*Disperse Orange 17	AAP, EKT, GAF, HSH, ICC, TCD.
Disperse Orange 21	DUP, TRC.
*Disperse Orange 25	DUP, EKT, TRC.
Disperse Orange 28	AAP.
Disperse Orange 29	AAP, GAF.
Disperse Orange 30	ICC, TRC.
Disperse Orange 38	TRC.
Disperse Orange 41	DUP.
Disperse Orange 44	DUP.
Disperse Orange 57	EKT.
Disperse Orange 58	AAP, EKT.
Disperse Orange 59	EKT, ICC.
Disperse Orange 62	DUP.
Disperse Orange 75	DUP.
Other disperse orange dyes	AAP, ALT, DUP, EKT, GAF, ICC, MAY, SDC, TCD, TRC.
*Disperse red dyes:	
*Disperse Red 1	AAP, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
Disperse Red 4	GAF, ICC, TRC.
*Disperse Red 5	AAP, EKT, GAF, HSH, ICC, TCD.
Disperse Red 7	AAP, GAF.
Disperse Red 9	ATL, ICI.
*Disperse Red 11	AAP, DUP, GAF, ICC.
*Disperse Red 13	DUP, GAF, ICC, TCD.
*Disperse Red 15	GAF, HSH, TCD, TRC.
*Disperse Red 17	AAP, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
Disperse Red 21	EKT.
Disperse Red 30	EKT, TRC.
Disperse Red 31	ICC.
Disperse Red 35	EKT.
Disperse Red 54	ICC.
*Disperse Red 55	AAP, DUP, ICC, TCD, TRC.
Disperse Red 56	DUP.
Disperse Red 59	ACY, DUP, GAF.
*Disperse Red 60	AAP, DUP, EKT, GAF, SDC, TCD, TRC, VPC.
*Disperse Red 65	DUP, EKT, ICC, TRC.
Disperse Red 66	AAP.
Disperse Red 73	TRC.
Disperse Red 78	ICC, TRC.
Disperse Red 86	EKT, GAF.
Disperse Red 88	EKT.
Disperse Red 96	ACY.
Disperse Red 117	EKT.
Disperse Red 136	EKT.
Disperse Red 137	EKT.
Disperse Red 138	EKT.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse red dyes--Continued	
Disperse Red 140	DUP.
Disperse Red 177	ICC.
Disperse Red 178	ICC.
Disperse Red 179	ICC.
Disperse Red 180	ICC.
Other disperse red dyes	AAP, DUP, EKT, GAF, ICC, MAY, SDC, TRC, VPC.
*Disperse violet dyes:	
*Disperse Violet 1	AAP, GAF, HSH, ICC, TRC.
*Disperse Violet 4	AAP, GAF, ICC.
Disperse Violet 8	GAF.
Disperse Violet 14	DUP.
Disperse Violet 18	DUP.
Disperse Violet 26	DUP.
*Disperse Violet 27	AAP, ACY, DUP, EXT, GAF, ICC.
Disperse Violet 28	TRC.
Disperse Violet 41	EKT.
Disperse Violet 42	EKT.
Disperse Violet 43	EKT.
Disperse Violet 44	EKT.
Other disperse violet dyes	DUP, GAF, MAY, SDC.
*Disperse blue dyes:	
*Disperse Blue 1	AAP, BAS, GAF, ICC, TCD, TRC.
*Disperse Blue 3	AAP, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
*Disperse Blue 7	EKT, GAF, HSH, ICC, TCD, TRC.
Disperse Blue 9	DUP, GAF, ICC.
Disperse Blue 26	ICC.
Disperse Blue 27	DUP, EKT.
Disperse Blue 35	ICI.
Disperse Blue 55	TRC.
Disperse Blue 56	VPC.
Disperse Blue 60	DUP.
Disperse Blue 61	DUP.
Disperse Blue 62	DUP, EKT, SDC.
Disperse Blue 63	DUP.
*Disperse Blue 64	DUP, EKT, GAF, TRC.
Disperse Blue 70	AAP.
Disperse Blue 71	VPC.
Disperse Blue 73	TRC.
*Disperse Blue 79	AAP, EKT, TRC.
Disperse Blue 81	VPC.
Disperse Blue 94	BAS.
Disperse Blue 95	GAF.
Disperse Blue 102	EKT.
Disperse Blue 109	DUP.
Disperse Blue 112	EKT.
Disperse Blue 116	ACY.
Disperse Blue 117	EKT.
Disperse Blue 118	EKT.
Disperse Blue 119	EKT.
Disperse Blue 120	EKT.
Disperse Blue 121	EKT.
Disperse Blue 123	EKT.
Disperse Blue 125	TRC.
Disperse Blue 132	DUP.
Disperse Blue 133	DUP.
Disperse Blue 139	VPC.
Disperse Blue 150	DUP.
Disperse Blue 155	GAF, TRC.
Disperse Blue 166	ICI.
Other disperse blue dyes	ALT, DUP, GAF, HSH, ICC, MAY, SDC, TRC, VPC.
Disperse green dyes	GAF, VPC.
Disperse brown dyes:	
Disperse Brown 1	TRC.
Disperse Brown 2	DUP, EKT, GAF.
Disperse Brown 7	EKT.
Other disperse brown dyes	AAP, GAF, ICC, SDC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse black dyes:	
*Disperse Black 1	AAP, DUP, GAF, TRC.
Disperse Black 2	TRC.
Disperse Black 9	AAP, EKT.
Disperse Black 33	EKT.
Disperse Black 34	EKT.
Other disperse black dyes	ALT, DUP, GAF, ICC, SDC, VPC.
FIBER-REACTIVE DYES	
*Reactive yellow dyes:	
Reactive Yellow 1	ICI.
Reactive Yellow 2	HST, TRC.
Reactive Yellow 3	TRC.
Reactive Yellow 4	ICI.
Reactive Yellow 6	TRC.
Reactive Yellow 7	ICI.
Reactive Yellow 8	HST.
Reactive Yellow 13	HST.
Reactive Yellow 14	HST.
Reactive Yellow 15	HST.
Reactive Yellow 17	HST.
Reactive Yellow 18	ICI.
Reactive Yellow 22	ICI.
Reactive Yellow 24	HST.
Reactive Yellow 25	VPC.
Reactive Yellow 37	HST.
Reactive Yellow 60	ACY.
Reactive Yellow 61	ACY.
Reactive Yellow 62	ACY.
Reactive orange dyes:	
Reactive Orange 1	ICI.
Reactive Orange 2	TRC.
Reactive Orange 4	ICI.
Reactive Orange 10	HST.
Reactive Orange 12	ICI.
Reactive Orange 13	ICI.
Reactive Orange 14	ICI.
Reactive Orange 16	HST.
Reactive Orange 49	ACY.
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 16	TRC.
Reactive Red 21	HST.
Reactive Red 29	ICI.
Reactive Red 31	HST, ICI.
Reactive Red 33	ICI.
Reactive Red 40	VPC.
Reactive Red 41	VPC.
Reactive Red 92	ACY.
Reactive Red 93	ACY.
Reactive violet dyes:	
Reactive Violet 1	ICI.
Reactive Violet 2	TRC.
Reactive Violet 4	HST.
Reactive Violet 5	HST.
Reactive Violet 14	HST.
*Reactive blue dyes:	
Reactive Blue 1	ICI.
Reactive Blue 2	TRC.
Reactive Blue 3	ICI.
Reactive Blue 4	ICI.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
FIBER-REACTIVE DYES--Continued	
*Reactive blue dyes--Continued	
Reactive Blue 5	TRC.
Reactive Blue 7	TRC.
Reactive Blue 9	ICI.
Reactive Blue 19	HST.
Reactive Blue 21	HST.
Reactive Blue 25	ICI.
Reactive Blue 27	HST.
Reactive Blue 29	VPC.
Reactive Blue 30	VPC.
Reactive Blue 86	ACY.
Reactive Blue 87	ACY.
Reactive Blue 88	ACY.
Other reactive blue dyes	HST.
Reactive green dyes	HST, ICI.
Reactive brown dyes: Reactive Brown 10	ICI.
*Reactive black dyes:	
Reactive Black 1	TRC.
Reactive Black 5	HST.
Reactive Black 9	ICI.
FLUORESCENT BRIGHTENING AGENTS	
Fluorescent Brightening Agent 6	ACY.
Fluorescent Brightening Agent 8	ACY.
Fluorescent Brightening Agent 9	ACY, 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.
Fluorescent Brightening Agent 30	GAF.
Fluorescent Brightening Agent 33	GAF.
Fluorescent Brightening Agent 34	DUP.
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, CGY.
Fluorescent Brightening Agent 68	CCW, GAF.
Fluorescent Brightening Agent 71	ACY, 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 113	VPC.
Fluorescent Brightening Agent 114	VPC.
Fluorescent Brightening Agent 125	ACY.
Fluorescent Brightening Agent 126	SDH.
Fluorescent Brightening Agent 128	SDH.
Fluorescent Brightening Agent 130	SDH.
Fluorescent Brightening Agent 134	CGY.
Fluorescent Brightening Agent 135	CGY.
Fluorescent Brightening Agent 158	ACY.
Fluorescent Brightening Agent 159	ACY.
Fluorescent Brightening Agent 184	CGY.
Fluorescent Brightening Agent 189	CGY.
Fluorescent Brightening Agent 190	CGY.
Fluorescent Brightening Agent 205	VPC.
Other fluorescent brightening agents	ACY, CCW, CGY, DUP, GAF, PCW, S, VPC.
FOOD, DRUG, AND COSMETIC COLORS	
Food, Drug, and Cosmetic Dyes	
*FD&C Blue No. 1	ACS, ALT, KON, SDH, WJ.
*FD&C Blue No. 2	ACS, KON, SDH, WJ.
FD&C Green No. 3	WJ.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
FOOD, DRUG, AND COSMETIC COLORS--Continued	
Food, Drug, and Cosmetic Dyes--Continued	
*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	KON, STG, WJ.
*FD&C Violet No. 1	ACS, SDH, WJ.
*FD&C Yellow No. 5	ACS, ALT, KON, SDH, STG, WJ.
*FD&C Yellow No. 6	ACS, ALT, KON, SDH, STG, WJ.
Other food, drug, and cosmetic dyes	ALT, STG.
Drug and Cosmetic Dyes	
D&C Blue No. 6	KON.
D&C Green No. 5	ACS, ALT, KON.
D&C Green No. 6	ACS, ALT, KON.
D&C Green No. 7	ALT.
D&C Green No. 8	KON, SDH.
D&C Orange No. 4	KON, SNA, 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.
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	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.
*D&C Red No. 36	ALT, KON, TMS.
D&C Red No. 37	ACS.
*D&C Yellow No. 5	KON, SNA, TMS.
D&C Yellow No. 6	KON.
D&C Yellow No. 7	KON.
D&C Yellow No. 8	KON, TMS.
D&C Yellow No. 10	KON.
D&C Yellow No. 11	KON.
Drug and Cosmetic Dyes, External	
Ext. D&C Green No. 1	ACS, KON.
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	ICI, VPC.
MORDANT DYES	
*Mordant yellow dyes:	
*Mordant Yellow 1	ATL, GAF, PDC.
Mordant Yellow 3	ATL.
Mordant Yellow 5	TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
MORDANT DYES--Continued	
*Mordant yellow dyes--Continued	
*Mordant Yellow 8	ACS, PDC, VPC.
Mordant Yellow 14	ACS, PDC.
Mordant Yellow 16	ACY.
Mordant Yellow 20	ACS, ATL.
Mordant Yellow 26	VPC.
Mordant Yellow 29	GAF.
Mordant Yellow 30	TRC, VPC.
Mordant Yellow 36	PDC.
*Mordant orange dyes:	
Mordant Orange 1	ACY, GAF, PDC, TRC.
Mordant Orange 4	GAF, PDC.
Mordant Orange 6	ATL, GAF, PDC, TRC.
Mordant Orange 8	TRC.
Mordant Orange 30	ACS.
*Mordant red dyes:	
Mordant Red 3	ACS, ACY.
Mordant Red 5	PDC.
Mordant Red 7	ACS, ACY, ATL, BDO, CMG, GAF, TRC, VPC.
Mordant Red 9	MRX.
Mordant Red 11	ACY.
Mordant violet dyes:	
Mordant Violet 5	PDC.
Mordant Violet 11	GAF.
Mordant Violet 20	GAF.
Mordant blue dyes:	
Mordant Blue 1	GAF.
Mordant Blue 3	GAF.
Mordant Blue 9	GAF.
Mordant Blue 13	ACS.
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.
Mordant Brown 19	GAF.
Mordant Brown 21	GAF, VPC.
*Mordant Brown 33	ACS, GAF, PDC, TRC.
*Mordant Brown 40	ACS, DUP, GAF, YAW.
Mordant Brown 50	TRC.
Mordant Brown 63	TRC.
Mordant Brown 70	DUP, PDC.
*Mordant black dyes:	
Mordant Black 3	ACS, TRC.
Mordant Black 7	GAF.
Mordant Black 8	VPC.
Mordant Black 9	ACS, VPC.
*Mordant Black 11	ACS, GAF, TRC, VPC.
Mordant Black 13	HSH.
*Mordant Black 17	ACS, ACY, GAF, TRC.
Mordant Black 19	PDC.
Mordant Black 26	TRC.
Mordant Black 38	PDC.
OXIDATION BASES	
Oxidation Base 8 and 8A	ACY.
Oxidation Base 21	PDC.
Oxidation Base 22	ACY.
Oxidation Base 25	ACY.
Other oxidation bases	ACY.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
SOLVENT DYES	
*Solvent yellow dyes:	
Solvent Yellow 1	AAP.
*Solvent Yellow 2	AAP, DUP, FH, GAF, PSC.
*Solvent Yellow 3	ACS, DUP, PSC.
Solvent Yellow 13	ACY, GAF.
*Solvent Yellow 14	AAP, ACS, ACY, DUP, FH, GAF, PSC, SDH.
Solvent Yellow 19	GAF.
Solvent Yellow 29	GAF.
Solvent Yellow 30	ACS, PSC.
Solvent Yellow 33	ACS, ACY.
Solvent Yellow 34	DSC.
Solvent Yellow 40	ACS.
Solvent Yellow 42	ACS.
Solvent Yellow 43	GAF.
Solvent Yellow 44	ACS, GAF.
Solvent Yellow 45	ACS.
Solvent Yellow 47	ACY, DUP, GAF.
Solvent Yellow 56	ACS, ACY.
Solvent Yellow 71	ACY.
Solvent Yellow 72	ACY.
Solvent Yellow 87	ACY.
Other solvent yellow dyes	AAP, DSC, PAT.
*Solvent orange dyes:	
Solvent Orange 2	AAP, PSC.
*Solvent Orange 3	ACS, ACY, DSC, GAF, PSC.
Solvent Orange 5	GAF.
*Solvent Orange 7	ACS, ACY, ATL, GAF.
Solvent Orange 20	ACY, GAF.
Solvent Orange 23	ACS.
Solvent Orange 24	DUP.
Solvent Orange 25	ACY, DUP.
Solvent Orange 31	ACS.
Solvent Orange 47	FH.
Solvent Orange 48	ACY.
Solvent Orange 51	ACY.
Other solvent orange dyes	AAP, ACY, DSC, DUP, PAT.
*Solvent red dyes:	
Solvent Red 1	ATL, PSC.
Solvent Red 8	GAF.
Solvent Red 22	GAF.
Solvent Red 24	ACY, DUP, FH, GAF, PAT, SDH.
*Solvent Red 26	AAP, ACS, ACY, PSC.
Solvent Red 27	ACS.
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	AAP, GAF, ICI.
Solvent Red 68	ACS.
Solvent Red 69	DSC, DUP.
Solvent Red 74	ACS.
Solvent Red 75	ACS.
Solvent Red 80	ACS, ACY.
Solvent Red 105	ACY.
Solvent Red 108	ACY.
Solvent Red 111	ACY.
Solvent Red 115	ACY.
Solvent Red 126	ACY.
Other solvent red dyes	AAP, ACY, ATL, DSC, DUP, PAT.
*Solvent violet dyes:	
Solvent Violet 8	ACS, ACY, DSC, DUP.
Solvent Violet 9	DSC.
Solvent Violet 13	ATL, HSH, ICI.
Solvent Violet 14	AAP, ICI.
Solvent Violet 17	ACS.
Other solvent violet dyes	AAP, DSC, PAT.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
SOLVENT DYES--Continued	
Solvent blue dyes:	
Solvent Blue 3	ACY, SW.
Solvent Blue 4	DSC, DUP, SDH.
Solvent Blue 5	DSC.
Solvent Blue 6	DSC.
Solvent Blue 7	ACY.
Solvent Blue 9	GAF.
Solvent Blue 11	BDO, GAF, ICI.
Solvent Blue 12	BDO.
Solvent Blue 16	ACS.
Solvent Blue 36	ACS, DUP.
Solvent Blue 37	DUP.
*Solvent Blue 38	ACS, ACY, ATL, DUP, GAF.
Solvent Blue 43	ACS.
Solvent Blue 58	ACY.
Solvent Blue 59	ACY.
Solvent Blue 60	ACY.
Solvent Blue 74	ACS.
Other solvent blue dyes	AAP, ACY, DSC, GAF, ICI, PAT, SDH.
Solvent green dyes:	
Solvent Green 1	ACY, DSC, SDH.
Solvent Green 2	GAF.
*Solvent Green 3	AAP, ACS, ACY, ATL, GAF, HSH, ICI.
Other solvent green dyes	ACY, DSC, GAF.
Solvent brown dyes:	
Solvent Brown 11	GAF.
*Solvent Brown 12	ACY, DSC, GAF.
Solvent Brown 19	DUP.
Solvent Brown 20	ACY, DUP.
Solvent Brown 22	DUP, FH, 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, FH.
Solvent Black 12	ACS.
Solvent Black 13	ACS.
Solvent Black 17	DUP.
Solvent Black 26	ACY.
Other solvent black dyes	DSC.
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.
Leuco Sulfur Yellow 15	ACY.
Other sulfur yellow dyes	ACY, SDC.
Sulfur Orange 1	STC.
Sulfur red dyes:	
Leuco Sulfur Red 5	SDC.
Sulfur Red 6	SDC.
Other sulfur red dyes	SDC.
Sulfur blue dyes:	
Sulfur Blue 5	ACY.
Sulfur Blue 7	ACY, SDC.
Leuco Sulfur Blue 7	ACY, SDC, STC.
Solubilized Sulfur Blue 7	SDC.
Sulfur Blue 8	SDC.
Leuco Sulfur Blue 8	SDC.
Sulfur Blue 9	ACY.
Leuco Sulfur Blue 13	ACY.
Sulfur Blue 16	ACY.
Other sulfur blue dyes	ACY, SDC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
SULFUR DYES--Continued	
Sulfur green dyes:	
Sulfur Green 2	SDC.
Leuco Sulfur Green 2	SDC.
Leuco Sulfur Green 3	SDC
Leuco Sulfur Green 9	STC.
Sulfur Green 14	DUP, SDC.
Leuco Sulfur Green 16	SDC.
Solubilized Sulfur Green 16	SDC.
Other sulfur green dyes	ACY, SDC.
Sulfur brown dyes:	
Leuco Sulfur Brown 1	STC.
Solubilized Sulfur Brown 1	STC.
Leuco Sulfur Brown 3	SDC.
Sulfur Brown 10	DUP, SDC.
Leuco Sulfur Brown 10	SDC.
Solubilized Sulfur Brown 10	SDC.
Sulfur Brown 12	SDC.
Sulfur Brown 14	SDC.
Leuco Sulfur Brown 14	ACY, SDC.
Leuco Sulfur Brown 20	STC.
Solubilized Sulfur Brown 21	STC.
Sulfur Brown 26	ACY.
Leuco Sulfur Brown 26	STC.
Sulfur Brown 30	ACY.
Leuco Sulfur Brown 37	SDC.
Leuco Sulfur Brown 81	ACY.
Leuco Sulfur Brown 82	ACY.
Other sulfur brown dyes	ACY, SDC.
Sulfur black dyes:	
Sulfur Black 1	ACY, SDC.
Leuco Sulfur Black 1	ACY, SDC, STC.
Solubilized Sulfur Black 1	SDC, STC.
Sulfur Black 2	SDC.
Leuco Sulfur Black 2	ACY, SDC.
Solubilized Sulfur Black 2	SDC.
Leuco Sulfur Black 10	ACY.
Sulfur Black 11	SDC.
Leuco Sulfur Black 11	SDC.
Other sulfur black dyes	SDC.
VAT DYES	
*Vat yellow dyes:	
Vat Yellow 1, 12-1/2%	ACS.
*Vat Yellow 2, 8-1/2%	AAP, ACS, GAF, HST, ICI, TRC, VPC.
Solubilized Vat Yellow 2, 25%	GAF.
Vat Yellow 3, 12-1/2%	DUP.
*Vat Yellow 4, 12-1/2%	ATL, CMG, GAF, HST, VPC.
Solubilized Vat Yellow 4, 37-1/2%	GAF.
Vat Yellow 10, 10%	GAF.
Vat Yellow 14, 12-1/2%	TRC.
Vat Yellow 15, 11-1/2%	ACY, DUP.
Vat Yellow 21, 9-1/2%	ATL.
Vat Yellow 22, 10%	DUP.
Vat Yellow 33, 15%	TRC, VPC.
Other vat yellow dyes	ACS, GAF, MAY, VPC.
*Vat orange dyes:	
*Vat Orange 1, 20%	ACS, ACY, ATL, DUP, GAF, HST, ICI, TRC, VPC.
Solubilized Vat Orange 1, 26%	HST.
*Vat Orange 2, 12%	ACS, ACY, DUP, GAF, ICI, TRC.
Vat Orange 3, 13-1/2%	CMG, DUP, GAF.
Vat Orange 4, 6%	ACY, DUP.
Vat Orange 5, 10%	ACY, HST.
Solubilized Vat Orange 5, 30%	HST.
Vat Orange 7, 11%	GAF, HST, TRC.
*Vat Orange 9, 12%	ACY, DUP, GAF, ICI, TRC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES--Continued	
*Vat orange dyes--Continued	
Vat Orange 11, 6%	DUP.
*Vat Orange 15, 10%	AAP, ACS, ACY, GAF, ICI, TRC, VPC.
Vat Orange 24	DUP.
Other vat orange dyes	GAF, SDC.
*Vat red dyes:	
*Vat Red 1, 13%	AAP, ACY, HST, ICI.
Solubilized Vat Red 1, 37%	GAF, HST.
Vat Red 10, 18%	ACS, 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%	GAF, HST, TRC.
Vat Red 16, 11%	DUP.
Vat Red 23	DUP.
*Vat Red 32, 20%	ACS, DUP, GAF.
Vat Red 35, 12-1/2%	ACS.
Vat Red 41, 20%	HST.
Vat Red 52, 10%	DUP.
Vat Red 56, 15-1/2%	ACY.
Vat Red 57	ACY.
Other vat red dyes	GAF, TRC.
*Vat violet dyes:	
*Vat Violet 1, 11%	ACY, DUP, GAF, ICI, TRC.
Vat Violet 2, 20%	ACY, HST.
Vat Violet 3, 15%	GAF, HST.
*Vat Violet 9, 12%	DUP, GAF, ICI, TRC.
*Vat Violet 13, 6-1/4%	ACS, DUP, GAF, ICI, TRC.
Vat Violet 14, 12-1/2%	ACS.
Vat Violet 17, 12-1/2%	DUP.
Vat Violet 21	VPC.
Other vat violet dyes	GAF, MAY.
*Vat blue dyes:	
Vat Blue 1, 20%	ACS.
Solubilized Vat Blue 1, 25%	GAF.
Vat Blue 3, 16%	HST.
*Vat Blue 4, 10%	ACY, DUP, GAF.
Vat Blue 5, 16%	ATL, DUP, HST.
Solubilized Vat Blue 5, 38%	GAF.
*Vat Blue 6, 8-1/3%	ACS, ACY, DUP, GAF, ICI, TRC.
Solubilized Vat Blue 6, 17-1/2%	GAF, HST.
Solubilized Vat Blue 9, 35%	GAF.
Vat Blue 12, 6-1/2%	DUP.
Vat Blue 14, 8-1/3%	DUP, GAF, TRC.
Vat Blue 16, 16-1/2%	ACY, DUP.
*Vat Blue 18, 13%	AAP, ACY, ATL, DUP, GAF, ICI, MAY, TRC.
Vat Blue 20, 14%	AAP, 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 53, 20-1/2%	GAF.
Vat Blue 60	DUP.
Other vat blue dyes	GAF, MAY, x.
*Vat green dyes:	
*Vat Green 1, 6%	ACS, ACY, ATL, DUP, GAF, ICI, MAY.
Solubilized Vat Green 1, 12-1/2%	ICI.
*Vat Green 3, 10%	AAP, ACS, ACY, ATL, DUP, GAF, ICI, MAY, TRC.
Solubilized Vat Green 3, 26%	GAF, ICI.
Vat Green 8, 8-1/2%	ACS, ATL, DUP, GAF.
*Vat Green 9, 12-1/2%	ACY, ATL, GAF, MAY, SDC, TRC.
Vat Green 20, 6%	DUP.
Other vat green dyes	GAF, MAY, SDC.
*Vat brown dyes:	
*Vat Brown 1, 11%	ACY, DUP, GAF, MAY, TRC, VPC.
Solubilized Vat Brown 1, 17%	GAF.
*Vat Brown 3, 11%	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC, VPC.

Table 2.--Dyes for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES--Continued	
*Vat brown dyes--Continued	
Vat Brown 5, 13%	ACY, HST, VPC.
Vat Brown 6, 17-1/2%	AAP.
Vat Brown 11, 12%	MAY, TRC.
Vat Brown 12, 12-1/2%	DUP.
Vat Brown 13, 17%	MAY.
Vat Brown 14, 12%	HST.
Vat Brown 20, 10-1/2%	ACS, GAF.
Vat Brown 28, 22%	ICI.
Vat Brown 29, 13%	ACY.
Vat Brown 31, 28%	AAP.
Vat Brown 38, 20%	ICI.
Vat Brown 40, 14%	DUP.
Vat Brown 57, 12.8%	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, TRC.
Vat Black 11, 17-1/2%	ACY.
Vat Black 13, 14%	DUP.
Vat Black 14, 11-1/2%	DUP.
Vat Black 18, 15-1/2%	GAF.
Vat Black 21, 18-1/2%	ACY.
Vat Black 22, 19%	ACY, TRC.
*Vat Black 25, 12-1/2%	AAP, ACY, DUP, GAF, ICI, MAY, TRC.
*Vat Black 27, 12-1/2%	ACY, BDO, DUP, GAF, ICI, MAY, TRC.
Vat Black 34, 16%	ICI.
Vat Black 37	GAF.
Vat Black 38, 20%	GAF.
Vat Black 52, 18-1/2%	ACY.
Other vat black dyes	GAF, SDC, TRC.
All other dyes	ACY, GAF, HSH, PAT, SDC.

Table 3.--Dyes: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of dye manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

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

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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. They are used in paints and related products, in printing inks, and in plastics and resin materials.

Statistics on production and sales of all organic pigments in 1970 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. Individiual toners and lakes are identified in this report by the names used in the second edition of the Colour Index.

Total production of organic pigments in 1970 was 56.5 million pounds--7.4 percent less than the 61.0 million pounds produced in 1969 and 5.2 percent more than the 53.7 million pounds produced in 1968. Total sales of organic pigments in 1970 amounted to 47.2 million pounds, valued at $123.0 million, compared with 50.8 million pounds, valued at $133.1 million, in 1969 and 45.8 million pounds, valued at $119.9 million, in 1968. In terms of quantity, sales of organic pigments in 1970 were 7.1 percent less than in 1969 and 3.0 percent greater than in 1968; in terms of value, sales in 1970 were 7.6 percent less than in 1969 and 2.5 percent greater than in 1968.

Production of toners in 1970 amounted to 52.5 million pounds--8.3 percent less than the 57.3 million pounds reported for 1969. Sales in 1970 were 43.8 million pounds, valued at $119.4 million, compared with 47.4 million pounds, valued at $129.3 million, in 1969. Sales in 1970 were thus 7.6 percent less than those in 1969 in terms of quantity, and 7.7 percent less in terms of value. The individual toners listed in the report which were produced in the largest quantities in 1970 were Pigment Yellow 12, 5.1 million pounds; Pigment Blue 19, 4.6 million pounds; and Pigment Blue 15, beta form, 4.2 million pounds.

Production of lakes totaled 4.0 million pounds in 1970--7.5 percent more than the 3.7 million pounds reported for 1969. Sales of lakes in 1970 amounted to 3.4 million pounds, valued at $3.6 million, compared with sales in 1969 of 3.4 million pounds, valued at $3.8 million. Sales in 1970 were thus equal to those in 1969 in terms of quantity, and 5.9 percent less in terms of value.

For each of 15 selected pigments, or groups of pigments, table 1A gives data on sales by commercial forms. Pigment Yellow 12, Pigment Red 90, and Pigment Blue 19 were sold principally in the flushed form. The remaining 12 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, sodium toner, without revealing the operations of individual companies.

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

TABLE 1.--Organic pigments: U.S. production and sales, 1970

[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	56,524	47,166	122,965	$2.61
TONERS				
Total	52,547	43,754	119,353	2.73
Yellow toners, total	10,238	7,423	20,410	2.75
Acetoacetarylide yellows, total	1,379	1,092	2,779	2.54
Pigment Yellow 1, C.I. 11 680	427	359	737	2.05
Pigment Yellow 3, C.I. 11 710	198	109	252	2.31
Pigment Yellow 4, C.I. 11 665	...	22	50	2.27
Pigment Yellow 74, C.I. 11 741	282	228	745	3.27
Other acetoacetarylide yellows	472	374	995	2.66
Benzidine yellows, total	8,489	6,201	16,072	2.59
Pigment Yellow 12, C.I. 21 090	5,100	3,634	7,924	2.18
Pigment Yellow 13, C.I. 21 100	439	...	...	...
Pigment Yellow 14, C.I. 21 095	1,866	1,485	3,669	2.47
Pigment Yellow 17, C.I. 21 105	444	294	878	2.99
Other benzidine yellows	640	788	3,601	4.57
All other	370	130	1,559	11.99
Orange toners, total	828	912	2,494	2.73
Pigment Orange 5, C.I. 12 075	231	313	527	1.68
Pigment Orange 13, C.I. 21 110	135	133	453	3.41
Pigment Orange 16, C.I. 21 160	280	270	750	2.78
Pigment Orange 34, C.I. 21 115	83	90	291	3.23
All other	99	106	473	4.46
Red toners, total	21,678	18,472	36,570	1.98
Naphthol reds, total	668	544	1,965	3.61
Pigment Red 2, C.I. 12 310	57	46	122	2.65
Pigment Red 5, C.I. 12 490	69	49	240	4.90
Pigment Red 17, C.I. 12 390	53	51	155	3.04
Pigment Red 18, C.I. 12 350	...	8	33	4.12
Pigment Red 22, C.I. 12 315	87	88	265	3.01
Pigment Red 23, C.I. 12 355	152	150	508	3.39
Other naphthol reds	250	152	642	4.22
Pigment Red 1, C.I. 12 070, dark	117	93	129	1.39
Pigment Red 1, C.I. 12 070, light	105	106	144	1.36
Pigment Red 3, C.I. 12 120	1,656	1,395	2,362	1.69
Pigment Red 4, C.I. 12 085	176	184	298	1.62
Pigment Red 6, C.I. 12 090	...	37	66	1.78
Pigment Red 38, C.I. 21 120	92	98	460	4.69
Pigment Red 48, C.I. 15 865	2,904	2,567	4,796	1.87
Pigment Red 49, C.I. 15 630:				
Barium toner	4,021	3,931	4,443	1.13
Calcium toner	1,431	1,279	1,511	1.18
Sodium toner	189	191	236	1.24
Pigment Red 52, C.I. 15 860	1,890	1,731	2,779	1.61
Pigment Red 53, C.I. 15 585, barium toner	2,176	1,943	2,768	1.42
Pigment Red 54, C.I. 14 830, calcium toner	87	73	165	2.26
Pigment Red 57, C.I. 15 850, calcium toner	1,176	1,013	1,617	1.60
Pigment Red 63, C.I. 15 880	38	41	73	1.78
Pigment Red 81, C.I. 45 160, PMA	509	418	2,419	5.79
Pigment Red 81, C.I. 45 160, PTA	101	89	583	6.55
Pigment Red 90, C.I. 45 380	1,754	978	1,979	2.02
All other	2,588	1,761	7,777	4.42
Violet toners, total	2,252	2,131	13,855	6.50
Pigment Violet 1, C.I. 45 170, PMA	109	108	385	3.56
Pigment Violet 1, C.I. 45 170, PTA	...	78	524	6.72
Pigment Violet 3, C.I. 42 535, fugitive	561	533	768	1.44

See footnotes at end of table.

TABLE 1.--Organic pigments: U.S. production and sales, 1970--Continued

Pigment	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
TONERS--Continued				
Violet toners--Continued				
Pigment Violet 3, C.I. 42 535, PMA	442	439	1,245	$2.84
Pigment Violet 3, C.I. 42 535, PTA	62	...	...	...
Pigment Violet 23, C.I. 51 319	203	187	3,122	16.70
All other	875	786	7,811	9.94
Blue toners, total	13,214	11,122	33,113	2.98
Pigment Blue 1, C.I. 42 595, PMA	216	157	743	4.73
Pigment Blue 1, C.I. 42 595, PTA	6	5	31	6.20
Pigment Blue 14, C.I. 42 600, PMA	117	101	482	4.77
Pigment Blue 15, C.I. 74 160, alpha form	3,581	3,208	9,894	3.08
Pigment Blue 15, C.I. 74 160, beta form	4,204	3,494	11,209	3.21
Pigment Blue 19, C.I. 42 750A	4,596	3,797	8,837	2.33
Pigment Blue 22, C.I. 69 810	26	18	306	17.00
Pigment Blue 25, C.I. 21 180	191	186	576	3.10
All other	277	156	1,035	6.63
Green toners, total	3,976	3,359	12,411	3.69
Pigment Green 1, C.I. 42 040, PMA	12	13	56	4.31
Pigment Green 1, C.I. 42 040, PTA	...	15	96	6.40
Pigment Green 2, C.I. 42 040 and 49 005, PMA	60	54	311	5.76
Pigment Green 2, C.I. 42 040 and 49 005, PTA	55	44	175	3.98
Pigment Green 7, C.I. 74 260	3,143	2,653	9,433	3.56
Pigment Green 8, C.I. 10 006	153	129	170	1.32
Pigment Green 10, C.I. 12 775	...	177	1,077	6.08
Pigment Green 36, C.I. 74 265	205	174	663	3.81
All other	348	100	430	4.30
Brown toners, total	134	100	224	2.24
Pigment Brown 5, C.I. 15 800	103	75	125	1.67
All other	31	25	99	3.96
Black toners	227	235	276	1.17
LAKES				
Total	3,977	3,412	3,612	1.06
Red lakes:				
Pigment Red 60, C.I. 16 105	277	272	495	1.82
Pigment Red 83, C.I. 58 000	49	46	170	3.70
(Acid Red 26), C.I. 16 150	223	225	110	.49
Violet lakes: Pigment Violet 5, C.I. 58 055	102	108	254	2.35
All other lakes[2]	3,326	2,761	2,583	.94

[1] Calculated from rounded figures.
[2] Includes all black, blue, green, orange, yellow lakes, "all other" red, and "all other" violet lakes.

Note.--The C.I. *(Colour Index)* numbers shown in this report are the identifying numbers given in the second 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, 1970

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	3,634	8,168	$2.25
Dry full-strength toner	963	2,076	2.16
Dry extended toner, dry dispersions, and aqueous dispersions[3] [4]	114	248	2.18
Flushed color	2,557	5,844	2.29
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	2,567	8,183	3.19
Dry full-strength toner, dry extended toner, and dry dispersions[4]	1,837	6,127	3.34
Aqueous dispersions[3]	529	1,416	2.68
Flushed color	201	640	3.18
Pigment Red 3, C.I. 12 120, total	1,395	2,439	1.75
Dry full-strength toner and dry extended toner[4]	897	1,535	1.71
Aqueous dispersions[3]	92	146	1.59
Flushed color	406	758	1.87
Pigment Red 48, C.I. 15 865, total	2,567	4,796	1.87
Dry full-strength toner, dry extended toner, and dry dispersions[4]	2,421	4,563	1.88
Aqueous dispersions[3]	91	119	1.31
Flushed color	55	114	2.07
Pigment Red 49, C.I. 15 630, barium toner, total	3,931	4,504	1.15
Dry full-strength toner	3,321	3,740	1.13
Dry dispersion and aqueous dispersion[3] [4]	24	34	1.42
Flushed color	586	730	1.25
Pigment Red 49, C.I. 15 630, calcium toner, total	1,279	1,627	1.27
Dry full-strength toner and dry dispersions[4]	1,105	1,307	1.18
Aqueous dispersions[3] and flushed color[4]	174	320	1.84
Pigment Red 49, C.I. 15 630, sodium toner[4]	191	237	1.24
Pigment Red 53, C.I. 15 585, barium toner, total	1,943	2,811	1.45
Dry full-strength toner, dry extended toner, and dry dispersions[4]	1,166	1,652	1.42
Aqueous dispersions[3] and flushed color[4]	777	1,159	1.49
Pigment Red 90, C.I. 45 380, total	978	2,095	2.14
Dry full-strength toner, dry extended toner, and dry dispersions[4]	119	246	2.07
Flushed color	859	1,849	2.15
Pigment Violet 3, C.I. 42 535, fugitive, total	533	768	1.44
Dry full-strength toner	278	442	1.59
Dry extended toner and flushed color[4]	255	326	1.28
Pigment Violet 3, C.I. 42 535, PMA, total	439	1,336	3.04
Dry full-strength toner	342	966	2.82
Dry extended toner, dry dispersion and aqueous dispersions[3] [4]	21	127	6.05
Flushed color	76	243	3.20
Pigment Blue 15, C.I. 74 160, alpha form, total	3,208	9,957	3.10
Dry full-strength toner	1,710	5,741	3.36
Dry extended toner	188	660	3.51
Dry dispersions	143	464	3.24
Aqueous dispersions[3]	765	1,781	2.33
Flushed color	402	1,311	3.26

See footnotes at end of table.

TABLE 1A.--U.S. sales of selected dry full-strength colors, dry extended colors, dry dispersions, aqueous dispersions, and flushed colors, 1970--Continued

Selected pigments by commercial forms	Sales		
	Quantity[1]	Value	Unit value[2]
	1,000 pounds	*1,000 dollars*	*Per pound*
Pigment Blue 15, C.I. 74 160, beta form, total	3,494	11,547	$3.30
Dry full-strength toner, dry extended toner and dry dispersions[4]	1,812	6,243	3.45
Aqueous dispersions[3]	403	1,159	2.88
Flushed color	1,279	4,145	3.24
Pigment Blue 19, C.I. 42 750A, total	3,797	8,837	2.33
Dry full-strength toner	483	1,203	2.49
Aqueous dispersions[3]	318	746	2.35
Flushed color	2,996	6,888	2.30
Pigment Green 7, C.I. 74 260, total	2,653	9,434	3.56
Dry full-strength toner	1,082	4,048	3.74
Dry extended toner	434	1,714	3.95
Aqueous dispersions[3]	857	2,572	3.00
Dry dispersions and flushed color[4]	280	1,100	3.93

[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 second 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, 1970

[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, CPC, DUP, GAF, HSC, HSH, ICI, IMP, KON, S, SDH, SNA, SW.
*Pigment Yellow 3, C.I. 11 710	ACS, HSH, IMP, KCW, KON, PPG, S, SW.
*Pigment Yellow 4, C.I. 11 665	ACS, HSC, SNA.
Pigment Yellow 5, C.I. 11 660	IMP.
Pigment Yellow 6, C.I. 11 670	CIK, IMP.
Pigment Yellow 9, C.I. 11 720	SNA.
Pigment Yellow 49, C.I. 11 765	ICI, IMP.
Pigment Yellow 73	ACS, SNA, x.
*Pigment Yellow 74, C.I. 11 741	DUP, HSC, IMP, SDH, SW.
Pigment Yellow 75	IMP.
All other acetoacetarylide yellows	DUP, KCW.
*Benzidine yellows:	
*Pigment Yellow 12, C.I. 21 090	ACS, ACY, AMS, APO, DUP, HSC, HSH, HST, ICC, IMP, KON, LVY, MRX, ROM, S, SDH, SNA, SW.
*Pigment Yellow 13, C.I. 21 100	APO, BUC, GAF, HSC, HSH, HST, ICC, IMP, ROM, SDH, SNA, SW.
*Pigment Yellow 14, C.I. 21 095	ACS, ACY, AMS, BUC, CIK, CPC, DUP, GAF, HSC, HSH, HST, ICC, IMP, KON, ROM, S, SDH, SNA, SW, x.
*Pigment Yellow 17, C.I. 21 105	ACY, AMS, APO, BUC, GAF, HSC, HSH, ICC, IMP, ROM, SDH, SNA, SW.
Pigment Yellow 76	x.
Pigment Yellow 83	ACS, HST.
Pigment Yellow 97	HST.
All other benzidine yellows	HSH, ICC, ROM, S, SW.
Pigment Yellow 10, C.I. 12 710	SW.
Pigment Yellow 11, C.I. 10 235	LVR.
Pigment Yellow 18, C.I. 49 005	IMP.
Pigment Yellow 19	GAF.
Pigment Yellow 60, C.I. 12 705	SW.
Pigment Yellow 108, C.I. 68 420	ACS.
Pigment Yellow 110	ACS.
Pigment Yellow 112 C.I. 70 600	ACS.
(Basic Yellow 2), C.I. 41 000 fugitive	LVR, MRX.
All other	ACS, ACY, ICC, IMP, S, SW, TRC.
*Orange toners:	
Pigment Orange 1, C.I. 11 725	ACS.
Pigment Orange 2, C.I. 12 060	IMP, SNA, SW, UHL.
Pigment Orange 4	SW.
*Pigment Orange 5, C.I. 12 075	ACY, HSC, IMP, SNA, SW.
*Pigment Orange 13, C.I. 21 110	ACS, ACY, AMS, IMP, KON, S, SNA, SW.
Pigment Orange 15, C.I. 21 130	ACS.
*Pigment Orange 16, C.I. 21 160	ACS, DUP, GAF, HSC, HSH, HST, ICC, IMP, ROM, SDH, SNA, SW.
*Pigment Orange 34, C.I. 21 115	BUC, ICC, ROM, SDH, SNA.
Pigment Orange 43, C.I. 71 105	ACS, GAF.
(Vat Orange 2), C.I. 59 705	GAF.
(Vat Orange 4), C.I. 59 710	ACS.
(Vat Orange 15), C.I. 69 025	ACS, TRC.
All other	GAF, KON, SNA.
*Red toners:	
*Naphthol reds:	
*Pigment Red 2, C.I. 12 310	ACS, HSH, IMP, KCW, MRX, SW.
*Pigment Red 5, C.I. 12 490	DUP, GAF, HSH, ICC, ICI, IMP, ROM, S, SDH, SW.
Pigment Red 9, C.I. 12 460	IMP.
Pigment Red 10, C.I. 12 440	KCW.
Pigment Red 13, C.I. 12 395	IMP, KCW, SW.

TABLE 2.--Organic pigments for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Red toners--Continued	
*Naphthol reds--Continued	
Pigment Red 15, C.I. 12 465	DUP.
*Pigment Red 17, C.I. 12 390	ACY, ICC, IMP, SNA, SW, UHL.
*Pigment Red 18, C.I. 12 350	ACS, IMP, SW.
*Pigment Red 22, C.I. 12 315	ACY, DUP, GAF, IMP, MRX, ROM, SNA, SW.
*Pigment Red 23, C.I. 12 355	ACS, ACY, BUC, DUP, IMP, ROM, SDH, SNA.
Pigment Red 31, C.I. 12 360	SNA.
Pigment Red 112, C.I. 12 370	IMP.
All other naphthol reds	ICC, KCW, ROM, S, SDH, SNA, SW.
*Pigment Red 1, C.I. 12 070, dark	ACY, AMS, HSC, HSH, IMP, KON, LVY, SW.
*Pigment Red 1, C.I. 12 070, light	ACY, HSC, HSH, IMP, PPG, SHD.
*Pigment Red 3, C.I. 12 120	ACY, CIK, CPC, DUP, HSC, HSH, IMP, KCW, KON, PPG, SDH, SNA, SW, UHL.
*Pigment Red 4, C.I. 12 085	ACY, AMS, HSC, IMP, KON, MRX, SNA, UHL.
*Pigment Red 6, C.I. 12 090	DUP, HSC, HSH, KCW, KON, SW.
*Pigment Red 38, C.I. 21 120	ACS, DUP, GAF, ICC, SNA, SW.
Pigment Red 41, C.I. 21 200	ACS.
*Pigment Red 48, C.I. 15 865	ACS, ACY, AMS, DUP, GAF, HSC, HSH, ICC, IMP, KON, LVY, MRX, S, SNA, SW.
Pigment Red 49, C.I. 15 630:	
*Barium toner	ACY, AMS, CIK, HSC, IMP, KON, LVY, SDH, SNA, SW, UHL.
*Calcium toner	ACY, AMS, CIK, HSC, IMP, LVY, PPG, SDH, SNA, SW.
*Sodium toner	ACY, AMS, HSC, KON, SDH, SW.
*Pigment Red 52, C.I. 15 860	AMS, HSC, HSH, IMP, SNA, SW.
Pigment Red 53, C.I. 15 585:	
*Barium toner	ACY, AMS, CIK, HSC, IMP, KON, LVY, MGR, MRX, SDH, SNA, SW.
Sodium toner	KON.
*Pigment Red 54, C.I. 14 830, calcium toner	HSH, IMP, SDH.
Pigment Red 55, C.I. 15 820	DUP, HSH.
*Pigment Red 57, C.I. 15 850, calcium toner	AMS, CIK, DUP, HSC, IMP, KON, LVY, MGR, SDH, SNA, SW.
Pigment Red 58, C.I. 15 825	DUP, GAF, IMP.
*Pigment Red 63, C.I. 15 880	ACS, HSH, IMP, 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	SNA.
*Pigment Red 81, C.I. 45 160, PMA	CPC, DUP, GAF, IMP, KON, LVR, LVY, MGR, MRX, S, SNA, TCD, UHL.
*Pigment Red 81, C.I. 45 160, PTA	ACY, AMS, DUP, GAF, HSC, IMP, KCW, KON, LVR, MGR, MRX, S, SNA, UHL.
Pigment Red 87, C.I. 73 310	ACS, TCD.
Pigment Red 88	ACS, SDH.
*Pigment Red 90, C.I. 45 380	AMS, ICC, IMP, LVR, LVY, SDH, SNA, TCD.
Pigment Red 91	TCD.
Pigment Red 92	TCD.
Pigment Red 94	TCD.
Pigment Red 122	ACS, ACY, SNA.
Pigment Red 123, C.I. 71 145	ACS.
Pigment Red 168, C.I. 59 300	ACS, TRC.
Pigment Red 177	TRC.
Pigment Red 179, C.I. 71 130	ACS.
Pigment Red 190, C.I. 71 140	ACS, GAF, HSC, SNA.
(Basic Red 2), C.I. 50 240	GAF.
All other	ACS, DUP, HAM, HSC, SW, x.
*Violet toners:	
Pigment Violet 1, C.I. 45 170, fugitive	UHL.
*Pigment Violet 1, C.I. 45 170, PMA	GAF, IMP, LVR, MGR, MRX, SNA, UHL.
*Pigment Violet 1, C.I. 45 170, PTA	ACY, AMS, DUP, GAF, HSC, IMP, MGR, MRX, SNA.
*Pigment Violet 3, C.I. 42 535, fugitive	ACY, AMS, HSC, IMP, KON, LVY, MGR, UHL.
*Pigment Violet 3, C.I. 42 535, PMA	AMS, CIK, DUP, GAF, HSC, IMP, KON, LVR, LVY, MGR, MRX, PPG, SDH, SNA, SW, UHL.

TABLE 2.--Organic pigments for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Violet toners--Continued	
*Pigment Violet 3, C.I. 42 535, PTA	ACY, AMS, HSC, IMP, KON, MRX, SNA, SW, TCD.
Pigment Violet 5, C.I. 58 055	S.
Pigment Violet 19, C.I. 46 500	ACS, DUP, SNA.
*Pigment Violet 23, C.I. 51 319	ACS, ACY, BUC, GAF, HST, ROM, SDC, SNA.
Pigment Violet 31, C.I. 60 010	DUP.
Pigment Violet 36, C.I. 73 385	ACS.
Pigment Violet 38, C.I. 73 395	ACS.
All other	BUC, ICC, IMP, ROM.
*Blue toners:	
*Pigment Blue 1, C.I. 42 595, PMA	DUP, GAF, IMP, KON, LVY, MGR, MRX, SNA, SW, TCD, UHL.
*Pigment Blue 1, C.I. 42 595, PTA	AMS, GAF, IMP, KON, MGR, SNA.
Pigment Blue 2, C.I. 44 045, PMA	GAF.
Pigment Blue 9, C.I. 42 025, PMA	LVR, MRX.
Pigment Blue 9, C.I. 42 025, PTA	GAF, IMP, MGR.
Pigment Blue 10, C.I. 44 040, PMA	IMP, LVR, SDH.
Pigment Blue 10, C.I. 44 040, PTA	IMP.
*Pigment Blue 14, C.I. 42 600, PMA	DUP, GAF, IMP, LVR.
Pigment Blue 14, C.I. 42 600, PTA	DUP, GAF.
*Pigment Blue 15, C.I. 74 160, alpha form	ACS, ACY, DUP, GAF, HSC, ICC, ICI, IMP, MGR, SNA, SW, TMS, TRC.
*Pigment Blue 15, C.I. 74 160, beta form	ACS, ACY, AMS, BUC, DUP, GAF, HSC, ICC, IMP, LVY, ROM, SNA, SW, TMS.
*Pigment Blue 19, C.I. 42 750A	ACY, AMS, HSC, SW, TCD.
*Pigment Blue 22, C.I. 69 810	ACS, DUP, TCD, TRC.
*Pigment Blue 25, C.I. 21 180	ACS, DUP, GAF, ICC, S.
Pigment Blue 64, C.I. 69 825	ICI, TRC.
(Basic Blue 2)	IMP.
All other	DUP, GAF, S, SDH, TNI.
*Green toners:	
*Pigment Green 1, C.I. 42 040, PMA	GAF, IMP, MRX, S, UHL.
*Pigment Green 1, C.I. 42 040, PTA	ACY, IMP, MGR.
*Pigment Green 2, C.I. 42 040 and 49 005, PMA	GAF, IMP, KON, LVY, MGR, MRX, UHL.
*Pigment Green 2, C.I. 42 040 and 49 005, PTA	AMS, DUP, IMP, KON, LVY, MRX, S, SDH.
Pigment Green 4, C.I. 42 000, fugitive	GAF.
Pigment Green 4, C.I. 42 000, PMA	GAF, KON, MGR.
Pigment Green 4, C.I. 42 000, PTA	ACY, AMS, IMP, KON, MGR.
*Pigment Green 7, C.I. 74 260	ACS, ACY, CIK, DUP, GAF, HSC, IMP, SNA, SW, TMS, TRC.
*Pigment Green 8, C.I. 10 006	HSH, IMP, KCW.
*Pigment Green 10, C.I. 12 775	DUP, HSC, IMP, SNA, SW.
*Pigment Green 36, C.I. 74 265	ACY, GAF, SNA.
Pigment Green 38	ACS, DUP.
*Brown toners:	
Pigment Brown 1, C.I. 12 480	ICI.
Pigment Brown 2, C.I. 12 071	HSH.
Pigment Brown 3, C.I. 21 010, fugitive	KON.
Pigment Brown 3, C.I. 21 010, PMA	KCW, KON.
*Pigment Brown 5, C.I. 15 800	ACS, BUC, HSH, ICC, ROM, SNA.
Pigment Brown 28, C.I. 69 015	GAF, TRC.
All other	GAF, ICC, SDH.
*Black toners:	
Pigment Black 1, C.I. 50 440	SNA.
All other	DUP, GAF, UHL.
LAKES	
Yellow lakes:	
(Acid Yellow 23), C.I. 19 140	KON, MGR, MRX.
(Acid Yellow 73), C.I. 45 350	TCD.
Orange lakes:	
Pigment Orange 7, C.I. 15 530	CPC.
Pigment Orange 17, C.I. 15 510	IMP, KCW, KCN.
All other	HAM.

TABLE 2.--Organic pigments for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Pigment	Manufacturers' identification codes (according to list in table 3)
LAKES--Continued	
Red lakes:	
*Pigment Red 60, C.I. 16 105	HSH, KON, MRX, SNA.
*Pigment Red 83, C.I. 58 000	HSH, IMP, KON, MRX, UHL.
(Acid Red 17), C.I. 16 180	IMP.
*(Acid Red 26), C.I. 16 150	CPC, HAM, IMP, KCW.
(Acid Red 27), C.I. 16 185	KON.
(Natural Red 4), C.I. 75 470	KON.
All other	HAM, IMP.
Violet lakes:	
*Pigment Violet 5, C.I. 58 055	ACS, DUP, HSH, IMP, KON, UHL.
Pigment Violet 20, C.I. 58 225	SW.
All other	HAM.
Blue lakes:	
Pigment Blue 17, C.I. 74 180	CPC, KCW.
Pigment Blue 24, C.I. 42 090	AMS, KON, LVY, SDH.
(Acid Blue 93), C.I. 42 780	LVR.
(Acid Blue 104), C.I. 42 735	CPC, KCW.
Green lakes	IMP.
Black lakes:	
(Natural Black 3), C.I. 75 291	CPC, KON.
All other	HAM.

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

TABLE 3.--Organic pigments: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of organic pigment manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company	Code identification	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	Martin-Marietta Corp., Ridgway Color & Chemical Div.	LVY	Cities Service Co., Levey Div.
APO	Apollo Colors, Inc.	MGR	Magruder Color Co., Inc.
BUC	Blackman-Uhler Chemical Co.	MRX	Max Marx Color & Chemical Co.
CIK	Tenneco Chemicals, Inc., Cal/Ink Div.	PPG	PPG Industries, Inc.
CPC	Childs Pulp Colors, Inc.	ROM	United Merchants & Manufacturers, Inc., Roma Chemical Div.
DUP	E. I. duPont de Nemours & Co., Inc.	S	Sandoz, Inc., Sandoz Color & Chemicals Div.
GAF	GAF Corp., Chemical Div.	SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
HAM	Hampden Color & Chemical Co.	SDH	Sterling Drug, Inc., Hilton-Davis Chemical Co. Div.
HSC	Chemetron Corp., Pigments Div.	SNA	Sun Chemical Corp., Pigments Div.
HSH	Harshaw Chemical Co. Div. of Kewanee Oil Co.	SW	The Sherwin-Williams Co.
HST	American Hoechst Corp.	TCD	Tenneco Chemicals, Inc., Tenneco Colors Div.
ICC	Inmont Corp.	TMS	Sterling Drug, Inc., Thomasset Colors Div.
ICI	ICI America, Inc.	TNI	Gillette Co., Chemical Division
IMP	Hercules, Inc., Imperial Color & Chemical Dept.	TRC	Toms River Chemical Corp.
KCW	Keystone Color Works, Inc.	UHL	Paul Uhlick & Co., Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 manufacurer. 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 semisynthetic 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 1970 amounted to 214 million pounds, or 7.2 percent more than the 200 million pounds produced in 1969 and 21.0 percent more than the 177 million pounds produced in 1968. Total sales of bulk medicinal chemicals in 1970 amounted to 155 million pounds, valued at $510 million, compared with sales in 1969 of 145 million pounds, valued at $462 million, and sales in 1968 of 123 million pounds, valued at $415 million. In terms of quantity, sales in 1970 were thus 6.7 percent larger than in 1969 and 26.1 percent larger than in 1968. In terms of value, sales in 1970 were 10.4 percent larger than in 1969 and 22.9 percent larger than in 1968.

Production of the more important groups of medicinal chemicals in 1970 was as follows: Antibiotics, 16.9 million pounds (28.3 percent larger than in 1969), of which 9.6 million pounds was for medicinal

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[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 Tariff 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.

use and 7.3 million pounds was for other uses; anti-infective agents other than antibiotics, 34.0 million pounds (0.8 percent larger than in 1969); central nervous system depressants and stimulants, 49.9 million pounds (3.9 percent smaller); gastrointestinal agents, 62.5 million pounds (7.1 percent larger); and vitamins, 22.9 million pounds (29.9 percent larger). Production of some of the more important individiual products listed in table 1 was as follows: Choline chloride, 39.6 million pounds (6 percent smaller than in 1969); aspirin, 35.2 million pounds (6 percent smaller); salicylic acid, 14.1 million pounds (3 percent larger); ascorbic acid, 9.8 million pounds (41 percent larger); piperazine base and salts, 7.8 million pounds (2 percent smaller); anti-infective sulfonamides, 5.9 million pounds (21 percent larger); penicillins (except semi-synthetic), 3,760 trillion units (53 percent larger); tetracyclines, 2.3 million kilograms (13 percent larger); vitamin A, 1,274 trillion units (7 percent larger); and vitamin E, 600 billion units (26 percent larger).

TABLE 1.--Medicinal chemicals: U.S. production and sales, 1970

[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 manufacturers 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	214,471	154,514	510,059	$3.30
Acyclic	82,281	67,206	44,705	.67
Benzenoid[3]	111,440	73,438	351.113	4.78
Cyclic nonbenzenoid[4]	20,750	13,870	114,241	8.24
Antibiotics, total[5]	16,939	7,216	145,447	20.16
For medicinal use, total	9,638	3,934	112,475	28.59
Antifungal and antitubercular antibiotics	954	757	11,567	15.28
Bacitracin	15	14	1,177	84.07
Penicillin G, potassium[6]	2,166	...	...	...
Penicillins[6] (semi-synthetic), total	883	...	...	...
Ampicillin	684	...	...	...
All other	199	...	...	...
Other antibiotics for medicinal use	5,620	3,163	99,731	31.53
For other uses, total	7,301	3,282	32,972	10.05
Bacitracin	420	389	6,118	15.73
All other	6,881	2,893	26,854	9.28
Antihistamines, total	363	187	7,003	37.45
Antinauseants	44	...	...	...
Chlorpheniramine maleate	42	12	169	14.08
All other	277	175	6,834	39.05
Anti-infective agents (except antibiotics), total	33,984	23,871	96,544	4.04
Antimony, bismuth, and mercury compounds	288	...	...	...
Phenolic antiseptics and disinfectants	450	327	528	1.62
Piperazine base and salts, total	7,849	5,184	3,691	.71
Piperazine	3,817	1,276	1,030	.81
All other	4,032	3,908	2,661	.68
Quinoline derivatives, total	377	185	930	5.03
Diiodohydroxyquin	16	...	...	...
Oxyquinoline benzoate	3	...	...	...
All other	358	...	...	...
Sulfonamides, total	5,943	1,657	7,262	4.38
Phthalylsulfacetamide	16	14	38	2.71
All other	5,927	1,643	7,224	4.40
Other anti-infective agents, total	19,077	16,518	84,133	5.09
Antibacterial agents and general antiseptics, total	2,682	...	...	....
Antileprotic and antitubercular agents	222	...	...	...
Urinary antiseptics, total	599	501	1,111	2.22
Methenamine salts	499	...	...	...
All other	100	...	...	...
Other antibacterial agents and general antiseptics	1,861	...	...	...
Antifungal agents	...	811	605	.75
Antiprotozoan agents	8,962	7,609	42,086	5.53
All other[7]	7,433	7,597	40,331	5.31
Autonomic drugs, total	623	507	9,104	17.96
Parasympatholytic (anticholinergic) quaternary ammonium compounds.	46	...	...	...
Parasympatholytic (anticholinergic) tertiary amines	...	30	1,427	47.57

See footnotes at end of table.

TABLE 1.--Medicinal chemicals: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Autonomic drugs--Continued				
Sympathomimetic (adrenergic) agents, total	523	457	6,104	$13.36
Epinephrine hydrochloride (racemic)	1	1	83	83.00
Phenylpropanolamine hydrochloride	292	302	1,842	6.10
All other	230	154	4,179	27.14
Other autonomic drugs	54	20	1,573	78.65
Cardiovascular agents, total	1,391	...	...	...
Vasodilators	121	...	...	...
Other cardiovascular agents	1,270	...	...	...
Central depressants and stimulants, total	49,943	31,426	77,003	2.45
Amphetamines, total	78	56	483	8.63
Amphetamine base and sulfate (racemic)	34	...	...	...
All other	44	56	483	8.63
Analgesics and antipyretics, total	43,457	27,294	49,047	1.80
Aspirin	35,170	...	...	...
Salicylates (except aspirin)	2,741	2,511	2,536	1.01
All other	5,546	24,783	46,511	1.88
Antidepressants	159	...	...	...
Barbiturates	1,003	526	2,394	4.55
Hydrocodone bitartrate	(8)	(8)	267	401.04
Hypnotics and sedatives (except barbiturates)	562	...	...	...
Skeletal muscle relaxants and tranquilizers, total	1,206	767	4,948	6.45
Meprobamate	...	561	1,414	2.52
All other	1,206	206	3,534	17.15
Other central depressants and stimulants[9]	3,478	2,783	19,864	7.14
Dermatological agents and local anesthetics, total	15,604	14,438	7,014	.49
Salicylic acid	14,126	13,710	5,447	.40
All other	1,478	728	1,567	2.15
Diagnostic agents, total	836	...	...	...
Roentgenographic contrast media	835	...	...	...
All other	1	...	...	...
Expectorants and mucolytic agents, total	2,617	2,481	4,599	1.85
Ethylenediamine dihydriodide	1,224	1,111	2,206	1.99
All other	1,393	1,370	2,393	1.75
Gastrointestinal agents, total	62,480	53,307	22,289	.42
Choleretics and hydrocholeretics	124	...	...	...
Choline chloride (all grades)	39,563	...	...	...
All other	22,793	53,307	22,289	.42
Hematological agents	39	...	...	...
Hormones and synthetic substitutes, total	1,511	251	16,551	65.94
Corticosteroids	50	...	...	...
Synthetic hypoglycemic agents	1,269	198	1,087	5.49
All other	192	53	15,464	291.77
Renal-acting and edema-reducing agents, total	1,463	141	4,950	35.11
Mercurial diuretics	...	(10)	19	43.49
Theophylline derivatives	79	67	270	4.03
All other	1,384	74	4,661	62.99
Therapeutic nutrients, total	3,626	2,497	3,031	1.21
Amino acids and salts	2,159	1,230	1,984	1.61
Calcium salts	741	763	498	.65
Ferrous gluconate	591	...	...	...
Other therapeutic nutrients	135	504	549	1.09

TABLE 1.--Medicinal chemicals: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[1]		
		Quantity	Sales	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Vitamins, total	22,915	17,053	84,063	$4.93
Vitamin A alcohol and esters, total[11]	1,428	970	21,222	21.88
Vitamin A palmitate (feed grade)	990	684	11,660	17.05
All other	438	286	9,562	33.43
Vitamin B-complex, total	8,079	6,284	31,453	5.01
Niacin (all grades)	2,333	...	...	...
Niacin (feed grade)	...	1,257	1,352	1.08
Niacinamide	1,359	1,428	2,448	1.71
Pantothenic acid and derivatives, total	2,159	1,436	3,855	2.68
Calcium pantothenate (racemic) (feed grade)	1,424	761	1,650	2.17
All other	735	675	2,205	3.27
Other B-complex vitamins	2,228	2,163	23,798	11.00
Vitamin C, total	12,059	8,828	13,426	1.52
Ascorbic acid	9,832	...	...	...
All other	2,227	...	...	...
Vitamin D[11]	13	8	1,129	141.12
Vitamin E[11]	1,105	893	16,341	18.30
Vitamin K	231	70	492	7.03
Miscellaneous medicinal chemicals[12]	137	1,139	32,461	28.50

[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 carbocylic 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 semi-synthetic), 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	
Bacitracin, total	-----BU---	9,881	9,135	7,295	$798.58
For medicinal use	-----BU---	351	313	1,177	3,760.38
For other uses	-----BU---	9,530	8,822	6,118	693.49
Penicillins (except semi-synthetics), total	-----BU---	3,760,210	1,522,253	28,667	18.83
Penicillin G, potassium, for medicinal use	-----BU---	1,566,158	...	...	...
Penicillin G, procaine, for all uses	-----BU---	...	787,301	15,174	19.27
All other, for all uses	-----BU---	2,194,052	734,952	13,493	18.36
Penicillins (semi-synthetic), total	-----Kg---	400,662	...	...	...
Ampicillin	-----Kg---	310,353	...	...	...
All other	-----Kg---	90,309	...	...	...
Tetracyclines, for all uses	-----Kg---	2,318,826	735,456	20,518	27.90

TABLE 1.--Medicinal chemicals: U.S. production and sales, 1970--Continued

Footnotes for table 1--Continued

[6] Production of medicinal and feed grades of all penicillins (except semi-synthetics) amounted to 5,944,000 pounds; sales amounted to 2,732,000 pounds, valued at $28,667,000.
[7] Includes production and sales of anthelmintic and antiviral agents, production of antifungal agents, sales of all other antibacterial agents and general antiseptics, and sales of antimony, bismuth, and mercury compounds.
[8] Production of hydrocodone bitartrate amounted to 975 pounds, and sales amounted to 667 pounds.
[9] Includes production and sales of anticonvulsants, antitussives (except hydrocodone bitartrate) and stimulants; also includes sales of antidepressants, and hypnotics and sedatives (except barbiturates).
[10] Sales of mercurial diuretics amounted to 404 pounds.
[11] All quantities for vitamin A, B_{12}, 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 B_{12}, 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 these vitamins, except for B_{12}, which was not separately publishable, in terms of million of international units (MU) or billion of U.S.P. units (BU):

Vitamin	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Vitamin A, total	---BU---	1,273,537	852,583	21,222	$24.89
Vitamin A palmitate (feed grade)	---BU---	815,763	563,499	11,660	20.69
All other	---BU---	457,774	289,084	9,562	33.08
Vitamin D	---BU---	243,992	137,651	1,129	8.20
Vitamin E	---MU---	599,829	494.983	16,341	33.01

[12] Includes production and sales of antineoplastic agents, smooth-muscle relaxants, and unclassified medicinal chemicals; also includes sales of cardiovascular agents, diagnostic agents, and hematological agents.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970

[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:	
*For medicinal use:	
*Antifungal and antitubercular antibiotics:	
Antifungal antibiotics:	
Amphotericin B	OMS.
Candicidin	PEN.
Nystatin	ACY, OMS.
Antitubercular antibiotics:	
Cycloserine	COM.
Dihydrostreptomycin	MRK, PFZ.
Streptomycin	MRK, PFZ.
Viomycin	PFZ.
*Bacitracin	COM, PEN, PFZ, PMP.
*Penicillin G, potassium	OMS, PFZ, WYT.
*Penicillins (semi-synthetic):	
*Ampicillin	BEE, BRS, OMS, WYT.
*Other semi-synthetic penicillins:	
Ampicillin, sodium	BEE, OMS, WYT.
Carbenicillin	BEE.
Cloxacillin, sodium	BEE, BRS.
Dicloxacillin, sodium	BEE, BRS, WYT.
Hetacillin	BRS.
Methicillin, sodium	BRS.
Nafcillin, sodium	WYT.
Oxacillin, sodium	BEE, BRS.
Phenethicillin, potassium	NRS, PFZ.
*Other antibiotics for medicinal use:	
Cephalexin	LIL.
Cephaloglycin	LIL.
Cephaloridine	LIL.
Cephalothin	LIL.
Chloramphenical	PD, RLS.
Clindamycin	x.
Erythromycin	ABB, LIL, UPJ.
Fumagillin	ABB.
Gentamycin	SCH.
Gramicidin	PEN.
Kanamycin	BRS.
Lincomycin	x.
Neomycin	OMS, PFZ, UPJ.
Novobiocin	MRK, UPJ.
Oleandomycin	PFZ.
Paromomycin	MRK.
Penicillin G, benzathine	WYT.
Penicillin G, procaine	OMS, PFZ, WYT.
Penicillin G, sodium	OMS.
Penicillin O, sodium	PFZ.
Phenoxymethylpenicillin (Penicillin V)	ABB, BRS, LIL, OMS.
Phenoxymethylpenicillin, benzathine	WYT.
Phenoxymethylpenicillin, hydrabamine	ABB.
Phenoxymethylpenicillin, potassium	ABB, LIL.
Polymyxin B	PFZ.
Spectinomycin	ABB, x
Tetracyclines:	
Chlortetracycline	ACY, RLS.
Demeclocycline	ACY.
Doxycycline	PFZ.
Methacycline	PFZ.
Oxytetracycline	PFZ, RLS.
Tetracycline	ACY, BRS, PFZ, RLS.
Thiostrepton	OMS.
Troleandomycin	PFZ.
Tyrothricin	PEN.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Antibiotics--Continued	
*For other uses:	
*Bacitracin	COM, DLI, GPR, PEN, PMP.
Chlortetracycline	ACY, DLI.
Cycloheximide	UPJ.
Hygromycin B	LIL.
Neomycin	PEN, PFZ.
Novobiocin	UPJ.
Nystatin	OMS.
Oxytetracycline	PFZ.
Penicillin G, benzathine	WYT.
Penicillin G, procaine	MRK, OMS.
Streptomycin	MRK, PFZ.
Tylosin	COM, 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.
Cyproheptadine hydrochloride	MRK.
Dexbrompheniramine maleate	SCH.
Dexchlorpheniramine maleate	SCH.
Dimethindene maleate	CGY.
Diphenhydramine hydrochloride	GAN, PD.
Doxylamine succinate	BKC.
Methapyrilene fumarate	ABB, PYL.
Methapyrilene hybenzate	LIL.
Methapyrilene hydrochloride	ABB, PYL.
Phenindamine tartrate	HOF.
Pheniramine maleate	HEX, HFT, SCH.
Phenyltoloxamine citrate	BRS.
Pyrilamine maleate	HEX, MRK, PYL.
Pyrilamine resin adsorbate	MRK.
Pyrrobutamine phosphate	LIL.
Thenyldiamine hydrochloride	SDW.
Thonzylamine hydrochloride	NEP.
Tripelennamine	CGY.
Tripelennamine citrate	CGY.
Tripelennamine hydrochloride	CGY.
Triprolidine hydrochloride	BUR.
*Anti-infective agents (except antibiotics):	
*Antimony, bismuth, and mercury compounds:	
Bismuth dipropylacetate	x.
Bismuth sodium triglycollamate	BPC.
Bismuth subsalicylate	MAL, NOR, PEN.
Glycobiarsol	PYL, SDW.
Merbromin	HYN.
Mercuric salicylate	MRK.
Nitromersol	ABB.
Phenylmercuric acetate	WRC.
Phenylmercuric benzoate	MRK.
Phenylmercuric borate	MRK, WRC.
Phenylmercuric chloride	WRC.
Phenylmercuric nitrate	MRK, WRC.
Stibophen	SDW.
Thimerosal	LIL, PYL, SEL.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Phenolic antiseptics and disinfectants:	
Betanaphthol[1]	ACY.
Bithionol	x.
Resorcinol[1]	KPT, LEM.
Thymol	GIV.
Thymol iodide	MAL.
*Piperazine base and salts:	
*Piperazine	DOW, FLM, JCC, UCC.
Piperazine adipate	PYL.
Piperazine citrate	BUR.
Piperazine dihydrochloride	DOW, FLM, JCC, WHL.
Piperazine dithiocarbamate	SEL.
Piperazine hexahydrate	JCC.
Piperazine hydrochloride	DOW, JCC, SEL.
Piperazine phosphate	BUR, JCC, PYL, SEL.
Piperazine sulfate	JCC.
Piperazine tartrate	PYL.
*Quinoline derivatives:	
Amodiaquin	PD.
Amodiaquin hydrochloride	PD.
Buquinolate	UOP.
Chloroquine phosphate	SDW.
*Diiodohydroxyquin	CGY, PCW, PYL, SRL.
Hydroxychloroquine sulfate	SDW.
8-Hydroxy-5-quinolinesulfonic acid	MRK.
Iodochlorhydroxyquin	CGY, PYL.
Oxolinic acid	NEP.
Oxyquinoline	FIS, MRK.
*Oxyquinoline benzoate	FIS, LEM, MRK.
Oxyquinoline citrate	FIS, MRK.
Oxyquinoline potassium sulfate	LEM.
Oxyquinoline sulfate	FIS, MRK, PYL.
Primaquine phosphate	PD, SDW.
*Sulfonamides:	
Acetyl sulfamethoxypyridazine	ACY.
Acetyl sulfisoxazole	HOF.
Azosulfamide	SDW.
Dinsed	SAL.
Mafenide acetate	SDW.
Mafenide hydrochloride	SDW.
*Phthalylsulfacetamide	CTN, LEM, PYL.
Phthalylsulfathiazole	MRK, PYL.
Succinylsulfathiazole	MRK, PYL.
Sulfabenzamide	ACY.
Sulfabenzamide, sodium	ACY.
Sulfabromomethazine, sodium	MRK.
Sulfacetamide	CTN, LEM, PYL.
Sulfacetamide, sodium	CTN, LEM.
Sulfachloropyrazine, sodium	ACY.
Sulfachloropyridazine, sodium	CGY.
Sulfadiazine	ACY.
Sulfadiazine, sodium	ACY.
Sulfadimethoxine	HOF.
Sulfaethidole	ACY.
Sulfaguanidine	ACY, SAL.
Sulfamerazine	ACY, LEM.
Sulfamerazine, sodium	ACY, CTN.
Sulfamethazine	ACY, LEM.
Sulfamethazine, sodium	ACY.
Sulfamethizole	ACY, CTN.
Sulfamethoxazole	HOF.
Sulfamethoxypyridazine	ACY.

See footnotes at end of table.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Sulfonamides--Continued	
Sulfanilamide	SAL.
Sulfanitran	SAL.
Sulfapyridine	ACY, CTN, MRK.
Sulfapyridine, sodium	ACY, CTN.
Sulfaquinoxaline	MRK.
Sulfathiazole	ACY, MRK.
Sulfathiazole, sodium	ACY, MRK.
Sulfisoxazole	HOF.
Sulfisoxazole, sodium	HOF.
*Other anti-infective agents:	
Anthelmintic agents:	
Cadmium anthranilate	MAL.
2,2-Dichlorovinyl dimethyl phosphate	SHC.
Diethylcarbamazine citrate	ACY.
Gentian violet	SDH.
Hexylresorcinol	HEX, MRK.
Phenothiazine	ABR, ISC.
Pyrvinium pamoate	x.
Thiabendazole	MRK.
*Antibacterial agents and general antiseptics:	
*Antileprotic and antitubercular agents:	
Aminosalicylic acid	MLS.
Ethionamide	RDA.
Isoniazid	RIL.
Potassium aminosalicylate	MLS.
Pyrazinamide	MRK.
Sodium aminosalicylate	MLS.
Sodium sulfoxone	ABB.
*Urinary antiseptics:	
Mandelic acid	MAL.
Methenamine	HN.
*Methenamine salts:	
Methenamine hippurate	RIK.
Methenamine mandelate	ARN, NEP, PYL.
Methenamine sulfosalicylate	x.
Methylene blue	ACY.
Nitrofurantoin	NOR.
Phenazopyridine hydrochloride	HOF, NEP.
*Other antibacterial agents and general antiseptics:	
Acriflavine	ACS.
Aminacrine	SDW.
Aminacrine hydrochloride	SDW.
Benzalkonium chloride	SDH.
Bromoform	DOW.
Camphor, monobromated	MAL, PEN.
Cetalkonium chloride	FIN, SDW.
Cetylpyridinium chloride	FIN, HEX.
Chlorobutanol	BPC, PD.
Furaltadone	NOR.
Furamazone	NOR.
Iodoform[2]	MAL.
Magnesium salicylate	MAL.
Myristyl-γ-picolinium chloride	UPJ.
Nalidixic acid	SDH.
Nitrofurazone	NOR.
Nitromide	PEN, SAL.
Providone - iodine complex	GAF.
*Antifungal agents:	
Benzoic acid	MON.
Calcium undecylenate	WTL.
Fuchsin, basic	ACS.

See footnotes at end of table.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Other anti-infective agents--Continued	
*Antifungal agents--Continued	
Sodium caprylate	LEM.
Sodium undecylenate	NTL.
Undecylenic acid	NTL.
Zinc undecylenate	CFC, NTL, WTL.
*Antiprotozoan agents:	
Aklomide	SAL.
Aminitrozole	ACY.
Amprolium	MRK.
Arsanilic acid	WHL.
Carbarsone	LIL, PYL, RSA, SEL, WHL.
Dimetridazole	RDA.
3,5-Dinitro-o-toluamide	DOW.
Furazolidone	NOR.
Metronidazole	RDA.
Nifursol	SAL.
Nihydrazone	NOR.
Nitarsone	SAL.
Nithiazide	MRK.
Nitrophenide	ACY.
Pyrimethamine	BUR.
Roxarsone	SAL.
Roxarsone, sodium	SAL.
Sodium arsanilate	SAL.
Antiviral agent: Amantadine hydrochloride	DUP
*Autonomic drugs:	
Parasympatholytic (anticholinergic) agents (except tropane derivatives):	
*Quaternary ammonium compounds:	
Diphemanil methylsulfate	SCH.
Hexocyclium methylsulfate	ABB.
Isopropamide iodide	SK.
Mepenzolate bromide	LKL.
Methantheline bromide	SRL.
Pipenzolate bromide	LKL.
Propantheline bromide	SRL.
Tridihexethyl iodide	ACY.
*Tertiary amines:	
Adiphenine hydrochloride	CGY.
Aminopentamide	BJL.
Benactyzine	BKL.
Cycrimine hydrochloride	LIL.
Dicyclomine hydrochloride	BKC.
Orphenadrine citrate	RIK.
Orphenadrine hydrochloride	RIK.
Oxyphencyclimine hydrochloride	PFZ.
Piperidolate hydrochloride	LKL.
Thiophenamil hydrochloride	x.
Trihexyphenidyl hydrochloride	ACY, SDW.
*Sympathomimetic (adrenergic) agents:	
Cinnamedrine hydrochloride	SDW.
Cyclopentamine hydrochloride	LIL.
Epinephrine bitartrate (levo)	SDW.
*Epinephrine hydrochloride (racemic)	ECL, VB, x.
Isoproterenol hydrochloride	SDW.
Levarterenol bitartrate	SDW.
Metaraminol bitartrate	SDW.
Methoxyphenamine hydrochloride	x.
Naphazoline hydrochloride	CGY.
Nordefrin hydrochloride	SDW.
Nylidrin hydrochloride	BKL.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Autonomic drugs--Continued	
*Sympathomimetic (adrenergic) agents--Continued	
Phenylephrine	GAN, SDW.
Phenylephrine bitartrate	GAN.
Phenylephrine hydrochloride	CTN, GAN, HEX, ORT, SDW.
*Phenylpropanolamine hydrochloride	ARS, BKL, HEX, NEP, ORT.
Propylhexedrine	HEX, SK.
Protokylol hydrochloride	LKL.
Pseudoephedrine hydrochloride	BUR, GAN.
Pseudoephedrine sulfate	GAN.
Tetrahydrozoline hydrochloride	PFZ.
*Other autonomic drugs:	
Parasympatholytic tropane derivatives:	
Anisotropine methylbromide	x.
Benztropine mesylate	x.
Homatropine	HEX.
Homatropine hydrobromide	HEX.
Homatropine methylbromide	CTN, HEX.
Parasympathomimetic (cholinergic) agents:	
Acetylcholine chloride	MRK.
Methacholine chloride	MRK, RSA.
Neostigmine bromide	HEX.
Physostigmine salicylate	PEN.
Pyridostigmine bromide	HOF.
Sympatholytic (antiadrenergic) agent: Ergonovine maleate.	LIL.
*Cardiovascular agents:	
*Vasodilators:	
Clonitrate	APD.
Cyclandelate	WYT.
Dioxyline phosphate	MAL.
Ethyl nitrite	MAL.
Glyceryl trinitrate	APD.
Isosorbide dinitrate	APD.
Mannitol hexanitrate	APD.
Nicotinyl alcohol tartrate	HOF.
Pentaerythritol tetranitrate	APD.
*Other cardiovascular agents:	
Antihypertensive agents:	
Guanethidine sulfate	CGY.
Hydralazine hydrochloride	CGY.
Methyldopa	MRK.
Pargyline hydrochloride	ABB.
Rauwolfia and veratrum alkaloids:	
Alkavervir	RIK.
Alseroxylon	RIK.
Raunormine	PEN.
Reserpine	PEN.
Bioflavonoids:	
Hesperidin	SKG.
Hesperidin methyl chalcone	SKG.
Lemon bioflavonoids	SKG.
Naringin	SKG.
Rutin	PEN.
Cardiac drugs:	
Procainamide hydrochloride	OMS.
Quinidine sulfate	HEX.
Colestipol hydrochloride	x.
*Central depressants and stimulants:	
*Amphetamines:	
*Amphetamine base and sulfate (racemic):	
Amphetamine (racemic)	HEX, ORT.
Amphetamine sulfate (racemic)	ARN, HEX, SK.
Dextroamphetamine	HEX.
Dextroamphetamine carboxymethylcellulose	ARN.
Dextroamphetamine hydrochloride	ARN, HEX.
Dextroamphetamine phosphate	ARN, HEX.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Amphetamines--Continued	
Dextroamphetamine sulfate	ARN, HEX, SK.
Dextroamphetamine tannate	ARN.
Levamphetamine	HEX.
Levamphetamine succinate	ARN.
Methamphetamine (dextrol)	HEX.
Methamphetamine (levo)	HEX.
Methamphetamine hydrochloride (dextro)	ARN, GAN, HEX.
Methamphetamine hydrochloride (racemic)	ARN, HEX.
*Analgestics and antipyretics:	
*Aspirin	DOW, MLS, MON, NOR, SDG.
*Salicylates (except aspirin):	
Aluminum aspirin	ABB, SCH.
Phenyl salicylate	DOW.
Potassium salicylate	HN.
Salicylamide	CFC, PEN.
Salicylsalicylic acid	CFC, NES.
Sodium salicylate	DOW, HN.
Strontium salicylate	CFC.
*Other analgesics and antipyretics:	
Acetaminophen	ATP, NEP, PEN.
p-Aminobenzoic acid and salts:	
Aminobenzoic acid	LEM.
Calcium aminobenzoate	GAN.
Magnesium aminobenzoate	LEM.
Potassium aminobenzoate	GAN, LEM.
Sodium aminobenzoate	GAN.
Anileridine hydrochloride	MRK.
Calcium succinate	LEM.
Colchicine	PEN.
Dextropropoxyphene napsylate	LIL.
Ethoheptazine citrate	WYT.
Indomethacin	MRK.
Mefenamic acid	PD.
Meperidine hydrochloride	PEN, SDW, WYT.
Methadone hydrochloride	LIL.
Oxycodone hydrochloride	EN.
Oxyphenbutazone	CGY.
Pentazocine	SDW.
Pentazocine hydrochloride	SDW.
Phenacetin	MON.
Phenylbutazone	CGY.
Propoxyphene hydrochloride	LIL.
*Antidepressants:	
Amitriptyline	MRK.
Desipramine hydrochloride	LKL.
Doxepin hydrochloride	PFZ.
Imipramine hydrochloride	CGY.
Nialamide	PFZ.
Nortriptyline	LIL.
Phenelzine sulfate	NEP.
Protriptyline	MRK.
*Barbiturates:	
Allylbarbituric acid	GAN.
Allylbarbituric acid, sodium	GAN.
Amobarbital	LIL.
Amobarbital, sodium	GAN, LIL.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Barbiturates--Continued	
Barbital	GAN, LIL.
Barbital, sodium	GAN.
Butabarbital	ABB, GAN.
Butabarbital, sodium	ABB, GAN.
Hexobarbital	GAN, SDW.
Mephobarbital	SDW.
Metharbital	ABB.
Methohexital, sodium	LIL.
Pentobarbital	ABB, GAN.
Pentobarbital, sodium	ABB, GAN, PD.
Phenobarbital	GAN, MAL.
Phenobarbital, sodium	GAN, MAL.
Secobarbital	GAN.
Secobarbital, sodium	GAN, LIL.
Talbutal	SDW.
Thiamylal, sodium	PD.
Thiopental, sodium	ABB.
Vinbarbital	x.
*Hydrocodone bitartrate	MAL, MRK, PEN.
*Hypnotics and sedatives (except barbiturates):	
Carbromal	PD.
Ethchlorvynol	ABB.
Ethinamate	LIL.
Glutethimide	CGY.
Methyprylon	HOF.
*Skeletal muscle relaxants and tranquilizers:	
Skeletal muscle relaxants:	
Carisoprodol	BKL.
Chlorphenesin carbamate	UPJ.
Mephenesin	BLK, HEX, OMS.
Mephenesin carbamate	OMS.
Phenaglycodol	LIL.
Succinylcholine chloride	ABB, BUR.
Tubocurarine	ABB, OMS.
Tranquilizers:	
Buclizine hydrochloride	PFZ.
Chlordiazepoxide hydrochloride	HOF.
Chlormezanone	SDW.
Chlorprothixene	HOF.
Diazepam	HOF.
Ethomoxane hydrochloride	LIL.
Hydroxyzine hydrochloride	PFZ.
Hydroxyzine pamoate	PFZ.
Mebutamate	BKL.
*Meprobamate	ABB, BKL, x.
Methaqualone	HEX, x.
Methaqualone hydrochloride	x.
Oxazepam	WYT.
Phenothiazine derivatives:	
Chlorpromazine hydrochloride	SK.
Fluphenazine hydrochloride	SCH.
Perphenazine	SCH.
Prazepam	NEP.
Prochlorperazine edisylate	SK.
Prochlorperazine maleate	SK.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Skeletal muscle relaxants and tranquilizers--Continued	
Tranquilizers--Continued	
Phenothiazine derivatives--Continued	
Promazine hydrochloride	WYT.
Promethazine hydrochloride	WYT.
Thiothixene hydrochloride	PFZ.
Trifluoperazine hydrochloride	SK.
Tybamate	BKL.
*Other central depressants and stimulants:	
Anticonvulsants:	
Diphenylhydantoin	PD.
Diphenylhydantoin, sodium	PD.
Ethosuximide	PD.
Ethotoin	ABB.
Methsuximide	PD.
Phenacemide	ABB.
Phensuximide	PD.
Antitussives:	
Benzonatate	CGY.
Caramiphen edisylate	SK.
Codeine	MRK.
Dextromethorphan hydrobromide	HOF.
Dimethoxanate hydrochloride	BKL.
Ethylmorphine hydrochloride	MAL, MRK.
Levopropoxyphene napsylate	LIL.
Thebaine	MRK.
General anesthetic: Vinyl ether	MRK.
Stimulants:	
Benzphetamine hydrochloride	x.
Caffeine:	
Natural	GNF.
Synthetic	PFZ.
Caffeine, citrated	MAL, MRK.
Caffeine sodium benzoate	GAN, MAL.
Chlorphentermine hydrochloride	NEP.
Diethylpropion hydrochloride	BKC, x.
Nikethamide	CGY.
Phentermine	HEX.
*Dermatological agents and local anesthetics:	
*Salicylic acid[1]	DOW, HN, MON, SDH.
*Other dermatological agents and local anesthetics:	
Dermatological agents:	
Allantoin	FIN, HFT.
Aluminum phenolsulfonate	MAL, SAL.
Ammonium phenolsulfonate	SAL.
Bismuth subgallate	MAL.
Glycol salicylate	RDA.
Scarlet red	ACS.
Sodium phenolsulfonate	SAL.
Zinc phenolsulfonate	MAL, SAL.
Local anesthetics:	
Butacaine	ABB.
Butacaine sulfate	ABB.
Butamben picrate	ABB.
Butyl aminobenzoate (Butamben)	ABB.
Dibucaine	CGY.

See footnotes at end of table.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Dermatological agents and local anesthetics--Continued	
*Other dermatological agents and local anesthetics--Continued	
Local anesthetics--Continued	
Dibucaine hydrochloride	CGY.
Lidocaine	AST, LEM, RLS, SDW.
Oxethazine	WYT.
Piperocaine hydrochloride	LIL.
Podophyllum resin	PEN.
Pramoxine hydrochloride	ABB.
Procaine hydrochloride	PFZ, UOP.
Proparacaine hydrochloride	OMS.
Tetracaine	SDW.
Tetracaine hydrochloride	SDW.
*Diagnostic agents:	
*Roentgenographic contrast media:	
Acetrizoate, sodium	MAL.
Diatrizoate, meglumine	OMS, SDW.
Diatrizoate, sodium	OMS, SDW.
Iodohippurate, sodium	MAL.
Iodopyracet	SDW.
Iopanoic acid	SDW.
Iophendylate	x.
Iothalamate, meglumine	MAL.
Iothalamate, sodium	MAL.
Meglumine iodipamide	OMS.
Methiodal, sodium	SDW.
Sodium iodipamide	OMS.
*Other diagnostic agents:	
Betazole hydrochloride	LIL.
Evans blue (blood volume determination)	NEP.
Indocyanine green (cardiac output test)	x.
Metyrapone (pituitary function test)	CGY.
Phenolphthalein monophosphate dicyclohexylamine	NEP.
*Expectorants and mucolytic agents:	
*Ethylenediamine dihydriodide	ABR, HFT, ISC, MAL, WHL.
Guaiacol and its derivatives:	
Glyceryl guaiacolate	GAN, HEX, x.
Guaiacol	MON.
Potassium guaiacolsulfonate	HN.
Iodinated glycerol	x.
Lobeline sulfate	ABB.
Terpin hydrate	PEN.
Thonzonium bromide	NEP.
*Gastrointestinal agents:	
*Choleretics and hydrocholeretics:	
Bile acids, oxidized	SRL, WIL.
Dehydrocholic acid	WIL.
Florantyrone	SRL.
Iron bile salts	LIL, WIL.
Ox bile extract	ABB, LIL, WIL.
Sodium dehydrocholate	WIL.
Tocamphyl	x.
*Choline chloride (all grades):	
Feed grade	COM, DA, HFT, TMH.
Medicinal grade	HFT.
Technical grade	RH.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Gastrointestinal agents--Continued	
*Other gastrointestinal 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.
Danthron	GAF.
Dihydroxy aluminum aminoacetate	CHT.
Magnesium citrate	MAL.
Methionine (medicinal grade)	DOW.
Methionine, hydroxy analogue, calcium salt	DUP, MON.
Oxyphenisatin acetate	HEX.
Pectin	SKG.
Phenolphthalein	MON.
Podophyllum	ABB.
Sitosterols	LIL, UPJ.
Sodium tartrate	MAL.
*Hemotological agents:	
Anticoagulants:	
Ammonium heparin	ABB, WIL.
Anisindione	SCH.
Bishydroxycoumarin	ABB.
Sodium heparin	ABB, RIK, WIL.
Sodium warfarin	EN.
Other hematological agents:	
Aminocaproic acid	ACY.
Cellulose, oxidized	EKT.
Dextran	PHR.
*Hormones and synthetic substitutes:	
*Corticosteroids:	
Betamethasone	SCH.
Betamethasone acetate	SCH.
Betamethasone phosphate	SCH.
Betamethasone valerate	SCH.
Cortisone	MRK, UPJ.
Cortisone acetate	MRK, UPJ.
Dexamethasone	MRL, SCH.
Dexamethasone phosphate	MRK.
Dichlorisone acetate	SCH.
1,2-Dihydrotriamcinolone	UPJ.
17α,21-Dihydroxy-16α-methyl-9(11)-progesterone 21 acetate.	UPJ.
Fludrocortisone acetate	UPJ.
Fluorometholone	UPJ.
9-Fluoroprednisolone acetate	UPJ.
Fluprednisolone	UPJ.
Hydrocortisone	MRK, PFZ, UPJ.
Hydrocortisone acetate	MRK, UPJ.
Hydrocortisone phosphate	MRK.
Medrysone	UPJ.
Methylprednisolone	UPJ.
Prednisolone	MRK, UPJ.
Prednisolone acetate	UPJ.
Prednisone	UPJ.
Triamcinolone	ACY, OMS.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Hormones and synthetic substitutes--Continued	
*Synthetic hypoglycemic agents:	
Acetohexamide	LIL.
Chlorpropamide	PFZ.
Phenformin hydrochloride	BKL.
Tolazamide	x.
Tolbutamide	x.
*Other hormones and synthetic substitutes:	
Anabolic agents and androgens:	
Fluoxymesterone	UPJ.
Testosterone cypionate	UPJ.
Antithyroid agents:	
Methimazole	LIL.
Propylthiouracil	ACY, CTN.
2-Thiouracil	ACY.
Estrogens:	
Chlorotrianisene	BKC, x.
Dienestrol diacetate	SCH.
Diethylstilbestrol	CTN, LIL.
Diethylstilbestrol diphosphate	x.
Estrogenic substances, conjugated	ORG.
Natural estrogenic substance	ORG.
Piperazine estrone sulfate	ABB.
Progestogens:	
Medroxyprogesterone acetate	x.
Norgestrel	WYT.
Progesterone	x.
Other hormones:	
Corticotropin (ACTH) (pituitary)	ARP, ORG.
Insulin (pancreas)	ARP, LIL.
Thyroid	LIL.
*Renal-acting and edema-reducing agents:	
*Mercurial diuretics:	
Meralluride	LKL.
Mersalyl acid	SDW.
Sodium mercaptomerin	WYT.
*Theophylline derivatives:	
Aminophylline	GAN, SRL.
Oxtriphylline	NEP.
Theophylline sodium glycinate	CHT.
*Other renal-acting and edema-reducing agents:	
Acetazolamide	ACY.
Benzothiadiazine derivatives:	
Benzthiazide	PFZ.
Chlorothiazide	MRK.
Cyclothiazide	LIL.
Flumethiazide	OMS.
Hydrochlorothiazide	ABB, CGY, MRK.
Methyclothiazide	ABB.
Polythiazide	PFZ.
Trichlormethiazide	SCH.
Chlorthalidone	CGY.
Dichlorphenamide	MRK.
Ethacrynic acid	MRK.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Renal-acting and edema-reducing agents--Continued	
*Other renal-acting and edema-reducing agents--Continued	
Probenecid	MRK.
Spironolactone	SRL.
Triamterene	ACY, SK.
*Therapeutic nutrients:	
*Amino acids and salts:	
Amino acid mixtures	ABB, MDJ, STA.
Aspartic acid and salts:	
Aspartic acid	HEX.
Potassium aspartate	WYT.
Beta-alanine	DA, HFT.
Glutamic acid and salts:	
Ammonium glutamate	IMC.
L-Arginine-L-glutamate	ABB.
Glutamic acid	IMC, LEM.
Glutamic acid hydrochloride	IMC, LEM.
Potassium glutamate	IMC, LEM.
Lysine (feed grade)	MRK.
Lysine hydrochloride	MRK.
*Calcium salts:	
Calcium glucoheptonate	PFN.
Calcium gluconate	DLI, PFZ, WHL.
Calcium phytate	STA.
*Ferrous gluconate	DLI, PFZ, SDW.
*Other therapeutic nutrients:	
Copper gluconate	PFZ.
Liver concentrate	WIL.
Liver, desiccated	WIL.
Magnesium gluconate	PFZ.
Manganese gluconate	PFZ.
Potassium gluconate	DLI, PFZ.
*Vitamins:	
*Vitamin A alcohol and esters:	
Beta-carotene (Provitamin A)	EKT, HOF.
Vitamin A acetate (feed grade)	HOF, PFZ.
Vitamin A acetate (medicinal grade)	HOF, PFZ.
Vitamin A alcohol	HOF, PFZ.
*Vitamin A palmitate (feed grade)	EKT, HOF, PFZ.
Vitamin A palmitate (medicinal grade)	EKT, HOF, PFZ.
*Vitamin B-complex:	
*Niacin (all grades):	
*Feed grade	DA, MRK, RIL.
Medicinal grade	MRK, SCR.
*Niacinamide	MRK, NEP, PD, RIL, SCR.
*Pantothenic acid and derivatives:	
Calcium pantothenate (dextrol)	HFT.
Calcium pantothenate (racemic) - calcium chloride complex.	CKL, DA, HFT, PHF.
*Calcium pantothenate (racemic) (feed grade)	CKL, DA, DLI, HFT, PHF.
Calcium pantothenate (racemic) (medicinal grade)	DA. HFT.
Choline pantothenate	DLI.
Dexpanthenol	HFT, HOF.
Panthenol (racemic)	HOF, PD.
Sodium pantothenate	PD.

TABLE 2.--Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
*Vitamins--Continued	
*Vitamin B-complex--Continued	
*Other B-complex vitamins:	
Biotin	HOF.
Cyanocobalamin:	
Cyanocobalamin (feed grade)	GPR, MRK, PMP.
Cyanocobalamin (medicinal grade)	MRK.
Cyanocobalamin (U.S.P. crystalline)	MRK.
Cyanocobalamin with intrinsic factor concentrate.	WIL.
Folic acid	ACY.
Inositol	STA.
Niacinamide hydrochloride	NEP.
Pyridoxine	HOF, MRK.
Riboflavin (feed grade)	DA, HOF, MRK.
Riboflavin (medicinal grade)	HOF, MRK.
Riboflavin-5-phosphate, sodium	HOF.
Thiamine hydrochloride	HOF, MRK.
Thiamine mononitrate	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, PHF, VTM.
7-Dehydrocholesterol (Provitamin D_3)	VTM.
Ergocalciferol (Vitamin D_2)	PHF, SCR, VTM.
*Vitamin E:	
d-Alpha tocopherol	CW, EKT.
dl-Alpha tocopherol	HOF.
d-Alpha tocopheryl acetate	CW, EKT.
dl-Alpha tocopheryl acetate	HOF.
dl-Alpha tocopheryl acetate (feed grade)	HOF.
d-Alpha tocopheryl acid succinate	CW, EKT.
*Vitamin K:	
Menadione	ABB, HET, WHL.
Menadione sodium bisulfite	ABB, DA, DLI, HET, WHL.
Phytonadione	MRK.
*Miscellaneous medicinal chemicals:	
Antineoplastic agents:	
Azothioprine	BUR.
Mercaptopurine	BUR.
Thioguanine	BUR.
Vinblastine sulfate	LIL.
Vincristine sulfate	LIL.
Smooth muscle relaxants:	
Alverine	CTN.
Alverine citrate	x.
Alverine hydrochloride	CTN.
Papaverine hydrochloride	LIL, MRK.
Sodium benzyl succinate	FIN.
Unclassified medicinal chemicals:	
Allopurinol	BUR.
Dopamine hydrochloride	SDW.
Hydrastine hydrochloride	PEN.
Penicillamine (copper chelating agent)	MRK.

[1] Producers of technical grade are listed in "Cyclic intermediates."
[2] Producers of technical grade are listed in "Miscellaneous chemicals."

TABLE 3.--Medicinal chemicals: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of medicinal chemicals to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
ABB	Abbott Laboratories
ABR	West Agro-Chemicals, Inc.
ACS	Allied Chemical Corp., Specialty Chemicals Div.
ACY	American Cyanamid Co.
APD	Atlas Chemical Industries, Inc.
ARN	Arenol Chemical Corp.
ARP	Armour Pharmaceutical Products Co.
ARS	Arsynco, Inc.
AST	Astra Pharmaceutical Products, Inc.
ATP	Atco Chemical-Industrial Products, Inc., Fine Chemicals Div.
BEE	Beecham, Inc.
BJL	Burdick & Jackson Laboratories, Inc.
BKC	J. T. Baker Chemical Co.
BKL	Millmaster Onyx Corp., Millmaster Chemical Div., Berkeley Chemical Dept.
BPC	Stauffer Chemical Co., Benzol Products Div.
BRS	Bristol-Myers Co., Bristol Laboratories Div.
BUR	Burroughs Wellcome Co.
CFC	Sun Chemical Corp.
CGY	Ciba-Geigy Corp., Ciba Pharmaceutical Co.
CHT	Chattam Drug & Chemical Co., Chattem Chemicals Div.
CKL	Chemlek Laboratories, Inc.
COM	Commerical Solvents Corp.
CTN	Chemetron Corp., Organic Chemical Div.
CW	General Mills Chemicals, Inc.
DA	Diamond Shamrock Corp.
DLI	Dawe's Laboratories, Inc.
DOW	Dow Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc.
ECL	Eastside Chemical Laboratory
EK	Eastman Kodak Co.:
EKT	Tennessee Eastman Co. Div.
EN	Endo Laboratories, Inc.
FIN	Fine Organics, Inc.
FIS	Fisher Chemical Co., Inc.
FLM	Fleming Laboratories, Inc.
GAF	GAF Corp., Chemical Div.
GAN	Gane's Chemical Works, Inc.
GIV	Givaudan Corp.
GNF	General Foods Corp., Maxwell House Div.
GPR	Grain Processing Corp.
HET	Heterochemical Corp.
HEX	Hexagon Laboratories, Inc.
HFT	Hoffman-Taff, Inc.
HN	Tenneco Chemicals, Inc.
HOF	Hoffmann-LaRoche, Inc.
HYN	Hynson, Westcott & Dunning, Inc.
IMC	International Minerals & Chemical Corp.
ISC	West Agro-Chemicals, Inc.
JCC	Jefferson Chemical Co., Inc.
KPT	Koppers Co., Inc., Organic Materials Div.
LEM	Lemke Chemicals, Inc.
LIL	Eli Lilly & Co.
LKL	Lakeside Laboratories Div. of Colgate-Palmolive Co.
MAL	Mallinckrodt Chemical Works
MDJ	Mead Johnson & Co.
MLS	Miles Laboratories, Inc., Marschall Div.
MON	Monsanto Co.
MRK	Merck & Co., Inc.
NEP	Nepera Chemical Co., Inc.
NES	Nease Chemical Co., Inc.
NOR	Norwich Pharmacal Co.
NTL	National Lead Co.
OMS	E. R. Squibb & Sons, Inc.
ORG	Organics, Inc.
ORT	Roehr Chemicals, Inc.
PCW	Pfister Chemical, Inc.
PD	Parke, Davis & Co.
PEN	CPC International, Inc., Penick Div.
PFN	Pfanstiehl Laboratories, Inc.
PFZ	Pfizer, Inc.
PHF	Peter Hand, Inc.
PHR	Pharmachem Corp.
PMP	Premier Malt Products, Inc.
PYL	Polychemical Laboratories, Inc.
RDA	Rhodia, Inc.
RH	Rohm & Haas Co.
RIK	Riker Laboratories, Inc. Sub. of 3M Co.
RIL	Reilly Tar & Chemical Corp.
RLS	Rachelle Laboratories, Inc.
RSA	R.S.A. Corp.
SAL	Salsbury Laboratories
SCH	Schering Corp.
SCR	R. P. Scherer Corp.
	Sterling Drug Corp.:
SDG	Glenbrook Laboratories Div.
SDH	Hilton-Davis Chemical Co. Div.
SDW	Winthrop Laboratories Div.
SEL	Selney Co., Inc.
SHC	Shell Oil Co., Shell Chemical Co. Div.

TABLE 3.--Medicinal chemicals: Directory of manufacturers, 1970--Continued

Code identification	Name of company	Code identification	Name of company
SK	Smith, Kline & French Laboratories	UPJ	Upjohn Co.
SKG	Sunkist Growers, Inc.		
SRL	G.D. Searle & Co.	VB	Vermilye-Bell
STA	A. E. Staley Manufacturing Co.	VTM	Vitamins, Inc.
TMH	Thompson-Hayward Chemical Co.	WHL	Whitmoyer Laboratories, Inc.
		WIL	Wilson & Co., Inc., Wilson Laboratories Div.
UCC	Union Carbide Corp.	WRC	Ventron Corp.
UOP	Universal Oil Products Co., UOP Chemical Div.	WTL	Pennwalt Corp., Lucidol Div.
		WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 1970 amounted to 100.3 million pounds -- a decrease by 16.7 percent from the 120.4 million pounds produced in 1969 (table 1).[1] Sales of these materials in 1970 amounted to 91.5 million pounds, valued at $89.1 million, compared with 103.6 million pounds, valued at $93.6 million in 1969.

Production of cyclic flavor and perfume materials in 1970 amounted to 52.5 million pounds; sales amounted to 42.9 million pounds, valued at $52.0 million. The individual chemical in the cyclic group produced in the greatest volume in 1970 again was benzyl alcohol (8.4 million pounds).

U.S. output of acyclic flavor and perfume materials in 1970 amounted to nearly 48 million pounds; sales of these materials amounted to 48.6 million pounds, valued at $37.1 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. Output of this chemical in 1970 totaled 37.2 million pounds, compared with 48.5 million pounds in 1969, a decrease by more than 23 percent.

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

TABLE 1.--Flavor and perfume materials: U.S. production and sales, 1970

[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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*per pound*
Grand total	100,321	91,503	89,102	$0.97
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total	52,543	42,916	52,045	1.21
Benzenoid and Naphthalenoid				
Total	41,109	35,215	38,891	1.10
4-Allyl-2-methoxyphenol (Eugenol)	435	348	953	2.74
4-Allyl-1,2-(methylenedioxy)benzene (Safrole)	277	71	69	.98
p-Anisaldehyde	1,446	...	...	...
Benzophenone[2]	357	126	140	1.11
Benzyl acetate	1,530	1,554	646	.42
Benzyl alcohol[2]	8,389	9,101	2,858	.31
Benzyl benzoate	316	469	217	.46
Benzyl butyrate	...	7	11	1.41
Benzyl cinnamate	13	6	24	3.99
Benzyl salicylate	241	257	317	1.26
Cinnamaldehyde	1,510	1,135	846	.75
Cinnamyl acetate	...	5	14	2.73
Cinnamyl alcohol	242	195	311	1.60
Cinnamyl anthranilate	...	1	6	10.56
Isobutyl phenylacetate	21	17	15	.93
Isobutyl salicylate	...	45	36	.81
Isopentyl salicylate	767	646	412	.64
2-Methoxy-4-propenylphenol (Isoeugenol)	100	115	450	3.85
4'-Methylacetophenone	55	28	47	1.69
p-Methylanisole	26	19	18	.93
Methyl anthranilate	...	250	396	1.59
α-Methylbenzyl acetate (Styralyl acetate)	70	68	61	.90
α-Methylcinnamaldehyde	21	10	20	1.94
Methyl phenylacetate	19	18	19	1.07
Methyl salicylate	5,396	5,274	2,418	.46
Phenethyl acetate	86	79	87	1.10
2-Phenethyl phenylacetate	...	21	43	2.03
3-Phenyl-1-propanol (Hydrocinnamic alcohol)	55	41	77	1.85
p-Propenylanisole (Anethole)	2,363	2,326	1,354	.58
All other benzenoid and naphthalenoid materials	17,374	12,983	27,026	2.08
Terpenoid, Heterocyclic, and Alicyclic				
Total	11,434	7,701	13,154	1.71
Cedryl acetate	213	107	265	2.48
Essential oils, chemically modified	214	126	471	3.74
4-Hydroxyundecanoic acid, γ-lactone (γ-Undecalactone)	...	8	34	4.11
α-Ionone	96	56	266	4.78
Isobornyl acetate	1,148	980	357	.36
Menthol, synthetic, tech. & U.S.P	399	431	1,675	3.89
Methylionones	580	398	1,748	4.39
Terpineols	3,349	3,261	1,211	.37
α-Terpinyl acetate	482	425	273	.64
Vetivenyl acetate	41	36	559	15.68
All other terpenoid, heterocyclic and alicyclic materials	4,912	1,873	6,295	3.36

See footnotes at end of table.

TABLE 1.--Flavor and perfume materials: U.S. production and sales, 1970--Continued

Material	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*per pound*
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total	47,778	48,587	37,057	$0.76
Allyl hexanoate	14	12	31	2.53
Citronellyl acetate	...	24	48	1.99
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	29	17	41	2.41
3,7-Dimethyl-trans-2,6-octadienal (Citral a; Geranial)	81	82	304	3.71
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	3,144	2,234	2,246	1.01
3,7-Dimethyl-6-octen-1-ol (Citronellol)	958	839	1,400	1.67
Ethyl butyrate	422	421	263	.62
Ethyl heptanoate	7	7	13	1.80
Ethyl hexanoate (Ethyl caproate)	17	7	16	2.31
Ethyl nonanoate	2	2	5	3.33
Geranyl acetate	100	99	178	1.79
Geranyl formate	12	13	34	2.64
Glutamic acid, monosodium salt (Monosodium glutamate)	37,210	...	...	...
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	533	491	2,488	5.06
Isopentyl butyrate	147	72	58	.80
Isopentyl formate	...	3	5	1.39
Isopentyl isovalerate	27	...	...	...
Rhodinol	10	10	276	28.31
All other acyclic materials	5,065	44,254	29,651	.67

[1] Calculated from the unrounded figures.
[2] Includes some technical grade.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970

[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 2 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes are taken from table 3]

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
Benzenoid and Naphthalenoid	
2'Acetonaphthone	GIV.
Acetophenone	GIV. UOP.
5-Acetyl-1,1,2,3,3,6-hexamethylindan	PFW.
p-Allylanisole	GIV.
Allyl cinnamate	RT.
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	GIV.
*4-Allyl-2-methoxyphenol (Eugenol)	ARS, CI, FB, GIV, IFF, LUE, PEN, RT, UNG, UOP.
4-Allyl-2-methoxyphenol acetate (Eugenyl acetate)	GIV.
*4-Allyl-1,2-(methylenedioxy)benzene (Safrole)	FB, GIV, OPC.
Allyl phenoxyacetate	GIV.
*p-Anisaldehyde	GIV, OPC, UOP.
Anisole (Methyl phenyl ether)	GIV.
Anisyl acetate	ELN, GIV.
Anisyl butyrate	RT.
Anisyl formate	RT.
Benzaldehyde	SHL.
*Benzophenone	GAF, GIV, NEO, PD, UOP.
*Benzyl acetate	GIV, OPC, SHL, UOP.
*Benzyl alcohol	BPC, HN, OPC, SHL, UOP, VEL.
*Benzyl benzoate	MON, OPC, PFZ, UOP, VEL.
Benzyl butyl ether	SHL.
*Benzyl butyrate	ELN, FB, GIV.
*Benzyl cinnamate	FB, GIV, UOP.
2-Benzyldioxolane	GIV.
Benzyl ether	SHL, VEL.
Benzyl formate	ELN, GIV, UOP.
Benzyl glyceryl acetal	CI, GIV.
Benzyl isobutyrate	GIV.
Benzyl isopentyl ether	GIV.
1-(Benzyloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether).	GIV, UOP.
Benzyl phenylacetate	ELN, GIV.
Benzyl propionate	ELN, FB, GIV.
*Benzyl salicylate	ELN, GIV, OPC, UNG, UOP.
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.
Butyl phenylacetate	GIV.
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene	GIV.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)	GIV.
Carvacrol	GIV.
*Cinnamaldehyde	CI, FB, UOP.
Cinnamic acid	BPC.
*Cinnamyl acetate	ELN, FB, GIV.
*Cinnamy alcohol	FB, GIV, NEO, UOP.
*Cinnamyl anthranilate	FEL, GIV, RT.
Cinnamyl butyrate	FB.
Cinnamyl cinnamate	FB.
Cinnamyl propionate	ELN, GIV, UOP.
Coumarin	DOW, RDA.
o-Cresyl methyl ether	CI.
Cuminyl alcohol	GIV.
trans-Decahydro-β-naphthol	IFF.
Dihydrocoumarin (Melilotol)	ARS.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrole)	GIV.
p-α-Dimethylbenzyl alcohol	GIV.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
3,7-Dimethyl-1,6-octadien-3-yl anthranilate (Linalyl anthranilate).	FMT.
3,7-Dimethyl-1,6-octadien-3-ol, benzoate (Linalyl benzoate).	HOF.
3,7-Dimethyl-1,6-octadien-3-ol, cinnamate	HOF.
3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate).	GIV.
α,α-Dimethylphenethyl acetate	IFF.
α,α-Dimethylphenethyl alcohol	IFF.
Diphenylmethane (Benzylbenzene)	ARA.
1,3-Diphenyl-2-propanone (Dibenzyl ketone)	GIV.
p-Ethoxy benzaldehyde	GIV.
1-Ethoxy-2-hydroxy-4-propenylbenzene	SHL.
3-Ethoxy-4-hydroxybenzaldehyde (Ethylvanillin)	MON, RDA, SLV.
2-Ethoxynaphthalene	GIV.
Ethyl anthranilate	FB.
Ethyl benzoate	ELN.
Ethyl cinnamate	GIV.
Ethyl α,β-epoxy-β-methylhydrocinnamate	ELN.
2-Ethylhexyl salicylate	FEL.
Ethyl phenylacetate	GIV.
Ethyl phenylglycidate	GIV, PFW.
Ethyl salicylate	FB.
3'-Ethyl-5',6',7',8'-tetrahydro-5',5',8',8'-tetramethyl-2'-acetonaphthone.	GIV, UOP.
α-Hexylcinnamaldehyde	CI, IFF.
Hydratropaldehyde	GIV, IFF.
Hydratropaldehyde, dimethyl acetal	GIV, IFF.
Hydrocoumarin	GIV, UOP.
Hydroxycitronellalmethyl anthranilate	GIV.
2-Hydroxy-3-ethoxybenzaldehyde (ortho Ethyl vanillin)	RDA
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone	GIV.
Indole	GIV.
Isoamyl phenylacetate	GIV.
Isobutyl benzoate	ELN, TCC.
p-Isobutyl d-ethoxybenzaldehyde (Rhodial)	RDA.
*Isobutyl phenylacetate	ELN, FB, GIV, OPC, RT.
*Isobutyl salicylate	FB, GIV, UOP.
Isopentyl benzoate	GIV.
*Isopentyl salicylate	FB, GIV, OPC, UOP.
p-Isopropylbenzaldehyde (Cumaldehyde)	GIV.
Isopropyl cinnamate	RT.
p-Isopropyl-α-methylhydrocinnamaldehyde (Cyclamen-aldehyde).	GIV, RDA.
p-Mentha-1,8-diene (Limonene)	SKG.
Menthyl anthranilate	PFW.
4'-Methoxyacetophenone (Acetanisole)	GIV.
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)	CI, GIV, SHL, UOP.
*4'-Methylacetophenone	ELN, GIV, OPC, UOP.
*p-Methylanisole	GIV, OPC, UOP.
*Methyl anthranilate	FB, OPC, PFW, SHL, SW, UNG.
Methyl anthranilydene-p-isopropylmethylhydro-cinnamaldehyde.	RDA.
Methyl benzoate	HN.
*α-Methylbenzyl acetate (Styralyl acetate)	CI, ELN, FB, GIV, UNG.
*α-Methylcinnamaldehyde	CI, FB, GIV.
Methyl cinnamate	FB, UOP.
6-Methylcoumarin	GIV.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
1,2-(Methylenedioxy)-4-propenylbenzene (Isosafrole)	GIV.
p-Methylhydratropaldehyde	GIV.
1-Methyl-4-isohexyl-hexahydrobenzaldehyde (Vernaldehyde)	GIV.
Methyl N-methylanthranilate	GIV, OPC.
*Methyl phenylacetate	ELN, GIV, OPC.
*Methyl salicylate	CFC, DOW, HN, MON, PEN.
6-Oxa-1,1,2,3,3,8-hexamethyl-2,3,5,6,7,8-hexahydro 1H-benz(f)indene (Galaxolide).	IFF
2-Oxa-4,5,5,8,8-pentamethyl-1,2,3,4,5,6,7,8-octahydro-anthracene.	IFF.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan	GIV.
α-Pentylcinnamaldehyde	CI, FB, GIV, UOP.
*Phenethyl acetate	GIV, IFF, NEO.
Phenethyl alcohol	IFF.
Phenethyl benzoate	IFF.
Phenethyl n-butyrate	IFF.
Phenethyl formate	ELN, IFF.
Phenethyl isobutyrate	GIV, IFF.
Phenethyl isovalerate	GIV, OPC.
*2-Phenethyl phenylacetate	CI, ELN, GIV, IFF, UOP.
Phenethyl propionate	GIV.
Phenethyl salicylate	GIV.
2-Phenoxyethyl isobutyrate	ELN, GIV, IFF.
Phenylacetaldehyde	GIV.
Phenylacetaldehyde, dimethyl acetal	GIV.
o-Phenylanisole (2-Methoxybiphenyl)	GIV.
Phenylethyl acetal	GIV.
Phenylethyl tiglate	FB.
*3-Phenyl-1-propanol (Hydrocinnamic alcohol)	ELN, FB, GIV, UOP.
3-Phenylpropyl acetate	ELN, GIV.
3-Phenylpropyl cinnamate	FB.
Piperonal (Heliotropin)	GIV, SHL, UOP.
Piperonal terpenes	SHL.
*p-Propenylanisole (Anethole)	ARZ, GLD, HPC, NCI, UOP.
p-Propylanisole (Dihydroanethole)	FB, GIV.
α-Propylphenylethyl alcohol	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)	MON, SW.
Saccharin, calcium salt	MON, SW.
Saccharin, sodium salt	LAK, MON.
p-Tolualdehyde	GIV, HN, TCC.
p-Tolylacetaldehyde	GIV.
p-Tolyl acetate	FB, GIV.
p-Tolyl phenylacetate	GIV.
α-(Trichloromethyl)benzyl acetate (Rosetone)	ARS.
Vanillin (4-Hydroxy-3-methoxybenzaldehyde)	MON, SLV.
Terpenoid, Heterocyclic, and Alicyclic	
Allyl cyclohexyl propionate	GIV.
p-tert-Butylcyclohexanone	IFF.
p-tert-Butylcyclohexyl acetate	CI, IFF.
Cadinene	FB
β-Caryophyllene	CI, GIV.
Caryophyllene alcohol	FB.
Cedrenol	GIV.
Cedrol	ELN, GIV, IFF.
*Cedryl acetate	ELN, GIV, IFF, NEO, UNG.
Cedryl formate	IFF.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
2-Cyclohexylcyclohexanone	GIV.
Cyclopentanone carboxylic acid	ARA.
Dihydronordicyclopentadienyl acetate	GIV, IFF.
Dihydronordicyclopentadienyl propionate	GIV, IFF.
Dihydroterpinyl acetate	GIV.
*Essential oils, chemically modified:	
Acetyl cedrene	GIV, IFF.
Amyris acetate	GIV.
Clove leaf oil terpenes	CI, SHL.
Ethyl oxyhydrate	FEL, FLO, LUE, PFW, VND.
Guaiacwood acetate	ELN, FB, GIV.
Guaiene	FB.
Lavandin, acetylated	FEL, GIV, UNG.
Rose oxide	FB.
Sassafrass oil, hydrogenated	GIV.
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.	IFF.
3-Hydroxy-2-methyl-4-pyrone (Maltol)	PFZ.
4-Hydroxynonanoic acid, γ-lactone (γ-Nonalactone)	GIV.
4-Hydroxyactanoic acid, γ-lactone (γ-Octalactone)	GIV, RT.
*4-Hydroxyundecanoic acid, γ-lactone (γ-Undecalactone)	ELN, FB, GIV.
Ionones:	
*α-Ionone	GIV, HOF, IFF, MYW.
β-Ionone	HOF, MYW.
Ionone (α- and β-)	GIV, MYW, UNG.
Isoborneol	RDA.
*Isobornyl acetate	FB, OPC, PFW, RDA, UNG.
Isobornyl propionate	GIV, OPC.
Isojasmone	FB.
Isomenthone	GIV.
2-Isopropylcyclohexanol	GIV.
Jasmal	IFF.
p-Mentha-6,8-dien-2-ol (Carveol)	FB.
p-Mentha-6,8-dien-2-one (Carvone; Carvol)	FB, FRM.
p-Menthan-3-one (Menthone)	GIV, NEO, OPC.
p-Menth-8-en-ol (Isopulegol)	GIV.
p-Menth-1-en-3-one	GIV.
p-Menth-4(8)-en-3-one (d-Pulegone)	GIV.
1,1-p-Menthen-6-yl-1-propanone	GIV.
*Menthol, synthetic:	
Tech	GIV, NEO.
U.S.P	GIV, GLD, HN, NEO.
Menthyl acetate	GIV.
Methylcyclohexyl propionate	GIV.
*Methylionones:	
6-Methyl-α-ionone	GIV, MYW.
6-Methyl-β-ionone	NEO.
Methylionone (α- and β-)	GIV, IFF, MYW, UNG.
γ-Methylionone	GIV.
Nopyl acetate	CI, FEL, SHL.
Santalol	GIV, IFF.
Santalyl acetate	GIV.
*Terpineols:	
α-Terpineol	GLD, HPC, NCI.
β-Terpineol	HN.
Terpineol (α- and β-)	GIV, NEO.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
Terpinol hydrate (Terpin hydrate), tech	HPC.
*α-Terpinyl acetate	GIV, NEO, PFW, UNG.
Terpinyl acetate (mixed α-β)	RDA.
α-Terpinyl propionate	ELN, GIV.
3,3,5-Trimethylcyclohexanol	ARS.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl-α-ionone).	GIV, IFF.
Vetivenol	GIV, UOP.
*Vetivenyl acetate	CI, ELN, FB, GIV, IFF, NEO, UOP.
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
Acetylbutyryl (2,3-Hexanedione)	FB.
Acetyl propionyl	FB.
Acetylvaleryl (2,3-Heptanedione)	FB.
Allyl heptoate	FB.
*Allyl hexanoate	ELN, FB, GIV, PFW.
Allyl isothiocyanate (Synthetic mustard oil)	MRT.
Allyl mercaptan	RT.
Allyl octanoate (Allyl caprylate)	RT.
Allyl sorbate	RT.
Allyl sulfide	RT.
Amyl propionate	GIV.
Butyl butyrate	FB.
Butyl butyryl lactate	ARS.
Butyl 10-undecylenate	GIV.
Citral dimethyl acetal	GIV.
*Citronellyl acetate	ELN, GIV, IFF, UOP.
Citronellyl butyrate	GIV.
Citronellyl ethyl ether	IFF.
Citronellyl formate	ELN, GIV, IFF.
Citronellyl isobutyrate	ELN, GIV.
Citronellyl oxyacetaldehyde	IFF.
Citronellyl propionate	GIV, IFF.
Decanal (Capraldehyde)	GIV, IFF.
Decyl acetate	GIV.
Diethyl sebacate	ELN, FEL.
Diethyl succinate	ELN, UCC.
Dihydromyrcenol	IFF.
Dihydromyrcenol and 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	HOF.
3,7-Dimethyl-1,6-nonadien-3-ol, acetate	HOF.
3,7-Dimethyl-2,6-octadienal (Citral)	HOF.
*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)	CI, FB, FEL, GIV, LUE, UOP.
3,7-Dimethyl-trans-2,6-octadienal dimethyl acetal	CI.
*3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	CI, ELN, FB, FEL, GIV, GLD, IFF, NCI, NEO, UNG, UOP.
3,7-Dimethyl-1,6-octadien-3-ol (Linalool; Linalyl alcohol)	ELN, FB, FEL, GIV, GLD, HOF, LUE, SHL, UNG.
3,7-Dimethyl-1,6-octadien-3-ol acetate (Linalyl acetate).	ELN, FB, GIV, GLD, HOF, SHL, UNG.
3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate).	HOF.
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate).	HOF, NEO.
3,7-Dimethyloctan-1-al	HOF.
3,7-Dimethyl-1,7-octanediol	GIV.
3,7-Dimethyl-1-octanol (Dihydrocitronellol)	GIV.
3,7-Dimethyl-3-octanol (Tetrahydrolinalool)	HOF.
3,7-Dimethyl-6-octen-1-al (Citronellal)	FB, GIV, IFF, UOP.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
*3,7-Dimethyl-6-octen-1-ol (Citronellol)	CI, ELN, FB, GIV, GLD, IFF, OPC.
3,7-Dimethyl-7-octenol and 6-octenol isomer	GIV.
*Ethyl butyrate	FB, NW, RT, UOP.
Ethyl caprate	FB.
Ethyl formate	FB, PFW.
*Ethyl heptanoate	ELN, FEL, RT.
*Ethyl hexanoate (Ethyl caproate)	ELN, FB, NW, PFW, RT.
Ethyl isohexanoate	PFW.
Ethyl isovalerate	FB, PFW.
Ethyl laurate	ELN, FB.
Ethyl myristate	RT.
*Ethyl nonanoate	FB, FEL, GIV, RT.
Ethyl octanoate	FB, RT.
Ethyl propionate	FB.
Ethyl valerate	PFW.
Ethylene brassylate	RDA.
Geranic acid	FB.
Geranonitrile	IFF.
*Geranyl acetate	CI, ELN, FEL, GIV, IFF, UNG, UOP.
Geranyl butyrate	CI, GIV.
*Geranyl formate	CI, ELN, GIV.
Geranyl isobutyrate	IFF.
Geranyl isovalerate	FB.
Geranyl neryl formate	IFF.
*Glutamic acid, monosodium salt (Monosodium glutamate)	COM, GRW, IMC.
γ-Heptalactone	FB.
Heptanal (Enanthaldehyde)	NTL.
Heptyl alcohol (1-Heptanol)	NTL.
2-Hexanal	FB.
Hexanoic acid (Caproic acid)	FB.
2-Hexanol	FB.
cis-3-Hexen-1-ol	GIV, SW.
cis-3-Hexen-1-ol lactate	RT.
3-Hydroxy-2-butanone (Acetoin)	FMT.
*7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	GIV, GLD, IFF, OPC, UOP.
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal).	GIV.
Isoamyl geranate	FB.
Isobutyl acetate	FB, PFW.
Isodihydro lavandulaldehyde	FB.
Isodihydro lavandulol	FB.
Isodihydro lavandulyl acetate	FB.
*Isopentyl butyrate	FB, GIV, NW, PFW, UOP.
*Isopentyl formate	ELN, GIV, RT.
*Isopentyl isovalerate	ELN, FB, PFW.
Lauraldehyde	GIV, IFF.
Methyl amyl ketone	CI.
Methyl isobutyrate	PFW.
Methyl isovalerate	FB.
Methyl-β-methylthiopropionate	RT.
Methyl 2-nonenoate	GIV.
Methylol methyl hexyl ketone	GIV.
β-Methylthiopropionaldehyde	RT
2-Methylundecanal	GIV.
Muguol and tetrahydro muguol	IFF.
Myrcenyl acetate	IFF.
Myristaldehyde	GIV.
Neryl acetate	GIV.
Nonanal	GIV.
Nonane diacetate	CI.
Nonane-1,3-diol monoacetate	GIV, IFF.

TABLE 2.--Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Nonanol	GIV.
Nonyl acetate	CI, GIV.
Ocimenol and acetate	IFF.
Octanal	GIV, IFF.
3-Octanone (Ethyl amyl ketone)	GIV.
Octyl acetate	FB.
n-Octyl alcohol	GIV.
n-Octyl formate	FB.
Omega decenol	IFF.
Pseudo linalyl acetate	IFF.
Pyrolysate ester	GIV.
*Rhodinol	FB, FEL, GIV, IFF, LUE, NEO, SHL.
Rhodinyl acetate	GIV, IFF.
Rhodinyl formate	IFF.
Sodium allyl sulfonate	SHL.
Tepyl acetate	UOP.
3,7,11-Trimethyl-1,6,10-dodecatriene-3-ol	HOF.
3,5,5-Trimethylhexyl acetate	OPC.
2,6,10-Trimethyl-9-undecen-1-al	GIV.
3,6,10-Trimethyl-9-undecen-2-one	GIV.
Undecanal	GIV, IFF.
9-Undecenal	GIV.
10-Undecen-1-ol	GIV.
γ-Valerolactone	GIV.

TABLE 3.--Flavor and perfume materials: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of flavor and perfume materials to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of Company
ABB	Abbott Laboratories
ARA	Arapahoe Chemicals Div. of Syntex Corp.
ARS	Arsynco, Inc.
ARZ	Arizona Chemical Co.
BPC	Stauffer Chemical Co., Benzol Products
CFC	Sun Chemical Corp.
CI	Chem-Fluer, Inc.
COM	Commercial Solvents Corp.
DOW	Dow Chemical Co.
ELN	Elan Chemical Co.
FB	Fritzsche, Dodge & Olcott, Inc.
FEL	Felton International, Inc.
FLO	Florasynth, Inc.
FMT	Fairmount Chemical Co., Inc.
FRM	Farmers' Chemical Co.
GAF	GAF Corp., Chemical Div.
GIV	Givaudan Corp.
GLD	SCM Corp., Glidden-Durkee Div.
GRW	Great Western Sugar Co.
HN	Tenneco Chemicals, Inc.
HOF	Hoffman-LaRoche, Inc.
HPC	Hercules, Inc.
IFF	International Flavor & Fragrances, Inc.
IMC	International Minerals & Chemical Corp.
LAK	Lakeway Chemical Co.
LUE	George Lueders & Co., Inc.
MON	Monsanto Co.
MRT	Morton Chemical Co.
MYW	Stepan Chemical Co.. Maywood Div.
NCI	Union Camp Corp., Chemical Div.
NEO	Norda Essential Oil & Chemical Co., Inc.
NTL	National Lead Co.
NW	Northwestern Chemical Co.
OPC	Orbis Products Corp.
PD	Parke, Davis & Co.
PEN	CPC International, Inc., Penick Div.
PFW	Polak's Frutal Works, Inc.
PFZ	Pfizer, Inc.
RDA	Rhodia, Inc.
RT	F. Ritter & Co.
SHL	Nitini, Inc. Div. of Shulton, Inc.
SKC	Sunkist Growers, Inc.
SLV	Sterwin Chemicals, Inc.
SW	Sherwin-Williams Co.
TCC	Tanatex Chemical Corp.
UCC	Union Carbide Corp.
UNG	Ungerer & Co.
UOP	Universal Oil Products Co., UOP Chemical Div.
VEL	Velsicol Chemical Corp.
VND	Van Dyk & Co., Inc.

Note.--For the complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 semifinished or finished solid forms. Resin materials may be in the form of solutions, pastes or emulsions for applications such as protective coatings, adhesives, or paper and textile treatment.

Statistics on U.S. production and sales of synthetic plastics and resin materials for 1970 are given in table 1.[1] In general, the statistics follow the outline of the Tariff Commission's monthly report on the production and sales of synthetic plastics and resin materials (S.O.C. Series P-70); however, the data given include some resins and some companies which were not covered in the monthly reports and also some adjusted figures supplied by the original reporting companies. Consequently, many of the figures given in table 1 are revised from those shown in the Commission's monthly release dated March 15, 1971, containing 12-month cumulative totals for 1970. The end-use breakdowns shown were developed with the advice of representatives of the plastics industry, and the reported data reflect producers' determinations of the use categories for their materials.

U.S. production of plastics and resin materials in 1970 totaled 19,210 million pounds--an increase of 4 percent from the revised total of 18,557 million pounds produced in 1969. Sales in 1970 totaled 17,074 million pounds, valued at $3,266 million compared with 15,922 million pounds, valued at $3,175 million in 1969.

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 3,525 million pounds in 1970 compared with the revised total of 3,544 million pounds in 1969. Production of the most important products in 1970 included phenolic resins (1,186 million pounds), urea and melamine resins (746 million pounds), alkyd resins (636 million pounds), and polyester resins (569 million pounds).

Thermoplastic materials are those which can be repeatedly softened by heat and shaped. U.S. production of thermoplastic materials totaled 15,685 million pounds in 1970 compared with the revised total of 15,013 million pounds in 1969. Production of the most important products in 1970 included polyethylene (5,844 million pounds), vinyl resins (3,756 million pounds), and styrene type materials (3,550 million pounds).

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

TABLE 1.--Plastics and resin materials: U.S. production and sales, 1970

[Quantities and values are given in terms of the total weight of the materials (dry basis). Listed below are all plastics and resin 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 plastics and resin materials for which data on production or sales were reported and identifies the manufacturers of each]

Kind and use	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
Grand total	19,209,919	17,074,309	3,266,081	$0.19
Plastics and resin materials, benzenoid[4]	6,799,570	5,793,962	1,298,725	.22
Plastics and resin materials, nonbenzenoid	12,410,349	11,280,347	1,967,356	.17
THERMOSETTING RESINS				
Total	3,524,691	2,788,693	661,529	.24
Alkyd resins, total	635,607	332,296	91,290	.27
Phthalic anhydride type	559,615	271,577	76,237	.28
Polybasic acid type	75,992	60,719	15,053	.25
Polyester resins, total[5]	569,251	505,950	118,445	.23
Reinforced plastics sheets	...	62,492	...	...
All other reinforced plastics	...	364,239	...	...
Surface coatings	...	7,737	...	...
All other domestic uses	...	60,531	...	...
Export sales	...	10,951	...	...
Styrene-alkyd polyesters	3,886	3,624	1,364	.38
Epoxy resins[6]:				
Unmodified, total	165,125	158,189	71,982	.46
Bonding and adhesives	...	16,928	...	...
Protective coatings	...	69,137	...	...
Reinforced plastics	...	33,223	...	...
All other domestic uses	...	19,917	...	...
Export sales	...	18,984	...	...
Modified[7]	(7,604)	(6,086)	(5,291)	.87
Phenolic and other tar acid resins, total	1,185,910	[8]983,769	[8]195,494	.20
Molding compounds	337,984	304,968	...	...
Bonding and adhesives resins for:				
Laminating	128,078	83,620	...	...
Coated and bonded abrasives	29,648	21,642	...	...
Friction materials	47,436	43,286	...	...
Thermal insulation	132,822	64,929	...	...
Foundry or shell molding	94,873	80,669	...	...
Plywood	199,233	182,981	...	...
Fibrous and granulated wood	58,110	48,205	...	...
Protective coatings, unmodified and modified	37,949	22,627	...	...
All other uses	119,777	112,150	...	...
Export sales	...	18,692	...	...
Polyurethane and diisocyanate resins (excluding foam and elastomers)	126,301	99,015	39,430	.40
Polyurethane and polyester polyols[9]	63,477	18,869	4,126	.22

See footnotes at end of table.

TABLE 1.--Plastics and resin materials: U.S. production and sales, 1970--Continued

Kind and use	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
THERMOSETTING RESINS--Continued				
Urea and melamine resins, total	[10]746,202	[8]661,738	[8]113,799	$0.17
Textile treating and coating resins	85,834	72,791	...	...
Paper treating and coating resins	65,682	43,278	...	...
Bonding and adhesives resins for:				
Laminating	50,754	35,069	...	...
Plywood	119,421	111,172	...	...
Fibrous and granulated wood	219,436	209,771	...	...
Protective coatings (straight and modified)	70,160	47,645	...	...
All other domestic uses (including molding)	134,915	128,778	...	...
Export sales	...	13,234	...	...
Dicyandiamide resins	425	379	211	.56
All other thermosetting resins[11]	28,507	24,864	25,388	1.02
THERMOPLASTIC RESINS				
Total	15,685,228	14,285,616	2,604,552	.18
Acrylic resins[12]	538,159	461,912	229,800	.50
Cellulosic plastics and resins[12]	182,178	179,107	101,992	.57
Polyamide resins, nylon type[12]	90,833	81,218	64,431	.79
Coumarone-indene and petroleum hydrocarbon resins, total	282,634	285,259	34,361	.12
Floor tile	31,835	31,803	...	...
Rubber compounding	86,087	82,905	...	...
All other uses	164,712	130,251	...	...
Export sales	...	40,300	...	...
Rosin modifications, total	86,867	84,769	16,568	.20
Rosin and rosin esters, unmodified (ester gums)	21,401	20,149	4,449	.22
All other	65,466	64,620	12,119	.19
Polyethylene and copolymers, total	5,844,061	5,416,792	697,971	.13
Density 0.940 and below:[13]				
Production and sales, total	4,239,607	4,006,591	503,151	.13
Sales and use	...	4,049,524	...	...
Injection molding	...	491,320	...	...
Blow molding	...	42,011	...	...
Film and sheet	...	2,049,335	...	...
Extrusion coating	...	381,322	...	...
Wire and cable	...	403,722	...	...
Other extruded products except pipe and conduit	...	22,787	...	...
All other domestic uses	...	298,622	...	...
Export sales	...	360,405	...	...
Density over 0.940:				
Production and sales, total	1,604,454	1,410,201	194,820	.14
Sales and use	...	1,644,816	...	...
Injection molding	...	326,789	...	...
Blow molding	...	593,884	...	...
Film and sheet	...	62,059	...	...
Extrusion coating	...	21,382	...	...

See footnotes at end of table,

TABLE 1.--Plastics and resin materials: U.S. production and sales, 1970--Continued

Kind and use	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
THERMOPLASTICS RESINS--Continued				
Polyethylene and copolymers--Continued				
Density over 0.940--Continued				
Production and sales--Continued				
Wire and cable	...	31,034	...	...
Pipe and conduit	...	60,238	...	...
Other extruded products	...	20,560	...	...
All other domestic uses	...	303,617	...	...
Export sales	...	225,253	...	...
Polypropylene, production and sales, total	1,030,859	963,512	190,475	$0.20
Sales and use	...	995,997	...	...
Injection molding	...	398,234	...	...
Film and sheet	...	88,689	...	...
Fibers and filaments	...	249,848	...	...
Other extruded products	...	43,224	...	...
All other domestic uses (including blow molding, extrusion, coating, wire and cable, and pipe and conduit)	...	83,453	...	...
Export sales	...	132,549	...	...
Styrene plastics materials, total	3,549,713	3,228,108	619,152	.19
ABS (acrylonitrile-butadiene-styrene) and SAN (styrene-acrylonitrile) resins, total	567,707	538,063	158,883	.30
Molding	...	293,453	...	...
Extrusion	...	170,953	...	...
All other domestic uses	...	48,680	...	...
Export sales	...	24,977	...	...
Styrene polymers and copolymers, other:				
Production and sales, total	2,982,006	2,690,045	460,269	.17
Straight polystyrene	1,157,276	...	...	...
Rubber-modified polystyrene	1,213,368	...	...	...
Styrene-butadiene copolymer	395,599	...	...	...
All other styrene polymers	215,763	...	...	...
Sales and use	...	2,804,776	...	...
Molding		1,395,781	...	...
Textile and paper coating and treating	...	316,585	...	...
Emulsion paint	...	36,781	...	...
Extrusion	...	447,595	...	...
All other domestic uses (including foam and foamable materials)	...	504,445	...	...
Export sales	...	103,589	...	...
Vinyl and vinylidene resins, total[14]	3,756,393	3,346,561	517,486	.15
Polyvinyl chloride and copolymers, production and sales	3,115,204	2,847,001	383,506	.13
Suspension homopolymer resins	2,232,008	...	...	...
Suspension copolymer resins	519,026	...	...	...
Dispersion (paste) resins and latexes	364,170	...	...	...
Polyvinyl chloride and copolymers, sales and use, total	...	2,985,214	...	...
Calendering, except flooring		457,957	...	...
Flooring, calendered	...	247,227	...	...
Flooring, coated	...	75,074	...	...
Paper and textile uses	...	93,395	...	...

See footnotes at end of table.

TABLE 1.--Plastics and resin materials: U.S. production and sales, 1970--Continued

Kind and use	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
THERMOPLASTICS RESINS--Continued				
Vinyl and vinylidene resins--Continued				
Polyvinyl chloride and copolymers, sales and use--Continued				
Protective coatings and adhesives	...	85,399	...	...
Wire and cable	...	408,726	...	...
Extruded film and sheet	...	193,620	...	...
Other extruded products	...	492,429	...	...
Sound records	...	140,580	...	...
Injection and flow molding	...	113,365	...	...
Plastisol formulating and molding	...	113,054	...	...
All other domestic uses	...	376,394	...	...
Export sales	...	187,994	...	...
Polyvinyl acetate:[15]				
Production and sales, total	422,320	365,259	84,600	$0.23
Latexes	328,022	...	...	...
Resins	94,298	...	...	...
Sales and use, total	...	382,506	...	...
Emulsion paints	...	134,848	...	...
Adhesives	...	123,973	...	...
Paper-treating	...	22,754	...	...
Textile-treating	...	17,215	...	...
All other domestic uses	...	79,934	...	...
Export sales	...	3,782	...	...
Polyvinyl alcohol	48,784	39,571	12,734	.32
Other vinyl and vinylidene resins[16]	170,085	94,730	36,646	.39
All other thermoplastic resins[17]	323,531	238,378	132,316	.56

[1] Data for each specified end use are based on a percentage breakdown which includes captive consumption as well as sales by original producers, unless otherwise specified. To avoid disclosures of individual company operations, some totals are made equal to sales rather than sales-plus-use. Data for export sales include materials for all uses and exclude fabricated and semi-fabricated forms.

[2] Calculated from rounded figures.

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

[4] Includes benzenoid plastics and resin materials as defined in part I of schedule 4 of the Tariff Schedules of the United States.

[5] Polyester resins are unsaturated alkyd resins, later to be copolymerized with a monomer (such as styrene or methyl methacrylate); and polyallyl resins (such as diallyl phthalate and diglycol carbonate). Data are on an "as sold" basis, including monomer if part of the resin system. Production and sales totals have been revised downward from the monthly reports because some companies had reported incorrectly. The same revisions for the 1969 data would bring those totals just below the 1970 totals.

[6] 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.

[7] Data shown for modified epoxy resins are that part of the unmodified epoxy resins which is further processed.

[8] Data represent sales only.

[9] Data represent polyether and polyester polyols which are intermediates for polyurethanes and are not themselves used as plastics or resins. The data do not include isocyanates or other intermediates for polyurethanes. The data here are incomplete because most of the polyurethane polyols are reported as polyhydric alcohol derivatives in the Miscellaneous Chemicals section.

[10] About 70 percent of production consisted of urea-formaldehyde type.

[11] Includes silicone resins, furfuryl-type resins, toluenesulfonamide resins, acetone-formaldehyde resins, and other thermosetting resins.

[12] Does not include production or sales for fiber use.

[13] Includes data for ethylene copolymers. Sales do not include sales by primary producers to other primary producers; sales do include resales of purchased material by primary producers. Sales and use data are from

TABLE 1.--Plastics and resin materials: U.S. production and sales, 1970--Continued

Footnotes for table 1--Continued

preliminary monthly reports which are not necessarily consistent with final annual data.

[14] 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.

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

[16] Includes polyvinylidene chloride, polyvinyl butyral, polyvinyl formal, and other vinyl resins.

[17] Includes acetal resins, polyester (mostly terephthalate) resins, polycarbonate resins, polyterpene resins, non-nylon polyamide resins, α-methylstyrene resins, fluorocarbon resins, polybutylene-type resins, polyimide-type resins, polyether (non-urethane) resins, and other thermoplastics.

TABLE 2.--Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1970

[Plastics and resin materials for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked to 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)
THERMOSETTING RESINS	
Acetone-formaldehyde resins	ACY, SNW.
*Alkyd resins, domestic:	
*Phthalic anhydride type	ACY, APT, APV, ASH, ATR, BAL, BEN, BRU, CEL, CIK, CM, COM, CPV, DEG. DSO, DUN, DUP, EW, FAR, FBR, FCD, FLW, FOC, FRE, FSH, GEI, GIL, GLD, GRG, GRV, HAN, ICF, IPC, JOB, JSC, JWL, KMC, KMP, KPS, KPT, KYN, MCC, MID, MMM, MNP, NCI, NPV, OBC, PER, PFP, PLS, PPG, PRT, PRX, RCI, RED, REL, RH, SCN, SIP, SKT, SM, SW, SYV, TV, x, x, x.
*Polybasic acid type	ACY, APV, ASH, BEN, CGL, CM, COM, DEG, DUN, DUP, EW, FBR, FCD, FOC, GEI, GLD, GRV, HAN, HPC, HYC, ICF, KMC, KYN, MCC, MID, MMM, MOB, NCI, NPV, PPG, RCI, RED, RH, SCN, SKT, SM, SW, TV, x.
*Polyester resins	ACP, ACR, ACY, APD, ASH, CGL, CPV, DA, DEG, DSO, EPC, EW, FMP, FRE, GEI, GLD, GNT, GRG, GRV, GYR, HKD, ICF, IPC, KMC, KPS, KPT, MFG, MMM, MRO, OCF, ORO, PLU, PPG, RCI, SCN, SED, SHA, SIC, SW, SYV, TXT, VAL, x.
Silicone resins	ASH, CGL, DCC, RCI, SPD, UCC.
*Styrene-alkyd polyesters	ASH, CGL, EW, FLW, JOB, MCC.
Epoxy resins:	
*Unmodified	CEL, CGY, DOW, RCI, RSY, SHC, UCC.
*Modified	ASH, DSO, EW, FAR, FOM, HAP, IOC, JOB, MID, MMM, MNP, MRB, MRT, NPV, OCF, PRX, REL, SCN, SED, SKT, x.
Furfuryl-type resins	HVG, TXT, UNO.
*Phenolic and other tar acid resins	ABS, ACR, AMR, ASH, BME, BOR, CBC, CBD, CBM, CD, CGL, CLK, CPV, DSO, EW, FCD, FOM, FRE, FRL, GE, GEI, GRG, GRV, HAN, HER, HKD, HPC, HVG, ICF, INL, IOC, IRI, KPT, KYN, MCA, MID, MMM, MON, MRB, NCI, NPP, NTC, OCF, PAI, PGU, PLS, PPG, PPL, PRX, PYZ, RAB, RCD, RCI, REL, RGC, RH, RPC, SCN, SHA, SIM, SKT, SNC, SPL, SW, SYV, UCC, UNO, UPL, VSV, WCA, WRD.
*Polyurethane and diisocyanate resins	ASH, BFG, CEL, CGL, DA, DUP, EW, FAR, FRE, GPM, HAP, HYC, ICI, JWL, KMC, MCC, MID, NPV, PEL, PFP, PFZ, PRT, PVI, PYR, QUN, RCI, SCN, SKT, UPJ, WTC, x.
*Polyurethane and polyester polyols	DUP, MOB, PFZ, RCI, SPD, WTC.
*Urea and melamine resins	ACP, ACY, AMR, APX, ASH, BOR, CAP, CBC, CBD, CEL, CGL, CLK, CMP, CPV, DAN, DSO, DUP, EFH, FOM, GAF, GLD, GRV, HAN, HNC, HPC, HRT, IRI, JSC, KPS, MID, MMM, MON, NPP, NTC, OCF, PC, PGU, PMC, PPG, PPL, QCP, RCI, REL, RH, RPC, SAC, SBC, SED, SNW, SOR, STC, SW, SYV, TXT, UNO, UPL, USO, VAL, WRD, x.
*Dicyandiamide resins	ECC, CGY, JSC, RPC, SBC, SNW, VAL, WIC.
All other thermosetting resins	EW, MON, RH, USR, VAL.

TABLE 2.--Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
THERMOPLASTIC RESINS	
Acetal resins	CEL, DUP.
*Acrylic resins	ACY, ASH, BAS, CEL, DUP, EFH, FLH, GLC, GLX, HNC, HRT, JNS, JOB, JSC, KMC, NPV, PCI, PVI, QUN, RH, RPC, SAR, SED, SEY, UCC, VAL, VPC, WAY, WIC, x.
*Cellulosic plastics and resins	CEL, DOW, EKT, HN, HPC, MON, RSB, SKT, SPY.
Polyamide resins:	
*Nylon type	ALF, BCM, CEL, DUP, FG, GNM, GOC, HN, MON, POL, SNW.
Non-nylon type	DUP, EMR, GNM, UCC.
*Coumarone-indene and petroleum hydrocarbon resins	ACC, ACP, DSO, DUP, ENJ, MID, NEV, PAI, PPG, RCI, SKT, VEL, WTC.
Fluorocarbon resins	DUP, ICI, MMM.
*Rosin modifications:	
*Rosin and rosin esters, unmodified (ester gums)	APV, ASH, CBY, DPP, FAR, FLW, FRP, MCC, NCI, SKT.
*All other	APV, ASH, CBY, DPP, EW, FAR, FRP, NCI, RH, SCF.
*Polyethylene and copolymers:	
*Density 0.940 and below	ACP, CBN, CEL, CPX, DOW, DUP, EKX, ENJ, GOC, KPP, MON, RCC, SHC, UCC, USI.
*Density over 0.940	ACP, CEL, CPX, DOW, DUP, EKX, GOC, HPC, KPP, MON, PLC, UCC, USI, x.
*Ethylene copolymers	DSO, DUP, ENJ, USI.
*Polypropylene resins	ACC, DA, EKX, ENJ, HPC, NVT, RCC, SHC.
Polybutene and polyisobutylene resins	ENJ, RH, SM.
Polycarbonate resins	GE, MOB.
Polyester resins, saturated	DUP, EKT.
Polyterpene resins	CBY, HPC, PAI, SCN.
*Styrene type plastics materials:	
*ABS and SAN resins	BFG, DOW, FBF, FIR, GRD, KPP, MCB, MON, RCC, UCC, USR.
*Styrene and styrene copolymer resins other than ABS and SAN.	ACC, AEP, ATR, BAS, BCN, BFG, BOR, CSD, DOW, DPI, DSO, DUP, FBF, FG, FIR, FLH, GAF, GLD, GNT, GOR, GRD, GYR, HLM, IOC, JNS, JSC, KPP, MNV, MON, MRT, NLC, ONX, PAI, PLA, POL, PRX, PVI, RCC, RH, RPC, SBI, SHC, SKT, SOL, SPE, UBS, UCC, UOC, USR, WIC, x.
α-Methylstyrene polymers	ACC, DOW.
*Vinyl resins:	
*Polyvinyl chloride and copolymer resins	ACP, AME, BFG, BOR, CPL, CUC, DA, DOW, ESC, FIR, GNT, GRA, GYR, HN, KYS, MON, NSC, PNT, RUB, SFA, THC, TNA, UCC, USR.
*Polyvinyl acetate resins	AML, ASH, BEN, BOR, CEL, CUC, DAN, DSO, DUP, FAR, FLH, FSH, GLC, GLD, GRD, HAN, HNC, HRT, JOB, JSC, KMC, KMP, MCC, MMM, MON, NPV, NSC, OBC, OCF, ONX, PII, PPG, PRX, PVI, QCP, RCI, RPC, SBI, SCO, SED, SEY, SPC, UCC, UOC, WIC, x. x. x.
*Polyvinyl alcohol resins	BOR, CUC, DUP, MON, SEY.
Polyvinyl butyral resins	DUP, MON, UCC.
Polyvinylidene chloride resins	BAS, DOW, DUP, GRD, MRT.
All other vinyl resins	EW, MCC, MON, UCC, USR.
All other thermoplastic resins	ACC, DUP, RPC, WTC, x.

TABLE 3.--Plastics and resin materials: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of plastics and resin materials to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
ABS	Abex Corp., American Brakeblok Div
ACC	Amoco Chemical Corp.
ACP	Allied Chemical Corp., Plastics Div.
ACR	CPC International, Inc., Acme Resin Div.
ACY	American Cyanamid Co.
AEP	A & E Plastics Pak Co., Inc.
ALF	Allied Chemical Corp., Fibers Div.
AME	American Chemical Corp.
AML	Amalgamated Chemical Corp.
AMR	Pacific Resins & Chemical Co.
APD	Atlas Chemical Industries, Inc.
APT	Whittaker Corp., Mol Rez Div.
APV	Armstrong Chemcon
APX	Apex Chemical Co., Inc.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.
BAL	Baltimore Paint & Chemical Corp.
BAS	BASF-Wyandotte Corp.
BCM	Belding Chemical Industries
BCN	Lehn & Fink Products Corp., Beacon Div.
BEN	Bennett's
BFG	B. F. Goodrich Co., B.F. Goodrich Chemical Co. Div.
BME	Bendix Corp., Friction Materials Div.
BOR	Borden Co., Borden Chemical Co. Div.
BRU	M. A. Bruder & Sons, Inc.
CAP	DuPlan Corp., Rochester Button Div.
CBC	Georgia-Pacific Corp., Coos Bay Div.
CBD	Chembond Corp.
CBM	Carborundum Co., Coated Abrasives Div.
CBN	Cities Service Co., Petrochemicals Group
CBY	Crosby Chemicals, Inc.
CD	Budd Co., Polychem Div.
CEL	Celanese Corp.:
	Celanese Coatings Co.
	Celanese Plastics Co.
CGL	Cargill, Inc.
CGY	Ciba-Geigy Corp. & Ciba Products Co. Div.
CIK	Tenneco Chemicals, Inc., Cal/Ink Div.
CLK	Clark Oil & Refining Corp., Clark Chemical Co.
CM	Carpenter-Morton Co.
CMP	Commercial Products Co., Inc.
COM	Commercial Solvents Corp.
CPL	Conoco Plastics
CPV	Cook Paint & Varnish Co.
CPX	Chemplex Co.
CSD	Cosden Oil & Chemical Co.
CUC	Air Reduction Co., Inc., Chemical & Plastics Div.
DA	Diamond Shamrock Corp.
DAN	Dan River Mills, Inc.
DAV	Conchemco, Inc., H. B. Davis Co. Div.
DCC	Dow Corning Corp.
DEG	Degan Oil & Chemical Co.
DOW	Dow Chemical Co.
DPI	Diamond Plastics, Inc.
DPP	Dixie Pine Products Co., Inc.
DSO	DeSoto, Inc.
DUN	Frank W. Dunne Co.
DUP	E. I. duPont de Nemours & Co., Inc.
ECC	Eastern Color & Chemical Co.
EFH	E. F. Houghton & Co.
	Eastman Kodak Co.:
EKT	Tennessee Eastman Co., Div.
EKX	Texas Eastman Co. Div.
EMR	Emery Industries, Inc.
ENJ	Enjay Chemical Co.
EPC	Epoxylite Corp.
ESC	Air Products & Chemicals, Inc. Escambia Chemical Plant
EW	Westinghouse Electric Corp., Industrial Plastics Div., Chemical Products Plant
FAR	Farnow, Inc.
FBF	Dart Industries, Inc., Fiberfil Div.
FBR	Pabco Paint Corp.
FCD	France, Campbell & Darling, Inc.
FG	Foster Grant Co., Inc.
FIR	Firestone Tire & Rubber Co., Firestone Plastics Co. Div.
FLH	H. B. Fuller Co.
FLW	Fuller-O'Brien Corp.
	FMC Corp.:
FMP	Organic Chemicals Div.
FOC	Farac Oil & Chemical Co. Div of Handschy Chemical Co.
FOM	Formica Corp.
FRE	Freeman Chemical Corp.
FRL	Firestone Tire & Rubber Co., Firestone Foam Products Co.
FRP	FRP Company
FSH	Frish & Co., Inc.
GAF	GAF Corp.:
	Chemical Div.
	Textile Chemicals Div.
GE	General Electric Co.:
GEI	Insulating Materials Dept.
GIL	Gilman Paint & Varnish Co.
GLC	General Latex & Chemical Corp.
GLD	SCM Corp., Glidden-Durkee Div.
GLX	Electro-Seal Glasflex Corp.
GNM	General Mills, Chemical Inc.
GNT	General Tire & Rubber Co., Chemical Div.
GOC	Gulf Oil Corp., Gulf Oil Co. Chemicals Dept. - United States
GOR	Gordon Chemical Co., Inc.
GPM	General Plastics Manufacturing Co.
GRA	Great American Chemical Corp.
GRD	W. R. Grace & Co., Polymers Chemicals Div.
GRG	P. D. George Co.
GRV	Guardsman Chemical Coatings, Inc.
GYR	Goodyear Tire & Rubber Co.
HAN	Hanna Chemical Coating Corp.
HAP	Applied Plastics Co., Inc.
HER	Heresite & Chemical Co.
HKD	Hooker Chemical Corp., Durez Div.
HLM	U.S. Industries, Inc., E. Helman Co. Div.
HN	Tenneco Chemicals, Inc.
HNC	H & N Chemical Co.
HPC	Hercules, Inc.
HRT	Hart Products Corp.

TABLE 3.--Plastics and resin materials: Directory of manufacturers, 1970--Continued

Code identification	Name of company
HVG	Haveg Industries
HYC	Dexter Corp., Hysol Co. Div.
ICF	Inmont Corp.
ICI	ICI America, Inc.
ICL	Inland Steel Co., Inland Steel Container Co. Div.
IOC	Ionac Chemical Co. Div of Sybron Corp.
IPC	Interplastic Corp., Commerical Resins Div.
IRI	Ironsides Resins, Inc.
JNS	S. C. Johnson & Son Inc.
JOB	Jones-Blair Paint Co.
JSC	Jersey State Chemical Co.
JWL	Jewel Paint & Varnish Co.
KMC	Kohler-McLister Paint Co.
KMP	Kelly-Moore Paint Co.
KPP	Sinclair-Koppers Co.
KPS	Koppers Pittsburgh Co.
KPT	Koppers Co., Organic Materials Div.
KYN	Kyanize Paints, Inc.
KYS	Keysor Chemical Corp.
MCA	Masonite Corp., Alpine Div.
MCB	Borg-Warner Corp., Marbon Chemical Div.
MCC	McCloskey Varnish Co.
MFG	North American Rockwell Corp., Reinforced Plastic Operations, Automotive Products Div.
MID	Dexter Corp., Midland Div.
MMM	Minnesota Mining & Manufacturing Co.
MNP	Minnesota Paints, Inc.
MNV	Johns-Manville Corp.
MOB	Mobay Chemical Co.
MON	Monsanto Co.
MRB	Marblette Co., Div. of Allied Products Corp.
MRO	W. R. Grace & Co., Marco Chemical Div.
MRT	Morton Chemical Co.
NCI	Union Camp Corp., Chemical Div.
NEV	Neville Chemical Co.
NLC	Nalco Chemical Co.
NPP	Enjay Chemical Co., Enjay Fibers & Laminates Co. Div.
NPV	Norris Paint & Varnish Co., Inc.
NSC	National Starch & Chemical Corp.
NTC	National Casein Co.
NVT	Novamont Corp., Neal Works
OBC	O'Brien Corp.
OCF	Owens-Corning Fiberglas Corp.
ONX	Millmaster Onyx Corp., Onyx Chemical Corp.
ORO	Chevron Chemical Co.
PAI	Pennsylvania Industrial Chemical Corp.
PC	Proctor Chemical Co., Inc.
PCI	Pioneer Chemical Works, Inc.
PEL	Pelron Corp.
PER	Perry & Derrick Co.
PFP	Midwest Manufacturing Corp.
PFZ	Pfizer, Inc.
PGU	Gulf Oil Corp., Gulf Adhesives
PII	Polymer Industries, Inc.
PLA	Richardson Co., Polymeric Div.
PLC	Phillips Petroleum Co.
PLS	Plastics Engineering Co.
PLU	Plumb Chemical Corp.
PMC	Plastics Manufacturing Co.
PNT	Pantasote Co.
POL	Polymer Corp.
PPG	PPG Industries, Inc.
PPL	Pioneer Plastics Corp.
PRT	Pratt & Lambert, Inc.
PRX	Purex Corp., Ltd.
PVI	Polyvinyl Chemicals, Inc., Div of Beatrice Foods Co.
PYR	Poly Resins
PYZ	Polyrez Co., Inc.
QCP	Quaker Chemical Corp.
QUN	K. J. Quinn & Co., Inc.
RAB	Raybestos-Manhattan, Inc., Raybestos Div.
RCC	Rexene Polymers Co.
RCD	Richardson Co.
RCI	Reichhold Chemicals, Inc.
RED	Red Spot Paint Co., Inc.
REL	Reliance Universal, Inc. & Rel Rez Div.
RGC	Rogers Corp.
RH	Rohm & Haas Co.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.
RSB	Rosenberg Bros. & Co.
RSY	Resyn Corp.
RUB	Hooker Chemical Corp., Ruco Div.
SAC	Southeastern Adhesives Co.
SAR	Sartomer Resins, Inc.
SBC	Scher Bros., Inc.
SBI	Standard Brands Chemical Industries, Inc.
SCF	Schaefer Varnish Co., Inc.
SCN	Schenectady Chemicals, Inc.
SCO	Scholler Bros., Inc.
SED	Conchemco, Inc., Kansas City Div.
SEY	Seydel-Woolley & Co., Inc.
SFA	Stauffer Chemicals Co., Specialty Chemical Div.
SHA	Shanco Plastics & Chemicals, Inc.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SIC	Vistron Corp., Silmar Div.
SIM	Simpson Timber Co.
SIP	Sipes Chemical Coatings Co.
SKT	Textron Inc., Spencer Kellogg Div.
SM	Mobil Chemical Co.
SNC	Sonoco Products Co.
SNW	Sun Chemical Corp., Chemicals Div.
SOL	Solar Chemical Corp.
SOR	Thomason Industries, Inc., Southern Resin Div.
SPC	Sinclair Paint Co.
SPD	General Electric Co., Silicone Products. Dept.
SPE	Petrochemical Investment Corp.
SPL	Saulding Fibre Co., Inc.
SPY	Standard Pyroxoloid Corp.
STC	Sou-Tex Chemical Co., Inc.
SW	Sherwin-Williams Co.
SYV	Synvar Corp.
THC	Olin Corp., Thompson Plastics
TNA	Ethyl Corp.
TV	Sun Chemical Corp., General Printing Ink Div.

TABLE 3.--Plastics and resin materials: Directory of manufacturers, 1970--Continued

Code identification	Name of company	Code identification	Name of company
TXT	Textilana Corp.	USR	Uniroyal, Inc., Chemical Div.
UBS	A. E. Staley Manufacturing Co., Staley Chemicals Div.	VAL	Valchem
		VEL	Veliscol Chemical Corp.
UCC	Union Carbide Corp.	VPC	Verona Corp.
UNO	United-Erie, Inc.	VSV	Valentine Sugars, Inc.
UOC	Union Oil Co. of California		
UPJ	Upjohn Co.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
UPL	Champion Papers, Inc., U.S. Plywood Div., California Operations, Shasta Area	WCA	West Coast Adhesives Co.
		WIC	Wica Chemical Inc.
USI	National Distillers & Chemical Corp.: U.S. Industrial Chemicals Co. Div.	WRD	Weyerhaeuser Co., Wood Products Div.
USI	National Petro Chemical Corp.		
USO	U. S. Oil Co.	WTC	Witco Chemical Co., Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 1970 are given in table 1.[1]

Production of rubber-processing chemicals as a group in 1970 amounted to 298 million pounds, or 1.7 percent less than the 303 million pounds reported for 1969. Sales of rubber-processing chemicals in 1970 amounted to 228 million pounds, valued at $149 million, compared with 229 million pounds, valued at $144 million, in 1969. The decreased production and sales of rubber-processing chemicals in 1970 is attributable principally to the decreased production and sales of acyclic compounds, particularly the dithiocarbamic acid derivatives.

The output of cyclic rubber-processing chemicals in 1970 amounted to 255 million pounds, or about the same amount that was reported for 1969. Sales in 1970 were 196 million pounds, valued at $134 million, compared with 194 million pounds, valued at $127 million in 1969. Of the total output of cyclic rubber-processing chemicals in 1970, accelerators accounted for 35.1 percent and antioxidants for 60.0 percent. Production of antioxidants, which amounted to 153.2 million pounds in 1970, included 114.6 million pounds of amino compounds and 38.7 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants in 1970 were 86.4 million pounds, valued at $60.7 million; sales of phenolic and phosphite antioxidants were 29.4 million pounds, valued at $22.1 million.

Production of acyclic rubber-processing chemicals in 1970 amounted to 42.8 million pounds, a decrease of 12.1 percent from the 48.7 million pounds reported for 1969. Sales in 1970 totaled 31.4 million pounds, valued at $15.4 million, compared with 35.5 million pounds, valued at $17.2 million, in 1969. Accelerators, principally dithiocarbamic acid derivatives and tetramethylthiuram sulfides, accounted for 50.8 percent of the output of acyclic rubber-processing chemicals for 1970. Dodecyl mercaptans accounted for 31.2 percent. Blowing agents, modifiers, shortstops, and lubricating and conditioning agents accounted for the remainder of the output of acyclic compounds.

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

TABLE 1.--Rubber-processing chemicals: U.S. production and sales, 1970

[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]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	298,291	227,861	148,959	$0.65
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total	255,477	196,485	133,534	.68
Accelerators, activators, and vulcanizing agents, total	89,565	69,627	40,364	.58
Aldehyde-amine reaction products	1,740	1,323	1,415	1.07
Dithiocarbamic acid derivatives	271	212	506	2.39
Thiazole derivatives, total	77,268	58,389	30,783	.53
N-Cyclohexyl-2-benzothiazolesulfenamide	5,903	4,680	3,605	.77
2,2'-Dithiobis(benzothiazole)	23,202	11,029	5,887	.53
2-Mercaptobenzothiazole	6,923	5,250	2,111	.40
2-Mercaptobenzothiazole, zinc salt	4,867	4,086	2,104	.51
All other thiazole derivatives	36,373	33,344	17,076	.51
All other accelerators, activators, and vulcanizing agents[2]	10,286	9,703	7,660	.79
Antioxidants, antiozonants, and stabilizers, total	153,245	115,817	82,725	.71
Amino compounds, total	114,561	86,397	60,669	.70
Substituted p-phenylenediamines, total	60,303	41,066	38,335	.93
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	5,337	...	...	...
N,N'-Diphenyl-p-phenylenediamine	1,757	1,472	1,519	1.03
All other substituted p-phenylenediamines	53,209	39,594	36,816	.93
Octyldiphenylamine	3,130	1,946	1,064	.55
N-Phenyl-2-naphthylamine	4,348	...	...	...
All other amino compounds[3]	46,780	43,385	21,270	.49
Phenolic compounds, total	23,619	19,484	17,172	.88
Polyphenolics (including bisphenols)	13,546	12,243	13,353	1.09
Phenol, alkylated	7,131	4,612	2,246	.49
Phenol, styrenated	1,444	1,272	510	.40
All other phenolic compounds	1,498	1,357	1,063	.78
Phosphite compounds	15,065	9,936	4,884	.49
Retarder: N-Nitrosodiphenylamine	1,528	830	514	.62
All other cyclic rubber-processing chemicals[4]	11,139	10,211	9,931	.97
RUBBER-PROCESSING CHEMICALS, ACYCLIC				
Total	42,814	31,376	15,425	.49
Accelerators, activators, and vulcanizing agents, total	21,765	15,768	9,722	.62
Dithiocarbamic acid derivatives, total[5]	8,196	7,039	5,139	.73
Dibutyldithiocarbamic acid, zinc salt	2,525	2,386	1,988	.83
Diethyldithiocarbamic acid, zinc salt	2,483	2,176	1,215	.56
Dimethyldithiocarbamic acid, zinc salt	1,456	1,386	622	.45
All other dithiocarbamic acid derivatives	1,732	1,091	1,314	1.20

See footnotes on following page.

TABLE 1.--Rubber-processing chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued				
Accelerators, activators, and vulcanizing agents--Continued				
Thiurams, total[6]	13,243	8,511	4,356	$0.51
Bis(dimethylthiocarbamoyl) disulfide	8,613	5,942	2,565	.43
Bis(dimethylthiocarbamoyl) sulfide	2,130	1,800	1,345	.75
All other thiurams	2,500	769	446	.58
All other accelerators, activators, and vulcanizing agents[7]	326	218	227	1.04
Polymerization regulators: Dodecyl mercaptans	13,358	11,474	4,115	.36
Shortstops: Dimethyldithiocarbamic acid, sodium salt	3,882	1,253	318	.25
All other acyclic rubber-processing chemicals[8]	3,809	2,881	1,270	.44

[1] Calculated from rounded figures.
[2] Includes guanidines.
[3] Includes aldehyde- and acetone-amine reaction products.
[4] Includes blowing agents, peptizers and other uses not separately shown.
[5] 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 section "Pesticides and Related Products".
[6] Includes data for small amounts of tetramethylthiuram sulfides for uses other than in the processing of natural and synthetic rubbers.
[7] Includes xanthates and disulfides.
[8] 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, 1970

[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.
α-Ethyl-β-propylacrylanilide	CCO.
Heptaldehyde-aniline condensate	USR.
Triethyltrimethylenetriamine	USR.
*Dithiocarbamic acid derivatives:	
Dibenzyldithiocarbamic acid, sodium salt	USR.
Dibenzyldithiocarbamic acid, zinc salt	USR.
Dibutyldithiocarbamic acid, N,N-dimethylcyclohexylamine salt.	MON.
Dibutyldithiocarbamic acid, diphenylguanidine salt	CCO.
2,4-Dinitrophenyl dimethyldithiocarbamate	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts, mixed.	DUP.
Guanidines:	
Dicatechol borate, di-o-tolylguanidine salt	DUP.
1,3-Diphenylguanidine	ACY.
Diphenylguanidine phthalate	MON.
1,3-Di-o-tolylguanidine	ACY.
Dodecyltetramethylguanidine	DUP.
1,2,3-Triphenylguanidine	ACS.
*Thiazole derivatives:	
2-Benzothiazyl N,N-diethylthiocarbamoyl sulfide	PAS.
1,3-Bis(2-benzothiazolylmercaptomethyl) urea	MON.
N-tert-Butyl-2-benzothiazolesulfenamide	BFG, MON.
*N-Cyclohexyl-2-benzothiazolesulfenamide	ACY, BFG, MON, USR.
N,N-Diisopropyl-2-benzothiazolesulfenamide	ACY.
N-(2,6-Dimethylmorpholino)-2-benzothiazolesulfenamide	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, DUP, GYR, USR.
4-Morpholinyl-2-benzothiazyl disulfide	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide	ACY, BFG, MON.
Thiazoline-2-thiol	ACY.
All other cyclic accelerators, activators, and vulcanizing agents:	
p-Benzoquinonedioxime	CTN, DUP.
Bis(p-aminocyclohexyl)methane carbamate	DUP.
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, RBC, VNC.
2-Imidazoline-2-thiol	DUP, RBC.
m-Phenylenebismaleimide	DUP.
Poly-p-dinitrosobenzene	DUP.
All other	DUP.
*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.

TABLE 2.--Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers--Continued	
*Amino compounds--Continued	
Aldehyde- and acetone-amine reaction products--Continued	
Diphenylamine-acetone condensate	ACY, BFG, USR.
Phenyl-2-naphthylamine-acetone condensate	USR.
*Substituted p-phenylenediamines:	
*N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	EKT, MON, USR.
N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine-	MON, UPM.
N,N'-Bis(1-methylheptyl)-p-phenylenediamine	BFG, MON, UPM.
N-sec-Butyl-N'-phenyl-p-phenylenediamine	USR.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine	USR.
Diarylarylenediamines, mixed	BFG, GYR.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine--	GYR, USR.
N-(1,4-Dimethylpentyl)-N'-phenyl-p-phenylenediamine-	USR.
N,N'-Di-2-naphthyl-p-phenylenediamine	BFG.
*N,N'-Diphenyl-p-phenylenediamine	BFG, DUP, SDC, USR.
N-Isopropyl-N'-phenyl-p-phenylenediamine	MON, USR.
Nitroso-N-phenylenediamine	USR.
All other substituted p-phenylenediamines	MON.
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.
4,4'-Dioctyldiphenylamine	BFG.
N,N'-Diphenylethylenediamine	CCO, DA, x.
N,N'-Diphenyl-1,3-propanediamine	CCO.
N,N'-Di-o-tolylethylenediamine	CCO.
p-Isopropoxydiphenylamine	BFG.
4,4'-Methylenedianiline	USR.
*Octyldiphenylamine	ACY, NPI, PAS, USR.
Octyldiphenylamine mixture (mono-, nonyl-, and di-)-	BFG.
N-Phenyl-1-naphthylamine	DUP.
*N-Phenyl-2-naphthylamine	BFG, DUP, USR.
p-(p-Toluenesulfonamido)diphenylamine	USR.
All other	DUP.
*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.
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.
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.

TABLE 2.--Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers--Continued	
*Phenolic compounds--Continued	
*Other phenolic antioxidants and stabilizers:	
o-Cresol, alkylated	PIT.
N-Lauroyl-p-aminophenol	MLS.
*Phenol, alkylated	ACY, BFG, CCO, GYR, NEV, PIT.
Phenol, hindered	DUP, GYR, USR.
*Phenol, styrenated	BFG, GYR, NEV, USR.
N-Stearoyl-p-aminophenol	MLS.
Xylenol, alkylated	PIT.
*Phosphite compounds:	
Diphenyldecyl phosphite	HK.
Nonyl phenyl phosphites, mixed	NPI, USR.
Phenyldidecyl phosphite	HK.
Polymeric phosphite	NPI.
Blowing agents:	
N,N'-Dimethyl-N,N'-dinitrosoterephthalamide	DUP.
Dinitrosopentamethylenetetramine	NPI.
p,p'-Oxybis(benzenesulfonhydrazide)	USR.
p-Toluenesulfonylhydrazide	USR.
p-Toluenesulfonylsemicarbazide	USR.
Peptizers:	
Alkylated o-thiocresol	PIT.
Alkylated thiophenol, zinc salt	PIT.
Aryl mercaptans	PIT.
2-Benzamidothiophene, zinc salt	ACY.
Dicresyl disulfide	USR.
2',2'''-Dithiobis(benzanilide)	ACY.
Dixylyl disulfides, mixed	PIT.
2-Naphthalenethiol	DUP.
Pentachlorobenzenethiol	DUP, SDC.
Thiocresol	PIT.
Thiophenol (Benzenethiol)	PIT.
Xylenethiol	DUP.
*Retarders: N-Nitrosodiphenylamine	ACY, BFG, CTN, GYR, NPI, SAL, 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	x.
RUBBER-PROCESSING CHEMICALS, ACYCLIC	
*Accelerators, activators, and vulcanizing agents:	
*Dithiocarbamic acid derivatives:	
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	ALC, DUP, PAS.
Diethyldithiocarbamic acid, tellurium salt	VNC.
*Diethyldithiocarbamic acid, zinc salt	ALC, GYR, PAS, USR, VNC, WRC.
Dimethyldithiocarbamic acid, bismuth salt	VNC.
Dimethyldithiocarbamic acid, copper salt	VNC.
Dimethyldithiocarbamic acid, lead salt	VNC.
Dimethyldithiocarbamic acid, selenium salt	VNC.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide.	BFG, GNT.
*Dimethyldithiocarbamic acid, zinc salt	ALC, DUP, FMN, GYR, PAS, RBC, USR.
All other	VNC.

TABLE 2.--Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued	
*Accelerators, activators, and vulcanizing agents--Continued	
*Thiurams:	
Bis(dibutylthiocarbamoyl) sulfide	USR.
Bis(diethylthiocarbamoyl) disulfide	DUP, GYR, PAS.
*Bis(dimethylthiocarbamoyl) disulfide	DUP, GYR, PAS, VNC.
*Bis(dimethylthiocarbamoyl) sulfide	DUP, GYR, USR.
Bis(ethylmethylthiocarbamoyl) sulfide	PAS.
Thiuram blend	DUP.
Xanthates and sulfides:	
Di-n-butylxantho disulfide	USR.
Diisopropylxantho disulfide	BFG.
Zinc dibutyl xanthate	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	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	PAS, PLC.
*Dodecyl mercaptans	HK, PAS, PLC.
n-Octyl mercaptan	PAS.
tert-Octyl mercaptan	PAS.
Tridecyl mercaptan	PAS.
Shortstops:	
Dimethyldithiocarbamic acid, potassium salt	GYR, USR.
*Dimethyldithiocarbamic acid, sodium salt	ALC, DUP, GYR, PAS, USR.
Other acyclic rubber-processing chemicals: Zinc laurate (activator, physical-property improver)	USR.

TABLE 3.--Rubber-processing chemicals: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of rubber-processing chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company	Code identification	Name of company
ACS	Allied Chemical Corp., Specialty Chemicals Div.	MLS	Miles Laboratories, Inc., Marshall 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	National Polychemicals, Inc.
BFG	B.F. Goodrich Co., B. F. Goodrich Chemical Co. Div.		
		PAS	Pennwalt Chemicals Corp.
		PIT	Pitt-Consol Chemical Co.
CCO	Reichhold Chemicals, Inc.	PLC	Phillips Petroleum Co.
CTN	Chemetron Corp., Organic Chemical Div.		
		RBC	Roberts Chemical Div. of Security Chemicals, Inc.
DA	Diamond Shamrock Corp.		
DUP	E. I. duPont de Nemours & Co., Inc.	RCD	Richardson Co.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.	SAL	Salsbury Laboratories
		SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
FMN	FMC Corp., Niagara Chemical Div.		
		UPM	Universal Oil Products Co.
GNT	General Tire & Rubber Co., Chemical Div.	USR	Uniroyal, Inc., Chemical Div.
GYR	Goodyear Tire & Rubber Co.		
HK	Hooker Chemical Corp.	VNC	Vanderbilt Chemical Corp.
ICI	ICI America, Inc.	WRC	Ventron Corp.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

Elastomers (synthetic rubbers) are high polymeric materials with properties similar to those of natural rubber, The term "elastomer" 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 1970 are shown in table 1.[1]

Total U.S. production of synthetic elastomers in 1970 was 4,438 million pounds, a decrease of 2 percent from that produced in 1969. The sales of these elastomers amounted to 3,820 million pounds (valued at $1,032 million) in 1970, a decrease of nearly 3 percent from 1969.

Styrene-butadiene rubber (SBR or S-type rubber) in 1970 continued to be the synthetic elastomer produced in the greatest quantity as it has been for more than 25 years. U.S. production of SBR, including 32 million pounds of its vinylpyridine sub-type, amounted to 2,423 million pounds in 1970. Solution polymerized polybutadiene, a stereo type elastomer, was produced domestically in 1970 in the next largest amount--636 million pounds; production of polyisoprene and ethylene-propylene rubbers, the other stereo types, amounted to 270 million and 143 million pounds, respectively. Total U.S. production of these stereo type elastomers amounted to 1,049 million pounds in 1970--an increase of 4 percent over 1969. Other principal types of synthetic elastomers for which U.S. production and sales data are reported separately are polyisobutylene-isoprene (butyl) rubber, production of which was 265 million pounds in 1970, and polybutadiene-acrylonitrile (N-type) rubber, production of which was 149 million pounds.

U.S. production and sales data on synthetic organic chemicals are reported in terms of cyclic and acyclic structured compounds for purposes of better correlation with other statistical reporting systems. In 1970, U.S. production of cyclic elastomers amounted to 2,454 million pounds, a decrease of 5 percent from 1969; sales of cyclic elastomers amounted to 1,999 million pounds (valued at $485 million), a decrease of 8 percent from 1969. U.S. production of acyclic elastomers in 1970 amounted to 1,983 million pounds, an increase of nearly 3 percent over 1969; sales of acyclic elastomers amounted to 1,821 million pounds (valued at $547 million), an increase of 4 percent over the previous year.

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

TABLE 1.--Elastomers (synthetic rubbers):[1] U. S. production and sales, 1970

[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	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	4,437,576	3,819,925	1,032,328	$0.27
ELASTOMERS, CYCLIC				
Total	2,454,462	1,998,632	485,092	.24
Polybutadiene-styrene type (S-type)[3]	2,390,751	[4]1,955,251	449,708	.23
Polybutadiene-styrene-vinylpyridine type	32,367	17,817	10,252	.58
Polyurethane type	31,344	25,564	25,132	.98
ELASTOMERS, ACYCLIC				
Total	1,983,114	1,821,293	547,236	.30
Polybutadiene-acrylonitrile type (N-type)	148,663	132,968	62,622	.47
Polyisobutylene-isoprene type (Butyl)	264,659	...	...	...
Silicone elastomers	12,267	12,269	38,870	3.17
Stereo elastomers, total	1,049,384	945,238	184,635	.20
Ethylene-propylene rubber	143,266	117,733	34,025	.29
Stereo polybutadiene	636,275	600,265	103,437	.17
Stereo polyisoprene	269,843	227,240	47,173	.21
All other acyclic elastomers[5]	508,141	730,818	261,109	.36

[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 so stretched and the stress removed, will return with force to approximately their original length.

[2] Calculated from rounded figures.

[3] Elastomer-content basis.

[4] Partly estimated.

[5] Includes data for polyacrylate, polyalkalene sulfide, polychloroprene, polyisobutylene, all other elastomers, and for sales of polyisobutylene-isoprene elastomers.

Note.--Statistics on the production of S-type, N-type, butyl, neoprene, and stereo elastomers were compiled in cooperation with the U.S. Bureau of the Census.

TABLE 2.--Elastomers (synthetic rubbers) for which U. S. production or sales were reported identified by manufacturer, 1970

[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)
ELASTOMERS, CYCLIC	
*Polybutadiene-styrene type (S-type)	APL, ASH, ASY, BFG, CPY, FIR, FRS, GNT, GYR, MCB, PLC, RUB, SBI, SHC, TUS, USR, WIC.
*Polybutadiene-styrene-vinylpyridine type	BFG, FIR, FRS, GNT, GYR, USR.
*Polyurethane type	ACY, BFG, DA, DNS, DUP, GNT, MOB, PFP, PRC, RUB, TKL, USR, WTC.
ELASTOMERS, ACYCLIC	
Polyacrylate ester type	ACY, BFG, DA, TKL.
Polyalkalene sulfide type	PRC, TKL.
Polybutadiene type	BFG, FRS, GYR, TKL, TUS.
*Polybutadiene-acrylonitrile type (N-type)	BFG, CPY, FRS, GYR, SBI, USR.
Polychloroprene type (Neoprene)	DUP, PTT.
*Polyisobutylene-isoprene type (Butyl)	CBN, ENJ.
Reaction products of natural rubber	GYR, HPC, ICI.
*Silicone elastomers	DCC, SFA, SPD, UCC.
*Stereo elastomers:	
*Ethylene-propylene rubber	CPY, DUP, ENJ, USR.
*Stereo polybutadiene	APL, ASY, ATR, FRS, GNT, GYR, PLC, TUS.
*Stereo polyisoprene	APL, GYR, SHC.
All other acyclic elastomers	ASY, DUP, ENJ, PLC, UCC, WAY, x.

TABLE 3.-- Elastomers (synthetic rubbers): Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of elastomers manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identi-fication	Name of comapny	Code identi-fication	Name of company
ACY	American Cyanamid Co.	ICI	I.C.I. America, Inc.
APL	Ameripol, Inc.		
ASH	Ashland Chemical Co.	MCB	Borg-Warner Corp., Marbon Chemical Div.
ASY	American Synthetic Rubber Corp.	MOB	Mobay Chemical Co.
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.	PFP	Midwest Manufacturing Corp.
		PLC	Phillips Petroleum Co.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PRC	Products Research & Chemical Corp.
		PTT	Petro-Tex Chemical Corp.
CBN	Cities Service Co., Petrochemical Group	RUB	Hooker Chemical Corp., Ruco Div.
CPY	Copolymer Rubber & Chemical Corp.		
		SBI	Standard Brands Chemical Industries, Inc.
DA	Diamond Shamrock Corp.	SFA	Stauffer Chemical Co., Specialty Chemical Div.
DCC	Dow Corning Corp.		
DNS	Dennis Chemical Co.	SHC	Shell Oil Co., Shell Chemical Co. Div.
DUP	E. I. duPont de Nemours & Co., Inc.	SPD	General Electric Co., Silicone Products Dept.
ENJ	Enjay Chemical Co.		
		TKL	Thiokol Chemical Corp.
	Firestone Tire & Rubber Co.:	TUS	Texas-U.S. Chemical Co.
FIR	Firestone Plastics Co. Div.		
FRS	Firestone Synthetic Rubber & Latex Co. Div.	UCC	Union Carbide Corp.
		USR	Uniroyal, Inc., Chemical Div.
GNT	General Tire & Rubber Co., Chemical Div.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
GYR	Goodyear Tire & Rubber Co.		
		WIC	Wica Chemicals, Inc.
HPC	Hercules, Inc.	WTC	Witco Chemical Co., Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 detail as is possible without revealing the operations of individual producers.[1]

U.S. production of plasticizers totaled 1,336 million pounds in 1970, a decrease of 3.3 percent from the 1,382 million pounds reported for 1969. Sales of plasticizers totaled 1,239 million pounds, valued at $235 million, in 1970, compared with 1,275 million pounds, valued at $266 million, in 1969.

Production of cyclic plasticizers in 1970, which consisted chiefly of the esters of phthalic anhydride and phosphoric acid, amounted to 998 million pounds, a decrease of 2.4 percent from the 1,023 million pounds reported for 1969. Sales of cyclic plasticizers in 1970 totaled 938 million pounds, valued at $144 million, compared with 947 million pounds, valued at $165 million, in 1969. The most important cyclic plasticizer was di(2-ethylhexyl) phthalate, with production of 350 million pounds, in 1970.

Production of acyclic plasticizers in 1970 totaled 338 million pounds, a decrease of 5.8 percent from the 359 million pounds reported for 1969. Sales of acyclic plasticizers totaled 302 million pounds, valued at $91 million, in 1970, compared with 328 million pounds, valued at $101 million, in 1969. Epoxidized esters were the most important group in 1970 with production of 95 million pounds.

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

TABLE 1--Plasticizers:[1] U.S. production and sales, 1970

[Listed below are plasticizers 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 plasticizers for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	1,336,076	1,239,116	234,836	$0.19
Benzenoid[3]	1,095,668	1,021,835	166,168	.16
Nonbenzenoid	240,408	217,281	68,668	.32
PLASTICIZERS, CYCLIC				
Total	998,475	937,504	143,736	.15
Phosphoric acid esters, total	...	75,363	25,933	.34
Cresyl diphenyl phosphate	12,738	11,266	3,087	.27
Tricresyl phosphate	46,003	39,584	13,035	.33
Triphenyl phosphate	10,593	...	...	...
All other phosphoric acid esters	...	24,513	9,811	.40
Phthalic anhydride esters, total	855,060	814,545	107,699	.13
Butyl octyl phthalates (including butyl 2-ethylhexyl phthalate and butyl iso-octyl phthalate)	11,934	11,468	1,606	.14
Dibutyl phthalate	22,919	24,604	4,237	.17
Dicyclohexyl phthalate	4,537	...	...	...
Diethyl phthalate	20,636	16,830	3,010	.18
Diisodecyl phthalate	123,359	121,315	14,494	.12
Dimethyl phthalate	8,117	6,017	1,187	.20
Dioctyl phthalates:				
Di(2-ethylhexyl) phthalate	350,396	343,543	38,765	.11
Diiso-octyl phthalate	85,128	71,220	8,594	.12
Di-tridecyl phthalate	15,130	16,471	3,308	.20
n-Hexyl n-decyl phthalate	9,276	9,638	1,369	.14
n-Octyl n-decyl phthalate	58,938	51,689	7,480	.14
All other phthalic anhydride esters	144,690	141,750	23,649	.17
Trimellitic acid esters, total	9,699	7,398	2,122	.29
Triiso-octyl trimellitate	3,184	2,489	678	.27
Tri-n-octyl n-decyl trimellitate	2,510	1,433	409	.29
Trioctyl trimellitate	2,342	1,644	467	.28
All other trimellitic acid esters	1,663	1,832	568	.31
All other cyclic plasticizers[4]	64,382	40,198	7,982	.20
PLASTICIZERS, ACYCLIC				
Total	337,601	301,612	91,100	.30
Adipic acid esters, total	54,040	48,590	10,903	.22
Di[2-(2-butoxyethoxy)ethyl] adipate	1,338	1,344	618	.46
Di(2-ethylhexyl) adipate	34,989	31,246	6,441	.21
Diisodecyl adipate	3,100	2,927	708	.24
Diiso-octyl adipate	2,215	...	...	...
n-Hexyl n-decyl adipate	2,062	2,292	479	.21
n-Octyl n-decyl adipate	8,345	7,258	1,593	.22
All other adipic acid esters	1,991	3,523	1,064	.30
Complex linear polyesters and polymeric plasticizers[5]	46,793	40,429	15,295	.38
Di(2-ethylhexyl) azelate	7,844	6,676	2,204	.33

See footnotes at end of table.

TABLE 1.--Plasticizers:[1] U.S. production and sales, 1970--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	95,140	90,190	21,101	$0.23
Epoxidized soya oils	69,300	63,924	13,997	.22
Octyl epoxytallates (including 2-ethylhexyl epoxytallates)	23,105	21,934	5,331	.24
All other epoxidized esters	2,735	4,332	1,773	.41
Glyceryl monoricinoleate	419	363	145	.40
Isopropyl myristate	4,825	4,056	1,922	.47
Isopropyl palmitate	2,017	1,563	594	.38
Oleic acid esters, total	12,246	10,351	2,608	.25
Butyl oleate	2,932	2,062	600	.29
Methyl oleate	3,001	2,395	445	.19
All other oleic acid esters	6,313	5,894	1,563	.27
Phosphoric acid esters	19,955	16,748	7,785	.46
Sebacic acid esters:				
Dibutyl sebacate	5,184	3,927	2,349	.60
Di(2-ethylhexyl) sebacate	3,821	3,412	1,935	.57
Stearic acid esters, total	9,244	9,345	2,544	.27
n-Butyl stearate	5,011	5,049	1,287	.25
All other stearic acid esters	4,233	4,296	1,257	.29
Triethylene glycol di(caprylate-caprate)	2,377	2,267	760	.34
All other acyclic plasticizers[6]	73,696	63,695	20,955	.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 data for alkylated naphthalene, glycol dibenzoates, hydrogenated terphenyls, all other phosphate esters (production only), toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

[5] Adipic acid polyesters account for most of the production of complex linear polyesters and polymeric plasticizers.

[6] Includes data for azelaic, citric and acetylcitric, lauric, myristic, palmitic, pelargonic, ricinoleic, and sebacic 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, 1970

[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 codes (according to list in table 3)
PLASTICIZERS, CYCLIC	
Coumarone-indene plasticizers	NEV.
N-Cyclohexyl-p-toluenesulfonamide	MON.
Dibenzyl sebacate	WTH.
Diethylene glycol dibenzoate	VEL.
Di-tert-octylphenyl ether	DOW.
Dipropanediol dibenzoate	VEL.
N-Ethyl-p-toluenesulfonamide	MON.
Isopropylidenediphenoxypropanol	DOW.
Naphthalene, alkylated	ACC.
*Phosphoric acid esters:	
*Cresyl diphenyl phosphate	FMP, MON, MTR, SFA, SM.
Dibutyl phenyl phosphate	MON, ORO.
Diphenyl octyl phosphate	MON.
Methyl diphenyl phosphate	FMP, MON.
*Tricresyl phosphate	FMP, MON, MTR, SFA.
*Triphenyl phosphate	EK, MON, SFA.
All other phosphoric acid esters	SFA.
*Phthalic anhydride esters:	
Alkyl benzyl phthalates	MON.
Bis(4-methyl-1,2-pentyl) phthalate	GRH.
Butyl benzyl phthalate	MON.
Butyl cyclohexyl phthalate	ACP.
*Butyl octyl phthalates:	
Butyl 2-ethylhexyl phthalate	ACP, GRH, TEK, UCC.
Butyl iso-octyl phthalate	GRH.
Butyl n-octyl phthalate	RCI.
Di(2-butoxyethyl)phthalate	FMP.
*Dibutyl phthalate	ACP, CGL, COM, DUP, EKT, GRH, MON, PFZ, RCI, RUB, SW, UCC, WTC.
*Dicyclohexyl phthalate	ACP, DUP, FMP, MON, PFZ.
Diethyl isophthalate	PFZ.
*Diethyl phthalate	DUP, EKT, KF, MON, PFZ, WTC.
Dihexyl phthalate	ENJ.
*Diisodecyl phthalate	ACP, BFG, CPL, EKT, ENJ, GRH, MON, PCC, RIC, RUB, TEK, UCC, WTC.
Diisononyl phthalate	ENJ, PFZ.
Diiso-octyldecyl phthalate	PCC.
Di(2-methoxyethyl) phthalate	EKT, FMP, SFA.
Dimethyl isophthalate	PFZ.
*Dimethyl phthalate	EKT, KF, MON, TCC, WTC.
Dinonyl phthalate	ACP, RCI.
Dioctyl phthalates:	
Dicapryl phthalate	WTH.
Di(2-ethylhexyl) isophthalate	UCC.
*Di(2-ethylhexyl) phthalate	ACP, BFG, CGL, CPL, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RUB, TEK, UCC, WTC.
*Diiso-octyl phthalate	ACP, CGL, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
Mixed dioctyl phthalates	CPL, TEK.
Diphenyl phthalate	MON.
*Di-tridecyl phthalate	ACP, CGL, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
2-(Ethylhexyl)isodecyl phthalate	CGL, UCC.
Glycol phthalate esters:	
Butyl phthalyl butyl glycolate	MON.
Ethyl (and methyl) phthalyl ethyl glycolate	MON.
Polypropylene glycol bis(amyl) phthalate	UCC.
All other glycol phthalate esters	HPC, WTC.
*n-Hexyl n-decyl phthalate	ACP, GRH, TEK, UCC.
Hexyl isodecyl phthalate	GRH.
Isodecyl tridecyl phthalate	TEK.
Iso-octyl isodecyl phthalate	RUB.
Iso-octyl tridecyl phthalate	RUB.
*n-Octyl n-decyl phthalate	ACP, CPL, GRH, MON, PCC, RCI, RUB, TEK, UCC.
All other phthalic anhydride esters	FMP, MON, PFZ.

TABLE 2.--Plasticizers for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, CYCLIC--Continued	
Polyethylene glycol dibenzoate	VEL.
Tetrahydrofurfuryl oleate	CCW, EMR.
Toluenesulfonamide o-, p- mixtures	ACY, LAK, MON.
*Trimellitic acid esters:	
Tri-n-alkyl trimellitate	RUB.
Tri(2-ethylhexyl) trimellitate	GRH, PFZ, RCI.
Triisodecyl trimellitate	PFZ.
*Triiso-octyl trimellitate	GRH, PCC, RCI, RUB, TEK.
*Tri-n-octyl n-decyl trimellitate	GRH, PFZ, RUB, TEK.
*Trioctyl trimellitate	PCC, RCI, RUB, TEK.
All other trimellitic acid esters	CPL, ENJ, x.
Trimethylpentanediol dibenzoate	VEL.
Trimethylpentanediol monoisobutyrate monobenzoate	EKT.
All other cyclic plasticizers	CCW, KPI, MON, NEV.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters:	
*Di[2-(2-butoxyethoxy)ethyl] adipate	FMP, RCI, TKL, WTH.
*Di(2-ethylhexyl) adipate	CPL, DA, EKT, GRH, HAL, MON, PCC, PFZ, RCI, RH, TEK, UCC.
Di-n-hexyl adipate	ARC.
Diisobutyl adipate	FMP, GRH, HAL.
*Diisodecyl adipate	ACP, GRH, MON, PCC, PFZ, RCI, RH, RUB, TEK, UCC.
*Diiso-octyl adipate	BFG, GRH, PCC, RH, RUB.
Diisononyl adipate	ENJ.
Diisopropyl adipate	SBC, VND.
Di-n-octyl adipate	ACP, ENJ.
*n-Hexyl n-decyl adipate	GRH, PCC, TEK.
Iso-octyl isodecyl adipate	GRH, PFZ.
*n-Octyl n-decyl adipate	ACP, GRH, MON, PCC, RCI, RH, RUB, TKL.
All other adipic acid esters	RUB, UCC.
Azelaic acid esters:	
Dicyclohexyl azelate	PFZ.
*Di(2-ethylhexyl) azelate	EKT, EMR, PFZ, RCI, RUB, UCC.
Diisobutyl azelate	HAL.
Diiso-octyl azelate	EMR.
All other azelaic acid esters	EMR.
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, EMR, HAL, MON, PFZ, RCI, RH, RUB, TEK, WTH.
Di[(butoxyethoxy)ethoxy]methane	TKL.
Dibutyl tartrate	ARC.
Diethylene glycol dipelargonate (Dinonanoate)	EMR.
Diiso-octyl diglycolate	CCA.
*Epoxidized esters:	
Butyl epoxydioleate	ASH.
Butyl epoxytallate	ASH, TEK.
Epoxidized linseed oils	ASH, SWT.
*Epoxidized soya oils	ASH, CPL, FMP, NTL, RH, SWT, TEK, UCC, WTC.
Epoxidized tall oils	RH.
*2-Ethylhexyl epoxytallates	ASH, NTL, SWT.
Octyl epoxystearates	WTC.
*Octyl epoxytallates	RH, TEK, UCC, WTC.
All other epoxidized esters	EMR.
Glyceryl tri-acetate (Triacetin)	PFZ.
Glyceryl tributyrate and tripropionate	EKT.
Glycol pelargonate	EMR.
Isodecyl nonanoate (Isodecyl pelargonate)	EMR.
Lauric acid esters	HAL, SBC.
Myristic acid esters: *Isopropyl myristate	ARC, DRW, PCS, SBC.
*Oleic acid esters:	
2-Butoxyethyl oleate	ARC, HAL.
*Butyl oleate	ARC, DA, HAL, ICI, SWT, WM, WTC, WTH.

TABLE 2.--Plasticizers for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, ACYCLIC--Continued	
*Oleic acid esters--Continued	
Decyl oleate	VND.
Glyceryl trioleate (Triolein)	DRW, EMR, SWT, WM.
Isobutyl oleate	DA.
Isopropyl oleate	EMR, WM.
*Methyl oleate	CHL, DA, EMR, HUM, ICI, SWT.
Propyl oleate	CHL, EMR, WM.
All other oleic acid esters	RH.
Palmitic acid esters:	
Isobutyl palmitate	DA.
Iso-octyl palmitate	RUB.
*Isopropyl palmitate	ARC, DRW, PCS, SBC.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate	FMP, SM.
Tributyl phosphate	FMP.
Tri(2-chloroethyl) phosphate	SFA, UCC.
Triethyl phosphate	EKT.
Trioctyl phosphate	UCC.
All other phosphoric acid esters	SCP, SM.
Ricinoleic and acetylricinoleic acid esters:	
n-Butyl acetylricinoleate	NTL.
Butyl ricinoleate	NTL, RCI.
*Glyceryl monoricinoleate	DA, GLY, HAL, NTL.
Glyceryl tri(acetylricinoleate)	NTL.
Methyl ricinoleate	NTL.
All other ricinoleic and acetylricinoleic acid esters	NTL.
Sebacic acid esters:	
Dibutoxyethyl sebacate	HAL, RCI.
*Dibutyl sebacate	EKT, GRH, HAL, PFZ, RCI, RH, WTH.
*Di(2-ethylhexyl) sebacate	GRH, HAL, PFZ, RCI, RH, WTH.
Diiso-octyl sebacate	DA, RCI.
*Stearic acid esters:	
Butoxyethyl stearate	ARC, WM.
*n-Butyl stearate	AAE, ARC, CHL, DA, DRW, EMR, GRO, ICI, PCS, RUB, SCP, SWT, WTC, WTH.
Dimethylammonium stearate	RH.
Dodecyl (lauryl) stearate	RCI.
2-Ethylhexyl stearate	FMP.
Glyceryl triacetyl stearate	NTL.
Isobutyl stearate	ARC, DA.
Isocetyl stearate	WM.
Isopropyl stearate	ARC, WM.
Methyl dichlorostearate	HK.
Methyl pentachlorostearate	HK.
Methyl stearate	CHL, SWT.
All other stearic acid esters	DA, HAL, WM, x.
Sucrose acetate isobutyrate	ARC, EKT.
Tetraethylene glycol di(2-ethylhexanoate)	UCC.
Triethylene glycol dicaprylate	RUB.
*Triethylene glycol di(caprylate-caprate)	ASH, DRW, HAL, RUB, WM.
Triethylene glycol di-2-ethylbutyrate	UCC.
Triethylene glycol di(2-ethylhexanoate)	UCC.
Triethylene glycol dipelargonate	RUB.
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	EKX.
All other acyclic plasticizers	ARC, EMR, HAL, HPC, RUB, SCP, TKL, WM.

TABLE 3.--Plasticizers: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of plasticizers manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
AAE	American Aniline & Extract Co., Inc.
ACC	Amoco Chemicals Corp.
ACP	Allied Chemical Corp., Plastics Div.
ACY	American Cyanamid Co.
ARC	Armour & Co., Armour Industrial Chemical Co. Div.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
CCA & CCW	Cincinnati Melacron Chemicals, Inc.
CGL	Cargill, Inc.
CHL	Chemol, Inc.
COM	Commercial Solvents Corp.
CPL	Conoco Plastics
CTN	Chemetron Corp., Organic Chemical Div.
DA	Diamond Shamrock Corp.
DOW	Dow Chemical Co.
DRW	Drew Chemical Corp.
DUP	E. I. duPont de Nemours & Co., Inc.
EK	Eastman Kodak Co.:
EKT	Tennessee Eastman Co. Div.
EKX	Texas Eastman Co. Div.
EMR	Emery Industries, Inc.
ENJ	Enjay Chemical Co.
FMP	FMC Corp., Organic Chemicals Div.
FOR	El Dorado Chemical Co.
GLY	Glyco Chemicals, Inc.
GRH	W.R. Grace & Co., Hatco Chemical Div.
GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
HAL	C. P. Hall Co. of Illinois
HK	Hooker Chemical Corp.
HPC	Hercules, Inc.
HUM	Kraftco Corp., Humko Plastics Div.
ICI	ICI America, Inc.
KF	Kay-Fries Chemicals, Inc.
KPI	Kenrich Petrochemicals, Inc.
LAK	Lakeway Chemicals, Inc.
MON	Monsanto Co.
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.
NEV	Neville Chemical Co.
NTL	National Lead Co.
ORO	Chevron Chemical Co.
PCC	USS Chemicals Div. of U.S. Steel Corp.
PCS	Emery Industries, Inc.
PFZ	Pfizer, Inc.
RCI	Reichhold Chemicals, Inc.
RH	Rohm & Haas Co.
RUB	Hooker Chemical Corp., Ruco Div.
SBC	Scher Brothers, Inc.
SCP	Standard Chemical Products, Inc.
SFA	Stauffer Chemical Co., Specialty Chemical Div.
SM	Mobil Chemical Co.
SM	Mobil Oil Corp., Mobil Chemical Co. Div., Industrial Chemical Div.
SW	Sherwin-Williams Co.
SWT	Swift & Co., Swift Chemical Co. Div.
TCC	Tanatex Chemical Corp.
TEK	Teknor Apex Co.
TKL	Thiokol Chemical Corp.
UCC	Union Carbide Corp.
VEL	Velsicol Chemical Corp.
VND	Van Dyk & Co., Inc.
WM	Wilson Pharmaceutical & Chemical Corp. Wilson-Martin Div.
WTC	Witco Chemical Co., Inc.
WTH	Union Camp Corp., Harchem Div.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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.

Table 1 shows statistics for production and sales of surface-active agents grouped by ionic class and by chemical class and subclass; table 2 lists these products and identifies the manufacturers.[1] 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 1970 amounted to 3,886 million pounds, or 0.4 percent less than the 3,901 million pounds reported for 1969. Sales of bulk surface-active agents in 1970 amounted to 2,061 million pounds, valued at $387 million, compared with sales in 1969 of 1,988 million pounds, valued at $370 million. In terms of quantity, sales in 1970 were thus 3.7 percent larger than in 1969; in terms of value, sales in 1970 were 4.7 percent larger than in 1969.

Production of anionic surface-active agents in 1970 amounted to 2,728 million pounds, or 70.2 percent of the total output reported for 1970 and 0.9 percent less than the anionic output reported for 1969. Sales of anionics in 1970 amounted to 1,163 million pounds, valued at $169 million. Of the total anionic output, 924 million pounds consisted of potassium and sodium salts of fatty, rosin, and tall oil acids, of which 505 million pounds was the sodium salt of tallow acids and 121 million pounds was the sodium salt of coconut oil acids; 715 million pounds consisted of alkylbenzenesulfonates, of which 401 million pounds was sodium dodecylbenzenesulfonate, 139 million pounds was dodecylbenzenesulfonic acid, and 138 million pounds was sodium tridecylbenzenesulfonate; 491 million pounds consisted of ligninsulfonates, of which 306 million pounds was the calcium salt; and 179 million pounds consisted of sulfated ethers.

Production of nonionic surface-active agents in 1970 amounted to 922 million pounds, or 23.7 percent of the total output reported for 1970

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

and 5.0 percent less than the nonionic output reported for 1969. Sales of nonionics in 1970 amounted to 736 million pounds, valued at $148 million. Of the total nonionic output, 249 million pounds consisted of alkylphenol ethoxylates and other benzenoid ethers, of which 142 million pounds was nonylphenol ethoxylate; 379 million pounds consisted of alcohol ethoxylates and other nonbenzenoid ethers, of which 296 million pounds was mixed linear alcohol ethoxylate; 111 million pounds consisted of glycerol esters; and 90 million pounds consisted of alkanolamides.

Production of cationic surface-active agents in 1970 amounted to 228 million pounds, or 5.9 percent of the total output reported for 1970 and 35.3 percent more than the cationic output reported for 1969. Sales of cationics in 1970 amounted to 155 million pounds, valued at $64 million. Of the total cationic output, 51 million pounds consisted of quaternary ammonium salts not containing oxygen, and 51 million pounds consisted of primary monoamines not containing oxygen.

Production of amphoteric surface-active agents in 1970 amounted to 7.6 million pounds, or 0.2 percent of the total output reported for 1970 and 10.1 percent less than the amphoteric output reported for 1969. Sales of amphoterics in 1970 amounted to 7.5 million pounds, valued at $5.4 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 phosphation or sulfation.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970

[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 manufacturer 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	3,886,186	2,061,457	387,201	$0.19
Benzenoid[4]	1,081,178	492,607	90,666	.18
Nonbenzenoid[5]	2,805,008	1,568,850	296,535	.19
Amphoteric Surface-Active Agents				
Total	7,627	7,539	5,397	.72
Anionic Surface-Active Agents				
Total	2,727,595	1,163,113	169,204	.15
Carboxylic acids (and salts thereof), total	937,520	...	...	...
Amine salts of fatty rosin, and tall oil acids	926	317	119	.38
Carboxylic acids having amide, ester, or ether linkages, total	12,494	8,492	5,721	.67
N-Lauroylsarcosine, sodium salt	5,291	1,597	1,114	.70
All other	7,203	6,895	4,607	.67
Potassium and sodium salts of fatty, rosin, and tall oil acids, total	924,100	...	...	...
Castor oil acids, potassium salt	46	41	10	.24
Coconut oil acids, potassium and sodium salts, total	132,945	3,548	1,279	.36
Potassium salt	11,944	...	...	...
Sodium salt	121,001	...	...	...
Corn oil acids, potassium and sodium salts	771	754	304	.40
Mixed vegetable fatty acids, potassium salt	3,212	...	...	...
Oleic acid, potassium salt	3,993	742	196	.26
Oleic acid, sodium salt	1,281	558	138	.25
Soybean oil acids, potassium and sodium salts	306	...	...	...
Stearic acid, potassium salt	398	...	...	...
Tall oil acids, potassium and sodium salts, total	33,316	19,852	4,074	.21
Potassium salt	21,167	...	...	...
Sodium salt	12,149	...	...	...
Tallow acids, sodium salt	504,955	...	...	...
All other	242,877	...	...	...
Phosphoric and polyphosphoric acid esters (and salts thereof), total	27,189	16,003	8,089	.51
Alcohols and phenols, ethoxylated and phosphated, total	20,213	10,544	4,726	.45
Dinonylphenol, ethoxylated and phosphated	953	896	353	.39
Mixed linear alcohols, ethoxylated and phosphated	1,343	1,045	334	.32
Nonylphenol, ethoxylated and phosphated	11,075	3,486	1,246	.36
Tridecyl alcohol, ethoxylated and phosphated	1,185	...	...	...
All other	5,657	5,117	2,793	.55
Alcohols, phosphated or polyphosphated, total	6,976	5,459	3,363	.62
2-Ethylhexyl phosphate, sodium salt	143	141	66	.47
All other	6,833	5,318	3,297	.62
Sulfonic acids (and salts thereof), total	1,331,043	700,502	69,513	.10
Alkylbenzenesulfonates, total	715,444	184,947	26,576	.14

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Anionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Sulfonic acids (and salts thereof)--Continued				
Alkylbenzenesulfonates--Continued				
Dodecylbenzenesulfonates, total	561,436	163,362	23,668	$0.14
Dodecylbenzenesulfonic acid	138,828	45,376	5,881	.13
Dodecylbenzenesulfonic acid, calcium salt	9,785	6,178	2,259	.37
Dodecylbenzenesulfonic acid, isopropanolamine salt	608	...	...	...
Dodecylbenzenesulfonic acid, isopropylamine salt	3,134	3,471	1,029	.30
Dodecylbenzenesulfonic acid, potassium salt	49	...	...	...
Dodecylbenzenesulfonic acid, sodium salt	400,559	100,484	12,778	.13
Dodecylbenzenesulfonic acid, triethanolamine salt	4,034	3,877	822	.21
All other	4,439	3,976	899	.23
Other alkylbenzenesulfonates, total	154,008	21,585	2,908	.13
Tridecylbenzenesulfonic acid, sodium salt	138,241	9,143	1,108	.12
All other	15,767	12,442	1,800	.14
Benzene-, cumene-, toluene-, and xylenesulfonates, total	64,528	52,268	4,786	.09
Cumenesulfonic acid, ammonium salt	4,737	4,844	527	.11
Xylenesulfonic acid, ammonium salt	4,479	4,538	369	.08
Xylenesulfonic acid, sodium salt	38,829	26,957	2,303	.09
All other	16,483	15,929	1,587	.10
Ligninsulfonates, total	491,327	424,315	15,996	.04
Ligninsulfonic acid, calcium salt	306,197	300,585	7,852	.03
Ligninsulfonic acid, chromium salt	9,341	9,343	834	.09
Ligninsulfonic acid, sodium salt	73,872	42,431	3,757	.09
All other	101,917	71,956	3,553	.05
Naphthalenesulfonates, total	8,246	6,972	2,675	.38
Butyl- and dibutylnaphthalenesulfonic acid and sodium salt	1,732	1,526	548	.36
All other	6,514	5,446	2,127	.39
Sulfonic acids having amide linkages, total	5,734	3,782	2,550	.67
Sulfosuccinic acid derivatives	1,849	1,493	1,103	.74
Taurine derivatives, total	3,885	2,289	1,447	.63
N-Methyl-N-oleoyltaurine, sodium salt	...	2,083	1,144	.55
All other	...	206	303	1.47
Sulfonic acids having ester or ether linkages, total	41,549	23,968	15,374	.64
Sulfosuccinic acid esters, total	12,469	11,752	6,384	.54
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt	9,095	8,500	4,757	.56
All other	3,374	3,252	1,627	.50
Other sulfonic acids having ester or ether linkages	29,080	12,216	8,990	.74
All other sulfonic acids	4,215	4,250	1,556	.37
Sulfuric acid esters (and salts thereof), total	...	189,043	43,118	.23
Acids, amides, and esters, sulfated, total	...	15,146	3,684	.24
Coconut oil acids - ethanolamine condensate, sulfated, potassium salt	36	36	27	.75
Esters of sulfated oleic acid, total	5,261	4,868	1,414	.29
Butyl oleate, sulfated, sodium salt	1,868	1,641	433	.26
Glycerol trioleate, sulfated, sodium salt	165	...	...	...
Isopropyl oleate, sulfated, sodium salt	421	413	116	.28
Propyl oleate, sulfated, sodium salt	449	447	86	.19
All other	2,358	2,367	779	.33
Oleic acid, sulfated, disodium salt	6,456	6,499	1,453	.22
Tall oil, sulfated, sodium salt	2,728	2,662	320	.12
All other	...	1,081	470	.43

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Anionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Sulfuric acid esters (and salts thereof)--Continued				
Alcohols, sulfated, total	...	40,346	16,192	$0.40
Coconut and sperm oil alkyl sulfate, sodium salt	505	502	252	.50
Dodecyl sulfate salts, total	57,584	32,400	13,093	.40
Dodecyl sulfate, ammonium salt	2,588	2,425	1,187	.49
Dodecyl sulfate, diethanolamine salt	...	2,272	1,404	.62
Dodecyl sulfate, magnesium salt	365	...	...	...
Dodecyl sulfate, sodium salt	20,337	17,875	6,642	.37
Dodecyl sulfate, triethanolamine salt	16,844	...	...	...
All other	17,450	9,828	3,860	.39
Mixed linear alcohol sulfate, ammonium salt	...	88	66	.75
Mixed linear alcohol sulfate, sodium salt	2,636	2,411	782	.32
All other	...	4,945	1,999	.40
Ethers, sulfated, total	179,290	92,806	15,010	.16
Alkylphenols, ethoxylated and sulfated	3,421	3,378	1,144	.34
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt	1,038	572	303	.53
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	5,028	4,926	1,468	.30
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	9,970	12,064	2,052	.17
All other	159,833	71,866	10,043	.14
Natural fats and oils, sulfated, total	42,447	40,745	8,232	.20
Castor oil, sulfated, sodium salt	8,443	8,054	2,270	.28
Coconut oil, sulfated, sodium salt	1,216	1,119	301	.27
Cod oil, sulfated, sodium salt	1,341	1,366	175	.13
Mixed fish oils, sulfated, sodium salt	4,575	4,034	720	.18
Neat's-foot oil, sulfated, sodium salt	2,202	1,833	336	.18
Soybean oil, sulfated, sodium salt	90	90	41	.46
Sperm oil, sulfated, sodium salt	7,264	7,207	1,384	.19
Tallow, sulfated, sodium salt	10,077	9,989	1,372	.14
All other	7,239	7,053	1,633	.23
Other anionic surface-active agents[6]	134,900	223,261	36,643	.16
Cationic Surface-Active Agents				
Total	228,489	155,093	64,424	.42
Amine oxides and oxygen-containing amines (except those having amine linkages), total	50,438	...	...	...
Acyclic, total	43,405	...	...	...
(Coconut oil alkyl)amine, ethoxylated	4,694	2,937	1,049	.36
(Tallow alkyl)amine, ethoxylated	2,186	1,292	911	.71
All other	36,525	...	...	...
Cyclic (except imidazoline and oxazoline derivatives)	3,232	...	...	...
Imidazoline and oxazoline derivatives, total	3,801	2,844	1,306	.46
2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline	328	328	138	.42
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	...	491	165	.34
All other	3,473	2,025	1,003	.50
Amines and amine oxides having amide linkages, total	15,041	14,115	5,923	.42
Carboxylic acid - diamine and polyamine condensates, total	8,369	8,195	2,815	.34
Stearic acid - diethylenetriamine condensate	333	...	...	...
All other	8,036	8,195	2,815	.34
Oleic acid - ethylenediamine condensate, monoethoxylated	3,565	...	...	...
Stearic acid - ethylenediamine condensate, monoethoxylated	2,090	1,914	1,145	.60
Other amines and amine oxides having amide linkage	1,017	4,006	1,963	.49

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Cationic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Amines, not containing oxygen (and salts thereof), total	91,868	54,698	19,888	$0.36
Amine salts	3,658	2,416	895	.37
Diamines and polyamines, total	18,516	13,387	4,009	.30
N-(Coconut oil alkyl)trimethylenediamine	904	725	367	.51
Imidazoline derivatives	2,467	976	331	.34
N-(9-Octadecenyl)trimethylenediamine	1,688	1,223	541	.44
N-(Tallow alkyl)trimethylenediamine	6,859	4,668	1,329	.28
All other	6,598	5,795	1,441	.25
Primary monoamines, total	50,856	24,026	8,208	.34
(Hydrogenated tallow alkyl)amine	...	3,207	806	.25
9-Octadecenylamine	3,123	1,198	473	.39
Octadecylamine	...	606	271	.45
(Tallow alkyl)amine	...	7,434	2,068	.28
All other	47,733	11,581	4,590	.40
Secondary and tertiary monoamines, total	18,838	14,869	6,776	.46
N,N-Dimethyloctadecylamine	1,112	796	423	.53
N-Methylbis(coconut oil alkyl)amine	865	736	299	.41
N-Methylbis(hydrogenated tallow alkyl)amine	...	3,532	1,010	.29
All other	16,861	9,805	5,044	.51
Oxygen-containing quaternary ammonium salts	19,727	...	...	...
Quaternary ammonium salts, not containing oxygen, total	51,415	44,480	20,861	.47
Acyclic, total	38,735	33,043	12,471	.38
Bis(coconut oil alkyl)dimethylammonium chloride	5,004	2,782	1,244	.45
Bis(hydrogenated tallow alkyl)dimethylammonium chloride	24,486	22,762	6,242	.27
Hexadecyltrimethylammonium salts	610	476	480	1.01
Trimethyl(tallow alkyl)ammonium chloride	1,397	957	442	.46
All other	7,238	6,066	4,063	.67
Benzenoid, total	12,680	11,437	8,390	.73
Benzyl(coconut oil alkyl)dimethylammonium chloride	436	424	343	.81
Benzyldimethyl(mixed alkyl)ammonium chloride	5,510	5,502	4,124	.75
Benzyldimethyloctadecylammonium chloride	1,446	...	...	...
Benzyltrimethylammonium chloride	...	96	41	.43
All other	5,288	5,415	3,882	.72
Groups listed above for which separate sales data may not be shown	...	34,727	14,486	.42
Nonionic Surface-Active Agents				
Total	922,475	735,712	148,176	.20
Carboxylic acid amides, total	89,984	58,274	17,327	.30
Diethanolamine condensates (amine/acid ratio=2/1), total	38,158	26,288	7,322	.28
Capric acid	83	118	49	.42
Coconut oil acids	18,406	18,071	5,144	.28
Lauric acid	3,252	...	...	...
Oleic acid	962	581	177	.30
Stearic acid	736	522	220	.42
Tall oil acids	424	159	47	.30
All other	14,295	6,837	1,685	.25

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Nonionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Carboxylic acid amides--Continued				
Diethanolamine condensates (other amine/acid ratios), total---	31,087	25,083	7,802	$0.31
Coconut oil acids (amine/acid ratio=1/1)----------	16,608	15,798	4,449	.28
Lauric acid (amine/acid ratio=1/1)----------	10,650	...	...	...
Oleic acid (amine/acid ratio=1/1)----------	384	337	121	.36
Stearic acid (amine/acid ratio=1/1)----------	577	659	277	.42
All other----------	2,868	8,289	2,955	.36
Ethanolamine condensates, total----------	15,832	5,243	1,577	.30
Coconut oil acids (amine/acid ratio=2/1)----------	1,164	...	...	...
All other----------	14,668	5,243	1,577	.30
Lauric acid - isopropanolamine condensate----------	37	45	35	.78
Other carboxylic acid amides----------	4,870	1,615	591	.37
Carboxylic acid esters, total----------	203,570	153,973	49,123	.32
Anhydrosorbitol esters, total----------	18,523	13,525	4,771	.35
Anhydrosorbitol mono-oleate----------	6,950	4,648	1,663	.36
Anhydrosorbitol monopalmitate----------	972	...	...	...
Anhydrosorbitol monostearate----------	4,988	...	...	...
Anhydrosorbitol tristearate----------	...	114	37	.32
All other----------	5,613	8,763	3,071	.35
Diethylene glycol esters, total----------	1,948	1,722	621	.36
Diethylene glycol monolaurate----------	94	79	26	.33
Diethylene glycol monostearate----------	491	440	138	.31
All other----------	1,363	1,203	457	.38
Ethoxylated anhydrosorbitol esters, total----------	20,466	18,617	7,479	.40
Ethoxylated anhydrosorbitol monolaurate----------	4,390	4,262	1,647	.39
Ethoxylated anhydrosorbitol mono-oleate----------	8,306	7,011	2,840	.41
Ethoxylated anhydrosorbitol monostearate----------	5,163	4,746	2,001	.42
Ethoxylated anhydrosorbitol tristearate----------	980	...	...	...
All other----------	1,627	2,598	991	.38
Ethylene glycol esters----------	3,575	3,366	990	.29
Glycerol esters, total----------	111,080	83,129	23,559	.28
Complex glycerol esters----------	3,705	3,239	1,325	.41
Glycerol esters of chemically defined acids, total----------	35,561	14,017	4,511	.32
Glycerol distearate----------	647	594	295	.50
Glycerol monolaurate----------	...	62	27	.44
Glycerol mono-oleate----------	2,955	1,863	662	.36
Glycerol monostearate----------	28,486	8,462	2,450	.29
All other----------	3,473	3,036	1,077	.35
Glycerol esters of mixed acids, total----------	71,814	65,873	17,723	.27
Glycerol monoester of hydrogenated cottonseed oil acids---	4,210	...	...	...
Glycerol monoester of hydrogenated soybean oil acids------	17,012	15,392	3,786	.25
All other----------	50,592	50,481	13,937	.28
Natural fats and oils, ethoxylated, total----------	5,192	4,534	1,442	.32
Castor oil, ethoxylated----------	3,981	3,639	1,070	.29
Lanolin, ethoxylated----------	520	253	152	.60
All other----------	691	642	220	.34
Polyethylene glycol esters, total----------	27,145	18,492	6,227	.34
Polyethylene glycol esters of chemically defined acids, total----------	19,398	13,261	4,810	.36
Polyethylene glycol dilaurate----------	1,331	1,059	358	.34
Polyethylene glycol dioleate----------	3,860	723	243	.34
Polyethylene glycol monolaurate----------	2,520	2,151	723	.34
Polyethylene glycol mono-oleate----------	2,878	2,578	919	.36
Polyethylene glycol monostearate----------	6,091	4,665	1,801	.39
All other----------	2,718	2,085	766	.37

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1970--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Nonionic Surface-Active Agents--Continued				
Carboxylic acid esters--Continued				
Polyethylene glycol esters--Continued				
Polyethylene glycol esters of rosin and tall oil acids, total	5,330	3,614	851	$0.24
Polyethylene glycol monoester of tall oil acids	1,857	...	...	...
Polyethylene glycol sesquiester of tall oil acids	3,038	2,381	558	.23
All other	435	1,233	293	.24
Polyethylene glycol esters of other mixed acids, total	2,417	1,617	566	.35
Polyethylene glycol sesquiester of coconut oil acids	171	167	87	.52
All other	2,246	1,450	479	.33
Polyglycerol esters	2,075	2,000	776	.39
Propanediol esters, total	4,969	1,916	595	.31
1,2-Propanediol monostearate	3,788	1,663	510	.31
All other	1,181	253	85	.34
Other carboxylic acid esters[7]	8,597	6,672	2,663	.40
Ethers, total	627,422	522,554	80,736	.15
Benzenoid ethers, total	248,804	215,836	36,222	.17
Dodecylphenol, ethoxylated	17,038	8,203	1,277	.16
Nonylphenol, ethoxylated	141,587	125,392	18,497	.15
Phenol, ethoxylated	7,691	...	...	...
All other	82,488	82,241	16,448	.20
Nonbenzenoid ethers, total	378,618	306,718	44,514	.15
Linear alcohols, alkoxylated, total	328,293	269,261	34,692	.13
Decyl alcohol, ethoxylated	1,118	...	...	...
Dodecyl alcohol, ethoxylated	11,701	...	...	...
Hexadecyl alcohol, ethoxylated	711	625	347	.56
Mixed linear alcohols, ethoxylated	295,825	239,867	28,245	.12
9-Octadecenyl alcohol, ethoxylated	3,441	2,001	981	.49
Octadecyl alcohol, ethoxylated	803	315	261	.83
All other	14,694	26,453	4,858	.18
Other ethers and thioethers, total	50,325	37,457	9,822	.26
Mixed alcohols, ethoxylated	507	...	...	...
Poly(ethylene and propylene) glycols	5,624	4,876	1,106	.23
Tridecyl alcohol, ethoxylated	5,525	4,334	987	.23
All other	38,669	28,247	7,729	.27
Other nonionic surface-active agents	1,499	911	990	1.09

[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," as 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 acids, amides, and esters and 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.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970

[Surface-active agents 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 codes (according to list in table 3)
Amphoteric Surface-Active Agents	
Acyclic:	
Alkylbetaine	DUP.
(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-[2-(Carboxymethylamino)ethyl]-N-(2-hydroxyethyl)-coconut oil amide, sodium salt.	UVC.
(Carboxymethyl)[3-(coconut oil amido)propyl] dimethylammonium chloride, sodium salt.	JRG.
(Carboxymethyl)[3-(coconut oil amido)propyl]dimethylammonium hydroxide, inner salt.	UVC.
(Carboxymethyl)dodecyldimethylammonium hydroxide, inner salt.	TCC.
(1-Carboxyundecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-(Coconut oil alkyd)-β-alanine, sodium salt	GNM.
N-(Coconut oil alkyl)-β-alanine, partial 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, UVC.
N-(2-Hydroxyethyl)-N-(2-lauramidoethyl)-β-alanine, sodium salt.	UVC, VAC.
N-(2-Hydroxyethyl)-N-(2-stearamidoethyl)glycine, sodium salt.	GAF
Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt.	RH.
(Mixed alkyl)sulfobetaine	DUP, TXT.
Mixed fatty betaines	TXT.
Oleic acid - ethylenediamine condensate, propoxylated and sulfated, sodium salt.	S.
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt.	GNM.
All other acyclic	VAC.
Cyclic:	
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium chloride, disodium salt.	UVC.
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium hydroxide, disodium salt.	MIR, UVC.
1-[2-(2-Carboxyethoxy)ethyl]-1-(2-hydroxy-3-sulfopropyl)-2-(mixed alkyl)-2-imidazolinium hydroxide, disodium salt.	UVC.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, UVC.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium chloride, sodium salt.	UVC.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, UVC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Amphoteric Surface-Active Agents--Continued	
Cyclic--Continued	
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, PCS, UVC.
Heptadecylmethylbenzimidazolinesulfonic acid, sodium salt.	CGY.
3-[2-(2-Undecyl-2-imidazolin-1-yl)ethoxy]-propionic acid, sodium salt.	UVC
All other cyclic	SEY.
Anionic Surface-Active Agents	
*Carboxylic acids (and salts thereof):	
*Amine salts of fatty, rosin, and tall oil acids:	
Coconut oil acids, diethanolamine salt	SEY.
Coconut oil acids, ethanolamine salt	SBP.
Oleic acid, n-butylamine salt	DYS.
Oleic acid, triethanolamine salt	DA.
Stearic acid, N,N,N',N'-tetrakis(2-hydroxyethyl)-ethylenediamine salt.	ICI.
Stearic acid, triethanolamine salt	AML, GLY.
Tallow acids, ethanolamine salt	SBP.
Tallow acids, triethanolamine salt	SBP.
*Carboxylic acids having amide, ester, or ether linkages:	
Butoxyethoxypropionic acid	UVC.
N-(Coconut oil acyl)sarcosine, sodium salt	HMP.
Diisobutylene - maleic anhydride copolymer, ammonium and sodium salts.	RH.
*N-Lauroylsarcosine, sodium salt	CGY, CP, HMP, ONX.
N-(Mixed alkylsulfonyl)glycine, sodium salt	GAF.
N-Oleoylpolypeptide, sodium salt	LMI, x.
N-Oleoylsarcosine, sodium salt	CGY, GAF.
Phthalic acid, octadecyl ester, potassium salt	CGY.
Stearoyl-2-lactylic acid	GLY.
Stearoyl-2-lactylic acid, calcium salt	GLY.
Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt.	UVC.
Unspecified sarcosine derivatives	HMP.
All other	MYW.
*Potassium and sodium salts of fatty, rosin, and tall oil acids:	
*Castor oil acid, potassium salt	ARL, NTL, PEK, SEA.
Castor oil acid, sodium salt	HEW, MRV, NTL.
*Coconut oil acids, potassium and sodium salts:	
*Potassium salt	ACE, AES, CON, DA, DYS, ESS, GAF, GRC, GRL, HEW, HNT, HRT. JRG, LUR, MCP, NMC, PCH, PEK, PG, SOP, SWT.
*Sodium salt	AGP, CON, CP, GRC, HEW, JRG, LEV, NMC, NPR, PG, PRX, SWT, VAC.
Coconut oil and tallow acids, sodium salt	BSW.
*Corn oil acids, potassium and sodium salts:	
Potassium salt	GRC, HNT, NMC.
Sodium salt	GRC, NMC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Carboxylic acids (and salts thereof)--Continued	
*Potassium and sodium salts of fatty, rosin, and tall oil acids--Continued	
Grease, sodium salt	NMC.
Lauric acid, potassium salt	VAL.
*Mixed vegetable fatty acids, potassium salt	AES, AML, DYS, GRC, GRL, LUR, PCH, PEK, SWT.
Mixed vegetable fatty acids, sodium salt	HAL, SWT.
Myristic acid, potassium salt	AES.
*Oleic acid, potassium salt	AES, ARL, CGY, CHP, DA, DYS, GYR, HNT, S, SHP, SWT, USR, WBG.
*Oleic acid, sodium salt	BSW, DA, GYR, LEV, LUR, MRV, NMC, SWT, USR, WBG, WTC.
Olive oil acids, sodium salt	HEW, HNT, LUR.
Palm kernel oil acids, sodium salt	NMC.
Palm oil acids, sodium salt	HEW, LUR, PRX.
Peanut oil acids, potassium salt	KAL, SLC.
Peanut oil acids, sodium salt	NMC.
Rosin acids, potassium salt	USR, x.
Rosin acids, sodium salt	CRT, HRT, PRX, SLM, x.
*Soybean oil acids, potassium and sodium salts:	
Potassium salt	CON, DYS, HEW, PEK.
Sodium salt	HEW.
*Stearic acid, potassium salt	GYR, HEW, USR, WTC.
Stearic acid, sodium salt	DA, HEW, LEV, MAL, MRV, WTC.
*Tall oil acids, potassium and sodium salts:	
*Potassium salt	ACE, AES, ACY, CON, DYS, ESS, GAF, GRC, HNT, NMC, PEK, PNX, SOP, VAL, x.
*Sodium salt	ASY, GRC, GYR, PRX, SNW, SOP, UNP, x.
Tallow acids, potassium salt	AES, ASY, DYS, GYR, PG, SWT, USR.
*Tallow acids, sodium salt	AGP, ASY, BSW, CON, CP, DA, GRC, GYR, HEW, JRG, LEV, LUR, NMC, NPR, PG, PRX, QCP, SWT.
All other	ASY.
*Phosphoric and polyphosphoric acid esters (and salts thereof):	
*Alcohols and phenols, ethoxylated and phosphated:	
Butyl alcohol ethoxylated and phosphated	GAF.
*Dinonylphenol, ethoxylated and phosphated	GAF, RTF, TCH, TXT.
Dodecyl alcohol, ethoxylated and phosphated	GAF, WIC, WTC.
Dodecylphenol, ethoxylated and phosphated	GAF.
2-Ethylhexanol, ethoxylated and phosphated	WAY.
Iso-pentyl alcohol, ethoxylated and phosphated	GAF.
*Mixed linear alcohols, ethoxylated and phosphated	CHP, CRT, CST, GAF, SEY, TCH, TXT, WTC, WYN.
*Nonylphenol, ethoxylated and phosphated	GAF, HDG, NLC, RTF, SCP, SEY, TCC, TCI, TXN, TXT, VAC, WAY, WTC.
9-Octadecenyl alcohol, ethoxylated and phosphated	GAF.
9-Octadecenyl alcohol, ethoxylated and phosphated ethanolamine salt.	GAF.
Octylphenol, ethoxylated and phosphated	DUP, RH, WAY.
Octylphenol, ethoxylated and phosphated, magnesium salt.	x.
Phenol, ethoxylated and phosphated	GAF, WTC, x.
Polyhydric alcohol, ethoxylated and phosphated	NLC.
*Tridecyl alcohol, ethoxylated and phosphated	GAF, LUR, NLC, SOP, TCC, WAY, WTC.
All other	GAF, WTC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Phosphoric and polyphosphoric acid esters (and salts thereof)--Continued	
*Alcohols, phosphated or polyphosphated:	
Decyl, dodecyl, and octyl phosphate, morpholine salt.	DUP, HDG.
Decyl and octyl phosphate	DUP, TXN.
Decyl polyphosphate, sodium salt	WTC.
Decyl polyphosphate, triethanolamine salt	RCD.
2-Ethylhexyl phosphate	WAY.
*2-Ethylhexyl phosphate, sodium salt	SEY, TCI, UCC, UVC.
2-Ethylhexyl polyphosphate	SFA, TCC, TCI.
2-Ethylhexyl polyphosphate, sodium salt	SFA.
Hexyl polyphosphate, potassium salt	DEX.
Mixed alkyl phosphate	CST, DUP, SFA, TCC.
Mixed alkyl phosphate, diethanolamine salt	DUP.
9-Octadecenyl phosphate	DUP.
Octadecyl phosphate, triethanolamine salt	RCD.
Octyl phosphate	TXT.
Octyl phosphate, alkylamine salt	DUP, TXT.
Octyl phosphate, potassium salt	DUP.
Octyl polyphosphate	DEX.
Octyl polyphosphate, potassium salt	x.
All other	SFA, VAL.
*Sulfonic acids (and salts thereof):	
*Alkylbenzenesulfonates:	
*Dodecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid	ACS, ARD, ATR, CO, CRT, CTL, EMK, HLI, LAK, LEV, PIL, PLX, PRX, RCD, RTF, STP, TCI, TEN, TXT.
Dodecylbenzenesulfonic acid, ammonium salt	AKS, ARL, ATR, TXN.
Dodecylbenzenesulfonic acid, butylamine salt	SOP, WTC.
*Dodecylbenzenesulfonic acid, calcium salt	APD, NLC, RCD, RH, RTF, STP, WTC.
Dodecylbenzenesulfonic acid, diethanolamine salt	SOP, VAL, WTC.
Dodecylbenzenesulfonic acid, dimethylamine salt	PIL.
Dodecylbenzenesulfonic acid, ethylenediamine salt.	APD.
*Dodecylbenzenesulfonic acid, isopropanolamine salt.	CTL, RCD, x.
*Dodecylbenzenesulfonic acid, isopropylamine salt.	APD, CTL, RCD, SNW, STP, TCH.
Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt.	ECC, NLC, PCS, WTC.
*Dodecylbenzenesulfonic acid, potassium salt	RCD, SOP, VAL.
*Dodecylbenzenesulfonic acid, sodium salt	AAC, ACS, AKS, APX, ARD, ARL, ATR, BLA, CO, CP, CRT, CTL, DA, DEP, DSO, ECC, HLI, LEV, MON, PG, PIL, PLX, PRX, RCD, STP, TEN, TXN, TXT, WTC.
*Dodecylbenzenesulfonic acid, triethanolamine salt.	AAC, ACS, ARD, ARL, CTL, ESS, HLI, PEK, PIL, RCD, RTF, SOS, STP, TXN, VAC, WTC, x.
*Other alkylbenzenesulfonates:	
Decylbenzenesulfonic acid, sodium salt	LAK, MON.
Didodecylbenzenesulfonic acid	CO.
Didodecylbenzenesulfonic acid, sodium salt	ATR.
Pentadecylbenzenesulfonic acid, potassium salt	STP.
Pentylbenzenesulfonic acid, sodium salt	MON.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Sulfonic acids (and salts thereof)--Continued	
*Alkylbenzenesulfonates--Continued	
*Other alkylbenzenesulfonates--Continued	
Tridecylbenzenesulfonic acid	CO, PIL, RCD.
*Tridecylbenzenesulfonic acid, sodium salt	BLA, CO, CP, NPR, PG, PIL, RCD, TXT, WTC.
Tridecylbenzenesulfonic acid, triethanolamine salt.	PCS.
Undecylbenzenesulfonic acid	TXT.
Undecylbenzenesulfonic acid, ammonium salt	TXT.
Undecylbenzenesulfonic acid, sodium salt	TXT.
Undecylbenzenesulfonic acid, triethanolamine salt.	TXT.
All other	RTF, USR.
*Benzene-, cumene-, toluene-, and xylenesulfonates:	
Benzenesulfonic acid, sodium salt	NES.
*Cumenesulfonic acid, ammonium salt	NES, STP, WTC.
Cumenesulfonic acid, sodium salt	NES.
Toluenesulfonic acid	NES, RCD, WTC.
Toluenesulfonic acid, potassium salt	NES, RCD, STP, TXN.
Toluenesulfonic acid, sodium salt	CO, NES, STP, WTC.
Xylenesulfonic acid	HLI.
*Xylenesulfonic acid, ammonium salt	CO, HLI, NES, RCD, STP, TXN, WTC.
Xylenesulfonic acid, potassium salt	NES.
*Xylenesulfonic acid, sodium salt	ATR, CO, HLI, NES, PIL, RCD, SDC, STP, TXN, WTC.
*Ligninsulfonates:	
Ligninsulfonic acid, aluminum salt	MAR.
Ligninsulfonic acid, ammonium salt	CPP, CRZ, SPA.
*Ligninsulfonic acid, calcium salt	CRZ, CWP, GLY, LKY, MAR, PSP.
*Ligninsulfonic acid, chromium salt	DCP, MAR, RAY.
Ligninsulfonic acid, iron salt	CRZ, WVA.
Ligninsulfonic acid, magnesium salt	WVA.
Ligninsulfonic acid, mixed salts	PSP.
*Ligninsulfonic acid, sodium salt	CRZ, MAR, RAY, SNC, WVA.
All other	WVA.
*Naphthalenesulfonates:	
Alkylnaphthalenesulfonic acid, sodium salt	ASY.
*Butyl- and dibutylnaphthalenesulfonic acid and sodium salt:	
Butylnaphthalenesulfonic acid, sodium salt	CLD, DA, ECC, PFZ.
Dibutylnaphthalenesulfonic acid	GAF, S.
Didodecylnaphthalenesulfonic acid, sodium salt	PFZ.
Diisopropylnaphthalenesulfonic acid, sodium salt	GAF, PFZ.
Dipentylnaphthalenesulfonic acid, ammonium salt	NLC.
Dipentylnaphthalenesulfonic acid, (mixed alkyl)-amine salt.	NLC.
Dipentylnaphthalenesulfonic acid, sodium salt	CGY.
Isopropylnaphthalenesulfonic acid	DUP, GRD.
Isopropylnaphthalenesulfonic acid, ammonium salt	NLC.
Methylenebis(2-naphthalenesulfonic acid)	DUP.
Methylnaphthalenesulfonic acid, sodium salt	DA, UDI.
Methylnonylnaphthalenesulfonic acid, sodium salt	UDI.
Tetrahydronaphthalenesulfonic acid	DUP.
All other	TRC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Sulfonic acids (and salts thereof)--Continued	
*Sulfonic acids having amide linkages:	
*Sulfosuccinic acid derivatives:	
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt.	ACY, CTN, MOA.
N-(2-Hydroxyethyl)-N-(tallow alkyl)sulfosuccinamic acid, disodium salt.	SCP.
N-Octadecylsulfosuccinamic acid, disodium salt----	ACY.
Sulfosuccinic acid, alkanolamide half ester, sodium salt.	HDG, SCP.
Sulfosuccinic acid, alkanolamide half ester, triethanolamine 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-oleoyltaurine, sodium salt----------	CRT, DA, DEP, GAF, HRT, MCP, SNW.
N-Methyl-N-palmitoyltaurine, sodium salt----------	GAF, WTC.
N-Methyl-N-(tall oil acyl)taurine, sodium salt----	DUP, GAF.
N-Methyl-N-(tallow acyl)taurine, sodium salt------	GAF.
All other----------	GAF.
*Sulfonic acids having ester or ether linkages:	
*Sulfosuccinic acid esters:	
Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl) ester, sodium salt.	GAF, MOA.
*Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt.	ACY, AKS, CGY, CHP, CRT, CST, DA, DAN, ECC, EMK, HDG, HRT, ICI, MCP, MOA, PC, TCI, UVC.
Sulfosuccinic acid, bis(tallow monoglyceride) ester, sodium salt.	ACY.
Sulfosuccinic acid, dihexyl ester, sodium salt----	ACY, MOA.
Sulfosuccinic acid, diisobutyl ester, sodium salt.	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.
*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----------	ACS.
Iso-octylphenol, ethoxylated and sulfonated, sodium salt.	CRT, RH.
All other----------	PG, SLM.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Sulfonic acids (and salts thereof)--Continued	
*All other sulfonic acids:	
Butylhydroxybiphenylsulfonic acid	RBC.
Mixed alkanesulfonic acid, sodium salt	DUP, VPC.
Mixed fish oils, sulfonated	SLM.
Petroleumsulfonic acid, water soluble (acid layer), sodium salt.	WTC.
All other	STC.
*Sulfuric acid esters (and salts thereof):	
*Acids, amides, and esters, sulfated:	
*Coconut oil acids - ethanolamine condensate, sulfated, potassium salt.	DEX, EMK, ONX.
Glycerol monoester of coconut oil acids, sulfated, sodium salt.	AAC, CP.
9-Octadecenyl acetate, sulfated, sodium salt	DUP.
*Oleic acid esters, sulfated:	
2-Butoxyethyl oleate, sulfated, sodium salt	S.
*Butyl oleate, sulfated, sodium salt	AKS, EFH, ICI, MCP, ONX, PC.
2-Ethylhexyl oleate, sulfated, sodium salt	MCP.
Ethyl oleate, sulfated, sodium salt	GAF.
*Glycerol trioleate, sulfated, sodium salt	LEA, MRV, SCP.
*Isopropyl oleate, sulfated, sodium salt	CRT, DEX, ECC, HRT, ICI, LEA, SCP.
Methyl oleate, sulfated, sodium salt	DA, ICI.
Mixed esters of oleic acid, sulfated, sodium salt.	EFH, MCP, SEY.
*Propyl oleate, sulfated, sodium salt	ACY, CHP, GAF, MRV, WTC.
*Oleic acid, sulfated, disodium salt	ACT, ACY, CRT, DA, EFH, GAF, ICI, LEA, MRV, SCO, TEN, WHW.
Oleic acid, sulfated, triethanolamine salt	WAY.
Propyl ricinoleate, sulfated, disodium salt	AKS.
*Tall oil, sulfated, sodium salt	ACY, APX, BAO, CHP, DA, HRT, ICI, KAL, MRV, RTF, SEA, WHI, WHW.
All other	EMR. SLM.
*Alcohols, sulfated:	
*Coconut and sperm oil alkyl sulfate, sodium salt	DEP, DUP.
Decyl and octyl sulfate, sodium salt	PCS.
Decyl sulfate, sodium salt	CTL, DA, DUP.
3,9-Diethyl-6-tridecyl sulfate, sodium salt	UCC.
*Dodecyl sulfate salts:	
2-Amino-2-methylpropanol salt	DUP.
*Ammonium salt	AAC, CTL, HLI, JRG, ONX, PCS, RCD, SCP, STP, WTC.
*Diethanolamine salt	DUP, HLI, JRG, ONX, SCP, STP, WTC.
Diethylamine salt	AAC.
N,N-Diethylcyclohexylamine salt	DUP.
Isopropanolamine salt	JRG, PCS.
*Magnesium salt	AAC, HLI, ONX, STP.
Potassium salt	HLI, PG, RCD.
*Sodium salt	AAC, CTL, DUP, HLI, JRG, ONX, PCS, PG, RCD, RTF. SCP, SEY, STP.
*Triethanolamine salt	AAC, CTL, DUP, HLI, ONX, PCS, PG, RCD, SCP, SEY, STP, TXT.
2-Ethylhexyl sulfate, sodium salt	AAC, PCS, UCC.
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	UCC.
Hexadecyl and 9-octadecenyl sulfate, sodium salt	AAC, RCD.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Sulfuric acid esters (and salts thereof)--Continued	
*Alcohols, sulfated--Continued	
Hexadecyl sulfate, sodium salt	AAC, DUP, SCP.
Hexyl sulfate, potassium salt	DEX.
*Mixed linear alcohol sulfate, ammonium salt	CP, LAK, S, SCP, TXT.
*Mixed linear alcohol sulfate, sodium salt	CP, LAK, SCP, TXT, VAC.
Mixed linear alcohol sulfate, triethanolamine salt.	LAK.
Nonyl sulfate, sodium salt	TEN.
Octadecyl sulfate, sodium salt	DUP, EMK, ONX, PG.
Octadecyl sulfate, triethanolamine salt	DUP.
Octyl sulfate, sodium salt	AAC, DUP.
Tridecyl sulfate, sodium salt	AAC.
*Ethers, sulfated:	
*Alkylphenols, ethoxylated and sulfated:	
Iso-octylphenol, ethoxylated and sulfated, sodium salt.	RH.
Nonylphenol, ethoxylated and sulfated, ammonium salt.	CGY, GAF, STP, TXT, x.
Nonylphenol, ethoxylated and sulfated, sodium salt.	CRT, GAF.
Nonylphenol, ethoxylated and sulfated, triethanolamine salt.	ARL.
*Dodecyl alcohol, ethoxylated and sulfated, ammonium salt.	AAC, CTL, HLI, TXT.
*Dodecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, CTL, DUP, ONX, PCS, RCD, RTF, SCP, STP.
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt.	LEV, TXN.
2-Hexyloxypropyl sulfate, sodium salt	S.
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt.	CO, LAK, NLC, PIL, RCD, SCP, SHC, STP, TXT, UCC.
*Mixed linear alcohols, ethoxylated and sulfated, sodium salt.	CO, CRT, DA, GAF, LAK, PIL, RCD, SCP, SHC, STP, TCI, TXT.
Sperm oil alcohol, ethoxylated and sulfated, sodium salt.	DUP, WAW.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ARL, RCD.
All other	APX, PG.
*Natural fats and oils, sulfated:	
*Castor oil, sulfated, sodium salt	ACT, ACY, AKS, AML, APX, BAO, BSW, CRT, DA, DEX, EFH, GAF, HRT, ICI, KAL, KNG, LEA, LUR, MCP, MRD, MRV, ONX, PC, S, SCO, SLC, SLM, SNW, WHI, WHW.
*Coconut oil, sulfated, sodium salt	ACY, BAO, DA, KNG, LUR, MRD, SEA, WHW.
*Cod oil, sulfated, sodium salt	ACT, BAO, CRT, S, SEA, WAW, WHI, WHW.
Grease, other than wool, sulfated, sodium salt	SEA, WHI.
Herring oil, sulfated, sodium salt	ACT, DA, WHI, WHW.
Lard, sulfated, sodium salt	SLM, WAW.
Mixed animal and vegetable oils, sulfated, sodium salt.	SLM.
*Mixed fish oils, sulfated, sodium salt	ACT, AML, DA, MRD, SCO, SLM.
Mustard seed oil, sulfated, sodium salt	DA, LUR.
*Neat's-foot oil, sulfated, sodium salt	ACT, BAO, CRT, DA, KAL, LUR, MRD, PC, SEA, SLM, WHW.
Peanut oil, sulfated, sodium salt	ACY, DA, LEA, LUR, SLC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Anionic Surface-Active Agents--Continued	
*Sulfuric acid esters (and salts thereof)--Continued	
*Natural fats and oils, sulfated--Continued	
Ricebran oil, sulfated, sodium salt	DA, EFH, LUR.
*Soybean oil, sulfated, sodium salt	CRT, HRT, KAL, LEA, MRD, ONX.
*Sperm oil, sulfated, sodium salt	ACT, BAO, CLD, CRT, DA, HRT, KAL, KNG, LEA, MRD, ONX, RTC, SEA, WHI, WHW.
*Tallow, sulfated, sodium salt	ACT, ACY, BSW, DA, ECC, EFH, ICI, KAL, LUR, MCP, MRD, ONX, PC, PCI, QCP, SCP, SID, SLM, SOS, WHI.
Whale oil, sulfated, sodium salt	KNG.
Other anionic surface-active agents:	
Lignin (non-sulfonated) and salts thereof	WVA.
Mixed linear alcohols, ethoxylated and carbonated, sodium salt.	S.
Tridecyl alcohol, ethoxylated and carbonated, sodium salt.	S.
Cationic Surface-Active Agents	
*Amine oxides and oxygen-containing amines (except those having amide linkages):	
*Acyclic:	
N,N-Bis(2-hydroxyethyl)decylamine oxide	BRD.
N,N-Bis(2-hydroxyethyl)dodecylamine	CTL, FIN.
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.
*(Coconut oil alkyl)amine, ethoxylated	AAC, APD, ARC, ASH, BRD, SDH, TCH, VAC, WYN.
(Coconut oil alkyl)amine, ethoxylated, acetate	RPC.
(Coconut oil alkyl)amine, ethoxylated, maleate	SDH.
N,N-Diethyldecylamine oxide	BRD.
N,N-Dimethylhexadecylamine oxide	ONX.
(Hydrogenated tallow alkyl)amine, ethoxylated	CGY, TCH.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine.	NLC.
(Mixed alkyl)amine, ethoxylated	APD, CGY, DA, GAF, NLC, RH.
(Mixed alkyl)poly(oxyethylene)amine	GAF.
Mixed substituted oximes	GNM.
(9-Octadecenyl)amine, ethoxylated	ARC, TCH.
Octadecylamine, ethoxylated	ARC, TCH.
Polyethylenepolyamine, alkoxylated	NLC.
(Soybean oil alkyl)amine, ethoxylated	AAC, ARC, VAC.
*(Tallow alkyl)amine, ethoxylated	AAC, ARC, CGY, DUP, TCH.
Tallow alkyl amine sulfate, ethoxylated	DUP.
N-(Tallow alkyl)trimethylenediamine, ethoxylated	ARC.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	NLC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated.	ARC, WYN.
All other	ARC, BRD, x.
*Cyclic (except imidazoline and oxazoline derivatives:	
N-Hexadecylmorpholine	APD, WTC.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	APX.
Lignin amine	WVA.
Rosin amine, ethoxylated	HPC, NLC, PCS, RTF, WTC.
N-(Soybean oil alkyl)morpholine	APD.
All other	TCH.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Cationic Surface-Active Agents--Continued	
*Amine oxides and oxygen-containing amines (except those having amide linkages)--Continued	
*Imidazoline and oxazoline derivates:	
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline.	COM, SWT, UVC.
*2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline.	DA, ONX, UVC, VAC.
2-(8-Heptadecenyl)-4-hydroxymethyl-4-methyl-2-oxazoline.	CGY, COM, UVC.
2-(Heptadecyl)-1-(2-hydroxyethyl)-2-imidazoline------	CGY, MOA, UVC, VAC.
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline------------	UVC.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline.	CGY, MOA, PCS, UVC.
*1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline.	HDG, MOA, NLC, UVC.
1-(2-Hydroxyethyl)-2-tridecyl-2-imidazoline hydrochloride.	UVC, WTC.
1-(2-Hydroxyethyl)-2-undecyl-2-imidazoline----------	UVC.
2-(11-Hydroxy-8-heptadecenyl)-2-imidazoline---------	UVC.
All other----------	EMR.
*Amines and amine oxides having amide linkages:	
*Carboxylic acid - 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, TXT, WTC.
Mixed dicarboxylic acids - polyalkylenepolyamine condensate.	TXT.
Mixed fatty acids - polyalkylenepolyamine condensate.	GRD, NLC.
Oleic acid - 1-(2-aminoethyl)piperazine condensate--	TXT.
Oleic acid - diethylenetriamine condensate----------	APD, TXT.
Oleic acid - N,N-dimethyltrimethylenediamine condensate.	CCW.
Pelargonic acid - tetraethylenepentamine condensate.	ICI.
*Stearic acid - diethylenetriamine condensate--------	CHP, CST, HRT, ONX, S.
Stearic acid - N,N-diethylethylenediamine condensate.	CGY.
Stearic acid - dipropylenetriamine condensate-------	JOR.
Stearic acid - tetraethylenepentamine condensate----	DEX, ICI, ONX.
Tall oil acids - diethylenetriamine condensate------	NCW, NLC, RTF.
Tall oil acids - polyalkylenepolyamine condensate---	RTF.
All other----------	EFH, VND.
Carboxylic acid - diamine and polyamine condensates, alkoxylated:	
Coconut oil acids - diethylenetriamine condensate polyethoxylated.	TCC.
Coconut oil acids - ethylenediamine condensate, monoethoxylated.	ARL.
*Oleic acid - ethylenediamine condensate, mono-ethoxylated.	CLD, DA, DEX, SOC, TNA.
Palm oil acids - ethylenediamine condensate, mono-ethoxylated.	APX.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Cationic Surface-Active Agents--Continued	
*Amines and amine oxides having amide linkages--Continued	
Carboxylic acid - diamine and polyamine condensates, alkoxylated--Continued	
*Stearic acid - ethylenediamine condensate, monoethoxylated.	AML, CLD, CST, DA, DEX, ECC, ICI, MRA, S, SNW.
Stearic acid - diethylenetriamine condensate, polyethoxylated.	TCC.
Stearic acid - ethylenediamine condensate, polyethoxylated.	APD.
3-Lauramido-N,N-dimethylpropylamine oxide	SNW.
All other	MYW, UVC.
*Amines, not containing oxygen (and salts thereof):	
*Amine salts:	
(Coconut oil alkyl)amine acetate	ARC, WTC.
N-(Coconut oil alkyl)trimethylenediamine acetate	ASH.
(Hydrogenated tallow alkyl)amine acetate	ARC, ASH.
(9-Octadecenyl)amine acetate	ARC, GNM.
Octadecylamine acetate	ACY, ARC.
Octylamine acetate	ARC.
(Tallow alkyl)amine acetate	ARC.
N-(Tallow alkyl)trimethylenediamine acetate	ARC, ASH.
N-(Tallow alkyl)trimethylenediamine naphthenate	APD.
N-(Tallow alkyl)trimethylenediamine oleate	ARC, ASH.
All other	ARC.
*Diamines and polyamines:	
*N-(Coconut oil alkyl)trimethylenediamine	ARC, ENO, GNM.
N-(Docosyl- and eicosyl)trimethylenediamine	ENO.
*Imidazoline derivatives:	
1-(2-Aminoethyl)-2-heptadecyl-2-imidazoline	UVC.
1-(2-Aminoethyl)-2-(mixed alkyl)-2-imidazoline	UVC.
1-[3-(2-Aminoethyl)naphth-1-yl]-2-(8-heptadecenyl)-2-imidazoline.	NLC.
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline.	NLC, RTF, UVC.
2-(8-Heptadecenyl)-2-imidazoline	PCS.
2-Heptadecyl-2-imidazoline	SCO.
N-(Mixed alkyl)polyethylenepolyamine	CCW.
*N-(9-Octadecenyl)trimethylenediamine	ARC, ASH, GNM.
Polybutene amine	ORO.
N-(Soybean oil alkyl)trimethylenediamine	ENO.
N-(Tall oil alkyl)trimethylenediamine	ARC.
N-(Tallow alkyl)dipropylenetriamine	ARC, GNM.
*N-(Tallow alkyl)trimethylenediamine	ARC, ASH, ENO, GNM.
*Primary monoamines:	
(Coconut oil alkyl)amine	ARC, ENO, GNM.
(Cottonseed oil alkyl)amine	ASH.
Dodecylamine	ARC, ASH, GNM.
Docosyl- and eicosylamine	ENO.
Hexadecylamine	ENO.
*(Hydrogenated tallow alkyl)amine	ARC, ASH, ENO, GNM.
(Mixed alkyl)amine	ARC, GNM.
(Mixed tert-alkyl)amine	RH.
Myristylamine	GNM.
*9-Octadecenylamine	ARC, ASH, ENO, GNM.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Cationic Surface-Active Agents--Continued	
*Amines, not containing oxygen (and salts thereof)--Continued	
*Primary monoamines--Continued	
*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, SNW.
*Secondary and tertiary monoamines:	
Bis(coconut oil alkyl)amine	ARC.
Bis(hydrogenated tallow alkyl)amine	ARC, ASH, ENO.
Bis(soybean oil alkyl)amine	ARC.
N,N-Diethyloctylamine	BRD.
N,N-Dimethyl(coconut oil alkyl)amine	ARC, ASH, BRD, ENO.
N,N-Dimethyldecylamine	BRD.
N,N-Dimethyl(docosyl and eicosyl)amine	ENO.
N,N-Dimethyldodecylamine	ARC, BRD.
N,N-Dimethylhexadecylamine	ARC, BRD.
N,N-Dimethyl(hydrogenated tallow alkyl)amine	ARC, ASH.
N,N-Dimethyl(mixed alkyl)amine	ARC, BRD, PG.
*N,N-Dimethyloctadecylamine	ARC, ASH, BRD, ENO.
N,N-Dimethyl(soybean oil alkyl)amine	ARC, ENO.
N,N-Dimethyltetradecylamine	ARC, BRD, GNM.
N,N-Dimethyltridecylamine	BRD.
*N-Methylbis(coconut oil alkyl)amine	ARC, ENO, GNM.
*N-Methylbis(hydrogenated tallow alkyl)amine	ARC, ASH, ENO, GNM.
N-Methylbis(mixed alkyl)amine	PG.
N-Methyldioctadecylamine	ASH.
Trioctylamine	GNM.
*Oxygen-containing quaternary ammonium salts:	
Quaternary ammonium salts having amide linkages:	
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium dihydrogen phosphate.	ACY.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium nitrate.	ACY.
(3-Lauramidopropyl)trimethylammonium methyl sulfate.	ACY.
2-(2-Lauroyloxyethyl)carbamoyl-1-methylpyridinium chloride.	WTC.
Stearic acid - diethanolamine condensate, methyl sulfate.	DUP.
Tall oil acid - polyalkylenepolyamine condensate, quaternary sulfate.	NLC.
Trimethyl(3-oleamidopropyl)ammonium methyl sulfate.	CGY.
All other	ARC, VAC.
Other oxygen-containing quaternary ammonium salts:	
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)2-hydroxyethyl)ammonium ethyl sulfate.	LUR.
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)-ammonium chloride.	CGY, NLC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Cationic Surface-Active Agents--Continued	
*Oxygen-containing quaternary ammonium salts--Continued	
Other oxygen-containing quaternary ammonium salts--Continued	
Benzyl(coconut oil alkyl, ethoxylated)dimethyl-ammonium chloride.	GAF.
1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium chloride.	UVC.
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazolinium chloride.	NLC, UVC.
Bis(2-hydroxyethyl, ethoxylated)methyl(9-octadecenyl)ammonium chloride.	ARC.
Bis(2-hydroxyethyl, ethoxylated)methyloctadecyl-ammonium chloride.	ARC.
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)methylammonium chloride.	ARC, VAC.
(Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride.	RH.
(Ethoxybenzyl)dimethyl(octyltolyloxy)ammonium chloride.	RH.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium ethyl sulfate.	APD, UVC.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate-------	APD, BRD.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate.	APD.
2(8-Heptadecenyl)-1,1-bis(2-hydroxyethyl)-2-imidazolinium chloride.	CGY.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine, distearate methyl sulfate.	DUP.
2-Hydroxytrimethylenebis[(coconut oil alkyl)dimethylammonium chloride]	CGY.
Octadecylamine, propoxylated and quaternarized-----	TCC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylene-diamine, dioleate methyl sulfate.	DUP.
(Tridecylbenzyl)diethyl(2-hydroxyethyl)ammonium chloride.	SNW.
All other----------	APD, ARC.
*Quaternary ammonium salts, not containing oxygen:	
*Acyclic:	
*Bis(coconut oil alkyl)dimethylammonium chloride-----	ARC, ASH, ENO, GNM, VAC.
Bis(coconut oil alkyl)dimethylammonium nitrate------	ARC.
*Bis(hydrogenated tallow alkyl)dimethylammonium chloride.	ARC, ASH, ENO, GNM, VAC.
(Coconut oil alkyl)trimethylammonium chloride-------	ARC, ASH, GNM.
Didecyldimethylammonium chloride----------	BRD.
Didodecyldimethylammonium 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, WTC,
Ethyldimethyl(mixed alkyl)ammonium ethyl sulfate----	JOR, TCC.
Ethyldimethyl(9-octadecenyl)ammonium bromide--------	ONX.
Ethylhexadecyldimethylammonium bromide----------	FIN.
*Hexadecyltrimethylammonium salts:	
Hexadecyltrimethylammonium bromide----------	DUP, FIN, ICI.
Hexadecyltrimethylammonium chloride----------	ARC, BRD.
Hexadecyltrimethylammonium p-toluenesulfonate-----	FIN.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Cationic Surface-Active Agents--Continued	
*Quaternary ammonium salts, not containing oxygen--Continued	
*Acyclic--Continued	
(Hydrogenated tallow alkyl)trimethylammonium chloride.	ARC.
Methyltrioctylammonium chloride	GNM.
Methyltris(mixed alkyl)ammonium chloride	ASH.
N,N,N',N',N'-Pentamethyl-N-(tallow alkyl)trimethylenebis[ammonium chloride].	ARC, GNM.
Triethyloctadecylammonium ethyl sulfate	AKS.
Trimethyl(mixed alkyl)ammonium chloride	NLC.
Trimethyloctadecylammonium chloride	ARC.
Trimethyl(soybean oil alkyl)ammonium chloride	ARC, ENO, VAC.
*Trimethyl(tallow alkyl)ammonium chloride	ARC, ASH, GNM, VAC.
Trimethyltetradecylammonium bromide	FIN.
All other	GNM, STC.
*Benzenoid:	
*Benzyl(coconut oil alkyl)dimethylammonium chloride.	ARC, CRT, DEP, LUR, RTF, TXT.
*Benzyldimethyl(mixed alkyl)ammonium chloride	AAC, ASY, BRD, FIN, ONX, RH, TXT, VAC.
*Benzyldimethyloctadecylammonium chloride	BRD, FIN, ONX, RH, TNI, WSN.
Benzyldimethyl(tallow alkyl)ammonium chloride	ENO.
Benzyldimethyltetradecylammonium chloride	BRD, FIN, SNW.
Benzyldodecyldimethylammonium chloride	FIN, ONX, SDH.
Benzylhexadecyldimethylammonium chloride	ONX.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ENO, FIN.
Benzyl(mixed alkyl)pyridinium chloride	RTF.
1-Benzyl-2-picolinium bromide	FIN.
1-Benzylpyridinium chloride	DEP.
*Benzyltrimethylammonium chloride	CHP, COM, CRT, TCC, WTC.
(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride.	ONX, VAC.
(Dodecylbenzyl)triethylammonium chloride	CHP, PC.
(Dodecylbenzyl)trimethylammonium chloride	NLC, VAC, WTC.
2-Dodecylisoquinolinium bromide	ONX.
(Dodecylmethylbenzyl)trimethylammonium chloride	RH.
1-Dodecylpyridinium chloride	BRD, HK.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride.	ONX.
1-Phenethyl-2-picolinium bromide	FIN.
Nonionic Surface-Active Agents	
*Carboxylic acid amides:	
*Diethanolamine condensates (amine/acid ratio=2/1):	
*Capric acid	CGY, PCS, SCP. UVC.
Castor oil acids	CLI, NTL.
*Coconut oil acids	AKS, AML, ARD, BSW, CGY, CLI, CTL, DA, DEP, DSO, EFH, ESS, HLI, HRT, JOR, KNP, LUR, MCP, MOA, ONX, PC, PCS, PG, PNX, RCD, RTF, SBC, SCP, SEY, SOP, SOS, STP, SWT, TXC, TXN, UNN, UVC, VAC, VAL, WTC. x.
Coconut oil and tallow acids	CLI, CRT, ECC, MOA, PG, VND.
*Lauric acid	CLI, DA, DRW, HLI, ONX, PG, RCD, WON, x.
Lauric and myristic acids	HLI, MOA, PG.
Linoleic acid	VND.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid amides--Continued	
*Diethanolamine condensates (amine/acid ratio=2/1)--Continued	
Mixed vegetable oil acids	HLI.
Myristic acid	MRT.
*Oleic acid	CCW, CLI, EMR, STP, UVC, VAC.
Pelargonic acid	EMR.
*Stearic acid	AML, CLI, DA, EMR, JOR, ONX, SCO, SOS, TXC, VAL.
*Tall oil acids	EFH, MCP, MOA, MRA, SOS.
Tallow acids	WTC.
All other	GAF, ROB.
*Diethanolamine condensates (other amine/acid ratios):	
*Coconut oil acids (amine/acid ratio=1/1)	APX, ARD, CCL, CGY, CLI, CTL, DA, HLI, MOA, ONX, PCS, PIL, RTF, SBC, SCP, SEY, STP, TCC, TXN, TXT, VAC.
Coconut oil acids (amine acid ratio=1.4/1)	JRG.
*Lauric acid (amine/acid ratio=1/1)	CTL, EML, HLI, LEV, MOA, ONX, PCS, PG, RTF, SBC, TXN, VAC.
Lauric and myristic acids (amine/acid ratio=1/1)	CLI, TXT.
Linoleic acid (amine/acid ratio=1/1)	MOA.
Myristic acid (amine/acid ratio=1/1)	HDG.
*Oleic acid (amine/acid ratio=1/1)	CGY, ECC, SBC, SWT, TCC, TXT.
Palmitic and stearic acids (amine/acid ratio=1.3/1)	MCP.
*Stearic acid (amine/acid ratio=1/1)	CGY, EMR, GAF, GLY, RPC, SEY, UVC.
Stearic acid (amine/acid ratio=2.7/1)	EFH.
Tall oil acids (amine/acid ratio=2.7/1)	EFH.
Tallow acids (amine/acid ratio=1/1)	RPC.
Unspecified mixed fatty acids (amine/acid ratio=1/1).	STP.
All other	EFH.
*Ethanolamine condensates:	
*Coconut oil acids (amine/acid ratio=2/1)	CTL, PCS, PEK, STP, VND, WTC.
Coconut oil acids (amine/acid ratio=1/1)	MOA, PG, STP, UVC.
Hydrogenated castor oil acids (amine/acid ratio=2/1).	GLY, NTL.
Hydrogenated tallow acids (amine/acid ratio=2/1)	GLY.
Lauric acid (amine/acid ratio=2/1)	ARC, CTL.
Lauric and myristic acids (amine/acid ratio=1/1)	MOA, TXN.
Oleic acid (amine/acid ratio=1/1)	VPC.
Oleic acid (amine/acid ratio=2/1)	ARD.
Stearic acid (amine/acid ratio=2/1)	ARC, CLI, ECC.
Stearic acid (amine/acid ratio=1/1)	MOA, VND.
Stearic acid (amine/acid ratio=1/2)	GLY.
*Lauric acid - isopropanolamine condensate	CLI, MOA, SNW.
*Other carboxylic acid amides:	
Coconut oil acids - ethanolamine condensate, ethoxylated.	DA, GAF, STP.
Coconut oil acids - isopropanolamine condensate	STP.
Lauric and myristic acids - isopropanolamine condensate.	LEV, TXT.
Oleic acid - ethanolamine condensate, ethoxylated	GAF.
Stearic acid - N,N'-diethylethylenediamine condensate (amine/acid ratio=1/2).	SNW.
Tallow acids - propanolamine condensate, ethoxylated.	NLC.
All other	ARC.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters:	
*Anhydrosorbitol esters:	
Anhydrosorbital ester of mixed fatty acids	GLY.
Anhydrosorbitol dioleate	APD, HDG.
Anhydrosorbitol monoester of tall oil acids	APD, GLY, HDG, TCH.
Anhydrosorbitol monolaurate	APD, GLY, HDG, PCS, TCH.
*Anhydrosorbitol mono-oleate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH.
*Anhydrosorbitol monopalmitate	APD, GLY, HDG, PCS, TCH.
*Anhydrosorbitol monostearate	APD, DRW, GLD, GLY, PCS.
Anhydrosorbitol sesquioleate	AAC, GLY, HDG.
Anhydrosorbitol triester of tall oil acids	TCH.
Anhydrosorbitol trioleate	AAC, APD, GLY, PCS, TCH.
*Anhydrosorbitol tristearate	APD, GLY, PCS.
*Diethylene glycol esters:	
Diethylene glycol dioleate	GLY.
Diethylene glycol distearate	ARC, GLY.
Diethylene glycol monoester of coconut oil acids	DA.
*Diethylene glycol monolaurate	CCW, ECC, GLY, HAL, HDG.
Diethylene glycol mono-oleate	ARC, EMR, HAL.
Diethylene glycol monoricinoleate	GLY.
*Diethylene glycol monostearate	ARC, CLI, DA, ECC, HAL, HDG, MCP, PCS, UVC, VAL, VND, WM, WTC.
Diethylene glycol sesquiester of tall oil acids	ECC, WTC.
Diethylene glycol sesquilaurate	ARC, GLY.
Diethylene glycol sesquistearate	WM.
*Ethoxylated anhydrosorbitol esters:	
Ethoxylated anhydrosorbitol monoester of tall oil acids.	RTF.
*Ethoxylated anhydrosorbitol monolaurate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH.
*Ethoxylated anhydrosorbitol mono-oleate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH.
Ethoxylated anhydrosorbitol monopalmitate	AAC, APD, GLY, HDG, TCH.
*Ethoxylated anhydrosorbitol monostearate	AAC, APD, ARC, DRW, GLY, HDG, PCS.
Ethoxylated anhydrosorbitol triester of tall oil acids.	APD, TCH.
Ethoxylated anhydrosorbitol trioleate	AAC, APD, GLY, PCS, TCH.
*Ethoxylated anhydrosorbitol tristearate	AAC, APD, DRW, GLY, HDG, PCS, TCH.
Ethoxylated sorbitol esters:	
Ethoxylated sorbitol beeswax ester	APD.
Ethoxylated sorbitol distearate	APD.
Ethoxylated sorbitol heptaoleate	APD.
Ethoxylated sorbitol hexaester of tall oil acids	APD, TCH.
Ethoxylated sorbitol hexaoleate	APD.
Ethoxylated sorbitol lanolin ester	APD.
Ethoxylated sorbitol mono-oleate	APD.
Ethoxylated sorbitol monostearate	SNW.
Ethoxylated sorbitol oleate, acetylated	APD.
Ethoxylated sorbitol pentaester of tall oil acids	APD, RTF.
Ethoxylated sorbitol pentalaurate	APD.
Ethoxylated sorbitol pentaoleate	APD.
Ethoxylated sorbitol tetraester of lauric and oleic acids.	APD.
Ethoxylated sorbitol tetraester of tall oil acids	APD.
Ethoxylated sorbitol tetraoleate	APD.
*Ethylene glycol esters:	
Ethylene glycol distearate	ARC, EMR, HUM.
Ethylene glycol ester of dimer acid	EMR.
Ethylene glycol mono-oleate	EFH, HAL.
Ethylene glycol monostearate	ARC, CCW, CLI, GLY, HAL, KNP, PCS, VND, WM.
Ethylene glycol sesquistearate	WM.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
*Glycerol esters:	
*Complex glycerol esters:	
Glycerol ester ethoxylated	GLY.
Glycerol lactate esters of fatty acids	GLD.
Glycerol lactate stearate	APD, PCS.
Glycerol maleate mono-oleate	DA.
Glycerol mannitan laurate	GLY.
Glycerol monoester of mixed fatty acids, acetylated.	EKT, WTC.
Glycerol mono-oleate, acetylated	x.
Glycerol monostearate, ethoxylated	TCH.
Glycerol monostearate, succinylated	EKT.
*Glycerol esters of chemically defined acids:	
Glycerol dioleate	ARC, HAL.
*Glycerol distearate	APD, APX, ARC, WTC.
Glycerol monocaprylate	ARC, DRW.
*Glycerol monolaurate	ARC, GLY, HAL.
*Glycerol mono-oleate	APD, CCW, DRW, EFH, EKT, EMR, GLY, HAL, HDG, PCS, SWT, WM, WTC.
Glycerol monoricinoleate	CCW, CGY, DA, GLY, HDG.
*Glycerol monostearate	ARC, ASH, CHL, CHP, CRT, DRW, EFH, EMR, GLY, GRO, HAL, HRT, LUR, PCS, PG, SOS, SWT, TCC, VND, WM, WTC, x.
*Glycerol esters of mixed acids:	
Glycerol diester of lard acids	VND, WM.
Glycerol monoester of coconut oil acids	DRW, SWT.
Glycerol monoester of corn oil acids	TCH.
Glycerol monoester of cottonseed oil acids	EKT.
*Glycerol monoester of hydrogenated cottonseed oil acids.	GLD, LEV, WM.
*Glycerol monoester of hydrogenated soybean oil acids.	ASH, DRW, EKT, GLD, NW, PCS.
Glycerol monoester of hydrogenated tallow acids	PCS, SCT.
Glycerol monoester of lard acids	EKT, GLD.
Glycerol monoester of peanut oil acids	DRW.
Glycerol monoester of tall oil acids	ARC, EFH.
All other	APD, CGY, EKT, GLD, LEV.
*Natural fats and oils, ethoxylated:	
*Castor oil, ethoxylated	AAC, APD, DA, DRW, GAF, GLY, NLC, NTL, PCS, RTF, TCH, TMH.
Corn oil, ethoxylated	TCH.
Hydrogenated castor oil, ethoxylated	APD, DA, TCH.
*Lanolin, ethoxylated	AAC, APD, CRD, PCS.
Tallow, ethoxylated	DRW.
*Polyethylene glycol esters:	
*Polyethylene glycol esters of chemically defined acids:	
*Polyethylene glycol dilaurate	ARC, DA, DEX, EFH, GLY, HAL, HDG, JOR, PCS, WM.
*Polyethylene glycol dioleate	ARC, CLD, DA, EFH, GLY, HAL, HDG, NLC, PCS, UVC, VND, WM.
Polyethylene glycol distearate	AAC, EFH, GLY, HAL, HDG, PCS, QCP.
Polyethylene glycol methylcarbitol maleate	CCA.
Polyethylene glycol monocaprylate	ECC.
*Polyethylene glycol monolaurate	AAC, ARC, CCA, DA, DEX, GLY, HAL, HDG, KNP, MCP, PCS, TCH, UVC.
*Polyethylene glycol mono-oleate	APD, ARC, CCA, CGY, CLD, CRT, DA, DEX, DRW, EFH, GAF, GLY, HAL, HDG, ICI, ONX, PCS, TCH, UVC, VAC, WTC.
Polyethylene glycol mono-oleate, ethoxylated	APD.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
*Polyethylene glycol esters--Continued	
*Polyethylene glycol esters of chemically defined acids--Continued	
Polyethylene glycol monopalmitate	APD.
Polyethylene glycol monopelargonate	EMR, TCH.
Polyethylene glycol monoricinoleate	HAL, NTL, TCH, UVC.
*Polyethylene glycol monostearate	AAC, AKS, AML, APD, ARC, CHP, CRT, DA, DEP, DEX, DRW, EFH, EMR, GLY, HAL, HDG, HRT, KNP, ONX, PC, PCS, RH, TCC, TCH, VND, WM, WTC.
Polyethylene glycol sesquioleate	EMR, PCS.
All other	GAF.
*Polyethylene glycol esters of rosin and tall oil acids:	
Polyethylene glycol diester of tall oil acids	EFH, GLY.
*Polyethylene glycol monoester of tall oil acids	EFH, NLC, RTF, SOS, TCH.
Polyethylene glycol sesquiester of rosin acids	HPC, QCP.
*Polyethylene glycol sesquiester of tall oil acids.	AML, APD, ARC, DA, MON, SLM, WTC.
*Polyethylene glycol esters of other mixed acids:	
Polyethylene glycol diester of trimerized castor oil acids.	GLY.
Polyethylene glycol ester of palmitic and stearic acids.	MCP.
Polyethylene glycol monoester of coconut oil acids.	GLY.
Polyethylene glycol monoester of coconut oil acids, ethoxylated.	APD.
Polyethylene glycol sesquiester of castor oil acids.	ARC.
*Polyethylene glycol sesquiester of coconut oil acids.	ARL, DA, MRT, PG, SCP, UVC, VND, WTC.
Polyethylene glycol sesquiester of tallow acids	SOS.
All other	ARC, VAC.
*Polyglycerol esters:	
Polyglycerol laurate	VND.
Polyglycerol lactate oleate	DRW.
Polyglycerol mono-oleate	HDG, PCS, VND.
Polyglycerol monostearate	ASH, PCS.
*Propanediol esters:	
1,2-Propanediol dioleate	HAL, x.
1,2-Propanediol distearate	ARC.
1,2-Propanediol monolaurate	ARC, HAL, SBC.
1,2-Propanediol mono-oleate	EFH, HAL.
*1,2-Propanediol monostearate	APD, ARC, CCW, EKT, GLD, GLY, HAL.
All other	ARC, GLD.
Miscellaneous carboxylic acid esters:	
Anhydrosorbitol glycerol monolaurate	APD.
Ethoxylated glycerol sesquiester of mixed fatty acids.	APD.
Ethoxylated 1,2-propanediol monostearate	APD.
Lauric acid esters of glycerol and ethoxylated nonylphenol.	TCC.
Methylglucoside laurate	HDG.
Miscellaneous esters of stearic acid	EMR.
Oleic acid esters of ethoxylated nonylphenol	EFH.
Pentaerythritol distearate	EMR, GLY, VAL.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
Miscellaneous carboxylic acid esters--Continued	
Pentaerythritol pelargonate	EMR.
Polyalkylene glycol diglycolate	NLC.
Polypropylene glycol mono-oleate	HDG.
Polypropylene glycol mono-oleate, propoxylated	APD.
Polypropylene glycol monostearate	HDG.
Sucrose esters of fatty acids	SUG.
All other	CCW, STC, TCH, WM.
*Ethers:	
*Benzenoid ethers:	
Alkylphenol - formaldehyde condensates, alkoxylated:	
p-tert-Butylphenol - formaldehyde condensate, alkoxylated.	RTF.
(Mixed alkyl)phenol - formaldehyde, alkoxylated	NLC.
Nonylphenol - formaldehyde, alkoxylated	NLC, RTF.
tert-Octylphenol - formaldehyde condensate, ethoxylated.	DA, SDW.
p-tert-Butylphenol, ethoxylated	RTF.
Diisobutylphenol, ethoxylated	GAF.
Dinonylphenol, ethoxylated	GAF, HDG, STP, TCH, VAC.
*Dodecylphenol, ethoxylated	GAF, MON, PCS, TMH, UCC.
Iso-octylphenol, ethoxylated	APX, DA, OMC, RH.
(Mixed alkyl)phenol, ethoxylated	GAF.
(Mixed alkyl)phenoxypoly(ethyleneoxy)ethyl chloride.	GAF.
*Nonylphenol, ethoxylated	APD, CGY, CLY, DA, GAF, HDG, JCC, MON, NLC, OMC, PCS, RH, RTF, STP, TCH, TMH, UCC, VAC.
Nonylphenol, ethoxylated and propoxylated	RTF.
Nonylphenoxypoly(ethyleneoxy)ethyl iodide	GAF.
n-Octylphenol, ethoxylated	TCH, TMH.
*Phenol, ethoxylated	APD, DA, GAF, JCC, TCH, UCC.
Phenol, propoxylated	ADP.
Tetradecylphenol, ethoxylated	ORO.
Tridecylphenol, ethoxylated	PCS.
Xylenol, ethoxylated	NLC.
All other	DA, RH, VPC.
*Nonbenzenoid ethers:	
*Linear alcohols, alkoxylated:	
*Decyl alcohol, ethoxylated	GAF, ICI, TCH.
Decyl and octyl alcohols, ethoxylated	GAF.
Decyl and octyl alcohols, ethoxylated and propoxylated.	GAF.
Decyloxypoly(ethyleneoxy)ethyl chloride	GAF.
*Dodecyl alcohol, ethoxylated	AAC, APD, DRW, GAF, HDG, OMC, RTF, SNW.
Dodecyl alcohol, ethoxylated and propoxylated	DUP.
*Hexadecyl alcohol, ethoxylated	AAC, APD, CGY, GLY, ICI.
*Mixed linear alcohols, ethoxylated	AAC, CO, GAF, HDG, JCC, MON, NLC, RH, SEY, SHC, SNW, STP, TCH, UCC, WTC.
Mixed linear alcohols, ethoxylated, butyl ether	TMH.
Mixed linear alcohols, ethoxylated and propoxylated.	GAF, JCC, STP, WYN.
*9-Octadecenyl alcohol, ethoxylated	AAC, APD, ASH, CGY, DA, DUP, GAF, TCH, VPC.
*Octadecyl alcohol, ethoxylated	APD, CGY, DA, DUP, GAF, HDG.
Sperm oil alcohol, ethoxylated	CRD, DUP.

TABLE 2.--Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
Nonionic Surface-Active Agents--Continued	
*Ethers--Continued	
*Nonbenzenoid ethers--Continued	
*Linear alcohols, alkoxylated--Continued	
Tallow alcohol, ethoxylated	AAC, JCC.
Tetradecyl alcohol, ethoxylated	AAC.
Tridecyl alcohol, ethoxylated	AAC, DUP.
All other	RH.
*Other ethers and thioethers:	
*Poly(ethylene and propylene)glycols:	
Poly(mixed ethylene, propylene)glycol	NLC, UCC, VAC.
Polypropylene glycol, ethoxylated	NLC, RTF, WYN.
tert-Dodecyl mercaptan, ethoxylated	AAC, RTF, UCC.
2-Ethylhexanol, ethoxylated	TCH.
Glucose, ethoxylated	RH.
Glycerol, alkoxylated	NLC.
Iso-octyl alcohol, ethoxylated	GAF.
Methylglucoside, propoxylated	STP.
*Mixed alcohols, ethoxylated	DRW, UCC, VAC.
Rosin, ethoxylated	NLC.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated.	CUC.
*Tridecyl alcohol, ethoxylated	AAC, APD, DRW, GAF, GLY, ICI, JCC, MON, NLC, OMC, PCS, RTF, TCH, UCC.
Tridecyl alcohol, propoxylated and ethoxylated	JCC.
Trimethylheptanol, ethoxylated	PCS.
Trimethylnonyl alcohol, ethoxylated	HDG, UCC.
Trimethylolpropane, alkoxylated	HDC, JFF, RTF, WYN.
All other	AAC, NLC, SNW.
*Other nonionic surface-active agents:	
3,5-Dimethyl-1-hexyn-3-ol	CUC.
3,6-Dimethyl-4-octyne-4,7-diol	CUC.
Dodecylbenzenesulfonic acid - diethanolamine condensate, fatty acid monoester.	ACT.
Glycerol sesquiester of hydrogenated castor oil acids, borated and ethoxylated.	GLY.
Octyl phosphate, ethoxylated	DUP.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol	CUC.
Tri(castor oil alkyl)phosphate	GLY.
Tris(nonylphenyl)phosphite	GAF.
All other	NLC.

TABLE 3.--Surface-active agents: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers of surface-active agents that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
AAC	Alcolac Chemical Corp.
ACE	Acme Chemical Co.
ACS	Allied Chemical Corp., Specialty Chemicals Div.
ACT	Arthur C. Trask Co.
ACY	American Cyanamid Co.
AES	Amerace-Esna Corp., Chemical Specialties Div.
AGP	Armour-Dial, Inc.
AKS	Arkansas Co., Inc.
AML	Amalgamated Chemical Corp.
APD	Atlas Chemical Industries, Inc.
APX	Apex Chemical Co., Inc.
ARC	Armour & Co., Armour Industrial Chemical Co.
ARD	Ardmore Chemical Co.
ARL	Arol Chemical Products Co.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.
ASY	American Synthetic Rubber Corp.
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.
BAO	Bayoil Co., Inc.
BLA	Astor Products, Inc., Blue Arrow Div.
BLS	Beech-nut, Inc.
BRD	Baird Chemical Industries, Inc.
BSW	Original Bradford Soap Works, Inc.
CCA & CCW	Cincinnati Melacron Chemicals, Inc.
CCL	A. E. Staley Manufacturing Co., Charlotte Chemicals Labs., Textile Div.
CGY	Ciba-Geigy Corp.: Ciba Pharmaceutical Co.
CHL	Chemol, Inc.
CHP	C. H. Patrick & Co., Inc.
CLD	Colloids, Inc.
CLI	Clintwood Chemical Co.
CLY	W. A. Cleary Corp.
CO	Continental Oil Co.
COM	Commercial Solvents Corp.
CON	Concord Chemical Co., Inc.
CP	Colgate-Palmolive Co.
CPP	Charmin Paper Products Co.
CRD	Croda, Inc.
CRT	Crest Chemical Corp.
CRZ	Crown Zellerbach Corp., Chemical Products Div.
CST	Charles S. Tanner Co.
CTL	Continental Chemical Co.
CTN	Chemetron Corp., Organic Chemical Div.
CUC	Air Reduction Co., Inc., Chemical & Plastics Div.
CWP	Consolidated Papers, Inc.
DA	Diamond Shamrock Corp.
DAN	Dan River Mills, Inc.
DCP	Dixie Chemical Products, Inc.
DEP	DePaul Chemical Co., Inc.
DEX	Dexter Chemical Corp.
DOW	Dow Chemical Co.
DRW	Drew Chemical Corp.
DSO	DeSoto, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.
DYS	Davies-Young Co.
ECC	Eastern Color & Chemical Co.
EFH	E. F. Houghton & Co.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.
EMK	Emkay Chemical Co.
EMR	Emery Industries, Inc.
ENO	Enenco, Inc.
ESS	Essential Chemicals Corp.
FIN	Fine Organics, Inc.
GAF	GAF Corp.: Chemical Div. Textile Chemical Div.
GLD	SCM Corp., Glidden-Durkee Div.
GLY	Glyco Chemicals, Inc.
GNM	General Mills Chemicals, Inc.
	W.R. Grace & Co.:
GRC	Dubois Chemicals Div.
GRD	Polymer & Chemicals Div.
GRL	Vestal Laboratories Div.
GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
GYR	Goodyear Tire & Rubber Co.
HAL	C. P. Hall Co. of Illinois
HDG	Hodag Chemical Corp.
HEW	Hewitt Soap Co.
HK	Hooker Chemical Corp.
HLI	Haag Laboratories, Inc.
HMP	W. R. Grace & Co.. Hampshire Chemical Div.
HNT	Huntington Laboratories, Inc.
HPC	Hercules, Inc.
HRT	Hart Products Corp.
HUM	Krafto Corp., Humko Products Div.
ICI	ICI America, Inc.
JCC	Jefferson Chemical Co., Inc.
JOR	Jordan Chemical Co.
JRG	Andrew Jergens Co.
KAL	Kali Manufacturing Co.
KNG	Far-Best Corp., O. L. King Div.
KNP	Knapp Products, Inc.
LAK	Lakeway Chemical Co.
LEA	Leatex Chemical Co.
LEV	Lever Brothers Co.
LIL	Eli Lilly & Co.
LKY	Lake State Div. of St. Regis Paper Co.
LMI	North American Chemical Co.
LUR	Laurel Products Corp.
MAL	Mallinckrodt Chemical Works
MAR	American Can Co.
MCP	Moretex Chemical Products, Inc.
MIR	Miranol Chemical Co., Inc.
MOA	Mona Industries, Inc.
MON	Monsanto Co.
MRA	Crown-Metro, Inc.
MRD	Marden-Wild Corp.
MRT	Morton Chemical Co.
MRV	Marlowe-Van Loan Corp.
MYW	Stepan Chemical Co., Maywood Div.

TABLE 3.--Surface-active agents: Directory of manufacturers, 1970--Continued

Code identification	Name of company
NCW	Nostrip Chemical Works, Inc.
NES	Nease Chemical Co., Inc.
NLC	Nalco Chemical Co.
NMC	National Milling & Chemical Co., Inc.
NPR	Safeway Stores, Inc., Brookside Div.
NTL	National Lead Co.
NW	Northwestern Chemical Co.
OMC	Olin Corp.
ONX	Millmaster Onyx Corp., Onyx Chemical Co.
ORO	Chevron Chemical Co.
PC	Proctor Chemical Co., Inc.
PCH	Peerless Chemical Co.
PCI	Pioneer Chemical Works, Inc.
PCS	Emery Industries, Inc.
PEK	Peck's Products Co.
PFZ	Pfizer, Inc.
PG	Procter & Gamble Co.
PIL	Pilot Chemical Co.
PLX	Plex Chemical Corp.
PNX	Murphy-Phoenix Co.
PRX	Purex Corp., Ltd.
PSP	Georgia-Pacific Corp., Bellingham Div.
PUR	Puritan Chemical Co.
QCP	Quaker Chemical Corp.
RAY	ITT Rayonier, Inc.
RBC	Roberts Chemical Div. of Security Chemicals, Inc.
RCD	Richardson Co.
RH	Rohm & Haas Co.
ROB	Robeco Chemicals, Inc.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.
RTC	Ritter Chemical Co., Inc.
RTF	Retzloff Chemical Co.
S	Sandoz, Inc., Sandoz Colors & Chemical Div.
SBC	Scher Bros., Inc.
SBP	Sugar Beet Products Co.
SCO	Scholler Bros., Inc.
SCP	Standard Chemical Products, Inc.
SCT	Sucrist Corp.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
	Sterling Drug, Inc.:
SDH	Hilton-Davis Chemical Co. Div.
SDW	Winthrop Laboratories Div.
SEA	Seaboard Chemicals, Inc.
SEY	Seydel-Woolley & Co.
SFA	Stauffer Chemical Co., Specialty Chemical Div.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHP	Shepherd Chemical Co.
SID	George F. Siddall Co., Inc.
SLC	Soluol Chemical Co., Inc.
SLM	Salem Oil & Grease Co.
SMC	Stamford Chemical Industries, Inc.
SNC	Sonoco Products Co.
SNW	Sun Chemical Corp., Chemicals Div.
SOC	Standard Oil Co. of California, Chevron Chemical Co.
SOP	Southern Chemical Products Co.
SOS	Southern Sizing Co.
SPA	Scott Paper Co.
STC	Sou-Tex Chemical Co., Inc.
STP	Stepan Chemical Co.
SUG	Colonial Sugars Co., Sucro Chemical Div.
SWT	Swift & Co., Swift Chemical Co. Div.
TCC	Tanatex Chemical Corp.
TCH	Trylon Chemical Corp.
TCI	Texize Chemicals, Inc.
TEN	Cities Service Co., Copperhill Operations
TMH	Thompson-Hayward Chemical Co.
TNA	Ethyl Corp.
TNI	Gillette Chemical Co. Div. of Gillette Co.
TRC	Toms River Chemical Corp.
TXC	Tex Chem Co.
TXN	Textilana-Nease, Inc.
TXT	Textilana Corp.
UCC	Union Carbide Corp.
UDI	Petrochemicals Co., Inc.
UNN	United Chemical Corp. of Norwood
UNP	United Chemical Products Corp.
USR	Uniroyal, Inc., Chemical Div.
UVC	Universal Chemicals Corp.
VAC	Northern Petrochemical Co.
VAL	Valchem
VND	Van Dyk & Co., Inc.
VPC	Verona Corp.
WAW	W. A. Wood Co.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
WBG	White & Bagley Co.
WHI	White & Hodges, Inc.
WHW	Whittemore-Wright Co., Inc.
WIC	Wica Chemicals, Inc.
WM	Wilson Pharmaceutical & Chemical Corp., Wilson-Martin Div.
WON	Woonsocket Color & Chemical Co.
WSN	Mallinckrodt Chemical Works, Washine Div.
WTC	Witco Chemical Co., Inc.
WVA	Westvaco Corp., Chemicals Div., Polychemicals Dept.
WYN	BASF-Wyandotte Chemicals Corp.

Note.--For complete names and addresees of the above reporting companies, refer to table 1 in the Appendix.

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 1970 amounted to 1,034 million pounds--6.4 percent less than the 1,104 million pounds reported for 1969 (table 1)[1]. Sales in 1970 were 881 million pounds, valued at $870 million, compared with 929 million pounds, valued at $851 million, in 1969.

The output of cyclic pesticides and related products amounted to 727 million pounds in 1970--about 11.3 percent less than the 819 million pounds produced in 1969. Sales in 1970 were 602 million pounds, valued at $702 million, compared with 666 million pounds, valued at $697 million, in 1969. The output of DDT amounted to 59 million pounds in 1970--the lowest since 1949. Production of acyclic pesticides and related products, increased in 1970 amounting to 307 million pounds, compared with the 285 million pounds reported for 1969. Sales in 1970 were 279 million pounds an increase of about 6.3 percent as compared with 263 million pounds in 1969; the value of sales increased to $169 million in 1970, compared with $154 million in 1969--a gain of 9.6 percent.

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

TABLE 1.--Pesticides and related products: U.S. production and sales, 1970

[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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	1,034,075	880,914	870,314	$0.99
Benzenoid	579,414	497,365	513,087	1.03
Nonbenzenoid	454,661	383,549	357,227	.93
PESTICIDES AND RELATED PRODUCTS, CYCLIC				
Total	727,133	601,755	701,558	1.17
Fungicides, total	95,762	83,465	39,023	.47
3,5-Dimethyl-1,3,5-2H-tetrahydrothiadiazine-2-thione (DMTT)	1,218	1,117	631	.56
Mercury fungicides, total	1,571	1,625	5,902	3.63
Phenylmercuric acetate (PMA)	457	301	2,003	6.65
Other mercury fungicides	1,114	1,324	3,899	2.94
Naphthenic acid, copper salt	1,730	1,795	529	.29
Pentachlorophenol (PCP)	47,170	45,832	6,371	.14
8-Quinolinol (8-Hydroxyquinoline), copper salt	71	68	120	1.76
All other cyclic fungicides[2]	44,002	33,028	25,470	.77
Herbicides and plant hormones, total	330,326	246,534	449,026	1.82
1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH)	3,271	3,096	5,247	1.69
Phenoxyacetic acid derivatives:				
2,4-Dichlorophenoxyacetic acid (2,4-D)	43,576	15,783	4,136	.26
2,4-Dichlorophenoxyacetic acid esters and salts, total	...	43,917	13,140	.30
2,4-Dichlorophenoxyacetic acid, n-butyl ester	878	1,454	479	.33
2,4-Dichlorophenoxyacetic acid, sec-butyl ester	6,740	3,931	1,023	.26
2,4-Dichlorophenoxyacetic acid, dimethylamine salt	19,499	19,480	5,350	.27
2,4-Dichlorophenoxyacetic acid, iso-octyl ester	9,989	7,387	2,474	.33
2,4-Dichlorophenoxyacetic acid, isopropyl ester	1,001	1,078	324	.30
All other (2,4-D) esters and salts	...	10,587	3,490	.33
2,4,5-Trichlorophenoxyacetic acid, esters, and salts, total	12,335	7,214	5,347	.74
2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester	2,142	...	...	...
All other (2,4,5-T) esters and salts	10,193	7,214	5,347	.74
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex), and esters	2,016	1,407	1,474	1.05
All other cyclic herbicides and plant hormones[3]	231,021	175,117	419,682	2.40
Insecticides and rodenticides, total	301,045	271,756	213,509	.79
Aldrin-toxaphene group[4]	88,641	84,225	43,159	.51
α-Bis(p-chlorophenyl)-β,β,β-trichloroethane (DDT)	59,316	34,019	5,351	.16
Organophosphorus insecticides, total	77,236	75,055	78,204	1.04
O,O-Diethyl O-p-nitrophenyl phosphorothioate (Parathion)	15,259	15,504	7,672	.49
O,O-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion)	41,353	39,869	19,173	.48
All other organophosphorus insecticides[5]	20,624	19,682	51,359	2.61
All other insecticides and rodenticides[6]	75,852	78,457	86,795	1.11
PESTICIDES AND RELATED PRODUCTS, ACYCLIC				
Total	306,942	279,159	168,756	.60
Fungicides, total	44,397	45,394	26,155	.58
Dithiocarbamic acid salts[7]	39,381	40,013	18,998	.47
All other acyclic fungicides[8]	5,016	5,381	7,157	1.33
Herbicides and plant hormones, total	73,458	61,578	48,928	.79
Methanearsonic acid salts[9]	30,454	24,521	8,028	.33
All other acyclic herbicides[10]	43,004	37,057	40,900	1.10

See footnotes at end of table.

TABLE 1.--Pesticides and related products: U.S. production and sales, 1970--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued				
Insecticides, rodenticides, and soil conditioners and fumigants, total	189,087	172,187	93,673	$0.54
Methyl bromide (Bromoethane)	21,047	21,790	8,764	.40
Organophosphorus insecticides[11]	55,260	...	...	...
All other acyclic insecticides (including sales of acyclic organophosphorus insecticides), rodenticides, and soil conditioners and fumigants[12 13]	112,780	150,397	84,909	.56

[1] Calculated from rounded figures.

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

[3] Includes acetanilide compounds, amiben esters and salts, barban, benefin, bensulide, other 2,4-D esters and salts (production only), dicamba, dimethylurea compounds, dinitrophenol compounds, endothal, isopropyl phenylcarbamates (IPC and CIPC), MCPA, mollinate, NPA, picloram, propanil, triazines, trifluralin, uracils, and others.

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

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

[6] Includes carbofuran, chlorobenzilate, dicofol, endosulfan, methoxychlor, and other chlorinated insecticides, carbaryl, insect attractants, DEET and other insect repellents, lindane, small amounts of rodenticides, piperonyl butoxide and other synergists, and others.

[7] Includes ferbam, maneb, metham, nabam, and zineb, plus the remaining dithiocarbamates which are used chiefly as pesticides.

[8] Includes dodine, mercury compounds, PETD, 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. Sales are included in the data for all other acyclic insecticides.

[12] Includes DBCP, soil conditioners and fumigants, metaldehyde (which is a molluscicide), small quantities of rodenticides, and others.

[13] Sales of acyclic organophosphorus insecticides are included with "All other acyclic insecticides" in order to establish an all other acyclic insecticide total without disclosing the operations of individual companies.

Note.--In order to expedite the release of this report, it was necessary to estimate the data for two small pesticide producers and to partially estimate the data for one large producer. Therefore, minor revisions may be necessary for the 1970 final report.

TABLE 2.--Pesticides and related products for which U.S. production or sales were reported, identified by manufacturer, 1970

[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]

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC	
*Fungicides:	
2-Benzothiazolethiol, zinc salt	VNC.
2,6-Bis(dimethylaminomethyl)cyclohexanone	MRK.
2'-Bromo-4'-hydroxyacetophenone	BKM.
5-Chloro-2-benzothiazolethiol, laurylpyridinium salt	VNC.
Cyanomethylthiobenzothiozole	BKM.
2,4-Dichloro-6-(o-chloroanilino)-s-triazine	CHG.
1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)	DUP.
2,6-Dichloro-4-nitroaniline (DCNA)	UPJ.
*3,5-Dimethyl-1,3,5,2H-tetrahydrothiadiazine-2-thione (DMTT)	MRK, OTC, SF, WRC.
Diphenylammonium propionate	MRK.
2-Heptadecyl-2-imidazoline (Glyodin)	UCC.
2-Mercaptobenzothiazole, monoethanolamine salt	VNC.
*Mercury fungicides:	
N-(Ethylmercuri)-p-toluene sulfonanilide	DUP.
Hydroxymercurichlorophenol	DUP.
Methylmercury quinolinolate	MRK.
2-(Phenylmercuriamino)ethyl acetate	CLY.
*Phenylmercuric acetate (PMA)	BKM, CLY, MRK, TRO, WRC.
Phenylmercuric ammonium acetate	MAL, TRO.
Phenylmercuric dimethyldithiocarbamate	WRC.
Phenylmercuric hydroxide	MRK.
Phenylmercuric lactate	MRK, UCC.
Phenylmercuric naphthonate	MRK.
Phenylmercuric oleate	CLY, HNX, TRO, WRC.
Phenylmercuric propionate	MRK.
Tris(2-hydroxyethyl)(phenylmercuri)ammonium lactate	CLY.
All other mercury fungicides	MAL.
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, HNX, MCI, SHP, TRO, WTC.
Pentachloronitrobenzene (PCNB)	OMC.
*Pentachlorophenol (PCP)	DOW, FRO, MON, RCI, SFD.
Pentachlorophenol, sodium salt	DOW, MON, RCI.
*8-Quinolinol (8-Hydroxyquinoline), copper salt	FIS, HNX, MRK.
N-(1,1,2,2-Tetrachloro-ethylsulfenyl)-cis-Δ-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)	SF.
N-Trichloromethylthiophthalimide (Folpet)	SF.
2,4,5-Trichlorophenol acid and salts:	
2,4,5-Trichlorophenol	DOW, HK, HPC.
2,4,5-Trichlorophenol, ethanolamine salt	GAF.
2,4,5-Trichlorophenol, sodium salt	DOW.
2,4,6-Trichlorophenol	DOW.
*Herbicides and plant hormones:	
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	DOW.
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)	DUP.
3-tert-Butyl-5-chloro-6-methyluracil	DUP.
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.

TABLE 2.--Pesticides and related products for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
2-Chloro-2',6'-diethyl-N-(m-butoxymethyl)acetanilide	MON.
2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor)	MON.
2-Chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine)	CGY.
2-Chloro-N-isopropylacetanilide (Propachlor)	MON.
N'-(4-Chlorophenoxy)phenyl N,N-dimethylurea (Chloroxuron)	CGY.
3-(p-Chlorophenyl)-1,1-dimethylurea (Monuron)	DUP.
3-(p-Chlorophenyl)-1,1-dimethylurea trichloroacetate	ACN.
3-Cyclohexyl-5,6-trimethyleneuracil	DUP.
2,6-Di-tert-butyl-p-tolylmethylcarbamate	HPC.
2,5-Dichloro-3-aminobenzoic acid, ammonium salt	AMC, GAF.
2,5-Dichloro-3-aminobenzoic acid, iminodi-2,2'-ethanol	GAF.
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-3-nitrobenzoic acid	GAF.
2,5-Dichloro-3-nitrobenzoic acid, ammonium hydroxide	GAF.
2,5-Dichloro-3-nitrobenzoic acid, ethyl ester	GAF.
2,5-Dichloro-3-nitrobenzoic acid, methylamine salt	GAF.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	DUP.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	DUP.
2,4-Dichlorophenyl-4-nitrophenyl ether	RH.
3',4'-Dichloropropionanilide (Propanil)	MON, RH.
*1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH)	ACY, ASL, CHF, FMT, USR.
N-(beta-O,O-Diisopropyl-dithiophosphorylethyl)-benzene sulfonamide (Bensulide)	SF.
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)	ARA, CWN, UPJ.
1,1-Dimethyl-3-phenylurea (Fenuron)	DUP.
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	DA.
Dinitrobutylphenol (DNBP)	DOW, FMN.
Dinitrobutylphenol, ammonium salt	DOW, FMN.
Dinitrobutyl phenol, triethanolamine salt	DOW, FMN.
Dinitrocresol, sodium salt	FMN.
2,4'-Dinitro-4-trifluoromethyl-diphenyl ether (Fluorodifen)	CGY.
2-Ethylamino-4-isopropylamino-6-methylmercapto-s-triazine (Ametryne)	CGY.
S-Ethyl cyclohexylethylthiocarbamate	SF.
S-Ethyl hexahydro-1H-azepine-1-carbothioate (Molinate)	SF.
Gibberellic acid	ABB, MRK.
3-(Hexahydro-4,7-methanoindan-5-yl)-1,1-dimethylurea (Norea)	HPC.
3-Indolebutyric acid	ARA.
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)	PPG.
Isopropyl N-phenylcarbamate (IPC)	PPG.
1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)	DUP.
2-Methylmercapto-4,6-bis(isopropylamino)-s-triazine (Prometryne)	CGY.
4-(Methylsulfonyl)-2,6-dinitro-N,N-dipropylaniline (Nitralin)	SHC.
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetamide	AMC.
1-Naphthaleneacetic acid (NAA)	AMC, THM.
1-Naphthaleneacetic acid, sodium salt	AMC, BKL.
N-1-Naphthylphthalamic acid (NPA)	USR.
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, disodium salt (Endothall)	PAS.
Phenoxyacetic acid derivatives:	
4-Chloro-2-methylphenoxyacetic acid (MCPA)	CLY, RDA.
4-Chloro-2-methylphenoxyacetic acid, potassium salt	GTH.
*2,4-Dichlorophenoxyacetic acid (2,4-D)	DOW, HPC, MON, RDA.

TABLE 2.--Pesticides and related products for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
Phenoxyacetic acid derivatives--Continued	
*2,4-Dichlorophenoxyacetic acid esters and salts:	
2,4-Dichlorophenoxyacetic acid, 2-butoxyethyl ester--	AMC, DOW, RIV.
2,4-Dichlorophenoxyacetic acid, butoxypolypropylene-glycol ester----------	DOW.
*2,4-Dichlorophenoxyacetic acid, n-butyl ester--------	AMC, HPC, MON, PBI, RIV,
*2,4-Dichlorophenoxyacetic acid, sec-butyl ester------	DOW, MON, RDA.
*2,4-Dichlorophenoxyacetic acid, dimethylamine salt---	AMC, DOW, HPC, PBI, RDA, RIV, TMH.
2,4-Dichlorophenoxyacetic acid, ethanolamine and isopropanolamine salt----------	DOW.
2,4-Dichlorophenoxyacetic acid, ethyl ester----------	AMC.
2,4-Dichlorophenoxyacetic acid, 2-ethylhexyl ester---	HPC.
*2,4-Dichlorophenoxyacetic acid, iso-octyl ester------	AMC, DOW, MON, PBI, RDA, RIV, TMH.
*2,4-Dichlorophenoxyacetic acid, isopropyl ester------	AMC, DOW, HPC, MON, RIV.
2,4-Dichlorophenoxyacetic acid, lithium salt---------	GTH.
2,4-Dichlorophenoxyacetic acid, sodium salt----------	DOW.
*2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)----------	DOW, HPC, MON.
*2,4,5-Trichlorophenoxyacetic acid esters and salts:	
2,4,5-Trichlorophenoxyacetic acid, amyl esters-------	HPC.
2,4,5-Trichlorophenoxyacetic acid, 2-butoxyethyl ester----------	AMC, DOW.
2,4,5-Trichlorophenoxyacetic acid, butoxypoly-propyleneglycol ester----------	DOW.
2,4,5-Trichlorophenoxyacetic acid, n-butyl ester-----	HPC, MON, PBI, RIV.
2,4,5-Trichlorophenoxyacetic acid, sec-butyl ester---	DOW.
2,4,5-Trichlorophenoxyacetic acid, 2-ethylhexyl ester----------	HPC.
*2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester---	DOW, MON, PBI, RIV, TMH.
2,4,5-Trichlorophenoxyacetic acid, triethylamine salt----------	DOW, HPC, RIV.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclo-pentadiene) isomers----------	VEL.
*2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)--------	DOW, HPC, TMH.
*2-(2,4,5-Trichlorophenoxy)propionic acid esters and salts:	
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-ethyl-hexyl ester----------	HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid isooctyl ester----------	RIV.
α,α,α-Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin)----------	LIL.
3-(m-Trifluoromethylphenyl)-1,1-dimethylurea (Fluometuron)----------	CGY.
Tris-(2,4-dichlorophenoxyethyl)phosphite (2,4-DEP)-------	USR.
Insect attractants and repellants:	
tert-Butyl 4(or 5)-chloro-2-methylcyclohexanecarboxy-late (Trimedlure)----------	UOP.
N,N-Diethyltoluamide (DEET)----------	HPC, PFZ.
Di-n-propyl isocinchomeronate----------	MGK.
*Insecticides:	
3-sec-Amylphenyl-N-methylcarbamate (m-(1-Methylbutyl)-phenyl methylcarbamate)----------	ORO, OTC.
Bacillus thuringiensis----------	ABB.
2-sec-Butyl-4,6-dinitrophenyl 3,3-dimethylacrylate (Binapacryl)----------	FMN.
2-(p-tert-Butylphenoxy)cyclohexyl-2'-propynyl sulfite----	USR.
Chlorinated insecticides:	
*Aldrin-toxaphene group:	
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor)----------	VEL.
Hexachloro-epoxy-octahydro-endo-endo-dimethano-naphthalene (Endrin)----------	VEL.
Hexachloro-epoxy-octahydro-endo-oxo-dimethano-naphthalene (Dieldrin)----------	SHC.

TABLE 2.--Pesticides and related products for which U. S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Insecticides--Continued	
Chlorinated insecticides--Continued	
*Aldrin-toxaphene group--Continued	
Hexachloro-hexahydro-endo-exo-dimethanonaphthalene (Aldrin)	SHC.
Octachloro-hexahydro-methanoindene (Chlordan)	VEL.
Toxaphene (Chlorinated camphene)	HN, HPC, SFD.
2,2-Bis(p-chlorophenyl)-1,1-dichloroethane (DDD) (TDE)	ACN, RH.
1,1-Bis(p-chlorophenyl)-2-nitrobutane	COM.
1,1-Bis(p-chlorophenyl)-2-nitropropane	COM.
*α-Bis(p-chlorophenyl)-β,β,β-trichloroethane (DDT)	ACN, DA, LEB, MTO, OMC.
2-(p-tert-Butylphenoxy)isopropyl-2'-chloroethyl sulfite	USR.
p-Chlorophenyl 2,4,5-trichlorophenyl sulfone (Tetradifon)	FMN, FMP.
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]-pentalene-2-one	ACN.
1,1-Dichloro-2,2-bis(p-ethylphenyl)ethane	RH.
4,4'-Dichloro-α-trichloromethylbenzhydrol (Dicofol)	RH.
2,6-Dimethyl-3,5-dichloro-4-pyridinol	DOW.
Dodecachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]-pentalene (Mirex)	ACN.
Ethyl 4,4'-dichlorobenzilate (Chlorobenzilate)	CGY.
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)	CHF, DUP, NES.
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate (Carbofuran)	FMN.
m-(1-Ethylpropyl)phenyl methylcarbamate	ORO.
Isobornyl thiocyanoacetate	HPC.
O-Isopropylphenyl N-methylcarbamate	OTC.
1-Naphthyl N-methylcarbamate (Carbaryl)	UCC.
*Organophosphorus insecticides:	
4-tert-Butyl-2-chlorophenylmethyl methylphosphoramidite (Crufomate)	DOW.
S-[[(p-Chlorophenyl)thio]methyl] O,O-diethyl phosphorodithioate (Carbophenothion)	SF.
2-Chloro-1-(2,4,5-trichlorophenyl)vinyldimethyl phosphate	SHC.
O,O-Diethyl O-3-chloro-4-methyl-1-oxo-2H-1-benzopyran-7-yl-phosphorothioate (Coumaphos)	CHG.
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate (Diazinon)	CGY.
O,O-Diethyl O-p-(methylsulfinyl)phenyl phosphorothioate (Fensulfothion)	CHG.
*O,O-Diethyl O-p-nitrophenyl phosphorothioate (Parathion)	AMP, MON, SF, SHC.
O,O-Diethyl O-3,5,6-trichloro-2 pyridyl phosphorothioate	DOW.
O,O-Dimethyl O-[4-(methylthio)-m-tolyl] phosphorothioate (Fenthion)	CHG.
*O,O-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion)	AMP, MON, SF, SHC, VEL.
O,O-Dimethyl S-[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl] phosphorodithioate (Azinphosmethyl)	CHG.
O,O-Dimethyl S-phthalimidomethyl phosphorodithioate	SF.
Dimethyl 2,4,5-trichlorophenyl phosphorothionate (Ronnel)	DOW.
2,3-p-Dioxane S,S-bis(O,O-diethylphosphorodithioate) (Dioxathion)	HPC.
α-Methylbenzyl 3-(dimethoxyphosphinyloxy)-cis-crotonate	SHC.
O,O,O',O'-Tetramethyl O,O'-thiodi-p-phenylene phosphorothioate	ACY.

TABLE 2.--Pesticides and related products for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Insecticides--Continued	
N-(Phenyl-2-nitropropyl)piperidine	MRK.
m-Tolyl-N-methylcarbamate	OTC.
Nematocides:	
O,O-Diethyl O-(2,4-dichlorophenyl) phosphorothioate (Dichlofenthion)	SM.
O,O-Diethyl O-2-pyrazinyl phosphorothioate (Thionazin)	ACY.
*Rodenticides:	
3-(α-Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	MOT, PEN.
2-Diphenylacetyl-1,3-indandione (Diphacinone)	NES.
5-(α-Hydroxy-α-2-pyridylbenzyl)-7-(α-2-pyridylbenzylidene)-4-norbornene-2,3-dicarboximide (Norbormide)	PM.
2-Pivaloyl-1,3-indandione (Pindone)	MOT, PIC.
Synergists and adjuvants:	
α-[2-(2-m-Butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide)	ALP, BKL, FMN, FMP.
N-(2-Ethylhexyl)-5-norbornene-2,3-dicarboximide	MGK.
1,2-Methylenedioxy-4-[2-octylsulfinyl)propyl]benzene	PEN.
Piperonal bis[2-(2'-n-butoxyethoxy)ethyl]acetal (Heliotropin acetal)	MGK.
PESTICIDES AND RELATED PRODUCTS, ACYCLIC	
*Fungicides:	
2-Aminobutane carbonate	LIL.
Bis-1,4-bromoacetoxy-2-butene	VIN.
Cadmium succinate	MAL.
1-Chloro-2-nitropropane (Korax)	FMN.
Dimethylthiocarbonyl disulfide	CLY.
Disodium cyanodithioimidocarbonate	BKM.
*Dithiocarbamic acid fungicides:	
Dimethyldithiocarbamic acid, ferric salt (Ferbam)	DUP, FMN, VNC, WRC.
Dimethyldithiocarbamic acid, manganese salt	FMN.
Dimethyldithiocarbamic acid, potassium salt	BKM.
Ethylene bis(dithiocarbamic acid), diammonium salt	RBC.
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	FMN, RH, USR.
Ethylene bis(dithiocarbamic acid), manganese salt (Maneb)	ALC, DUP, RH.
Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)	DUP, FMN, RH.
N-Methyldithiocarbamic acid, sodium salt (SMDC)	SF.
n-Dodecylguanidine acetate (Dodine)	ACY.
2-Hydroxypropylmethanethio sulfonate	BKM.
Mercury fungicides:	
Chloromethoxypropylmercuric acetate	TRO.
3-Methyl-(mercurithio)-1,2-propanediol	DUP.
Methylmercuric hydroxide	MRT.
Polyethylenethiuram disulfide (PETD)	FMN.
*Herbicides and plant hormones:	
2-Chloroallyl diethyldithiocarbamate (CDEC)	MON.
2-Chloro-N,N-diallyacetamide (CDAA)	MON.
S-2,3-Dichloroallyl N,N-diisopropylthiolcarbamate (Diallate)	MON.
2,2-Dichloropropionic acid, sodium salt (Dalapon)	DOW.
N-Dimethylamino succinamic acid (DMSA)	USR.
Dimethylarsinic acid (Cacodylic acid)	ASL.
Ethyl-N,N-diisobutyl thiolcarbamate	SF.
Ethyl N,N-dipropylthiolcarbamate (EPTC)	SF.
Ethyl xanthogen disulfide (EXD)	RBC.
*Methanearsonic acid salts:	
Methanearsonic acid, disodium salt (DSMA)	ASL, CLY, DA, VIN.
Methanearsonic acid, dodecyl- and octyl- ammonium salts	CLY, VIN.
Methanearsonic acid, monosodium salt (MSMA)	ASL, DA.
S-Propyl dipropylthiocarbamate (Vernolate)	SF.
S,S,S-Tributyl phosphorotrithioate	CHG.
Tributyl phosphorotrithioite	SM.

TABLE 2.--Pesticides and related products for which U. S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Herbicides and plant hormones--Continued	
Trichloroacetic acid, sodium salt (TCA)	DOW.
S-2,3,-Trichloroallyl N,N-diisopropylthiolcarbamate (Tri-allate)	MON.
*Insecticides:	
2-(2-Butoxyethoxy)ethyl thiocyanate	RH.
Metaldehyde	COM.
S-Methyl-N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl)	DUP.
*Organophosphorus insecticides:	
S-[1,2-Bis(ethoxycarbonyl)ethyl] O,O-dimethyl phosphorodithioate (Malathion)	ACY.
2-Carbomethoxy-1-propen-2yl dimethyl phosphate (Mevinphos)	SHC.
1-Chloro-diethylcarbamoyl-1-propen-2yl-dimethyl phosphate (Phosphamidon)	CGY, SM.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled)	SHC.
O,O-Diethyl S-2-(ethylthio)ethyl phosphorodithioate (Disulfoton)	CHG.
O,O-Diethyl S-(ethylthio)methyl phosphorodithioate (Phorate)	ACY.
3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-crotonamide (Dicrotophos)	SHC.
O,O-Dimethyl 2,2-dichlorovinyl phosphate (Dichlorvos)	SHC.
O,O-Dimethyl S-[2-(ethylsulfinyl)ethyl]phosphorothioate (Oxydemetonmethyl)	CHG.
O,O-Dimethyl (1-hydroxy-2,2,2-trichloroethyl)phosphonate (Trichlorfon)	CHG.
O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate (Dimethoate)	ACY.
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide (Monocrotophos)	SHC.
O,O,O',O'-Tetraethyl S,S'-methlene bisphosphorodithioate (Ethion)	FMN, FMP.
Tetraethyl pyrophosphate (TEPP)	AMP.
Tetra-n-propyl dithiopyrophosphate	SF.
2-Thiocyanoethyl dodecanoate	RH.
All other	BFG.
Nematocides:	
O-Ethyl S,S-dipropyl phosphorodithioate	SM.
2-Methyl-2 (methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb)	UCC.
*Rodenticides: Sodium fluoroacetate	RBC.
*Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium salt	ACY.
*Soil fumigants:	
1,2-Dibromo-3-chloropropane (DBCP)	AMP, BST, DOW, SHC.
1,3-Dichloropropene	DOW.
1,3-Dichloropropene, 1,2-dichloropropane	DOW, SHC.
*Methyl bromide (Bromomethane)	AMP, DOW, GTL, MCH.
Trichloronitromethane (Chloropicrin)	DOW, IMC.
All other acyclic pesticides and related products	GAF.

TABLE 3.--Pesticides and related products: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of pesticides and related products manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
ABB	Abbott Laboratories
ACN	Allied Chemical Corp., Agricultural Div.
ACY	American Cyanamid Co.
ALC	Alco Chemical Corp.
ALP	Alpha Laboratories, Inc.
AMC	Amchem Products, Inc.
AMP	Kerr-McGee Corp.
ARA	Arapahoe Chemical Div. of Syntex Corp.
ASL	Ansul Chemical Co.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
BKL	Millmaster Onyx Corp., Millmaster Chemical Co. Div., Berkeley Chemical Dept.
BKM	Buckman Labs., Inc.
BST	Occidental Chemical Co.
CCA	Cincinnati Milacron Chemicals, Inc.
CGY	Ciba-Geigy Corp. and Ciba Agricultural Co.
CHF	Chemical Formulators, Inc.
CHG	Chemagro Corp.
CIS	Chemical Insecticide Corp.
CLY	W. A. Cleary Corp.
COM	Commercial Solvents Corp.
CWN	Upjohn Co., Carwin Organic Chemicals
DA	Diamond Shamrock Corp.
DOW	Dow Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc.
FER	Ferro Corp., Ferro Chemical Div.
FIS	Fisher Chemical Co., Inc.
	FMC Corp.:
FMN	Niagara Chemical Div.
FMP	Organic Chemicals Div.
FMT	Fairmount Chemical Co.
FRO	Vulcan Materials Co., Chemical Div.
GAF	GAF Corp., Chemical Div.
GOC	Gulf Oil Corp., Gulf Oil Chemical Co.-United States
GTH	Guth Chemical Co.
GTL	Great Lakes Chemical Corp.
HK	Hooker Chemical Corp.
HN	Tenneco Chemicals, Inc.:
HNX	Nuodex Div.
HPC	Hercules, Inc.
IMC	International Minerals & Chemical Corp.
LEB	Lebanon Chemical Corp.
LIL	Eli Lilly & Co.
MAL	Mallinckrodt Chemical Works
MCH	Michigan Chemical Corp.
MCI	Mooney Chemical Corp.
MGK	McLaughlin, Gormley & King Co.
MON	Monsanto Co.
MOT	Motomco, Inc.
MRK	Merck & Co., Inc.
MRT	Morton Chemical Co.
MTO	Montrose Chemical Corp. of Calif.
NES	Nease Chemical Co., Inc.
OMC	Olin Mathieson Chemical Corp. and Agricultural Div.
ORO	Chevron Chemical Co.
OTC	Ott Chemical Co.
PAS	Pennwalt Chemicals Corp.
PBI	Gordon Corp.
PEN	CPC International, Inc., Penick Div.
PFZ	Pfizer, Inc.
PIC	Pierce Organics, Inc.
PM	Pitman-Moore, Inc.
PPG	PPG Industries, Inc.
RBC	Roberts Chemicals, Div. of Security Chemical, Inc.
RCI	Reichhold Chemicals, Inc.
RDA	Rhodia, Inc.
RH	Rohm & Haas Co.
RIV	Riverdale Chemical Co.
SF	Stauffer Chemical Co., Agricultural Div.
SFD	Sonford Chemical Co.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHP	Shepherd Chemical Co.
SM	Mobil Oil Corp., Mobil Chemical Co. Div., Industrial Chemical Div.
THM	WM. T. Thompson Co., Thompson Chemicals Div.
TMH	Thompson-Hayward Chemical Co.
TRO	Troy Chemical Co.
UCC	Union Carbide Corp.
UOP	Universal Oil Products Co., UOP Chemical Div.
UPJ	Upjohn Co.
USB	U.S. Borax Research Corp.
USR	Uniroyal, Inc., Chemical Div.
VEL	Velsicol Chemical Corp.
VIN	Vineland Chemical Co.
VNC	Vanderbilt Chemical Corp.
WRC	Wood Ridge Chemical Corp.
WTC	Witco Chemical Co., Inc.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

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 1970 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, antifreeze chemicals, solvents, and acyclic intermediates. Table 1 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.[1]

Production of miscellaneous cyclic and acyclic chemicals in 1970 totaled 79.3 billion pounds, or 4.7 percent more than the output of 75.7 billion pounds reported for 1969. Sales of miscellaneous chemicals in 1970 amounted to 36.0 billion pounds, valued at $4.1 billion, compared with 34.8 billion pounds, valued at $4.0 billion, in 1969.

The total output of miscellaneous cyclic chemicals in 1970 was 1.7 billion pounds, or 10.5 percent less than the output of 1.9 billion pounds reported for 1969. Sales in 1970 totaled 749 million pounds, valued at $310 million, compared with 860 million pounds, valued at $325 million, in 1969. In 1970 the most important groups of cyclic compounds were the lubricating oil additives, the output of which was 380 million pounds, and synthetic tanning materials, the output of which was 43 million pounds.

Total production of miscellaneous acyclic chemicals in 1970 was 77.6 billion pounds, or 5.1 percent more than the output of 73.8 billion pounds reported for 1969. Sales in 1970 totaled 35.2 billion pounds, valued at $3.8 billion, compared with 33.9 billion pounds, valued at $3.7 billion, in 1969. 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 1970, 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 18.7 billion pounds. The most important chemicals in this group were dichloroethane (production of 7.5 billion pounds in 1970 compared with

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

6.0 billion pounds in 1969) and vinyl chloride (4.0 billion pounds compared with 3.7 billion pounds). Output of nitrogenous compounds totaled 12.7 billion pounds. The most important chemical in this group was urea (used principally in fertilizers and as a feed additive), production of which was 6.2 billion pounds in 1970, compared with 5.9 billion pounds in 1969.

Monohydric alcohols, which are used largely as solvents and intermediates, were the third largest group in 1970, with production of 11.4 billion pounds. The most important items in the group in terms of production were synthetic methanol (4.9 billion pounds in 1970, compared with 4.2 billion pounds in 1969), synthetic ethyl alcohol (2.0 billion pounds in 1970, compared with 2.4 billion pounds in 1969) and isopropyl alcohol (1.9 billion pounds in 1970, compared with 2.0 billion pounds in 1969). Aldehydes and ketones, which are also used largely as solvents and intermediates, were the next largest group with production of 10.0 billion pounds. The most important items in this group in 1970 were formaldehyde (4.4 billion pounds), acetaldehyde (1.6 billion pounds), and acetone (1.6 billion pounds).

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970

[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 manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	79,257,419	35,997,692	4,096,583	$0.11
MISCELLANEOUS CHEMICALS, CYCLIC				
Total	1,705,018	749,112	310,370	.41
Benzoic acid, sodium salt	11,876	11,422	3,379	.30
Benzoyl peroxide	6,311	6,232	5,717	.92
Butyl benzoate	3,140	2,156	460	.21
2,6-Di-tert-butyl-p-cresol:				
Food grade	7,192	6,932	3,624	.52
Tech	18,841	16,842	8,573	.51
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	163	...	...	...
Enzymes	(2)	(2)	29,597	...
Flotation reagents	6,779	...	...	...
Gasoline additives[3]	30,299	25,043	17,037	.68
Hexamethylenetetramine, tech	76,625	36,890	5,639	.15
p-Hydroxybenzoic acid esters:				
Methyl p-hydroxybenzoate (Methylparaben)	840	820	1,258	1.53
Propyl p-hydroxybenzoate (Propylparaben)	312	292	559	1.91
Lubricating oil and grease additives, total	380,025	213,961	50,937	.24
Oil-soluble petroleum sulfonate, barium salt	16,894	...	...	...
Oil-soluble petroleum sulfonate, calcium salt	167,116	...	...	...
Oil-soluble petroleum sulfonate, sodium salt	58,376	30,978	5,647	.18
All other	137,639	182,983	45,290	.25
Morpholine	21,204	19,855	6,434	.32
Naphthenic acid salts, total[4 5]	25,272	21,103	5,710	.27
Calcium naphthenate	1,820	1,774	509	.29
Cobalt naphthenate	3,412	3,485	1,716	.49
Lead naphthenate	14,363	10,504	2,020	.19
Manganese naphthenate	1,958	1,759	474	.27
Zinc naphthenate	1,192	...	...	...
All other	2,527	3,581	991	.28
Photographic chemicals:				
p-Diethylaminobenzenediazonium (p-Diazo-N,N-diethylaniline), zinc chloride salt	84	80	173	2.16
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride	20	20	61	3.05
Pinene, (α- and β-)	81,292	57,624	8,007	.14
Tall oil salts, total[4]	8,273	8,300	3,065	.37
Calcium tallate	684	717	183	.26
Cobalt tallate	2,145	2,198	965	.44
Iron tallate	188	160	35	.22
Lead tallate	4,162	4,022	767	.19
Manganese tallate	815	849	204	.24
All other	279	354	911	2.57
Tanning materials, synthetic, total	43,272	...	...	...
2-Naphthalenesulfonic acid, formaldehyde condensate and salts	39,873	40,501	8,126	.20
All other	3,399	...	...	...
Textile chemicals	2,494	1,591	1,462	.92
All other miscellaneous cyclic chemicals	980,704	279,448	150,552	.54

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	77,552,401	35,248,580	3,786,213	$0.11
Cellulose Esters and Ethers				
Total	1,107,330	320,080	132,969	.42
Cellulose esters, total	989,421	207,649	69,389	.33
Cellulose acetate	820,392	...	...	...
All other	169,029	207,649	69,389	.33
Cellulose ethers, total	117,909	112,431	63,580	.57
Sodium carboxymethylcellulose, 100%	64,876	65,235	28,230	.43
All other[6]	53,033	47,196	35,350	.75
Lubricating Oil Additives				
Total	436,864	161,198	30,068	.19
Phosphorodithioates (Dithiophosphates)	98,796	25,723	8,282	.32
All other	338,068	135,475	21,786	.16
Nitrogenous Compounds				
Total[7]	12,708,990	7,475,514	684,816	.09
Acrylonitrile	1,039,257	547,124	59,812	.11
Amines, total	975,289	275,769	58,770	.21
Butylamines, total	17,213	9,571	2,911	.30
n-Butylamine, mono-	2,073	1,710	575	.34
Di-n-butylamine	2,662	2,027	628	.31
All other	12,478	5,834	1,708	.29
Diethylenetriamine	...	23,749	7,640	.32
Ethylamines:				
Diethylamine	8,795	4,575	1,026	.22
Ethylamine, mono-	28,069	24,175	3,249	.13
Triethylamine	...	6,527	2,022	.31
Ethylenediamine	62,062	46,906	9,306	.20
1,6-Hexanediamine (Hexamethylenediamine)	613,439	...	...	...
Methylamines:				
Dimethylamine	78,283	36,535	3,638	.10
Methylamine, mono-	28,676	23,452	2,106	.09
Trimethylamine	25,454	19,687	1,938	.10
Propylamines:				
Diisopropylamine	1,237	1,154	262	.23
Di-n-propylamine	7,674	8,804	2,188	.25
Triethylenetetramine	13,159	9,537	3,549	.37
All other	91,228	61,097	18,935	.31
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	8,710	6,694	2,603	.39
1,1'-Azobisformamide	...	3,517	4,207	1.20
2-Dimethylaminoethanol	3,147	2,135	965	.45
Erucamide	2,473	2,562	2,396	.94

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Nitrogenous Compounds--Continued				
Ethanolamines, total	264,340	207,682	23,557	$0.1
2-Aminoethanol (Monoethanolamine)	87,167	63,352	6,951	.1
2,2'-Iminodiethanol (Diethanolamine)	93,279	65,688	6,633	.1
2,2',2''-Nitrilotriethanol (Triethanolamine)	83,894	78,642	9,973	.1
Nitriloacids and salts, total	158,263	139,172	25,928	.1
(Diethylenetrinitrilo)pentaacetic acid, potassium salt	3,006	2,550	738	.2
(Ethylenedinitrilo)tetraacetic acid	4,287	1,339	727	.5
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate	1,686	1,694	684	.4
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	36,955	24,795	6,712	.2
(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt	5,820	4,488	1,742	.3
All other	106,509	104,306	15,325	.1
Oleamide (Octadecene amide)	...	4,410	1,922	.4
Pentaerythritol tetranitrate	3,644	3,085	2,546	.8
Stearamide	...	745	326	.4
Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2)	20,614	13,358	4,210	.3
Urea in compounds or mixtures (100% basis), total	(8) 6,238,357	5,456,122	(9) 157,364	.0
In feed compounds	671,901	584,803	16,820	.0
In liquid fertilizer	2,818,562	2,438,170	67,722	.0
In solid fertilizer	2,403,260	2,212,700	66,036	.0
All other	344,634	220,449	6,786	.0
All other nitrogenous compounds	3,994,896	813,139	340,210	.4
Acids, Acyl Halides and Anhydrides				
Total	5,992,209	1,258,061	185,251	.1
Acetic acid, synthetic, 100%	1,932,285	389,146	22,873	.0
Acetic anhydride, 100%	1,589,047	160,703	13,929	.0
Acrylic acid	100,418	23,805	5,155	.2
Adipic acid	1,081,995	127,081	19,861	.1
Butyric acid	...	2,569	572	.2
Dodecenylsuccinic anhydride	...	2,290	933	.4
Fumaric acid	53,202	45,488	9,287	.2
Lauroyl chloride	4,617	...	...	...
Maleic anhydride	215,122	150,972	23,963	.1
Palmitoyl chloride	330	...	...	...
Polyacrylic acid	890	864	548	.6
Propionic acid	49,601	28,661	2,457	.0
All other acids, acyl halides and anhydrides	964,702	326,482	85,673	.2

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Salts of Organic Acids				
Total	282,501	243,671	84,084	$0.35
Acetic acid salts, total	29,658	34,454	6,407	.19
Copper acetate	263	184	164	.89
Potassium acetate	2,983	2,414	750	.31
Sodium acetate	20,859	13,014	2,255	.17
Zinc acetate	356	371	147	.40
Zirconium acetate	188	131	51	.39
All other	5,009	18,340	3,040	.17
2-Ethylhexanoic acid (α-Ethylcaproic acid) salts:				
Calcium 2-ethylhexanoate	1,169	302	116	.38
Cobalt 2-ethylhexanoate	1,517	1,150	844	.73
Lead 2-ethylhexanoate	940	793	343	.43
Manganese 2-ethylhexanoate	196	188	60	.32
Zinc 2-ethylhexanoate	681	635	320	.50
Zirconium 2-ethylhexanoate	...	1,031	544	.53
Gluconic acid, sodium salt	14,241	14,097	3,575	.25
Lactic acid salts	1,819	1,587	664	.42
Mercaptoacetic (Thioglycolic) acid, salts	3,133	2,984	4,562	1.53
Octanoic (Caprylic) acid, salts	1,199	908	994	1.09
Oleic acid salts	578	480	325	.68
Polyacrylic acid salts	4,743	5,159	5,795	1.12
Propionic acid salts:				
Calcium propionate	20,295	16,253	3,534	.22
Sodium propionate	4,792	3,870	857	.22
Stearic acid salts, total[10]	46,181	43,405	15,869	.37
Aluminum stearates, total	3,208	3,090	1,231	.40
Aluminum distearate	2,519	2,324	909	.39
Aluminum monostearate and tristearate	689	766	322	.42
Cadmium stearate	109	112	86	.77
Calcium stearate	23,339	23,000	8,049	.35
Lithium stearate	497	478	254	.53
Magnesium stearate	3,632	3,394	1,351	.40
Zinc stearate	11,221	10,674	3,905	.37
All other	4,175	2,657	993	.37
All other salts of organic acids	151,359	116,375	39,275	.34
Aldehydes and Ketones				
Total	10,025,606	3,951,685	205,642	.05
Acetaldehyde	1,611,352	...	...	...
Acetone, total	1,615,248	1,123,551	44,815	.04
From cumene	723,620	559,097	22,692	.04
All other	891,628	564,454	22,123	.04
2-Butanone (Methyl ethyl ketone)	480,228	427,218	38,797	.09

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Aldehydes and Ketones--Continued				
Formaldehyde (37% by weight)	4,426,931	1,381,029	33,049	$0.02
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	...	37,493	4,830	.13
4-Methyl-2-pentanone (Methyl isobutyl ketone)	199,043	166,948	19,425	.12
All other aldehydes and ketones	1,692,804	815,446	64,726	.08
Alcohols, Monohydric, Unsubstituted				
Total	11,350,687	5,158,519	318,030	.06
Alcohols, C_9 or lower, unmixed, total	10,531,342	4,609,154	243,390	.05
Butyl alcohols:				
n-Butyl alcohol (n-Propylcarbinol)	467,808	278,163	22,140	.08
Isobutyl alcohol (Isopropylcarbinol)	91,746	77,771	4,214	.05
Ethyl alcohol, synthetic[11]	1,956,597	1,060,607	66,841	.06
2-Ethyl-1-hexanol	456,997	228,612	18,942	.08
Hexyl alcohol	16,656	3,744	383	.10
Iso-octyl alcohols	99,833	76,271	7,075	.09
Isopropyl alcohol	1,919,206	861,215	49,183	.06
Methanol, synthetic	4,931,682	1,861,723	53,344	.03
1-(and 2-)Octanol	...	5,518	1,074	.19
Propyl alcohol (Propanol)	60,320	57,245	6,093	.11
All other	530,497	98,285	14,101	.14
Alcohols, C_{10} and higher, unmixed, total	284,670	130,182	19,636	.15
Decyl alcohols	157,363	57,812	5,466	.09
1-Hexadecanol and other hexadecyl alcohols	...	5,671	1,533	.27
Stearyl and other octadecyl alcohols	...	7,168	1,509	.21
All other	127,307	59,531	11,128	.19
Mixtures of alcohols, total	534,675	419,183	55,004	.13
C_9 and lower, only	49,574	35,068	3,829	.11
C_{10} and higher, only	394,681	294,519	40,146	.14
C_6 to C_{12} and others[12]	90,420	89,596	11,029	.12
Polyhydric Alcohols and Their Esters and Ethers				
Total[13]	6,200,071	4,484,158	493,598	.11
Polyhydric alcohols, total	4,265,579	3,068,532	279,101	.09
Ethylene glycol	3,037,501	2,209,675	146,205	.07
Glycerol, synthetic only	190,809	176,129	32,637	.19
Pentaerythritol	85,189	67,572	15,501	.23
Propylene glycol (1,2-Propanediol)	428,181	395,459	36,419	.09
Sorbitol	105,091	88,183	17,444	.20
All other	418,808	131,514	30,895	.23
Polyhydric alcohol esters	186,680	178,258	36,218	.20

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Polyhydric Alcohols and Their Esters and Ethers--Continued				
Polyhydric alcohol ethers, total	1,747,812	1,237,368	178,279	$0.14
2-Butoxyethanol (Ethylene glycol monobutyl ether)	106,915	90,646	13,385	.15
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	15,080	10,295	1,778	.17
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	...	2,007	398	.20
Diethylene glycol	341,407	196,613	13,325	.07
Dipropylene glycol	44,142	34,874	3,862	.11
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	136,316	59,174	7,795	.13
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	35,842	30,760	4,260	.14
2-Methoxyethanol (Ethylene glycol monomethyl ether)	97,029	75,375	8,415	.11
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	13,375	6,550	724	.11
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	24,801	...	...	...
Polyethylene glycol	42,098	40,653	9,163	.23
Polypropoxy ethers, total	388,023	301,711	49,208	.16
Glycerol tri(polyoxypropylene) ether	192,103	164,761	24,253	.15
All other	195,920	136,950	24,955	.18
Polypropylene glycol	212,886	187,016	28,131	.15
Triethylene glycol	89,312	70,178	9,246	.13
All other ethers of polyhydric alcohols	200,586	131,516	28,589	.22
Esters of Monohydric Alcohols				
Total	2,447,970	1,179,595	188,778	.16
n-Butyl acetate, unmixed	74,322	64,268	7,204	.11
Butyl acrylate	84,429	45,835	8,125	.18
Dibutyl maleate	9,686	9,546	1,743	.18
Diethyl carbonate (Ethyl carbonate)	1,759	1,328	515	.39
Dilauryl 3,3'-thiodipropionate	993	...	...	...
Dioctyl maleate	4,529	4,092	838	.20
Distearyl 3,3'-thiodipropionate	850	791	692	.87
Ethyl acetate, 85%	161,360	138,834	11,034	.08
Ethyl acrylate	207,269	68,202	11,464	.17
Ethyl chloroacetate	...	182	91	.50
2-Ethyl-1-hexyl acrylate	45,360	32,660	6,975	.21
Methyl esters of tallow	269	269	38	.14
Methyl methacrylate	445,053	...	...	...
Phosphorus acid esters, not elsewhere specified	17,791	17,482	14,480	.83
Propyl acetate	23,532	22,071	2,660	.12
Vinyl acetate	803,224	348,875	29,698	.09
All other	567,544	425,160	93,221	.22

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1970--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Halogenated Hydrocarbons				
Total	18,695,628	8,568,392	708,305	$0.08
Carbon tetrachloride	1,011,191	841,188	44,093	.05
Chlorinated paraffins, total	58,371	56,913	7,560	.13
35-64% chlorine	35,393	34,612	4,051	.12
Other	22,978	22,301	3,509	.16
Chlorodifluoromethane	...	72,613	37,031	.51
Chloroethane (Ethyl chloride)	678,034	272,741	17,135	.06
Chloroform	239,893	174,903	10,686	.06
Chloromethane (Methyl chloride)	422,678	175,961	9,750	.06
1,2-Dibromoethane (Ethylene dibromide)	296,826	145,626	26,139	.18
Dichlorodifluoromethane	375,406	356,040	91,603	.26
1,2-Dichloroethane (Ethylene dichloride)	7,459,824	1,313,995	38,292	.03
Dichloromethane (Methylene chloride)	402,190	358,160	28,757	.08
1,2-Dichloropropane (Propylene dichloride)	...	21,778	596	.03
Iodomethane (Methyl iodide)	20	10	36	3.60
Tetrachloroethylene (Perchloroethylene)	706,896	640,192	44,835	.07
1,1,1-Trichloroethane (Methylchloroform)	366,330	327,387	32,084	.10
Trichloroethylene	610,778	568,860	40,490	.07
Trichlorofluoromethane	244,472	236,580	43,772	.19
Vinyl chloride, monomer (Chloroethylene)	4,040,234	2,720,196	107,037	.04
All other halogenated hydrocarbons	1,782,485	285,249	128,409	.45
All Other Miscellaneous Acyclic Chemicals				
Total	8,304,545	2,447,707	754,672	.31
2-Butanone peroxide	3,164	2,986	3,215	1.08
tert-Butyl hydroperoxide	2,166	787	579	.74
tert-Butyl peroxide (Di-tert-butyl peroxide)	1,610	1,512	1,372	.91
Carbon disulfide	720,851	465,990	19,427	.04
Epoxides, ethers, and acetals:				
Ethylene oxide	3,864,767	411,232	28,641	.07
Isopropyl ether	...	7,511	766	.10
Propylene oxide	1,179,216	172,134	14,667	.09
Lauroyl peroxide	1,589	1,611	1,294	.80
Organo-silicon polymers	91,872	83,916	104,077	1.24
Phosgene (Carbonyl chloride)	617,471	...	...	...
Sodium formaldehyde sulfoxylate	4,631	4,216	1,098	.26
Sodium methoxide (Sodium methylate)	5,757	...	...	...
Tetraethyllead	324,757	325,593	172,539	.53
Tetra(methylethyl)leads	504,215	484,364	280,880	.58
Zinc formaldehyde sulfoxylate	628	612	285	.47
All other	981,851	485,243	125,832	.26

[1] Calculated from rounded figures.

[2] Not available.

[3] Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are included 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 included

TABLE 1.--Miscellaneous chemicals: U. S. production and sales, 1970--Continued

Footnotes for table 1--Continued

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 6,500,046 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 Alcohol Tax Unit, U.S. Internal Revenue Service.

[12] Of the total production, about 60% consisted of alcohols lower than C_{10} and about 40% consisted of alcohols higher than C_{10}.

[13] Some polyols which are used as intermediates for urethanes have been included with "Plastics and Resin Materials."

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970

[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	
Acetylcyclohexanesulfonyl peroxide	WTL.
1-Adamantanamine	ALD.
Adenosine and derivatives	PLB.
2-Aminobenzothiazole	FMT.
2-Amino-5-dichloro-2-propylbenzophenone	ALD.
2-Amino-4,6-dimercapto-1,3,5-triazine	ACY.
1-(2-Aminoethyl)piperazine	JCC, UCC.
1-(3-Aminopropyl)morpholine	JCC.
Amyl p-dimethylaminobenzoate	VND.
Anisaldehyde bisulfite	GIV, SHL.
Arylalkyl phosphites	WES.
*Benzoic acid, sodium salt	HN, MON, PFZ, VEL, WSN.
p-Benzoquinone (p-Quinone)	EKT.
Benzothiazole	ACY.
*Benzoyl peroxide	CAD, NOC, RCI, WTC, WTL, x.
Biological stains	ACS, EK.
Bis-aminopropylpiperazine	JCC.
Bis(2,4-dichlorobenzoyl) peroxide	CAD, WTL.
2,4-Bis(4-hydroxy-3,5-di-tert-butylphenoxy)-6-(n-octylthio)-1,3,5-triazine.	CGY.
Bis(2-hydroxypropoxyphenyl)methane	JCC.
2,4-Bis(n-octylthio)-6-(4'-hydroxy-3',5'-di-tert-butylanilino)-1,3,5-triazine.	CGY.
Boron fluoride-phenol complex	ACS.
*Butyl benzoate	PFZ, TCC, VAL, VEL.
p-tert-Butylbenzoic acid, barium bis-salt	CCA.
2(and 3)-tert-Butyl-4-methoxyphenol	EKT.
tert-Butyl peroxybenzoate	NOC, WTC.
4-tert-Butylphenyl salicylate	DOW.
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	ACS, EK, FIN, GFS, LAM.
Chloramine B (Sodium derivative of N-chlorobenzenesulfonamide).	NES.
1-(3-Chlorallyl)-3,5,7-triaza-1-azoniaadamantane chloride.	DOW.
o-Chlorobenzamalononitrile	NCA.
p-Chlorophenylalanine	ALD.
Chlorophyllin, sodium-potassium-copper	KCH.
Cholesteryl chloride	ALD.
Cobalt phthalocyaninedisulfonate	ACS.
Cumene hydroperoxide	ACP, HPC, RCI.
Cyanuric and isocyanuric acid	FMB, MON.
1,3(and 1,4)-Cyclohexadiene	ALD.
Cyclohexanone peroxide	NOC, WTL.
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid) disubstituted, polyester salts: Barium and cadmium salts.	RCI.
Cyclohexene	EK.
Cyclohexenone and cyclopentenone	ALD.
1,4-Cyclohexylenedimethanol	EKT.
1-Cyclohexyl-2-pyrrolidinone	GAF.
Cyclohexyl p-toluenesulfonate	ARS.
Cyclopropane	OH, OMS, TAE.
Cytidine and derivatives	PLB.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Decahydronaphthalene (Decalin)	DUP.
Diaminohexanitrobiphenyl	NCA.
Diaminotrinitrobenzene	NCA.
2,5-Di-tert-amylhydroquinone	CTN, EKT.
1,4-Diazobicyclo(2.2.2)octane	HOU.
Diazodinitrophenol	HPC.
2,5-Di(benzoylperoxy)-2,5-dimethylhexane	WTC, WTL.
Dibenzyl azodicarboxylate	WTL.
Dibromodimethylhydantoin	ARA.
2,6-Di-tert-butyl-p-cresol:	
*Food grade	ASH, HPC, KPT, PRD, SHC.
*Tech	ASH, HPC, KPT, PRD, SHC, USR.
2,5-Di-tert-butylhydroquinone	EKT.
Di-tert-butyl diperoxyphthalate	WTL.
1,3-Dichloro-5,5-dimethylhydantoin	GLY.
Dichloro-s-triazine-2,4,6(1H,3H,5H)trione (Dichloroisocyanuric acid), and salts.	FMB, MON.
4,4'-Dichloro-3-trifluoromethylcarbonalide	CGY.
Dicyclohexylammonium nitrite	OMC.
Digitonin	PEN.
2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)	PLC.
2,4-Dihydroxybenzophenone	DUP.
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-carboxypyridine).	EK.
2,2'-Dihydroxy-4-methoxybenzophenone	ACY.
2,2'-Dihydroxy-4-(octadecyloxy)benzophenone	ACY.
Diisopropylbenzene hydroperoxide	HPC.
Diisopropyl-m,p-cresols	GIV.
*p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	EKT, GAF, UOP.
2,6-Dimethylmorpholine	DOW.
2,4-Dinitrobenzenesulfonic acid, sodium salt	NES.
4,4-Dinitrocarbanilide-4,6-dimethyl-2-pyrimidinol	MRK.
Di-n-octadecyl-3,5-di-tert-butyl-4-hydroxyphenyl phosphonate.	CGY.
1,2-Dioctylcyclobutane-3,4-bis(octamethylene isocyanate)-	OTC.
Dioxane (1,4-Diethylene oxide)	DOW, UCC.
Dioxin	GIV.
Dipropylene glycol salicylate	SBC.
Dithioammilide, monoethanolamine salt	ACY.
4-(Dodecyloxy)-2-hydroxybenzophenone	DUP, EKT.
*Enzymes:	
Hydrolytic:	
Amylases	BAX, CRN, GRP, MLS, OMS, PMP, RH, WBC.
Proteases	BAX, CHH, COM, DOL, ENZ, GRP, MLS, PD, PFZ, PMP, SPR, WBC.
Other	BAX, JFR, MLS, OMS, RH, WBC.
Nonhydrolytic	MLS, PLB, WBC.
Ethyl cellulose phthalate	EK.
Ethylenediaminedi(o-hydroxyphenylacetic acid), ferric sodium salt.	CGY.
4-Ethylmorpholine	BRD, JCC.
*Flotation reagents:	
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt	ACY.
Dicresylphosphorodithioic acid, sodium salt	KCU.
2,2'-Dimethylthiocarbanilide (Di-o-tolylthiourea)	DUP, RBC.
Rosin amines	HPC.
Thiocarbanilide (Diphenylthiourea)	ACS, ACY.
Fluorinated benzenoid chemicals	PIC.
Furan derivatives:	
2-Furaldehyde (Furfural)	QKO.
Tetrahydrofurfuryl alcohol	QKO.
Gallic acid	MAL.
*Gasoline additives:	
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	EKT.
6-tert-Butyl-o-cresol	TNA.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Gasoline additives--Continued	
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.
N,N'-Diisopropyl-p-phenylenediamine	EKT.
N,N'-Disalicylidene-1,2-propanediamine	DUP, TX.
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.
1,3,5-Tris(3,5-di-tert-butyl-4-hydroxybenzyl)-mesitylene.	TNA.
Other	EKT, TNA, UPM.
Glyceryl p-aminobenzoate	VND.
Guanosine and derivatives	PLB.
*Hexamethylenetetramine, tech	DUP, HKD, HMP, HN, PLS, UCC.
Hexanitrobenzene	NCA.
Hexanitrostilbene	NCA.
Homomenthyl salicylate	ARS.
Hydrindantin	HEX.
Hydrocinnamic acid	ARS.
o-(2-Hydroxy-p-anisoyl)benzoic acid	ACY.
p-Hydroxybenzoic acid esters:	
Benzyl p-hydroxybenzoate	RSA.
Butyl p-hydroxybenzoate (Butylparaben)	HN, LEM, WSN.
Ethyl p-hydroxybenzoate (Ethylparaben)	HN, LEM, WSN.
n-Heptyl p-hydroxybenzoate (Heptylparaben)	WSN.
*Methyl p-hydroxybenzoate (Methylparaben)	ARS, HN, LEM, WSN.
*Propyl p-hydroxybenzoate (Propylparaben)	ARS, HN, LEM, WSN.
Other	WSN.
Hydroxymethyl-5,5-dimethylhydantoin	GLY.
2-Hydroxy-4-methoxybenzophenone	ACY, GAF.
2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate	ACY.
2-Hydroxymethyl-5-norbornene acrylate	ARS.
2-Hydroxy-4-n-octoxybenzophenone	ACY.
2-(2-Hydroxy-5-tert-octylphenyl)benzotriazole	ACY.
2-Hydroxypropyl p-(N,N-bis-2-hydroxypropylamino)-benzoate.	SHL.
1-Hydroxy-2-pyridine (Omadine)	OMC.
2-Imidazolidinethione (1,3-Ethylene-2-thiourea)	PAS.
1,2,3-Indantrione monohydrate (Ninhydrin)	HEX.
Inosine and derivatives	PLB.
2-(p-Iodophenyl)-3-(p-nitrophenyl)-5-phenyl-2H-tetrazolium chloride.	EK.
Isobutyl vinyl ether - toluene, xylene polymers	GAF.
Isopropyl-o-cresols	CP.
Isopropylmorpholine	JCC.
*Lubricating oil and grease additives:	
Chlorosulfurized and sulfurized compounds:	
Heterocyclic compounds, sulfurized	ORO.
Other	LUB, SOI.
Oil-soluble petroleum sulfonates:	
Oil-soluble petroleum sulfonate, ammonium salt	CO.
*Oil-soluble petroleum sulfonate, barium salt	CO, LUB, TX.
*Oil-soluble petroleum sulfonate, calcium salt	CO, ENJ, LUB, ORO, SHO.
Oil-soluble petroleum sulfonate, magnesium salt	CO.
*Oil-soluble petroleum sulfonate, sodium salt	CO, ENJ, MOR, PAR, SHO, SOC, SOI.
Phenol salts:	
Barium salt of nonylphenol	ENJ, CCA.
Calcium salt of octylphenol-formaldehyde	SHC.
Other	ENJ, GOC, HDG, LUB, ORO, SHC, SIN, TX, x.
All other	ENJ, GOC, LUB, ORO, SIN, SM, x.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970-- Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
p-Menthane	HPC.
8-p-Menthyl hydroperoxide	HPC, VND.
p-Methoxybenzylidenemalonic acid, diethyl and dimethyl esters.	ACY.
4-Methoxyphenol	ASL, EKT.
Methylaziridine	ARS.
2,2'-Methylenebis(4-chlorophenol) (Dichlorophene)	GIV.
Methylenebis[dimethylhydantoin]	GLY.
2,2'-Methylenebis(3,4,6-trichlorophenol) (Hexachlorophene).	GIV.
Methyl gallate	HSH.
Methylglucoside	CRN.
4-Methylmorpholine	JCC, UCC.
Methyl phenyl phosphates	TNA.
1-Methyl-2-pyrrolidone, monomer	GAF.
*Morpholine	DOW, JCC, UCC.
Morpholine salt of p-toluenesulfonic acid	AMB.
*Naphthenic acid salts:	
Aluminum naphthenate	HSH, WTC.
Barium naphthenate	CCA.
Cadmium naphthenate	CCA.
*Calcium naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SRR, SW, TRO, WTC.
Cerium naphthenate	SHP.
Cobalt lead manganese naphthenate	HNX, HSH.
*Cobalt naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SRR, SW, TRO, WTC.
Iron naphthenate	CCA, CCC, HNX, HSH, MCI, WTC.
Lead manganese naphthenate	CCA.
*Lead naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SRR, SW, TRO, TX, WTC.
Lithium naphthenate	CCA, MCI.
*Manganese naphthenate	CCA, FER, HNX, HSH, MCI, SHP, SRR, SW, WTC.
Nickel naphthenate	CCA.
Rare earths naphthenate	CCA.
Sodium naphthenate	CCA.
Strontium naphthenate	CCA.
*Zinc naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SW, TRO, WTC.
o-Nitrobenzoic acid and sodium salt	WAY.
Octadecyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)-propionate.	CGY.
Organic mercury compounds: Phenylmercuric borate	TRO.
Oxanilide	FIN.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	DOW, JCC.
2-(2-Phenoxyethoxy)ethanol (Diethylene glycol phenyl ether).	DOW.
2-Phenoxypropanol	JCC.
2,2'-(p-Phenylene)diethanol	EKT.
m-Phenylene isonaphthalamide	DUP.
Phenyl hydrogen phosphate	HDG, SM.
2-(Phenylthio)quinoline	EK.
5-Phosphonylribose-1-pyrophosphate	PLB.
Photographic chemicals:	
N-(o-Acetamidophenethyl)-1-hydroxy-2-naphthamide	EKT.
2-(4-Amino-N-ethyl-m-toluidino)ethyl sulfate	EKT.
3-Amino-1,2,4-triazole	FMT.
Benzotriazole	EK, FMT, MRT, SW.
p-Benzylaminophenol hydrochloride	EK.
2-Chloro-N,N-diethyl-p-phenylenediamine hydrochloride.	IDC.
3-Chloro-4-diethylaminobenzenediazonium salts (p-Diazo-2-chloro-N,N-diethylaniline salts).	FMT.
Chlorohydroquinone	EK.
2,4-Diaminophenol dihydrochloride (Amidol)	VPC.
2,5-Diethoxy-4-morpholinobenzenediazonium salts	FMT, GAF.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Photographic chemicals--Continued	
2,5-Diethoxy-4-thiocresoldiazonium salts	FMT.
*p-Diethylaminobenzenediazonium (p-Diazo-N,N-diethylaniline), zinc chloride salt.	FMT, MRT, x.
N,N-Diethyl-p-phenylenediamine hydrochloride	EKT, FMT.
N,N-Diethyltoluene-2,5-diamine, monohydrochloride	EKT, IDC.
2,5-Dihydroxy-p-benzenedisulfonic acid salts	x.
2,5-Dihydroxybenzenesulfonic acid	EK.
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline) - zinc chloride.	FMT, IDC.
4-(2',6'-Dimethylmorpholinyl)benzenediazonium chloride - zinc chloride.	IDC.
p-Diphenylaminediazonium sulfate	FMT.
p-(N-Ethylbenzimido)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylaniline) - zinc chloride.	MRT.
*p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride.	FMT, IDC, x.
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	FMT, IDC.
N-Ethyl-N-(β-methanesulfonamidoethyl)toluene-2,5-diamine sulfate.	EKT.
Hydroquinone (Hydroquinol)	EKT.
p-((2-Hydroxyethyl)methylamino)benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline) - zinc chloride.	FMT, IDC.
4-Methoxy-1-naphthol	x.
p-Methylaminophenol sulfate	EK.
5-Methylbenzotriazole	EK, FMT.
4-Methyl-1-phenyl-3-pyrazolidinone	WAY.
4-Morpholinylbenzenediazonium salts	FMT, IDC.
6-Nitrobenzimidazole	EK, FMT.
Octylphenyl salicylate	EKT.
1-Phenyl-3-pyrazolidinone	CGY, WAY.
4-Phenylpyrocatechol	x.
Polyvinyl cinnamate	WAY.
2-Resorcylic monoethanolamide	FMT.
1-(2,4,6-Trichlorophenyl)-3-(4-nitroanilino)-2-pyrazolin-5-one.	EKT.
All other	EK, EKT, FMT, IDC, VPC, x.
Phthalic acid, lead salt, dibasic	NTL.
Picramic acid, sodium salt	SDC.
*Pinene (α- and β-)	ARZ, CBY, GLD, HN, HPC, NCI.
Piperazine, ethoxylated	GAF.
Piperonal, sodium bisulfite complex	SHL.
Poly-4-(2-acryloxyethoxy)-2-hydroxybenzophenone	ACY.
Polyethylene terephthalate	DUP, EK.
Polyvinyl phthalate	EK.
Propyl gallate	EKT, HSH.
Pyrogallol (Pyrogallic acid)	HSH, MAL.
Resorcinol monobenzoate	EKT.
Rosin acid salts:	
Calcium resinate	JMS, SW.
Copper resinate	JMS.
Iron resinate	JMS.
Lead resinate	JMS.
Manganese resinate	JMS.
Zinc resinate	HN, JMS, SW.
Salicylanilide	DUP, FIN, PCW.
Salicylic acid, lead salt	NTL.
Sodium cresoxide (Cresylic acid, sodium salt)	DEX, GOC.
Sucrose benzoate	VEL.
Sulfosalicylic acid	LEM, MON, MRK.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Tall oil salts (Linoleic-rosin acid salts):	
Calcium manganese tallate	MCI.
*Calcium tallate	CCA, CCC, HNX, HSH, MCI, SRR, TRO, WTC.
*Cobalt tallate	CCA, CCC, FER, HNX, MCI, SHP, SRR, TRO, WTC.
Copper tallate	CCA, MCI, SHP.
*Iron tallate	CCA, MCI, SHP, SRR, WTC.
Lead manganese tallate	HSH, MCI.
*Lead tallate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SRR, TRO, WTC.
*Manganese tallate	CCA, CCC, FER, HNX, HSH, MCI, SHP, TRO, WTC.
Zinc tallate	HSH, MCI.
Tannic acid	MAL.
*Tanning materials, synthetic:	
*2-Naphthalenesulfonic acid, formaldehyde condensate and salts.	AKS, DA, GRD, RH, TCD.
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated).	RH.
Styrene maleic anhydride interpolymer, partial sodium salt.	DUP.
Sulfonyldiphenolsulfonic acid, formaldehyde condensate.	GAF.
All other	AKS, GGY.
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'-hydroxyphenol)propionate]methane.	CGY.
1,3,6,8-Tetranitrocarbazole	SDC.
Tetraphenyltin	x.
*Textile chemicals, other than surface-active agents:	
N^1,N^1-Diphenyl-1,2-propanediamine	SNW.
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).	x.
2,2',4,4'-Tetrahydroxybenzophenone	GAF.
All other	GAF, x, x.
2,2'-Thiobis(4-chlorophenol)	GIV.
2,2'-Thiobis(4,6-dichlorophenol)	x.
(2,2'-Thiobis(4-octylphenolate))-n-butylamine nickel	ACY.
Thiophene	PAS.
o-Toluidine formaldehyde hydrochloride	RBC.
o-Tolylbiguanide	MON.
Triallyl cyanurate	ACY.
Triaryl phosphites	WES.
3,4',5-Tribromosalicylanilide	FIN.
3,4',5-Tribromosalicylanilide and 4,5-Dibromosalicylanilide mixtures.	FIN.
3,4,4'-Trichlorocarbanilide	MON.
Trichloromelamine	AMB, GAF, NES, WTH.
1,3,5-Trichloro-s-triazine-2,4,6(1H,3H,5H)trione (Trichloroisocyanuric acid).	MON.
Tri-(m,p)-cresyl borate	USB.
Trimethylaminoethylpiperazine	JCC.
3,5,5-Trimethyl-2-cyclohexen-2-one (Isophorone)	ENJ, UCC.
2,4,6-Trinitroresorcinol and lead derivative	REM.
s-Trioxane	CEL.
Triphenylphosphine	x.
Triphenyl phosphite	HK, MON.
Triphenyl sulfonium chloride	FIS.
Triphenyltin	x.
Uridine derivatives	PLB.
1-Vinyl-2-pyrrolidinone, monomer and polymer	GAF.
1-Vinyl-2-pyrrolidinone - acrylic copolymers	GAF.
1-Vinyl-2-pyrrolidinone - vinyl acetate copolymer	GAF.
1-Vinyl-2-pyrrolidinone - other copolymers	GAF.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC	
Cellulose Esters and Ethers	
*Cellulose esters:	
*Cellulose acetate	AV, CEL, DUP, EKT.
Cellulose acetate butyrate	EKT.
Cellulose acetate propionate	EKT.
Cellulose propionate	CEL.
Nitrocellulose (Cellulose nitrate)	DUP, HPC.
*Cellulose ethers:	
Ethylhydroxyethylcellulose	x.
Hydroxyethylcellulose	UCC, x.
Hydroxypropylcellulose	x.
Methylcellulose	DOW.
*Sodium carboxymethylcellulose, 100%	BUK, DUP, HPC, KON, WMP, WYN.
All other	UCC.
Lubricating Oil Additives	
*Phosphorodithioates (Dithiophosphates):	
Zinc di(butylhexyl) phosphorodithioate	ORO.
Zinc dihexyl phosphorodithioate	MON.
All other	ENJ, LUB, SOI, x.
Sulfurized lard oil	CCW, NLC, WBG.
Sulfurized sperm oil	CCW.
All other	ALX, CCW, ENJ, GOC, HK, LUB, MON, NLC, ORO, SOI, TX.
Nitrogenous Compounds	
Acetamide	ACS.
Acetamidine hydrochloride	MRK.
Acetamidoethanol (N-Acetyl-ethanolamine)	RBC.
Acetonitrile	EKX, SOH.
*Acrylonitrile	ACY, BFG, DUP, MON, SOH.
Adiponitrile	DUP, MON.
1-Allyl-3-di(2-hydroxyethyl)thiourea	IDC.
1-Allyl-3-(2-hydroxyethyl)-2-thiourea	FMT, IDC.
Allyl isothiocyanate, non-flavor grade	ARS.
*Amines:	
Allylamines	SHC.
2-Amino-octane	PAS.
*Butylamines:	
*n-Butylamine, mono-	PAS, UCC, VGC.
*Di-n-butylamine	PAS, UCC, VGC.
Diisobutylamine	ESC, VGC.
sec-Butylamine, mono-	VGC.
tert-Butylamine, mono-	MON, RH.
Tri-n-butylamine	PAS, UCC, VGC.
n-Butylethylamine	PAS.
n-Butylmethylamine	UCC.
Diethylaminoethylamine	PD.
*Diethylenetriamine	DOW, JCC, UCC.
N,N-Diethylethylenediamine	ALB, CGY.
N^1,N^1-Diethyl-1,4-pentanediamine (Novoldiamine)	SDH.
Diethylaminopropylamine	UCC.
Dimethylaminopropylamine	JCC, UCC.
1,3-Dimethylbutylamine	PAS.
Dipropylenetriamine	UCC.
Ethylamines:	
*Diethylamine	DUP, ESC, PAS, UCC, VGC.
Diethylamine hydrochloride	BKL.
*Ethylamine, mono-	ESC, PAS, UCC, VGC.
*Triethylamine	ESC, PAS, UCC, VGC.
*Ethylenediamine	DOW, JCC, UCC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
*Amines--Continued	
Ethylenediamine salts	EK, NES.
(2-Ethylhexyl)amine, mono-	VGC.
*1,6-Hexanediamine (Hexamethylenediamine)	CRL, DUP, ELP, MON.
n-Hexylamine	VGC.
3,3'-Iminobispropylamine	JCC.
Isopropylamines:	
*Diisopropylamine	ESC, PAS, UCC, VGC.
Isopropylamines, mono-	ESC, PAS, UCC, VGC.
Methylamines:	
*Dimethylamine	COM, DUP, ESC, GAF.
Dimethylamine hydrochloride	CFC, EK.
Dimethylamine sulfate	RH.
*Methylamine, mono-	COM, DUP, ESC, GAF.
Methylamine hydrochloride	EK, RBC.
*Trimethylamine	COM, DUP, ESC, GAF.
n-Octylamine, mono-	VGC.
Pentaethylenehexamine	DOW, JCC.
Pentylamines (Amylamines):	
Dipentylamine	PAS, VGC.
Pentylamine, mono-	PAS.
Polyalkylene polyamines	NLC.
Polyethyleneimine	SNW.
1,2-Propanediamine (Propylenediamine)	UCC.
1,3-Propanediamine (1,3-Diaminopropane)	JCC, NTL.
Propylamines:	
*Dipropylamine	ESC, PAS, UCC, VGC.
Propylamine, mono-	PAS, UCC, VGC.
Tripropylamine	PAS, VGC.
Tetraethylenepentamine	DOW, JCC, UCC.
N,N,N'-N'-Tetramethyl-1,3-butanediamine	UCC.
Tetramethylethylenediamine	RH.
*Triethylenetetramine	DOW, JCC, UCC.
Other amines	ALB, ALD, DUP, EK, JCC, NTL, ONX, UCC.
2-Amino-1-butanol	ACY, COM.
2-Aminoethanethiol (2-Mercaptoethylamine) hydrochloride.	EVN.
2-Aminoethanol (Monoethanolamine) hydrochloride	WSN.
2-Aminoethanol (Monoethanolamine) sulfite	EVN, VND.
Aminoethoxyethanol	JCC.
*2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	DOW, HDG, JCC, UCC.
2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate).	EVN, HAB.
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.
2-Amino-2-methyl-1-propanol	COM.
2-Amino-1-propanol	ALB, LIL.
3-Amino-1-propanol	UCC.
3-Aminopropionitrile (3-Cyanopropylamine)	EKT.
3-Amino-1-propylaminoethanol (N-Hydroxyethylpropanediamine).	JCC.
*1,1'-Azobisformamide	FMT, NPI, USR.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyronitrile).	DUP.
Bilirubin	PFN.
Bis[dimethylaminoethyl] ether	UCC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
1,3-Bis(hydroxymethyl)urea (Dimethylolurea)	GLY, x.
Bis(trimethylsilyl)acetamide	PIC, WTC.
N-Bromoacetamide	ARA.
N-Bromosuccinimide (Succinibromimide)	ARA, SW.
2,3-Butanedione monoxime	EK.
2-Butanone oxime	ACP, ALB.
1-Butyl-3-ethyl-2-thiourea	PAS.
Butyl isocyanate	OTC, UPJ.
Butryaldehyde oxime	ACP.
n-Butyronitrile	EKX.
Caprolactam (2-Oxohexamethylenimine)	ACP, CNP, DBC, UCC.
Chlorocholine chloride	ACY.
2-Chloro-N,N-dimethylethylamine (Dimethylaminoethyl chloride.	HEX, MCH, MRK, NES.
3-Chloro-N,N-dimethylpropylamine	SK.
2-Chloro-N,N-dimethylpropylamine and hydrochloride	LIL, MCH.
3-Chloro-N,N-dimethylpropylamine hydrochloride	MCH, NES.
2"- Chloro-1,1-dimethyltriethylamine (2-Diisopropylamino-ethyl chloride) hydrochloride.	MCH.
2-Chloroethylamine hydrochloride	NES.
β-Chloroallyl-N-methylamine	LIL.
Chloro-N-(2-hydroxyethyl)acetamide	KF.
N-Chlorosuccinimide (Succinichlorimide)	ARA.
2-Chloro-N,N-diethylethylamine hydrochloride	HEX, MCH.
Choline base	RH.
Choline bisulfite	WAY.
Coco nitrile	ARC, ASH.
Coconut oil acids - ammonium condensate	PG.
Coconut oil amide	ARC.
Cottonseed oil nitrile	ASH.
Creatine and creatinine	PFN.
2-Cyanoacetamide	KF, MTR.
Cyanoacetic acid	KF.
Cyanoacetic acid, 2-ethylhexyl ester	GAF.
Cyanogen bromide	EK.
2-Dibutylaminoethanol	AAC, PAS.
1,3-Dibutyl-2-thiourea	PAS, RBC.
1,4-Dicyanobutene	x.
Diethanolamine polyoxypropylene ether	JCC.
Diethoxyethylamine	WYN.
2-Diethylaminoethanol	AAC, PAS, UCC.
2-(2-Diethylaminoethoxy)ethanol	PAS.
2-Diethylaminoethyl methacrylate	DUP.
Diethylcarbamoyl chloride	FIS.
Diethyldithiocarbamic acid, sodium salt	EK.
N,N-Diethyldodecanamide	EK.
Diethylhydroxylamine	PAS.
1,3-Diethyl-2-thiourea	PAS, RBC.
Diisopropylaminoethanol	PAS, UCC.
2-Diisopropylaminoethyl methacrylate	DUP.
Diisopropylammonium nitrite	OMC.
N,N-Dimethylacetamide	DUP.
*2-Dimethylaminoethanol	AAC, DUP, PAS, RH, UCC.
3-Dimethylaminopropionitrile	ACY.
Dimethylaminoethyl methacrylate	x.
Dimethylamino-2-propanol	COM, PAS.
Dimethylcarbamyl chloride	CTN, OTC.
N,N-Dimethylformamide	DUP.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
1,1-Dimethylhydrazine	FMP.
Dithiooxamide	MAL.
2,5-Dithiobiurea	ACY.
*Erucamide	ARC, ASH, FIN, HUM.
*Ethanolamines:	
*2-Aminoethanol (Monoethanolamine)	DOW, JCC, MAT, OMC, SHC, UCC.
*2,2'-Iminodiethanol (Diethanolamine)	DOW, JCC, MAT, OMC, SHC, UCC.
*2,2',2''-Nitrilotriethanol (Triethanolamine)	DOW, JCC, MAT, OMC, SHC, UCC.
Ethoxymethoxypropylamine	JCC.
3-Ethoxypropionitrile	ACY.
Ethyl acetamidocyanoacetate	SDW.
Ethyl allyl(1-methyl-2-pentynyl)cyanoacetate	LIL.
2-Ethylaminoethanol (Ethylmonoethanolamine)	PAS.
Ethyl carbamate	FMP.
Ethyl carbodiimide hydrochloride	OTC.
Ethyl cyanoacetate	KF.
N,N'-Ethylenebis-stearamide	CTN.
Ethyleneimine, monomer	DOW.
Ethyleneimine, polymer	AAC, DOW.
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	SDW.
5-(N-Ethyl-N-hydroxyethylamino)-2-pentanone	SDW.
Ethyl isocyanate	OTC.
Fish oil fatty acid amide	ASH, HUM.
Formamide	DUP.
Formamidine disulfide dihydrochloride	WAY.
Glycine (Aminoacetic acid)	CHT.
Glycine ethyl ester hydrochloride	BPC.
Glycolonitrile	ACY.
Guanidine hydrochloride	ACY.
4-Guanyl-1-nitrosoguanyl-1-tetrazine	REM.
Hexamethylenediammonium adipate (Nylon salt)	CEL, DUP, MON.
Hydracrylonitrile (Ethylene cyanohydrin)	AAE, UCC.
Hydroxyethyl carbamate	JCC.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris-(hydroxymethyl)nitromethane).	COM.
N-Hydroxymethylstearamide	ICI.
Hydroxypropyl carbamate	JCC.
3,3'-Iminodi-1,2-propanediol	DUP.
Isobutyl cyanoacetate	KF.
Isobutyronitrile	EKX, ESC.
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.
Lactonitrile	MON.
Lauronitrile (Dodecyl nitrile)	ASH.
Lysine diisocyanate methyl ester	MRK.
Malononitrile	KF, MTR.
Methacrylamide	x.
Methacrylonitrile	SOH.
Methoxyamine hydrochloride	EK .
3-Methoxypropylamine	JCC.
N-Methylacetamide	EK.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
2-Methylaminoethanol (N-Methylethanolamine)	UCC.
Methyl carbamate	BKL, FMP.
Methyl cyanoacetate	KF.
Methyl α-cyanoacrylate	EKT.
N,N'-Methylenebis(acrylamide)	ACY, SOH.
N,N'-Methylenebis(octadecanamide)	ARC.
Methylenebis(thiocyanate)	NLC.
N-Methylglucamine	DUP.
Methyl isocyanate	OTC, UCC.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)	PAS, UCC.
2-Methyllactonitrile (Acetone cyanohydrin)	RH, x.
2-Methyl-2-nitro-1,3-propanediol	COM.
2-Methyl-2-nitro-1-propanol	COM.
Methylpolyethanolamine	GAF.
N-Methyltaurine	GAF.
*Nitriloacids and salts:	
(Diethylenetrinitrilo)pentaacetic acid	HMP.
(Diethylenetrinitrilo)pentaacetic acid, monosodium hydrogen ferric salt.	CGY.
*(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt.	CGY, DOW, HMP.
(Diethylenetrinitrilo)pentaacetic acid, sodium salt	CGY, RPC.
N,N-Dihydroxyethylglycine, sodium salt	DOW, HMP.
Ethanoldiglycine, disodium salt	HMP.
*(Ethylenedinitrilo)tetraacetic acid (Ethylenediaminetetraacetic acid).	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt.	CGY, 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, DOW, HMP, HRT, RPC.
(Ethylenedinitrilo)tetraacetic acid, trisodium salt	CGY, HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, iron salt.	HMP.
*(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt.	CGY, CRT, DOW, HMP. RPC.
Nitrilotriacetic acid	HMP.
Nitrilotriacetic acid, trisodium salt	CGY, DOW, HMP, MON.
Nitrilotriacetic acid, zinc salt	HMP.
Other	ALD, EK, CGY, HMP, WAY.
2-Nitro-1-butanol	COM.
Nitroethane	COM.
Nitromethane	COM.
1-Nitropropane	COM.
2-Nitropropane	COM.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
Nylon, 6 and 6/6 polymer for fiber	ALF, DBC, DUP, MON.
Octadecyl isocyanate	CWN, MOB, UPJ.
Octadecyloxymethyltriethylammonium chloride	DAN.
Oleamide (Octadecene amide)	ARC, ASH, FIN, HUM.
Oleic acid, amine condensates	CCW, GAF, GLY.
Oleonitrile (Octadecene nitrile)	ARC, ASH.
Oleoylpalmitamide	FIN.
*Pentaerythritol tetranitrate	COM, DUP, HPC.
Pentyl nitrate (Amyl nitrate)	TNA.
Polyacrylamide	ACY, HPC, NLC.
Polyacrylonitrile	DUP.
Polyoxyalkylene amines	JCC, NLC, UCC.
n-Propyl carbamate	BKL.
Propyl isocyanate	OTC.
Propyl nitrate	TNA.
Quaternary ammonium compounds	EK, RSA, WAY.
Ricinolamide	TKL.
*Sarcosine (N-Methylaminoacetic acid)	CGY, GAF, HMP.
Semicarbazide base	FMT.
Semicarbazide hydrochloride	FMT.
*Stearamide (Octadecane amide)	ARC, ASH, FIN, HUM.
*Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2).	CCW, DA, GLY, HUM, ICI.
Stearonitrile (Octadecanenitrile)	ASH.
Stearylerucamide	FIN.
Succinimide	ASH.
Tallow amide, hydrogenated	ARC, HUM.
Tallow nitrile	ARC, ASH.
Tallow nitrile, hydrogenated	ARC, ASH.
Tetracyanoethylene	KF, NCA.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine	WYN.
Tetramethylguanidine	ACY.
3,3'-Thiodipropionitrile	HAB.
Thiosemicarbazide	ACY, FMT.
*Urea in compounds or mixtures, 100% basis:	
*In feed compounds	ACN, ACY, AGY, DUP, FTX, GCC, JDC, MSC, PPC, SHC, SOH, TER, TRI, VLN, WYC.
*In liquid fertilizer	ACN, AGY, AKL, APD, ARM, BOR, CFA, CHN, CNC, DUP, ESC, FCA, FTX, GCC, GOC, HKY, HPC, JDC, MSC, OMC, PLC, PPC, SHC, SM, SNI, SOH, TER, TRI, VLN, WYC.
*In solid fertilizer	ACN, ACY, AGY, AKL, COL, DUP, GCC, GOC, HPC, JDC, MON, MSC, OMC, PPC, SHC, SNO, SOH, TER, TRI, VLN, WYC.
In plastics	ACN, DUP, MON.
All other	ACN, BOR, CNC, DUP, HPC, MSC, SHC, SNO, TER, WYC.
Urea - urethane copolymer	DUP.
All other nitrogenous compounds	AAC, ABB, ACY, ALD, ARC, BKL, DUP, EK, EVN, JCC, GAF, GNM, IDC, KF, LIL, MOB, MRK, NLC, OTC, PCW, PFZ, PIC, RSA, S, SNW, UCC, USB, x, x.
Acids, Acid Anhydrides, and Acyl Halides	
*Acetic acid, synthetic, 100%	BOR, CEL, EKT, FMP, HPC, MON, PUB, UCC.
*Acetic anhydride, 100%:	
From acetaldehyde	HPC.
From acetic acid	CEL, EKT, FMP.
From ethylene	UCC.
*Acrylic acid	BFG, CEL, DBC, UCC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Acids, Acid Anhydrides, and Acyl Halides--Continued	
*Adipic acid	ACP, CEL, DBC, DUP, ELP, MON, RH.
Azelaic acid	EMR.
Behenic acid	ASH.
Brominated fatty acids	DUP.
Bromoacetic acid	MCH.
Bromobutyric acid	GTL.
tert-Butylacetyl chloride	ALD.
tert-Butylperoxymaleic acid	WTL.
Butylstannoic acid	CCW.
*Butyric acid	CEL, EKT, UCC.
Butyric anhydride	EKT, UCC.
Butyryl chloride	HK.
Castor oil fatty acids, dehydrated	DA, NTL.
Chloroacetic acid, mono-	BUK, DOW, HPC, MON.
Chloroacetyl chloride	DOW, WTC.
Citric acid	MLS, PFZ, WTC.
Crotonic acid (2-Butenoic acid)	EKT.
Decanoyl chloride	WTC, WTL.
Di-n-propylacetic acid and chloride	CTN.
Dipropylmalonic acid	CTN.
Dodecanedioic acid	x.
Dodecenylsuccinic acid	HMY.
*Dodecenylsuccinic anhydride	ACS, HMY, MON.
Dodecylsuccinic anhydride	HN.
2-Ethylbutyric acid (Diethylacetic acid)	UCC.
2-Ethylhexanoic acid (α-Ethylcaproic acid)	EKT, UCC.
2-Ethylhexanoyl chloride	WTC, WTL.
Formic acid, 90%	DUP, UCC.
*Fumaric acid	ACS, HN, MON, NTL, PCC, PFZ.
Gluconic acid, tech	DLI, PFZ.
Glutaric anhydride	UCC.
Glycolic acid (Hydroxyacetic acid)	DUP, SNW.
n-Hexadecenylsuccinic anhydride	HMY.
Isethionic acid (2-Hydroxyethanesulfonic acid)	GAF.
Isoascorbic acid	MRK, PFZ.
Isobutyric acid	EKT.
Isobutyric anhydride	EKT.
Isobutyl chloride	WTL.
Iso-octanoic acid	UCC.
Itaconic acid (Methylenesuccinic acid)	PFZ.
2-Keto-D-gluconic acid	MRK.
Lactic acid	CLN, MON.
*Lauroyl chloride	CAD, GAF, HK, PFN, TEK, UOP, WTC, WTL, x.
Levulinic acid	QKO.
Maleic acid	ACS, PFN, PFZ.
*Maleic anhydride	ACS, HN, KPS, MON, PCC, PTT, RCI.
Malic acid	ACS, EK.
Malonic acid	KF.
Mercaptoacetic acid (Thioglycolic acid)	EVN, HAB.
3-Mercaptopropionic acid	EVN.
Mercaptosuccinic acid (Thiomalic acid)	EVN.
Methacrylic acid	DUP, RH.
Methanesulfonic acid	EK, PAS.
2-Methylvaleric acid (2-Methylpentanoic acid)	UCC.
Neodecanoic acid	ENJ.
Neodecanoyl chloride	WTC.
Neopentanoic acid	ENJ.
Nonanoic acid (Pelargonic acid)	EMR, GIV.
Nonenylsuccinic anhydride	HMY.
Octadecylphosphonic acid	SM.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Acids, Acid Anhydrides, and Acyl Halides--Continued	
Octanoyl chloride	HK.
Octenylsuccinic anhydride	HMY.
Oleoyl chloride	GAF, HRT, UOP.
Oxalic acid	ACS, MAL, PFZ.
Oxalyl chloride	ALD.
*Palmitoyl chloride	GAF, OPC, PD, UOP.
Peroxyacetic acid	FMB, UCC.
Pivaloyl chloride	WTC, WTL.
*Polyacrylic acid	AAE, DA, RH.
Polygalacturonic acid	SKG.
*Propionic acid	CEL, COM, EKT, UCC.
Propionic anhydride	EKT, UCC.
Propionyl chloride	EK, UOP.
Sebacic acid	RH, WTH.
Sorbic acid (2,4-Hexadienoic acid)	UCC.
Succinic acid	ACS, BKC.
Succinic anhydride	ACS.
d-Tartaric acid	BKC.
Tetrahydroxysuccinic acid (Dioxytartaric acid)	ACY.
Thioacetic acid	EK, EVN.
Thiolactic acid	EVN.
3,3'-Thiodipropionic acid	CCW, EVN, HAB.
Trichloroacetic acid	DOW.
Valeric acid	UCC.
All other	ABB, ACY, ALD, DUP, EK, ENJ, GAF, HMY, PIC, RH, UCC, WTC, x, x.
Salts of Organic Acids	
*Acetic acid salts:	
Aluminum acetate	ACY, UCC, WTC.
Ammonium acetate	ACS, BKC, MAL.
Ammonium titanyl acetate	DUP.
Barium acetate	ACS, BKC.
Butyltin acetates	CCW, x.
Cadmium acetate	MAL, SHP.
Calcium acetate	ACS, MAL.
Chromium acetate	ACY.
Cobalt acetate	BKC, HSH, SHP.
*Copper acetate	ACS, BKC, SHP, UCC.
Lead acetate	BKC, MAL.
Lead subacetate	ACS, BKC, MAL.
Lead tetraacetate	ARA.
Magnesium acetate	ACS, BKC.
Manganese acetate	HSH, SHP.
Mercuric acetate	MAL.
Nickel acetate	BKC, HSH, SHP.
*Potassium acetate	ACS, BKC, CWL, MAL, UCC.
Silver acetate	MAL.
*Sodium acetate	ACS, BKC, CEL, DAN, EKT, MAL, UCC, WSN.
Sodium diacetate	UCC.
Strontium acetate	BKC.
*Zinc acetate	ACS, BKC, HSH, MAL, SHP, UCC.
*Zirconium acetate	HSH, NTL, TZC.
Other	CCA, CCW, x.
Acrylic acid, sodium salt	AAE.
Adipic acid, ammonium salt	FIS.
Allylsulfonic acid, sodium salt	NES.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
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	DAN, MLS, NES, PFZ, SNW.
Di-n-propylacetic acid, sodium salt	CTN.
2-Ethylhexanoic acid (α-Ethylcaproic acid) salts:	
Aluminum 2-ethylhexanoate	PFZ, WTC.
Barium 2-ethylhexanoate	CCA, PFZ.
Cadmium 2-ethylhexanoate	CCA, PFZ.
*Calcium 2-ethylhexanoate	CCA, CCC, FER, HNX, HSH, MCI, SW, TRO.
*Cobalt 2-ethylhexanoate	CCA, CCC, FER, HNX, HSH, MCI, SRR, SW, WTC.
Copper 2-ethylhexanoate	CCA, SRR.
Iron 2-ethylhexanoate	CCA, MCI.
*Lead 2-ethylhexanoate	CCA, CCC, HNX, HSH, MCI, NTL, SRR, WTC.
*Manganese 2-ethylhexanoate	CCA, HNX, MCI, WTC.
Nickel 2-ethylhexanoate	MCI.
Potassium 2-ethylhexanoate	CCA.
Rare earths 2-ethylhexanoate	CCA.
Strontium 2-ethylhexanoate	CCA.
*Zinc 2-ethylhexanoate	CCA, HNX, HSH, MCI, SRR, WTC.
*Zirconium 2-ethylhexanoate	CCA, CCC, HNX, TRO, WTC.
Other	EK, WTC, x.
Formic acid salts:	
Aluminum formate	WSN.
Ammonium formate	ACS, RSA.
Calcium formate	COM.
Chromic formate	GAF.
Copper formate	CTN.
Lead formate	NTL.
Sodium formate, refined	ACS, BKC,
Sodium formate, tech	COM, HPC.
Glucoheptonic acid salts:	
Sodium glucoheptonate	PFN.
Zinc glucoheptonate	PFN.
Gluconic acid salts:	
Ammonium gluconate	PFZ.
*Sodium gluconate	CWL, DLI, PFZ, PMP.
Glycolic acid, aluminum salt	CIB.
9H-Hexadecafluorononanoic acid, ammonium salt	DUP.
Humic acids, sodium salts	NLC.
Isoascorbic acid, sodium salt	MRK.
*Lactic acid salts:	
Ammonium lactate	TCC.
Calcium lactate	SHF.
Other	EK, PFN, REH, WTC.
Lauric acid salts:	
Barium cadmium laurate	CCA, x.
Dibutyltin dilaurate	CCA, x.
Zinc laurate	SNW.
Linoleic acid salts:	
Calcium linoleate	CCA, SHP.
Cobalt linoleate	HSH, SHP.
Copper linoleate	SHP.
Lead linoleate	SHP.
Manganese linoleate	SDH, SHP.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
Maleic acid salts:	
Dibutyltin maleate	CCA, x.
Lead (tribasic) maleate	NTL.
Malonic acid, calcium salt	GIV.
*Mercaptoacetic acid (Thioglycolic acid) salts:	
Ammonium mercaptoacetate	EVN, HAB, TNI.
Antimony mercaptoacetate	CCA.
Calcium mercaptoacetate	EVN.
Dibutyltin mercaptoacetate	CCA.
Potassium mercaptoacetate	EVN.
Sodium mercaptoacetate	EVN.
Mercaptopropionic acid, dibutyltin salt	CCA, x.
Methacrylic acid, sodium salt	AAE.
Methylsuccinic acid, disodium salt	SDW.
Neodecanoic acid salts:	
Cadmium neodecanoate	CCA.
Calcium neodecanoate	CCA, MCI.
Cobalt neodecanoate	MCI.
Copper 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	WTC.
Ammonium oleate	MCI.
Barium zinc oleate	WTC.
Chromium oleate	SHP.
Copper oleate	SHP, WTC.
Lead oleate	SHP.
Stannous oleate	CCW, x.
Oxalic acid salts:	
Ammonium oxalate	ACS, PFZ.
Ferric ammonium oxalate	PFZ.
Ferric oxalate	BKL, PFZ.
Ferric sodium oxalate	PFZ.
Potassium binoxalate	BKC.
Potassium oxalate	BKC, PFZ.
Sodium oxalate	BKC, MAL.
Palmitic acid salts:	
Aluminum palmitate	DA, WTC.
Zinc palmitate	ACY, DA, WTC.
Other	DA.
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.
Other	ACY.
*Polyacrylic acid salts:	
Ammonium polyacrylate	BFG.
Potassium polyacrylate	BFG.
Sodium polyacrylate	ALC, BFG, DA, RH.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
Polymethacrylic acid, sodium salt	GRD.
Propionic acid salts:	
*Calcium propionate	HFT, PFZ, UCC, WSN.
*Sodium propionate	HFT, PFZ, UCC, WSN.
Zinc propionate	BKC.
Ricinoleic acid salts:	
Calcium ricinoleate	NTL.
Lithium ricinoleate	NTL.
Sodium ethyl oxalacetate	FMP.
Sodium polypectate	SKG.
Sodium sorbitol borate	APD.
Sorbic acid salts:	
Potassium sorbate	UCC.
*Stearic acid salts:	
*Aluminum stearates:	
*Aluminum distearate	ACY, DA, JTC, MAL, NOC, SYP, WTC.
*Aluminum monostearate	DA, MAL, SYP, WTC.
*Aluminum tristearate	DA, MAL, NOC, SYP.
Ammonium stearate	DA, MCI, NOC, WTC.
Barium stearate	DA, NOC, SYP.
*Cadmium stearate	DA, NOC, SYP, WTC.
*Calcium stearate	ACY, DA, HNX, JTC, MAL, NOC, SYP, WTC.
Copper stearate	NOC.
Ferric stearate	MCI.
Ferrous stearate	NOC, WTC.
Lead stearate	DA, MCI, NOC, WTC.
*Lithium stearate	DA, NOC, SYP, WTC.
*Magnesium stearate	ACY, DA, JTC, MAL, NOC, SYP, WTC.
Manganese stearate	NOC.
Nickel stearate	WTC.
Strontium stearate	MAL.
*Zinc stearate	ACY, CCA, DA, HNX, JTC, MAL, NOC, SYP, WTC.
All other	APD, DA, NOC, SYP, WTC.
Succinic acid, sodium salt	MAL.
Tartaric acid salts:	
Antimony potassium tartrate	PFZ.
Potassium bitartrate	ACY.
Potassium sodium tartrate	PFZ.
Sodium bitartrate	PFZ.
Vinylsulfonic acid, sodium salt	x.
Xanthic acid salts:	
Potassium ethylxanthate	ACY, DOW.
Potassium hexylxanthate	DOW.
Potassium isopropylxanthate	DOW.
Potassium pentylxanthate	ACY, DOW.
Sodium n-butylxanthate	KCC, USR.
Sodium sec-butylxanthate	ACY, DOW.
Sodium ethylxanthate	ACY, DOW.
Sodium isobutylxanthate	DOW.
Sodium isopropylxanthate	DOW.
All other	ACY.
All other salts of organic acids	CCW, DA, EK, FIN, KCH, NTL, PD, RSA.
Aldehydes and Ketones	
*Acetaldehyde	CEL, DUP, EKT, EKX, MON, PUB, SHC, UCC.
*Acetone:	
*From cumene	ACP, CLK, HPC, MON, PCC, SHC, SKO, SOC, UCC.
From isopropyl alcohol	EKT, ENJ, SHC, UCC.
Other	CEL, DIX, HPC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Aldehydes and Ketones--Continued	
Acetone, crude	OCC.
Acrolein (Acrylaldehyde)	SHC, UCC.
Aldol (Acetaldol)	UCC.
*2-Butanone (Methyl ethyl ketone)	ATR, CEL, DIX, EKT, ENJ, SHC, UCC.
Butyraldehyde	CEL, EKX, UCC.
ε-Caprolactone	UCC.
Chloral (Trichloroacetaldehyde)	DA, FMB, MTO.
5-Chloro-2-pentanone	SDW.
1-Chloro-1-penten-3-one (β-Chlorovinyl ethyl ketone)	x.
Chloro-2-propanone (Chloroacetone)	EK.
Crotonaldehyde	CEL, EKT, UCC.
1,4-Dihydroxy-2-butanone	GAF.
1,3-Dihydroxy-2-propanone (Dihydroxyacetone)	BAX.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)	EKX.
2-Ethylbutyraldehyde	UCC.
2-Ethylhexanal (α-Ethylcaproaldehyde)	EKX, UCC.
2-Ethyl-2-hexen-1-al (2-Ethyl-3-propylacrolein)	UCC.
Ethylideneacetone	UCC.
*Formaldehyde (37% by weight)	ACN, BOR, CBC, CBD, CEL, COM, DUP, GAF, GOC, HKD, HN, HPC, MON, RCI, RH, UCC, WCL.
Glutaraldehyde	UCC.
Glyoxal	UCC.
2-Heptanone (Methyl amyl ketone)	LCI, UCC.
3-Heptanone (Ethyl butyl ketone)	UCC.
Hexadienal	UCC.
Hexaldehyde	GIV.
2,5-Hexanedione (Acetonylacetone)	RBC, UCC.
2-Hydroxy-2-methyl-3-butanone	LIL.
*4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	CEL, SHC, UCC.
Isobutyraldehyde	EKX, UCC.
Isopentaldehyde, mixed isomers	UCC.
Isovalerone (Diisobutyl ketone)	EKT, UCC.
Methacrylaldehyde (Methacrolein)	UCC.
4-Methoxy-4-methyl-2-pentanone	SHC.
2-Methylbutyraldehyde	UCC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)	EKT, UCC.
Methyl hexenone	UCC.
*4-Methyl-2-pentanone (Methyl isobutyl ketone)	EKT, ENJ, SHC, UCC.
Methylpentenal	UCC.
4-Methyl-3-penten-2-one (Mesityl oxide)	SHC, UCC.
Methylpseudoionone	GIV.
2-Methylvaleraldehyde (2-Methylpentaldehyde)	UCC.
Paraformaldehyde	CEL, HN.
Paraldehyde (Paracetaldehyde)	UCC.
2,4-Pentanedione (Acetylacetone)	UCC.
2-Pentanone (Methyl propyl ketone)	UCC.
Propionaldehyde	EKX, UCC.
Pseudoionone	GIV.
Tetrahydropseudoionone	GIV.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	UCC.
Valeraldehyde	UCC.
All other	ALD, ARC, CEL, EK, HEX.
Alcohols, Monohydric, Unsubstituted	
*Alcohols C_9 or lower, unmixed:	
Allyl alcohol	DOW, FMP, SHC.
Amyl alcohols:	
2-Methyl-1-butanol	UCC.
2-Methyl-2-butanol (tert-Amyl alcohol)	SHC.
1-Pentanol	UCC.
2-Pentanol	UCC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Alcohols, Monohydric, Unsubstituted	
*Alcohols C_9 or lower, unmixed--Continued	
Butyl alcohols:	
Primary:	
*Iso (Isopropylcarbinol)	DBC, EKX, SHC, UCC.
*Normal (n-Propylcarbinol)	CEL, CO, DBC, EKX, ENJ, SHC, TNA, UCC.
Secondary (Methylethylcarbinol)	ENJ, SHC.
Tertiary (Trimethylcarbinol)	SHC, x.
2,6-Dimethyl-4-heptanol (Diisobutylcarbinol)	UCC.
*Ethyl alcohol, synthetic	CEL, EKX, ENJ, HPC, PUB, SHC, UCC, USI.
*2-Ethyl-1-hexanol	CEL, DBC, EKX, ENJ, SHC, UCC.
2-Ethyl-4-methyl-1-pentanol	EKX.
Heptyl alcohol	EKX.
*Hexyl alcohol	CO, EKX, ENJ, PG, TNA, UCC.
Hexynol	CUC.
*Iso-octyl alcohols	ENJ, HOU, PCC, TID, UCC.
*Isopropyl alcohol	ENJ, SHC, UCC.
*Methanol, synthetic	ACN, BOR, CEL, COM, DUP, ESC, GOC, HN, HPC, MON, RH, UCC.
2-Methyl-3-butyn-2-ol	CUC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	SHC.
3-Methyl-1-pentyn-3-ol, (Methylparafynol)	CUC.
*1-Octanol	CO, WTH.
*2-Octanol (sec-Capryl alcohol)	RH.
Octanols, other	EKX, GOC, IFF, PG.
*Propyl alcohol (Propanol)	CEL, EKX, UCC.
2-Propyn-1-ol	GAF.
All other	CUC, EK, GYR, UCC.
*Alcohols C_{10} or higher, unmixed:	
*Decyl alcohols	CO, ENJ, HOU, PCC, PG, TID, UCC.
3,9-Diethyl-6-tridecanol	UCC.
3,6-Dimethyl-3-octanol	CUC.
Dodecyl alcohol (Lauryl alcohol) (95%)	CO.
4-Ethyl-1-octyn-3-ol	CUC.
*1-Hexadecanol (Cetyl alcohol) (95%)	ASH, CO, GIV, PG.
*Hexadecyl alcohols, other	ENJ.
*1-Octadecanol (Stearyl alcohol) (95%)	ASH, CO, PG.
cis-9-Octadecen-1-ol (Oleyl alcohol)	ASH, DUP.
Tetradecyl alcohols	CO, ENJ, PG, UCC.
1-Tridecanol	ENJ, GOC, TID.
2,6,8-Trimethyl-4-nonanol	UCC.
All other	GOC.
*Mixtures of alcohols:	
*C_9 and lower only:	
Amyl alcohols	CEL, ENJ, PUB, UCC.
Other	CEL, EKX.
*C_{10} and higher only	ASH, CO, ENJ, PG, SHC, TNA.
*C_6 to C_{12} and others	CO, EKX, GOC, PG, TNA.
Polyhydric Alcohols and Their Esters and Ethers	
*Polyhydric alcohols:	
1,3-Butanediol	x.
1,4-Butanediol	GAF, x.
1,2,4-Butanetriol	GAF.
2-Butene-1,4-diol	GAF.
2-Butyne-1,4-diol	GAF, x.
3-Chloro-1,2-propanediol (Glycerol α-chlorohydrin)	EVN.
2,5-Dimethyl-2,5-hexanediol	CUC.
2,5-Dimethyl-3-hexyne-2,5-diol	CUC.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	EKX.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Polyhydric Alcohols and Their Esters and Ethers--Continued	
Polyhydric alcohols--Continued	
*Ethylene glycol	CAU, CEL, DOW, DUP, EKX, GAF, HCH, JCC, MAT, OMC, SHC, UCC, WYN.
2-Ethyl-1,3-hexanediol	UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylol propane).	CEL.
*Glycerol, synthetic	APD, DOW, FMP, SHC.
1,2,6-Hexanetriol	CEL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolethane).	COM.
Mannitol	APD.
3-Mercapto-1,2-propanediol (Thioglycerol)	EVN.
2-Methyl-2,4-pentanediol (Hexylene glycol)	CEL, SHC, UCC.
2-Methyl-2-propyl-1,3-propanediol	ABB, BKL,
*Pentaerythritol	CEL, COM, HN, HPC, RCI.
*Propylene glycol (1,2-Propanediol)	CEL, DOW, JCC, OCC, OMC, UCC, WYN.
*Sorbitol	APD, BRD, MRK, PFZ.
2,2,4-Trimethyl-1,3-pentanediol	EKX.
All other	APD, BKL, CUC, PHR, PIC, UCC.
*Polyhydric alcohol esters:	
1,3-Butanediol dimethacrylate	SAR.
2-(2-Butoxyethoxy)ethyl acetate	EKT, UCC.
2-Butoxyethyl acetate	EKT, UCC.
Diethylene glycol chloroformate	PPG.
2-(2-Ethoxyethoxy)ethyl acetate	EKT.
2-Ethoxyethyl acetate	DOW, UCC, x.
Ethylene glycol diacetate	EKT, UCC.
Ethylene glycol dimercaptoacetate	EVN.
Ethylene glycol dimethacrylate	SAR.
Ethylene glycol hydroxyacetate	CCA.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol triacrylate (Trimethylol propane triacrylate).	AAE.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol trimethacrylate.	SAR.
Glyceryl monoacetate (Monoacetin)	ARC, HAL.
Glyceryl triacetate (Triacetin)	ARC, EKT, UCC.
Glyceryl trioleate	GRO.
Glycol adipate	x.
2-Methoxyethyl acetate	UCC.
Methoxytriethyleneglycol acetate	RBC.
Pentaerythritol caprylate	DRW.
Pentaerythritol pelargonate	DRW.
Polyethylene glycol dimethacrylate	SAR.
Sucrose octa-acetate	HFT, PD.
Tetraethylene glycol diacrylate	AAE.
Tetraethylene glycol dimethacrylate	SAR.
Triethylene glycol diacrylate	AAE.
Triethylene glycol dimethacrylate	SAR.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	EKX.
All other	ARC, EK, EKX, EVN, GLY, SAR, USB, UCC, x.
*Polyhydric alcohol ethers:	
Allyloxypolyethylene glycol	UCC.
3-(Allyloxy)-1,2-propanediol (Allyl glyceryl ether)	SHC.
Bis(2-butoxyethyl) ether (Diethylene glycol di-n-butyl ether).	UCC.
Bis(2-ethoxyethyl) ether (Diethylene glycol diethyl ether.	UCC.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Polyhydric Alcohols and Their Esters and Ethers--Continued	
*Polyhydric alcohol ethers--Continued	
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, OMC.
1,4-Bis(vinyloxy)butane (1,4-Butanediol, divinyl ether).	GAF.
*2-Butoxyethanol (Ethylene glycol monobutyl ether)	DOW, EKX, OMC, SHC, UCC.
*2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether).	DOW, EKX, OMC, SHC, UCC.
*2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol glycol monobutyl ether).	DOW, OMC, UCC.
1-Butoxyethoxy-2-propanol	UCC.
*Diethylene glycol	CAU, CEL, DOW, EKX, GAF, HCH, JCC, MAT, OMC, SHC, UCC, WYN.
Diethoxytetraglycol	UCC.
Dimethoxyethane (Ethylene glycol dimethyl ether)	ASL, WYN.
*Dipropylene glycol	DOW, JCC, OCC, OMC, UCC.
*2-Ethoxyethanol (Ethylene glycol monoethyl ether)	DOW, EKX, JCC, OMC, UCC.
*2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether).	DOW, EKX, JCC, OMC, UCC.
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether).	DOW, OMC, UCC.
2-Hexyloxyethanol	UCC.
2-[2-(Hexyloxy)ethoxy]ethanol	UCC.
2-Isobutoxyethanol	EKX, UCC.
1-Isobutoxy-2-propanol (Propylene glycol isobutyl ether).	DOW.
*2-Methoxyethanol (Ethylene glycol monomethyl ether)	CBN, CO, DOW, EKX, JCC, HCH, OMC, UCC, x.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether).	DOW, EKX, JCC, HCH, OMC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether).	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl 2-methoxyethyl ether (Triethylene glycol dimethyl ether).	ASL.
Methoxypolyethylene glycol	JCC, UCC.
1-Methoxy-2-propanol	DOW, JCC, UCC.
3-(3-Methoxypropoxy)propanol	DOW, UCC.
3-[3-(3-Methoxypropoxy)propoxy]propanol	DOW.
Methyl butynoxyethanol	CUC.
Polybutylene glycol	NLC.
Polyethoxyethyl glycerol	GLY.
Polyethoxyethylsorbitol	APD, GLY, TCH.
*Polyethylene glycol	DA, DOW, DUP, GAF, HDG, JCC, MAT, NLC, OMC, PCS, UCC, WYN.
*Polypropoxy ethers:	
*Glycerol tri(polyoxypropylene) ether	JCC, OMC, UCC, WYN.
*Other	APD, DA, DOW, JCC, UCC, WYN.
*Polypropylene glycol	DOW, JCC, HDG, NLC, OMC, UCC, WYN.
Polytetramethylene ether glycol	QKO, x.
Tetraethylene glycol	DOW, EKX, UCC.
1,1,3,3-Tetramethoxypropane	KF, UCC.
2,2'-Thiodiethanol (Thiodiglycol)	HAB, UCC.
*Triethylene glycol	CAU, CEL, DOW, EKX, GAF, HCH, JCC, MAT, OMC, SHC, UCC.
Tripropylene glycol	DOW, HDG, UCC.
All other	DOW, EKX, GAF, UCC, UPJ.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Esters of Monohydric Alcohols	
Allyl methacrylate	SAR.
Amyl acetates, 90%:	
Isopentyl acetate (Isoamyl acetate)	NW, UCC.
n-Pentyl acetate	PFW.
Mixed	PUB.
Butyl acetates:	
Iso	EKT, EKX, ENJ, UCC.
*Normal	CEL, EKT, ENJ, PUB, SHC, UCC.
Secondary	EKT, ENJ, HPC, PUB, SHC.
Tertiary	EK.
*Butyl acrylate	CEL, DBC, RH, UCC.
n-Butyl 4,4-bis(tert-butylperoxy)valerate	WTL.
Butyl butyllacetate	RT.
Butyl chloroacetate	MON.
sec-Butyl chloroformate	CTN.
Butyl lactate	COM.
Butyl maleate, mono-	PCC.
tert-Butyl peroxyacetate	WTL.
tert-Butyl peroxy-2-ethylhexanoate	WTC, WTL.
tert-Butyl peroxyisobutyrate	WTC, WTL.
tert-Butyl peroxyisononanoate	WTL.
tert-Butyl peroxyisopropylcarbonate	PPG, WTL.
tert-Butyl peroxypivalate	WTC, WTL.
Cetyl lactate	VND.
Chloromethyl pivalate	BJL.
Diallyl maleate	FMP.
Di(sec-butyl) chloroformate	WTL.
Dibutyl fumarate	MON, PFZ, RCI, RUB.
*Dibutyl maleate	CUC, DUP, MON, PCC, RCI, RUB.
Di(sec-butyl) peroxydicarbonate	WTL.
Diethyl sec-butylethylmalonate	ABB.
Diethyl butylmalonate	BPC.
Diethyl sec-butylmalonate	ABB.
*Diethyl carbonate (Ethyl carbonate)	CTN, FMP, OTC.
Diethyl diethylmalonate (Diethyl malonic ester)	BPC, LIL.
Diethyl (ethoxymethylene)malonate	KF.
Diethyl ethylmalonate (Ethyl malonic ester)	LIL.
Diethyl ethyl(1-methylbutyl)malonate (Ethyl-1-methylbutyl malonic ester).	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 maleate	ACY, UCC.
Diethyl malonate (Malonic ester)	ABB, KF, LIL.
Diethyl (1-methylbutyl)malonate	ABB, LIL.
Diethyl oxalate (Ethyl oxalate)	FMP.
Diisobutyl maleate	RUB.
Di-iso-nonyl 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	WTC.
Dimethyl maleate	AAC.
Dimethyl malonate	KF.
Dimethyl methoxymethylene malonate	KF.
Di(4-methyl-2-pentyl) maleate	RUB.
Dimyristyl 3,3'-thiodipropionate	CCW.
*Dioctyl maleate	MON, PCC, RCI.
*Distearyl 3,3'-thiodipropionate	ACY, CCW, EVN, HAB.
Dithiobis(stearyl propionate)	EVN.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Esters of Monohydric Alcohols--Continued	
Ditridecyl maleate	RUB.
Di(tridecyl) 3,3'-thiodipropionate	EVN, HAB.
*Ethyl acetate (85%)	CEL, EKT, EKX, ENJ, MON, PUB, UCC.
Ethyl acetoacetate	EKT, UCC.
*Ethyl acrylate	CEL, DBC, RH, SNW, UCC.
*Ethyl chloroacetate	DOW, KF, MON.
Ethyl chloroformate	CTN, FMP, OTC.
Ethylene carbonate	JCC.
2-Ethyl-1-hexyl acetate	EKT, UCC.
*2-Ethyl-1-hexyl acrylate	CEL, DBC, UCC.
2-Ethyl-1-hexyl methacrylate	x.
Ethyl propionate	NW.
Ethyl silicate (Tetraethoxysilane)	SFA.
Ethyl sulfate (Diethyl sulfate)	UCC.
Fatty acid esters, not included with plasticizers or surface-active agents:	
Butyl palmitate	AAE, DA.
Dimethyl brassylate	EMR.
Ethyl stearate	ARS.
Hexadecyl stearate	ICI.
Isopropyl linoleate	VND.
Methyl esters of coconut oil	PG.
*Methyl esters of tallow	BFR, CHL, HUM.
Methyl 12-hydroxystearate	HUM, NTL.
Methyl myristate	PG.
Methyl stearate	DA.
Myristyl myristate	VND.
All other	BFR, CCA, HUM.
Glycidyl acrylate	AAE.
Glycidyl methacrylate	AAE.
Hexyl acetate	ENJ.
Isobutyl acrylate	DBC, RH, UCC.
Isobutyl chloroformate	OTC.
Isobutyl isobutyrate	EKX.
Isodecyl acrylate	UCC.
Iso-octyl mercaptoacetate	CCW, EVN, HAB.
Iso-octyl 3-mercaptopropionate	EVN.
Isopropyl acetate	EKT, ENJ, HPC, UCC.
Isopropyl chloroformate	CTN, PPG.
Lauryl lactate	VND.
Lauryl stearyl thiodipropionate	EVN.
Maleic esters and copolymers	GAF.
Methallylidene diacetate	UCC.
Methyl acetate	EK, MON, UCC.
Methyl acetoacetate	EKT, UCC.
Methyl acrylate, monomer	CEL, DBC, RH.
Methyl borate	MHI, SFA.
Methyl chloroacetate	DOW, KF.
Methyl chloroformate	CTN, FMP.
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.
Octadecyl 3-mercaptopropionate	EVN.
*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.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Esters of Monohydric Alcohols--Continued	
*Phosphorus acid esters--Continued	
Didodecyl hydrogen phosphate	DUP.
Dimethyl hydrogen phosphite	SM.
Dimethyl methylphosphonate	SM.
Dioleyl hydrogen phosphite	SM.
Iso-octyl hydrogen phosphate	SM.
Methyl hydrogen phosphates	HK.
Oleyl hydrogen phosphate	SM.
Tributyl phosphate	COM.
Tributyl phosphite	SFI, SM.
Tridecyl phosphite	HK.
Triethyl phosphite	SM.
Triiso-octyl phosphite	SM.
Triisopropyl phosphite	SM.
Trimethyl phosphate	TNA.
Trimethyl phosphite	SM.
Tris(2-chloroethyl) phosphite	SM.
Tris(chloroisopropyl) thionophosphate	TNA.
Tris(2,3-dibromopropyl) phosphate	MCH.
Tris(2-ethylhexyl) phosphite	SM.
Tris(octadecyl) phosphite	SM.
All other	DUP, MON, SM, WES.
*Propyl acetate	CEL, EKT, PUB, UCC.
Propylene carbonate	DOW, JCC.
Tetraoctyl orthosilicate	MON.
Titanic acid esters:	
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, CUC, DUP, MON, NSC, UCC.
All other	ALD, CEL, CTN, DUP, EFH, EK, EKX, EMR, EVN, FMP, GAF, LIL, PCC, PUB, RH, TNI, UCC, VND, WTL.
Halogenated Hydrocarbons	
1-Bromobutane (n-Butyl bromide)	ABB, BPC.
2-Bromobutane (sec-Butyl bromide)	ABB, EK, MCH.
Bromochloromethane	DOW.
1-Bromo-3-chloropropane (Trimethylenechlorobromide)	MCH.
2-Bromo-2-chloro-1,1,1-trifluoroethane	ICI.
Bromoethane (Ethyl bromide)	DOW, GTL, MCH.
1-Bromo-3-methylbutane (Isoamyl bromide)	LIL.
1-Bromo-3-methyl-2-butene	SDW.
1-Bromo-octadecane	DUP, GAF.
1-Bromo-octane (n-Octyl bromide)	MCH.
2-Bromopentane (1-Methylbutyl bromide)	ABB, LIL, PD.
1-Bromopropane (n-Propyl bromide)	BPC, EK.
2-Bromopropane (Isopropyl bromide)	BPC.
Bromotrichloromethane	MCH.
Bromotrifluoromethane	DUP.
*Carbon tetrachloride	ACS, DA, DOW, FMB, FRO, PPG, SFI, TNA.
*Chlorinated paraffins:	
Less than 35% chlorine	DA, DVC.
*35%-64% chlorine	CCH, DA, DVC, HK, HPC, ICI, KPS, NEV.
65% or more chlorine	DA, DVC, NEV.
2-Chloro-1,3-butadiene	DUP.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Halogenated Hydrocarbons--Continued	
1-Chlorobutane (n-Butyl chloride)	PUB, UCC.
2-Chlorobutane (sec-Butyl chloride)	EK, PLC.
1-Chloro-1,1-difluoroethane	ACS, DUP, PAS.
*Chlorodifluoromethane	ACS, DUP, KAI, PAS.
*Chloroethane (Ethyl chloride)	AME, DOW, DUP, HPC, PPG, SHC, TNA.
*Chloroform	ACS, DA, DOW, DUP, FRO, SFI.
*Chloromethane (Methyl chloride)	ACS, ANM, 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.
Chlorotrifluoroethylene, polymerized	MMM.
Chlorotrifluoromethane	DUP, UCC.
Dibromodifluoromethane	DOW.
*1,2-Dibromoethane (Ethylene dibromide)	DOW, GTL, HCH, MCH, TNA.
Dibromomethane (Methylene bromide)	DOW, UCC.
1,4-Dibromopentane	SDW.
1,3-Dibromopropane	MCH.
1,2-Dibromo-1,1,2,2-tetrafluoroethane	DUP, WYN, x.
Dichlorobutadiene	DUP.
1,3-Dichloro-2-butene	DUP.
1,4-Dichlorobutene	DUP.
*Dichlorodifluoromethane	ACS, DUP, KAI, PAS, UCC.
*1,2-Dichloroethane (Ethylene dichloride)	ACS, AME, BFG, CO, DA, DOW, FRO, JCC, PPG, TNA, UCC.
*Dichloromethane (Methylene chloride)	ACS, DA, DOW, DUP, FRO, SFI.
*1,2-Dichloropropane (Propylene dichloride)	DOW, JCC, UCC.
2,3-Dichloropropene	DOW.
Dichlorotetrafluoroethane	ACS, DUP.
1,1-Difluoroethane	ACS, DUP.
Difluorotetrachloroethane	DUP.
Diiodomethane (Methylene iodide)	NTB, SDW.
Hexafluoropropylene, monomer	DUP.
Iodoethane (Ethyl iodide), tech	EK, FMT, RSA.
*Iodomethane (Methyl iodide)	EK, FMT, NTB, RSA.
1-Iodoperfluorohexane	TKL, x.
Octafluorocyclobutane	DUP.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	DOW.
1,1,2,2-Tetrachloroethane (Acetylene tetrachloride)	DUP.
*Tetrachloroethylene (Perchloroethylene)	DA, DOW, DUP, FRO, HK, PPG, SFI, TNA, TTX.
Tetrafluoroethylene, monomer	DUP, PAS, TKL.
Tetrafluoroethylene, polymer	ACP, DUP, PAS, TKL.
Tetrafluoromethane	DUP.
*1,1,1-Trichloroethane (Methyl chloroform)	DOW, FRO, PPG, TNA.
1,1,2-Trichloroethane (Vinyl trichloride)	DOW, UCC.
*Trichloroethylene	DA, DOW, DUP, HK, PPG, TNA, TTX.
*Trichlorofluoromethane	ACS, DUP, KAI, PAS, UCC.
1,2,3-Trichloropropane	DOW, SHC, UCC.
1,2,3-Trichloropropene	DOW.
Trichlorotrifluoroethane	ACS, DUP, UCC.
Vinyl bromide (Bromoethylene)	DOW.
*Vinyl chloride, monomer (Chloroethylene)	ACS, AME, BFG, CO, DA, DOW, HN, MNO, PPG, TNA.
Vinyl fluoride	DUP.
Vinylidene chloride, monomer (1,1-Dichloroethylene)	DOW, FRO.
Vinylidene fluoride	DUP.
All other	ALD, DUP, EK, GAF, HMY, MCH, TKL.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
All Other Miscellaneous Acyclic Chemicals	
Acetyl peroxide	WTL.
Aluminum isopropoxide (Aluminum isopropylate)	CHT, KCH.
*2-Butanone peroxide	CAD, NOC, RCI, WTC, WTL, x.
*tert-Butyl hydroperoxide	CAD, NOC, OCC, WTC, WTL.
*tert-Butyl peroxide (Di-tert-butyl peroxide)	CAD, NOC, SHC, WTC, WTL, x.
Butyrolactone	GAF.
*Carbon disulfide	ACS, FMB, PAS, PPG, SFI.
2-Chloroethanol (Ethylene chlorohydrin)	UCC.
Decanoyl peroxide	WTC, WTL.
Dialdehyde starch	MLS.
2,3-Dibromopropanol	MCH.
Diketene	ALD, EKT, FMP.
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.
2,5-Dimethyl-2,5-dihydroperoxyhexane	WTC.
Epoxides, ethers, and acetals:	
Acetone dimethylacetal (2,2-Dimethoxypropane)	DOW.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)	AAC, DOW, SHC.
Bis(2-chloroethoxy)methane (Dichloroethylformal)	TKL.
Bis(2-chloroethyl) ether (Dichlorodiethyl ether)	DOW.
Bis(2-chloro-1-methylethyl) ether (Dichloroisopropyl ether).	DOW, OMC.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	DOW.
Butylene oxide	DOW.
Butyl ether (Di-n-butyl ether)	PUB, UCC.
Butyl vinyl ether	GAF, UCC.
2-Chloroethyl vinyl ether	UCC.
Chloromethyl methyl ether	HK, RH.
2,2-Dichloro-1,1-difluoroethyl methyl ether	DOW.
Dimercaptodiethyl ether	EVN, USR.
Epichlorohydrin	DOW, SHC.
*Ethylene oxide	CAU, CEL, DOW, EKX, GAF, HCH, JCC, MAT, NWP, OMC, SHC, SNO, UCC, WYN.
*Ethyl ether:	
Absolute	MAL.
Tech	ENJ, HPC, UCC, USI.
U.S.P	MAL, OMS.
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)	COM, DUP, UCC.
Methyl vinyl ether	GAF.
Octadecyl vinyl ether	GAF.
*Propylene oxide	CEL, DOW, JCC, OCC, OMC, UCC, WYN.
Other	EK, GAF, ICI, UCC.
Ethanedithiol	RBC.
Ethanethiol	EK, PLC.
2-(Ethylmercapto)ethanol	PLC.
Fats and oils, chemically modified	ABB, CHL, DOM, SDW.
Glucono-delta-lactone	DLI, PFZ.

TABLE 2.--Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1970--Continued

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
All Other Miscellaneous Acyclic Chemicals--Continued	
Glutaraldehyde bis(sodium bisulfite)	IDC.
Hexachlorodimethyl sulfone	SFA.
n-Hexadecyl disulfide	PAS.
Hydrocarbons:	
1-Butyne (Ethylacetylene)	CUC.
n-Decane	HMY, PLC.
n-Dodecane	HMY, PLC.
Ethylene, from ethyl alcohol, medicinal grade	OH.
Hexadecane	HMY.
Myrcene	IFF, NCI.
1-Octadecene	HMY.
n-Octane	HMY, PLC.
Propyne (Methylacetylene)	CUC.
Other	HMY.
*Lauroyl peroxide	CAD, TEK, WTC, WTL, x.
Magnesium methylate	MRT.
Methanesulfanol	PAS.
Methyl sulfide (Dimethyl sulfide)	CRZ.
Methyl sulfoxide	CRZ.
Organo-aluminum compounds:	
Diethylaluminum chloride	TNA, TSA.
Diethylaluminum iodide	TSA.
Ethylaluminum chlorides	TNA, TSA.
Isobutylaluminum chlorides	TNA, TSA.
Methylaluminum chlorides	TNA.
Triethylaluminum	TNA, TSA.
Triisobutylaluminum	TNA, TSA.
Other	TNA, TSA.
Organo-boron compounds	ACS, SFA, TSA.
Organo-lead compounds:	
*Tetraethyllead	DUP, HCH, NLC, TNA.
Tetramethyllead	DUP, NLC, TNA.
*Tetra(methyl-ethyl)lead	DUP, HCH, TNA.
Organo-lithium compounds	FTE.
Organo-magnesium halides	ARA.
Organo-mercury compounds	EK, NTB.
Organo-silicon compounds:	
Monomers	DCC, UCC.
*Polymers	DCC, ORO, SFA, SPD, UCC.
Organo-tin compounds:	
Bis(tributyltin) oxide	CCW, x.
Dibutyltin dichloride	CCW, x.
Dibutylmethoxytin (Dibutyl tin methoxide)	CCA.
Other	CCA, CCW, PCW, x.
Organo-zinc compounds	TSA.
Organo-zirconium compounds	LCI.
Perchloromethanethiol (Perchloromethyl mercaptan)	CHO.
*Phosgene (Carbonyl chloride)	ACS, CTN, DUP, MOB, OTC, PPG, RUC, UCC, UPJ, VDM x.
Pine oil, synthetic	CBY, NCI.
β-Propiolactone	CEL.
Propionyl peroxide	WTL.
Rare sugars	PFN, RSA.
Sodium ethoxide	FMP.
Sodium formaldehyde bisulfite	EK, IDC.
*Sodium formaldehyde sulfoxylate	DA, RH, ROY.
*Sodium methoxide (Sodium methylate)	DA, DUP, OMC, SFA, x.
Sodium vinyl sulfonate	CUC.
Succinyl peroxide	WTL.
Tetrakis(hydroxymethyl)phosphonium chloride	HK.
Thallous ethoxide	ALD.
Tributylphosphine	CCW.
Trioctylphosphine oxide	EK.
*Zinc formaldehyde sulfoxylate	DA, RH, ROY.
Other	ALD, ALX, DA, EK, GAF, GNM, NES, RSA, SDW, SFA, TNA, UCC, WTL, x, x.

TABLE 3.--Miscellaneous chemicals: Directory of manufacturers, 1970

ALPHABETICAL DIRECTORY BY CODE

[Names of miscellaneous chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below in the order of their identification codes as used in table 2]

Code identification	Name of company
AAC	Alcolac Chemical Corp.
AAE	American Aniline & Extract Co., Inc.
ABB	Abbott Laboratories
	Allied Chemical Corp.:
ACN	Agricultural Div.
ACP	Plastics Div.
ACS	Specialty Chemicals Div.
ACY	American Cyanamid Co.
AGY	Agway, Inc., Nitrogen Div.
AKL	Arkla Chemical Corp.
AKS	Arkansas Co., Inc.
ALB	Ames Laboratories, Inc.
ALC	Alco Chemical Corp.
ALD	Aldrich Chemical Co., Inc.
ALF	Allied Chemical Corp., Fibers Div.
ALX	Alox Corp.
AMB	American Bio-Synthetic Corp.
AME	American Chemical Corp.
ANM	Ancon Chemical Corp.
APD	Atlas Chemical Industries, Inc.
ARA	Arapahoe Chemicals Div. of Syntex Corp.
ARC	Armour Industrial Chemical Co.
ARM	USS Agri-Chemicals, Div. of U.S. Steel Corp.
ARS	Arsynco, Inc.
ARZ	Arizona Chemical Co.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.
ASL	Ansul Chemical Co.
ATR	Atlantic Richfield Co., ARCO Div.
AV	FMC Corp., American Viscose Div.
AZT	Dart Industries, Inc., Aztec Chemicals Div.
BAX	Baxter Laboratories, Inc.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
BFR	Pace National Corp.
BJL	Burdick & Jackson Labs., Inc.
BKC	J. T. Baker Chemical Co.
BKL	Millmaster Onyx Corp., Millmaster Chemical Co. Div., Berkeley Chemical Dept.
BOR	Borden Co., borden Chemical Co. Div.
BPC	Stauffer Chemical Co., Benzol Products Div.
BRD	Baird Chemical Industries, Inc.
BUK	Buckeye Cellulose Corp.
CAD	Noury Chemical Corp.
CAU	Calcasieu Chemical Corp.
CBC	Georgia-Pacific Corp.. Coos Bay Div.
CBD	Chembond Corp.
CBN	Cities Service Co.
CBY	Crosby Chemicals, Inc.
CCA	Cincinnati Milacron Chemicals, Inc.
CCC	Chase Chemical Corp.
CCH	Pearsall Chemical Co.
CCU	Cincinnati Milacron Chemicals, Inc.
CEL	Celanese Corp.:
	Celanese Chemical Co.
	Celanese Fibers Co.
	Celanese Plastics Co.
CFA	Cooperative Farm Chemicals Association
CFC	Sun Chemical Corp.
CGY	Ciba-Geigy Corp.:
	Ciba Pharmaceutical Co.
CHH	Charles Hansen's Laboratory, Inc.
CHO	Stauffer Chemical Co., Calhio Chemicals, Inc. Div.
CHN	Cherokee Nitrogen Co.
CHT	Chattem Drug & Chemical Co., Chattem Chemicals Div.
CLK	Clark Oil & Refining Corp., Clark Chemical Co.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.
CNC	Columbia Nitrogen Corp.
CNP	Columbia Nipro Co.
CO	Continental Oil Co.
COL	Collier Carbon & Chemical Corp.
COM	Commercial Solvents Corp.
CP	Colgate-Palmolive Co.
CRN	CPC International, Inc.
CRT	Crest Chemical Corp.
CRZ	Crown Zellerbach Corp., Chemical Products Div.
CTN	Chemetron Corp., Organic Chemical Div.
CUC	Air Reduction Co., Inc., Chemicals & Plastics Div.
CWL	Stauffer Chemical Co., Cowles Chemical Div.
CWN	Upjohn Co., Carwin Organic Chemicals
DA	Diamond Shamrock Corp.
DAN	Dan River Mills, Inc.
DBC	Dow Badische Co.
DCC	Dow Corning Corp.
DEX	Dexter Chemical Corp.
DIX	Dixie Chemical Co.
DLI	Dawe's Laboratories, Inc.
DOL	Dole Co., Div. of Castle & Cook, Inc.
DOM	Dominion Products, Inc.
DOW	Dow Chemical Co.
DRW	Drew Chemical Corp.
DUP	E. I. duPont de Nemours & Co., Inc.
DVC	Dover Chemical Corp.
EFH	E. F. Houghton & Co.
EK	Eastman Kodak Co.:
EKT	Tennessee Eastman Co. Div.
EKX	Texas Eastman Co. Div.
ELP	El Paso Products Co.
EMR	Emery Industries, Inc.
ENJ	Enjay Chemical Co.
ENZ	Enzyme Development Corp.
ESA	East Shore Chemical Co., Inc.
ESC	Air Products & Chemicals, Inc., Escambia Plant
EVN	Evans Chemetics, Inc.

TABLE 3.--Miscellaneous chemicals: Directory of manufacturers, 1970--Continued

Code identification	Name of company
FCA	Farmers Chemical Association, Inc.
FER	Ferro Corp., Ferro Chemical Div.
FIN	Fine Organics, Inc.
FIS	Fisher Chemical Co., Inc.
	FMC Corp.:
FMB	Inorganic Chemicals Div.
FMP	Organic Chemicals Div.
FMT	Fairmount Chemical Co., Inc.
FRO	Vulcan Materials Co., Chemicals Div.
FTE	Foote Mineral Co.
FTX	CF Industries, Inc., Fel-Tex Plant
GAF	GAF Corp., Chemical Div.
GAN	Gane's Chemical Works, Inc.
GCC	W. R. Grace & Co., Agricultural Chemical Group
GFS	G. Frederick Smith Chemical Co.
GIV	Givaudan Corp.
GLD	SCM Corp. Glidden-Durkee Div.
GLY	Glyco Chemicals, Inc.
GNM	General Mills Chemicals, Inc.
GOC	Gulf Oil Corp., Gulf Oil Chemicals Co. - United States
GPR	Grain Processing Corp.
GRD	W. R. Grace & Co., Polymers & Chemicals Div.
GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
GTL	Great Lakes Chemical Corp.
GYR	Goodyear Tire & Rubber Co.
HAB	Halby Products Co., Inc.
HAL	C. P. Hall Co. of Illinois
HCH	Houston Chemical Corp.
HDG	Hodag Chemical Corp.
HEX	Hexagon Laboratories, Inc.
HFT	Hoffman-Taff, Inc.
HK	Hooker Chemical Corp.:
HKD	Durez Plastics Div.
HKY	Hawkeye Chemical Co.
HMP	W. R. Grace & Co., Hampshire Chemical Div.
HMY	Humphrey Chemical Co.
HN	Tenneco Chemicals, Inc.:
HNX	Nuodex Div.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Div.
HPC	Hercules, Inc.
HRT	Hart Products Corp.
HSH	Harshaw Chemical Co., Div. of Kewanee Oil Co.
HUM	Kraftco Corp., **Humko** Products Chemical Div.
ICI	ICI America, Inc.
IDC	Industrial Dyestuff Co.
IFF	International Flavors & Fragrances, Inc.
JCC	Jefferson Chemical Co., Inc.
JDC	Nipak, Inc.
JFR	George A. Jeffrey's & Co., Inc.
JMS	J. Meyer & Sons, Inc.
JTC	Joseph Turner & Co.
KAI	Kaiser Aluminum & Chemical Corp., Kaiser Chemicals Div.
KCC	Kennecott Copper Corp., Chino Mines Div.
KCH	Keystone Chemurgic Corp.
KCU	Kennecott Copper Corp., Utah Copper Div.
KF	Kay-Fries Chemicals, Inc.
KON	H. Kohnstamm & Co., Inc.
KPS	Koppers Pittsburgh Co.
KPT	Koppers Co., Inc., Organic Materials Div.
LAM	LaMotte Chemical Products Co.
LCI	Lachat Chemicals, Inc.
LEM	Lemke Chemicals, Inc.
LIL	Eli Lilly & Co., Inc.
LUB	Lubrizol Corp.
MAL	Mallinckrodt Chemical Works
MAT	Matador Chemical Co., Inc.
MCH	Michigan Chemical Corp.
MCI	Mooney Chemicals, Inc.
MET	M & T Chemicals, Inc.
MHI	Ventron Corp., Chemicals Div.
MLS	Miles Laboratories, Inc., Marschall Div.
MMM	Minnesota Mining & Manufacturing Co.
MNO	Monochem, Inc.
MOB	Mobay Chemical Co.
MON	Monsanto Co.
MOR	Mineral Oil Refining Co.
MRK	Merck & Co., Inc.
MRT	Morton Chemical Co.
MSC	Mississippi Chemical Corp.
MTO	Montrose Chemical Corp. of California
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.
NCA	Northrop Carolina, Inc.
NCI	Union Camp Corp., Chemical Div.
NES	Nease Chemical Co., Inc.
NEV	Neville Chemical Co.
NLC	Nalco Chemical Co.
NOC	Norac Co., Inc. and Mathe Chemical Co. Div.
NOR	Norwich Pharmacal Co.
NPI	National Polychemicals, Inc.
NSC	National Starch & Chemical Corp.
NTB	National Biochemical Co.
NTL	National Lead Co.
NW	Northwestern Chemical Co.
NWP	Northern Petrochemicals Co.
OCC	Oxirane Chemical Co.
OH	Air Reduction Co., Inc., Ohio Medical Products Div.
OMC	Olin Corp.
OMS	E. R. Squibb & Sons, Inc.
ONX	Millmaster Onyx Corp., Onyx Chemical Co.
OPC	Orbis Products Corp.
ORO	Chevron Chemical Co.
OTC	Ott Chemical Co.
PAR	Pennsylvania Refining Co.
PAS	Pennwalt Corp.
PCC	USS Chemicals Div. of U.S. Steel Corp.
PCS	Emery Industries, Inc.
PCW	Pfister Chemical Works
PD	Parke, Davis & Co.
PEN	CPC International, Inc., Penick Div.
PFN	Pfanstiehl Laboratories, Inc.
PFW	Polak's Frutal Works, Inc.
PFZ	Pfizer, Inc.
PG	Procter & Gamble Co.
PHR	Pharmachem Corp.

TABLE 3.--Miscellaneous chemicals: Directory of manufacturers, 1970--Continued

Code identification	Name of company
PIC	Pierce Organics, Inc.
PLB	P-L Biochemicals, Inc.
PLC	Phillips Petroleum Co. & Phillips Pacific Chemical Co.
PLS	Plastics Engineering Co.
PMP	Premier Malt Products, Inc.
PPC	Premier Petrochemical Co.
PPG	Pittsburgh Plate Glass Co.
PRD	Productol Chemical Co., Inc.
PTT	Petro-Tex Chemical
PUB	Publicker Industries, Inc.
QKO	Quaker Oats Co.
RBC	Roberts Chemicals Div. of Security Chemicals, Inc.
RCI	Reichhold Chemicals, Inc.
REH	Reheis Chemical Co. Div. of Armour Pharmaceutical Co.
REM	Remington Arms Co., Inc.
RH	Rohm & Haas Co.
ROY	Royce Chemical Co.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.
RSA	R.S.A. Corp.
RT	F. Ritter & Co.
RUB	Hooker Chemical Corp., Ruco Div.
RUC	Rubicon Chemicals, Inc.
S	Sandoz, Inc., Sandoz Colors & Chemical Div.
SAR	Sartomer Resins, Inc.
SBC	Scher Bros.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
	Sterling Drug, Inc.:
SDH	Hilton-Davis Chemical Co. Div.
SDW	Winthrop Laboratories Div.
	Stauffer Chemical Co.:
SFA	Specialty Chemical Div.
SFI	Industrial Div.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHF	Kraftco Corp., Sheffield Chemical Co. Div.
SHL	Nitine, Inc. Div. of Shulton, Inc.
SHO	Shell Oil Co.
SHP	Shepherd Chemical Co.
SK	Smith, Kline & French Laboratories
SKG	Sunkist Growers, Inc.
SKO	Skelly Oil Co.
SM	Mobil Oil Corp., Mobil Chemical Co. Div. Industrial Chemical Div.
SNI	Kaiser Aluminum & Chemical Corp., Kaiser Agricultural Chemicals Div.
SNO	SunOlin Chemical Co.
SNW	Sun Chemical Corp., Chemical Div.
SOC	Standard Oil Co. of California, Chevron Chemical Co.
SOH	Vistron Corp.
SOI	American Oil Co. (Maryland)
SPD	General Electric Co., Silicone Products Dept.
SPR	Scientific Protein Laboratories
SRR	Stresen-Reuter International, International Minerals & Chemical Corp.
SW	Sherwin-Williams Co.
SYP	Synthetic Products Co.
TAE	Chemetron Corp., National Cylinder Gas Div.
TCC	Tanatex Chemical Corp.
TCD	Tenneco Chemical, Inc., Tenneco Colors Div.
TCH	Trylon Chemicals, Inc.
TEK	Teknor Apex Co.
TER	Terra Chemicals International, Inc.
TID	Getty Oil Co.
TKL	Thiokol Chemical Corp.
TNA	Ethyl Corp.
TNI	Gillette Chemical Co., Div. of Gillette Co.
TCC	Tanatex Chemical Corp.
TRI	Triad Chemicals
TRO	Troy Chemical Co.
TSA	Texas Alkyls, Inc.
TTX	Detrex Chemical Industries, Inc.
TX	Texaco, Inc.
TZC	Tizon Chemical Corp.
UCC	Union Carbide Corp.
UOP	Universal Oil products Co., UOP Chemical Div.
UPJ	Upjohn Co.
UPM	Universal Oil Products Co.
UPR	Witco Chemical Corp., U.S. Peroxygen Div.
USB	U.S. Borax Research Corp.
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.
USR	Uniroyal, Inc., Chemical Div.
VDM	Van De Mark Chemical Co.
VEL	Velsicol Chemical Corp., Inc.
VGC	Virginia Chemicals, Inc.
VLN	Valley Nitrogen Producers, Inc.
VND	Van Dyk & Co., Inc.
VPC	Verona Corp.
Way	Phillip A. Hunt Chemical Corp., Wayland Chemical Div.
WBC	Worthington Biochemical Corp.
WBG	White & Bagley Co.
WES	Weston Chemical Corp.
WM	Wilson Pharmaceutical & Chemical Corp., Wilson-Martin Div.
WMP	Essex International, Inc.. Electro-Mechanical Div.
WSN	Mallinckrodt Chemical Works, Washine Div.
WTC	Witco Chemical Co., Inc.
WTH	Union Camp Corp., Harchem Div.
WTL	Pennwalt Corp., Lucidal Div.
WYC	Wycon Chemical Co.
WYN	Wyandotte Chemicals Corp.

Note.--For complete names and addresses of the above reporting companies, refer to table 1 in the Appendix.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1970 are listed below alphabetically, together with their identification codes as used in table 2 of the 14 individual sections of this report]

Identification code	Name of company	Office address
AEP	A & E Plastik Pak Co., Inc	14505 Proctor, Industry, CA 91747.
ABB	Abbott Laboratories	14th St. and Sheridan Rd., N. Chicago, IL 60664.
ABS	Abex Corp., American Brakelok Div	2401 S. Loudoun (Paper Mill Rd.), Winchester, VA 22601.
ACE	Acme Chemical Co	2506 N. 32d St., Milwaukee, WI 53245.
AGY	Agway, Inc., Nitrogen Div	1446 Buffalo St., Olean, NY 10760.
	Air Products & Chemicals, Inc.:	
ESC	Escambia Plant	P. O. Box 467, Pensacola, FL 32702.
HOU	Houndry Process & Chemical Div	1339 Chestnut Street, Philadelphia, Pa 19107.
	Air Reduction Co., Inc.:	
CUC	Chemicals & Plastics Div	150 E. 42nd St., New York, NY 10017.
OH	Ohio Medical Products Div	3030 Airco Dr., P. O. Box 1319, Madison, WI 53701.
ALC	Alco Chemical Corp	Trenton Ave. and William St., Philadephia, PA 19134.
AAC	Alcolac Chemical Corp	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.
	Allied Chemical Corp.:	
ACN	Agricultural Div	P. O. Box 2061R, Morristown, NJ 07960.
ALF	Fibers Div	1 Times Square, New York, NY 10036.
ACP	Plastics Div	P. O. Box 365, Morristown, NJ 07960.
ACS	Specialty Chemicals Div	Columbia Rd. & Park Ave., Morristown, NJ 07960.
ACU	Union Texas Petroleum Div	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.
AML	Amalgamated Chemical Corp	Ontario and Rorer Sts., Philadelphia, PA 19134.
AMC	Amchem Products Inc	Brookside Ave., Ambler, PA 19002.
AES	Amerace-Esna Corp., Chemical Specialties Div.	74 Hudson Ave., Tanafly, NJ 07670.
DLH	Amerada Hess Corp, Hess Oil & Chemical Div	1 Hess Plaza, Woolridge, NJ 07095.
AAE	American Aniline & Extract Co., Inc	Venango and F Sts., Philadelphia, PA 19134.
AAP	American Aniline Products, Inc	P. O. Box 3063, Paterson, NJ 07509.
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., Long Beach, CA 90810.
ACY	American Cyanamid Co	Wayne, NJ 07470.
HST	American Hoechst Corp	129 Quidnick St., Coventry, RI 02816.
SOI	American Oil Co. (Maryland)	910 S. Michigan Ave., Chicago, IL 60680.
AMO	American Oil Co. (Texas)	910 S. Michigan Ave., Chicago, IL 60680.
ASY	American Synthetic Rubber Corp	P. O. Box 360, Louisville, KY 40201.
APL	Ameripol, Inc	3135 Euclid Ave., Cleveland, OH 44115.
ALB	Ames Laboratories, Inc	200 Rock Lane, Milford, CT 06460.
ACC & AVS	Amoco Chemical Corp	130 E. Randolph Dr., Chicago, IL 60601.
PAN	Amoco Production Co	P. O. Box 591, Tulsa, OK 74102.
ANM	Ancon Chemical Corp	1 Stanton St., Marinette, WI 54143.
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.
HAP	Applied Plastics Co	130 Penn St., El Segundo, CA 90245.
ARA	Arapahoe Chemicals Div. of Syntex Corp	2855 Walnut St., Boulder, CO 80302.
ARD	Ardmore Chemical Co., Inc	840 Valley Brook Ave., Lyndhurst, NJ 07071.
ARN	Arenol Chemical Corp	40-33 23d St., Long Island City, NJ 11101.
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.
AGP	Armour-Dial, Inc	111 E. Wacker Dr., Chicago, IL 60601.
ARC	Armour Industrial Chemical Co	111 E. Wacker Dr., Chicago, IL 60601.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
ARP	Armour Pharmaceutical Co	P. O. Box 511, Kankakee, IL 60901.
APV	Armstrong Chemco, Inc	1330 S. Kolbourn Ave., Chicago, IL 60623.
ARK	Armstrong Cork Co	Liberty and Charlotte Sts., Lancaster, PA 17604.
ARL	Arol Chemical Products Co	371 Wayne St., Jersey City, NJ 07072.
ARS	Arsynco, Inc	P. O. Box 8, Carlstadt, NJ 07072.
ASH	Ashland Oil, Inc	1401 Winchester Ave., Ashland, KY 41101.
	Ashland Chemical Co. Div	1701 N. High St., Columbus, OH 43215 and P. O. Box 149, Baytown, TX 77520.
BLA	Astor Products, Inc., Blue Arrow Div	P. O. Box B, Jacksonville, FL 32203.
AST	Astra Pharamaceutical Products, Inc	7-1/2 Neponset St., Worcester, MA 01606.
ATP	Atco Chemical Industrial Products, Inc., Fine Chemicals Div.	93 Main St., Franklin, NJ 07416.
ATL	Atlantic Chemical Corp	10 Kingsland Rd., Nutley, NJ 07110.
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.	260 S. Broad St., Philadelphia, PA 19101.
APD	Atlas Chemical Industries, Inc	Wilmington, DE 19899 and P. O. Box 87, Joplin, MO 64801.
APR	Atlas Processing Co	P. O. Box 9188, 3546 Midway St., Shreveport, LA 71109.
BAS & WYN	BASF Wyandotte Corp	100 Cherry Hill Rd., Parsippany, NJ 07054 and 1609 Biddle Ave., Wyandotte, MI 48192.
BRP	BP Oil Corp	Midland Bldg., Cleveland, OH 44115.
BRD	Baird Chemical Industries	22-10 Route 208, Fair Lawn, NJ 07410.
BKC	J. T. Baker Chemical Co	222 Red School Lane, Phillipsburg, NJ 08865.
BAL	Baltimore Paint & Chemical Corp	2325 Hollins Ferry Rd., Baltimore, MD 21230.
BAX	Baxter Laboratories, Inc	6301 Lincoln Ave., Morton Grove, IL 60053.
BAO	Bayoil Co., Inc	2 Union St., Peabody, MA 01960.
BEE	Beecham, Inc	65 Industrial S., Clifton, NJ 07012.
BLS	Beech-Nut, Inc	Church St., Canajoharie, NY 13317.
BCM	Belding Chemical Industries	1439 Broadway, New York, NY 10018.
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.
BUC	Blackman-Uhler Chemical Co	P. O. Box 5627, Spartanburg, SC 29301.
BOR	Borden, Inc., Borden Chemical Div	350 Madison Ave., New York, NY 10017.
MCB	Borg-Warner Corp., Marbon Chemical Div	P. O. Box 68, Washington, WV 26181.
BRS	Bristol-Meyers Co., Bristol Laboratories Div	19 Mony Plaza, E. Syracuse, NY 13201.
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 Cornwalles Rd. Research Triangle Park, NC 27709.
FTX	CF Industries, Inc., Fel-Tex Plant	P. O. Box 68, Fremont, NB 68025.
CRN	CPC International, Inc	International Plaza, Englewood Cliffs, NJ 07632.
ACR	Acme Resin Co. Div	1401 Circle Ave., Forest Park, IL 60130.
PEN	Penick Div	100 Church St., New York, NY 10008.
CBT	Samuel Cabot, Inc	One Union St., Boston, MA 02108.
CAU	Calcasieu Chemical Corp	P. O. Box 1522, Lake Charles, LA 70601.
CMB	Carborundum Co., Coated Abrasives Div	Walmore, Rd., P. O. Box 477, Niagara Falls, NY 14304.
CGL	Cargill, Inc	Cargill Bldg., Minneapolis, MN 55402.
CM	Carpenter-Morton Co	376 3d St., Everett, MA 02149.
CRS	Carus Chemical Co., Inc	1375 8th St., LaSalle, IL 61301.
CEL	Celanese Corp. of America	522 5th Ave., New York, NY 10036.
	Celanese Coatings Co	1495 S. 11th St., Louisville, KY 40208.
GRS	Champlin Petroleum Co., Corpus Christi Refinery	P. O. Box 9176, Corpus Christi, TX 78408.
CPP	Charmin Paper Products Co	800 Hoberg St., Green Bay, WI 54305.
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.
CHG	Chemagro Corp	P. O. Box 4913, Station "F", Kansas City, MO 64120.
CBD	Chembond Corp	P. O. Box 270, Springfield, OR 97477.
	Chemetron Corp.:	
TAE	National Cylinder Gas Div	840 N. Michigan Ave., Chicago, IL 60611.
CTN	Organic Chemical Div	P. O. Box 480, Newport, TN 37821.
HSC	Pigments Div	491 Columbia Ave., Holland, MI 49423.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
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	43 Summit St., Brooklyn, NY 11231.
CHH	Chri-Hansen's Laboratory, Inc	9015 W. Maple St., Milwaukee, WI 53214.
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.	100 Lister Ave., Newark, NJ 07105.
CGY	Ciba-Geigy Corp	444 Saw Mill River Rd., Ardsley, NY 10502.
	Ciba Agrochemical Co	556 Morris Ave., Summit, NJ 07901.
	Ciba Pharmaceutical Co	556 Morris Ave., Summit, NJ 07901.
	Ciba Products Div	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.
	Cities Service Co.:	
TEN	Copperhill Operations	Copperhill, TN 37317.
LVY	Levey Div	630 Glendale-Milford Rd., Cincinnati, OH 45215.
CBN	Petrochemicals Div., Chemicals Div	P. O. Box 1522, Lake Charles, LA 70601.
CPN	Petrochemicals Group	60 Wall St., New York, NY 10005.
CSO	Cities Service Oil Co	P. O. Box 300, Tulsa, OK 74101.
CLK	Clark Oil & Refining Corp., Clark Chemical Co	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. Wolcoth Ave., Chicago, IL 60609.
CSP	Coastal States Petrochemical Co	P. O. Drawer, Corpus Christi, TX 78403.
CP	Colgate-Palmolive Co	300 Park Ave., New York, NY 10022.
COL	Collier Carbon & Chemical Corp	461 S. Boyston, Los Angeles, CA 90017.
CLD	Colloids, Inc	394 Frelinghuysen Ave., Newark, NJ 07114.
SUG	Colonial Sugars Co., Sucro-Chemical Div	Gramercy, LA 70052.
CNP	Columbia Nipro Corp	P. O. Box 1483, Augusta, GA 30903.
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	P. O. Box 3623, Ponce, PR 00731.
CPI	Commonwealth Petrochemicals, Inc., Sub. of Commonwealth Oil Refining Co., Inc.	P. O. Box 3623, Ponce, PR 00731.
CON	Concord Chemical Co., Inc	17th & Federal Sts., Camden, NJ 08105.
CPL	Conoco Plastics	P. O. Box 236, Wilton, CT 06897.
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	P. O. Box 389, Kansas City, MO 64141.
CFA	Cooperative Farm Chemicals Association	P. O. Box 308, Lawrence, KS 66044.
COP	Coopers Creek Chemical Corp	River Rd., W. Conshohocken, PA 19428.
CPY	Copolymer Rubber & Chemical Corp	P. O. Box 2591, Baton Rouge, LA 70821.
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., Althouse Div	500 Pear St., Reading, PA 19603.
CBY	Crosby Chemicals, Inc	P. O. Box 460, DeRidder, LA 70634.
CCP	Crown Central Petroleum Corp	P. O. Box 1168, Baltimore, MD 21203.
MRA	Crown Metro, Inc	12 Dudley St., Providence, RI 02905.
CRZ	Crown Zellerbach Corp., Chemical Products Div.	Camas, WA 98607.
DAN	Dan River Mills, Inc	Danville, VA 24541.
	Dart Industries, Inc.:	
AZT	Azetec Chemicals Div	P. O. Box 756, Elyria, OH 44035.
FBF	Fiberfil Div	1701 N. Heidelbach Ave., Evansville, IL 47717.
DYS	Davies-Young Co	705 Albany St., Dayton, OH 45401.
DLI	Dawe's Laboratories, Inc	450 State St., Chicago, IL 60430.
DEG	Degen Oil & Chemical Co	200 Kellogg St., Jersey City, NJ 07305.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
DNS	Dennis Chemical Co	2701 Papin St., St. Louis, MO 63103.
DEP	DePaul Chemical Co., Inc	44-27 Purvis St., Long Island City, NY 11101.
DSO	DeSoto, Inc	1700 S. Mt. Prospect Ave., Des Plaines, IL 60018.
TTX	Detrex Chemical Industries, Inc	14331 Woodrow Wilson, Detroit MI 48232.
DEX	Dexter Chemical Corp	845 Edgewater Rd., Bronx, NY 10474.
HYC	Hysol Div	211 Franklin St., Olean, NY 14760.
MID	Midland Div	E. Water St., P. O. Box 620, Waukegan, IL 60085.
DPI	Diamond Plastics, Inc	P. O. Box 666, Paramount, CA 90723.
DA	Diamond Shamrock Corp	300 Union Commerce Bldg., Cleveland, OH 44114.
DIX	Dixie Chemical Co	3635 W. Dallas Ave., Houston, TX 77019.
DCP	Dixie Chemical Products, Inc	3635 W. Dallas Ave., Houston, TX 77019.
DPP	Dixie Pine Products Co., Inc	P. O. Box 470, Hattiesburg, MS 39401.
DOL	Dole Co. Div. of Castle & Cook, Inc	P. O. Box 3380, Honolulu, HI 96801
DOM	Dominion Products, Inc	882 3d Ave., Brooklyn, NY 11232.
DVC	Dover Chemical Co	W. 15th and Davis Sts., Dover, OH 44622.
DBC	Dow Badische Chemical Co	P. O. Drawer "D", Williamsburg, VA 23605.
DOW	Dow Chemical Co	Hopkins Bldg., Midland, MI 48640.
DCC	Dow Corning Corp	P. O. Box 1592, Midland, MI 48640.
DRW	Drew Chemical Corp	416 Division St., Boonton, NJ 07005.
DUN	Frank W. Dunne Co	1007 41st., Oakland, CA 94608.
CAP	DuPlan Corp., Rochester Button Div	300 State St., Bochester, NY 14614.
DUP	E. I. duPont de Nemours & Co., Inc	DuPont Bldg., Wilmington, DE 19898.
DSC	Dye Specialties, Inc	26 Journal Sq., Jersey City, NJ 07306.
ECC	Eastern Color & Chemical Co	35 Livingston St., Providence, RI 02904.
EK	Eastman Kodak Co	343 State St., Rochester, NY 14650.
EKT	Tennessee Eastman Co. Div	P. O. Box 511, Kingsport, TN 37662.
EKX	Texas Eastman Co. Div	P. O. Box 7444, Longview, TX 75601.
ESA	East Shore Chemical Co., Inc	1221 Barney Ave., Muskegon, MI 49443.
ECL	Eastside Chemical Laboratory	12880 NE Bellevue-Richmond Rd., Bellevue, WA 98005.
ELN	Elan Chemical Co	268 Doremus Ave., Newark, NJ 07105.
GLX	Electro-Seal Glasflex Corp	Plainfield, Stirling, NJ 07980.
ELP	El Paso Products Co	P. O. Box 3986, Odessa, TX 79760.
EMR & PCS	Emery Industries, Inc	4300 Carew Tower, Cincinnati, OH 45202 and 8733 S. Dice Rd., Santa Fe Springs, CA 90670.
EMK	Emkay Chemical Co	319 2d St., Elizabeth, NJ 07206.
EN	Endo Laboratories, Inc	1000 Stewart Ave., Garden City, NY 11530.
ENO	Enenco, Inc	P. O. Box 398, Memphis, TN 38101.
ENJ	Enjay Chemical Co	P. O. Box 201, Florham Park, NJ 07932.
NPP	Enjay Fibers & Laminates Co. Div	Odenton, MD 21113.
ENZ	Enzyme Development Corp	2 Penn Plaza, New York, NY 10001.
EPC	Epoxylite Corp	1428 Santa Anita, S. El Monte, CA 91733.
ESS	Essential Chemicals Corp	28391 Essential Rd., Merton, WI 53056.
WMP	Essex International, Inc., Electro-Mechanical Div.	1200 Rochester Ave., Muncie, IN 47302.
TNA	Ethyl Corp	330 S. 4th St., Richmond, VA 23217.
EVN	Evans Chemetics, Inc	90 Tokeneke Rd., Darien, CT 06820.
	FMC Corp.:	
AV	American Viscose Div	1617 John F. Kennedy Blvd., Philadelphia, PA 19103.
FMB	Inorganic Chemicals Div	633 3d Ave., New York, NY 10017 and Sawyer Ave. & River Rd., Town of Tonawanda, NY 14150.
FMN	Niagara Chemical Div	100 Niagara St., Middleport, NY 14105.
FMP	Organic Chemicals Div	633 3d Ave., New York, NY 10017.
	Nitro Plant	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., Paterson, NJ 07505.
FMT	Fairmont Chemical Co., Inc	117 Blanchard St., Newark, NJ 07105.
FOC	Farac Oil & Chemical Co. Div of Handschy Chemical Co.	13601 S. Ashland Ave., Riverdale, IL 60627.
KNG	Far-Best Corp., O. L. King Div	640 Gilman St., Berkeley, CA 94710.
FCA	Farmers Chemical Association, Inc	P. O. Box 87, Harrison, TN 37341.
FRM	Farmer's Chemical Co	P. O. Box 591, 3713 W. Main St., Kalamazoo, MI 49005.
FAR	Farnow, Inc	77 Jacobus Ave., S. Kearny, NJ 07032.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
FEL	Felton International, Inc	599 Johnson Ave., Brooklyn, NY 11237.
	Ferro Corp.:	
FER	Ferro Chemical Div	P. O. Box 349, 7050 Kreck Rd., Bedford, OH 44146.
OTA	Ottawa Chemical Div	700 N. Wheeling St., Toledo, OH 43605.
FIN	Fine Organics, Inc	205 Main St., Lodi, NJ 07644.
	Firestone Tire & Rubber Co.:	
FRL	Firestone Foam Products Co	P. O. Box 2290, Fall River, MA 02777.
FIR	Firestone Plastics Co. Div	P. O. Box 699, Pottstown, PA 19464.
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.
FIS	Fisher Chemical Co., Inc	5200 Paul G. Blazer Memorial Pkwy., Columbus, OH 43216.
FLM	Fleming Laboratories, Inc	P. O. Box 10373, Charlotte, NC 28201.
FLO	Florasynth Laboratories, Inc	900 Van Nest Ave., Bronx, NY 10462.
FTE	Foote Mineral Co	Route 100, Exton, PA 19341.
FOM	Formica Corp	Formica Bldg., 120 E. 4th St., Cincinnati, OH 45202.
FG	Foster Grant Co., Inc	289 N. Main St., Leominster, MA 01453.
FH	Foster-Heaton Co	16 E. 5th St., Paterson, NJ 07524.
FCD	France, Campbell & Darling, Inc	N. Michigan Ave., Kenilworth, NJ 07033.
FRE	Freeman Chemical Corp	222 E. Main St., Port Washington, WI 53074.
FSH	Frisch & Co., Inc	88 E. 11th St., Paterson, NJ 07524.
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:	
	Chemical Div	P. O. Box 12, Linden, NJ 07036.
	Textile Chemical Div	1228 Chestnut St., Chattanooga, TN 37402.
GAN	Gane's Chemical Works, Inc	535 5th Ave., New York, NY 10017.
GE	General Electric Co	1 Plastics Ave., Pittsfield, MA 01201 and 1 Plastics Ave., Coshocton, OH 43812.
GEI	Insulating Materials Dept	1 River Rd., Schenectady, NY 12305.
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.
CW & GNM	General Mills Chemicals, Inc	4620 W. 77th St., Mann, MN 55435 and So. Kensington Rd., Kankakee, IL 60901.
GPM	General Plastics Manufacturing Co	3481 S. 35th St., Tacoma, WA 98409.
GNT	General Tire & Rubber Co., Chemical Div	1 General St., Akron, OH 44309.
GRG	P. D. George Co	5200 N. 2d St., St. Louis, MO 63147.
JFR	George A. Jeffreys & Co	528 Chapman St., P. O. Box 709, Salem, VA 24153.
	Georgia-Pacific Corp.:	
PSP	Bellingham Div	P. O. Box 1236, Bellingham, WA 98225.
CBC	Coos Bay Div	P. O. Box 869, Coos Bay, OR 97420.
TID	Getty Oil Co	Delaware City, DE 19706.
TNI	Gillette Chemical Co. Div. of Gillette Co	P. O. Box 362, N. Chicago, IL 60064.
GIL	Gilman Paint & Varnish Co	W. 8th and Pine Sts., Chattanooga, TN 37401.
GIV	Givaudan Corp	125 Delawanna Ave., Clifton, NJ 07014.
GLY	Glyco Chemicals, Inc	Greenwich, CT 06830.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	3135 Euclid Ave., Cleveland, OH 44137.
GYR	Goodyear Tire & Rubber Co	1144 E. Market St., Akron, OH 44313.
PBI	Gordon Corp	300 S. 3d St., Kansas City, KS 66118.
GOR	Gordon Chemical Co., Inc	88 Webster St., Worcester, MA 01603.
	W. R. Grace & Co.:	
GCC	Agricultural Chemical Group	P. O. Box 277, Memphis, TN 38101.
GRC	Dubois Chemicals Div	Dubois Tower, Cincinnati, OH 45202.
HMP	Hampshire Chemical Div	Poisson Ave., Nashua, NH 03060.
GRH	Hatco Chemical Div	629 Amboy St., Edison, NJ 08817.
MRO	Marco Chemical Div	1711 W. Elizabeth Ave., Linden, NJ 07036.
GRD	Polymers & Chemicals Div	62 Whittemore Ave., Cambridge, MA 02140.
GRL	Vestal Laboratories Div	4963 Manchester Ave., St. Louis, MO 63110.
GPR	Grain Processing Corp	1600 Oregon St., Muscatine, LA 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.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
GRV	Guardsman Chemical Coatings, Inc	1350 Steele Ave., SW., Grand Rapids, MI 49502.
	Gulf Oil Corp.:	
PGU	Gulf Adhesives	632 No. Cannon Ave., Lansdale, PA 19446.
GOC	Gulf Oil Chemicals Co. - United States	P. O. Box 2100, Houston, TX 77001.
GTH	Guth Corp	332 S. Center St., Hillside, IL 60162.
HNC	H & N Chemical Co	90 Maltese Dr., Totowa, NJ 07512.
HLI	Haag Laboratories, Inc	14010 S. Seeley Ave., Blue Island, IL 60406.
HAB	Halby Products Co., Inc	600 Terminal Ave., New Castle, DE 19720.
HAL	C. P. Hall Co. of Illinois	7300 S. Central Ave., Chicago, IL 60638.
HAM	Hampden Color & Chemical Co	126 Memorial Dr., Springfield, MA 01101.
HAN	Hanna Chemical Coatings Corp	P. O. Box 147, Columbus, OH 43216.
HSH	Harshaw Chemical Co. Div. of Kewanee Oil Co	1945 E. 97th St., Cleveland, OH 44106.
HRT	Hart Products Corp	1440 Broadway, New York, NY 10018.
HVG	Haveg Industries, Inc	900 Greenbank Rd., Wilmington, DE 19808.
HKY	Hawkeye Chemical Co	P. O. Box 899, Clinton, LA 52733.
HCR	Hercor Chemical Corp	P. O. Box 3623, Ponce, PR 00731.
HPC	Hercules, Inc	910 Market St., Wilmington, DE 19899.
IMP	Imperial Color & Chemical Dept	P. O. Box 231, Glen Falls, NY 12803.
HER	Heresite & Chemical Co	822 S. 14th St., Manitowoe, WI 54220.
HES	Hess Oil Virgin Islands Corp	Kingshell, P. O. Box 127, St Croix, USVI 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 10469.
HDG	Hodag Chemical Corp	7247 N. Central Park Ave., Skokie., IL 60076.
HOF	Hoffmann-LaRoche, Inc	324 Kingsland St., Nutley, NJ 07110.
HFT	Hoffman-Taff, Inc	P. O. Box 1246 S.S.S., Springfield, MO 65805.
HK	Hooker Chemical Corp	Buffalo Ave. & 47th St., Niagara Falls, NY 14302.
HKD	Durex Div	Walck Rd., N. Tonawanda, NY 14121.
RUB	Ruco Div	New South Rd., Hicksville, NY 11802.
EFH	E. F. Houghton & Co	303 W. Lehigh Ave., Philadelphia, PA 19133.
HCH	Houston Chemical Corp	1 Gateway Center., Pittsburgh, PA 15222.
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 Briquetting, Inc	P. O. Box 380, Cody, WY 82414.
HYN	Hynson, Westcott & Dunning, Inc	Charles and Chase Sts., Baltimore, MD 21201.
ICI	ICI America, Inc	151 South St., Stamford, CT 06904.
RAY	ITT Rayonier, Inc	161 E. 42d St., New York, NY 10017.
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 & ICF	Inmont Corp	1133 Avenue of the Americas, New York, NY 10036.
IFF	International Flavors & Fragrances, Inc	521 W. 57th St., New York, NY 10019.
IMC	International Minerals & Chemical Corp	5401 Old Orchard Rd., Skokie, IL 60078.
IPC	Interplastic Corp., Commercial Resins Div	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.
JEN	Jennison-Wright Corp	P. O. Box 691, Toledo, OH 43601.
JRG	Andrew Jergens Co	2535 Spring Grove Ave., Cincinnati, OH 45214.
JSC	Jersey State Chemical Co	59 Lee Ave., Haledon, NJ 07508.
JWL	Jewel Paint & Varnish Co	345 N. Western Ave., Chicago, IL 60612.
MNV	Johns-Manville Corp	22 E. 40th St., New York, NY 10016.
JNS	S. C. Johnson & Son, Inc	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Paint Co	6969 Denton Dr., Dallas, TX 75235.
JOR	Jordan Chemical Co	1830 Columbia Ave., Folcraft, PA 19032.
	Kaiser Aluminum & Chemical Corp.:	
SNI	Kaiser Agricultural Chemicals Div	P. O. Box 246, Savannah, GA 31402.
KAI	Kaiser Chemical Div	P. O. Box 337, Gramercy, LA 70052.
KAL	Kali Manufacturing Co	427 Moyer St., Philadelphia, PA 19125.
KF	Kay-Fries Chemicals, Inc	360 Lexington Ave., New York, NY 10017.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
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.
KPI	Kenrich Petrochemicals, Inc	Foot of E. 22d St., Bayonne, NJ 07002.
AMP	Kerr-McGee Corp	Robert S. Kerr Ave., Oklahoma City, OK 73102.
KYS	Keysor Chemical Corp	26000 Springfield Rd., Saugus, CA 91350.
KCH	Keystone Chemurgic Corp	R. D. 2, Bethlehem, Pa 18017.
KCW	Keystone Color Works, Inc	151 W. Gay Ave, York, PA 17403.
KNP	Knapp Products, Inc	180 Hamilton Ave., Lodi, NJ 07644.
KMC	Kohler-McLister Paint Co	1201 Osage St., Denver, CO 80201.
KON	H. Kohnstamm & Co., Inc	161 Avenue of the Americas, New York, NY 10013.
KPT	Koppers Co., Inc., Organic Materials Div	Koppers Bldg., Pittsburgh, PA 15219.
KPS	Koppers Pittsburgh Co	Koppers Bldg., Pittsburgh, PA 15219.
	Kraftco Corp.:	
HUM	Humko Products Div	P. O. Box 398, Memphis, TN 38101.
SHF	Sheffield Chemicals Div	2400 Morris Ave., Union, NJ 07083.
KYN	Kyanize Paints, Inc	2d and Boston Sts., Everett, MA 02149.
LCI	Lachat Chemicals, Inc	20200 Ashland Ave., Chicago Heights, IL 60411.
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 Chemical Co	5025 Evanston Ave., Muskegon, MI 49443.
LAM	LaMotte Chemical Products Co	Chestertown, MD 21620.
LUR	Laurel Products Corp	2600 E. Tioga St., Philadelphia, PA 19134.
LEA	Leatex Chemical Co	2722 N. Hancock St., Philadelphia, PA 19133.
LEB	Lebanon Chemical Corp	P. O. Box 180, Lebanon, PA 17042.
BCN	Lehn & Fink Products, Inc., Beacon Div	33 Richdale Ave., Cambridge, MA 02140.
LEM	Lemke Chemicals, Inc	195-203 Main St., Lodi, NJ 07644.
LEN	Leonard Refineries, Inc	E. Superior St., Alma, MI 48801.
LEV	Lever Brothers Co	390 Park Ave., New York, NY 10022.
LVR	C. Lever Co	Howard and Huntington Sts., Philadelphia, PA 19133.
LIL	Eli Lilly & Co	307 E. McCarty St., Indianapolis, IN 46206 and G.P.O. Box 4388, San Juan, PR 00936.
LUB	Lubrizol Corp	29400 Lakeland Blvd., Wickliffe, OH 44092.
LUE	George Lueders & Co., Inc	427 Washington St., New York, NY 10013.
MET	M & T Chemicals, Inc	Woodridge Rd. & Randolph Ave., P. O. Box 1104, Rahway, NJ 07065.
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.
MOC	Marathon Oil Co., Texas Refining Div	P. O. Box 1191, Texas City, TX 77590.
MRB	Marblette Co. Div. of Allied Products Corp	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 27260.
	Martin-Marietta Corp.:	
AMS	Ridgway Color & Chemical Div	75 Front St., Ridgway., PA 15853.
SDC	Southern Dyestuff Co. 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.
MAT	Matador Chemical Co., Inc	P. O. Box 2256, Wichita, KS 67201.
NOC	Mathe Chemical Co. Div. of Norac Co., Inc	169 Kennedy Dr., Lodi, NJ 07644.
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	1715 SE. 5th St., Minneapolis, MN 55414.
MDJ	Mead Johnson & Co	2404 W. Penna. St., Evansville, IN 47721.
MRK	Merck & Co., Inc	126 E. Lincoln Ave., Rahway, NJ 07065.
MER	Merichem Co	1914 Haden Rd., Houston, TX 77015.
JMS	J. Meyer & Sons, Inc	4321 N. 4th St., Philadelphia, PA 19140.
MCH	Michigan Chemical Corp	351 E. Ohio St., Chicago, IL 60611.
PFP	Midwest Manufacturing Corp	Oak St. and Bluff Rd., Burlington, IA 52601.
MLS	Miles Laboratories, Inc., Marschall Div	Myrtle & McNaughton Sts., Elkhart, IN 46514.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
	Millmaster Onyx Corp.:	
GRO	A. Gross & Co. Div----------	99 Park Ave., New York, NY 10016.
BKL	Millmaster Chemical Div., Berkely Chemical Dept.	99 Park Ave., New York, NY 10016.
ONX	Onyx Chemical Co. Div----------	190 Warren St., Jersey City, NJ 07302.
RPC	Refined-Onyx Div----------	624 Schuyler Ave., Lyndhurst, NJ 07071.
MOR	Mineral Oil Refining Co----------	P. O. Drawer C, Dickinson, TX 77539.
MMM	Minnesota Mining & Maufacturing Co---------	3M Center, St. Paul, MN 55101.
MNP	Minnesota Paints, Inc----------	1101 S. 3d St., Minneapolis, MN 55415
MIR	Miranol Chemical Co., Inc----------	277 Coit St., Irvington, NJ 07111.
MSC	Mississippi Chemical Corp----------	P. O. Box 388, Yazoo City, MS 39194.
MOB	Mobay Chemical Co----------	Penn Lincoln Parkway, W. Pittsburgh, PA 15205.
SM	Mobil Chemical Co----------	P. O. Box 3868, Beaumont, TX 77704; 7301 Bessemer Ave., Cleveland, OH 44127 and P.O. Box 250, Edison, NJ 08817.
SM	Mobil Oil Corp----------	P. O. Box 900, Dallas, TX 75221.
	Mobil Chemical Co., Industrial Chemical Div.	801 E. Main St., Richmond, VA 23219.
MOA	Mona Industries, Inc----------	65 E. 23d St., Paterson, NJ 07524.
MNO	Monochem, Inc----------	P. O. Box 488, Geismar, LA 70734.
MON	Monsanto Co----------	P. O. Box 120, Santa Clara, CA 95052 and 800 N. Lindergh Blvd., St. Louis, MO 63166.
	Bircham Bend Plant----------	190 Grochmal Ave., Indian Orchard, MA 01051.
	Chocolate Bayou Plant----------	P. O. Box 711, Alvin, TX 77511.
	Plastics Div----------	730 Worcester St., Indian Orchard, MA 01101; 5100 W. Jefferson Ave., Trenton, MI 48183; River Rd., Addyston, OH 45001 and P. O. Box 1311, Texas City, TX 77591.
	Textiles Div----------	800 N. Linbergh Blvd., St. Louis, MO 63166 and P. O. Box 1507, Pensacola, Fl 32503.
MTO	Montrose Chemical Corp. of California------	500 S. Virgil Ave., Los Angeles, CA 90005.
MCI	Mooney Chemicals, Inc----------	2301 Scranton Rd., Cleveland, OH 44113.
MCP	Moretex Chemical Products, Inc----------	314 W. Henry St., P. O. Box 1799, Spartanbury, SC 29301.
MRT	Morton Chemical Co----------	110 N. Wacker Dr., Chicago, IL 60606.
PAT	Morton International, Inc., Morton Chemical Co. Div.	110 N. Wacker Dr., Chicago, IL 60606.
MOT	Motomco, Inc----------	89 Terminal Ave., Clark, NJ 07066.
PNX	Murphy-Phoenix Co----------	9505 Cassius Ave., Cleveland, OH 44105.
NLC	Nalco Chemical Co----------	180 N. Michigan Ave., Chicago, IL 60601.
NTB	National Biochemical Co----------	3127 W. Lake St., Chicago, IL 60612.
NTC	National Casein Co----------	601 W. 80th St., Chicago, IL 60620.
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.	99 Park Ave., New York, NY 10016.
NTL	National Lead Co----------	111 Broadway, New York, NY 10006.
NMC	National Milling & Chemical Co----------	4601 Flat Rock Rd., Philadelphia, PA 19127.
USI	National Petro Chemical Corp----------	99 Park Ave., New York NY 10016.
NPI	National Polychemicals, Inc----------	51 Eames St., Wilmington, MA 01887.
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 17, Harriman, NY 10926.
NEV	Neville Chemical Co----------	Neville Island P.O., Pittsburgh, PA 15225.
NIL	Nilok Chemicals, Inc., Hilton-Davis Chemical Co.	2235 Langdon Farm Rd., Cincinnati, OH 45230.
JDC	Nipak, Inc----------	301 S. Harwood St., Dallas, TX 75221.
SHL	Nitini, Inc. Div. of Shulton, Inc----------	697 Rt. 46, Clifton, NJ 07015.
NOC	Norac Co., Inc----------	405 S. Motor Ave., Azusa, CA 91703.
NEO	Norda Essential Oil & Chemical Co., 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., Reinforced Plastics Operations, Automotive Products Div.	4601 Benefit Ave., Ashtabula, OH 44004.
NWP & VAC	Northern Petrochemical Co----------	2200 E. Devon Ave., Des Plaines, IL 60018.
NCA	Northrop Carolina, Inc----------	P. O. Box 3049, Asheville, NC 28802.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
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, Pedrichtown, 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 46621.
BST	Occidental Chemical Co	P. O. Box 198, Lathrop, CA 95330.
OMC	Olin Corp	120 Long Ridge Rd., Stamford, CT 06904.
	Agricultural Chemicals Div	1120 Marshall St., P. O. Box 991, Little Rock, AR 72203.
THC	Thompson Plastics	238 S. Main St., Assonet, MA 02702.
OPC	Orbis Products Corp	475 10th Ave, New York, NY 10018.
ORG	Organics, Inc	1724 W. Greenleaf Ave., Chicago, IL 60628.
BSW	Original Bradford Soap Works, Inc	200 Providence St., W. Warwick, RI 02893.
OTC	Ott Chemical Co	500 Agard Rd., Muskegon, MI 49945.
OCF	Owens-Corning Fiberglas Corp	P. O. Box 901, Toledo, OH 43601.
OCC	Oxirane Chemical Co	10801 Choate Rd., Houston, TX 77062.
PLB	P-L Biochemicals, Inc	1037 W. McKinley Ave., Milwaukee, WI 53205.
PPG	PPG Industries, Inc	1 Gateway Center, Pittsburgh, PA 15222.
FBR	Pabco Paint Corp	P. O. Box 8502, Emeryville, CA 94608.
BFR	Pace National Corp	4501 Shilshole Ave., N.W., Seattle, WA 98107.
AMR	Pacific Resins & Chemical Co	3400 13th Ave., SW., Seattle, WA 98134.
PNT	Pantasote Co. of New York, Inc	26 Jefferson St., Passaic, NJ 07055.
PD	Parke Davis & Co	Jos. Campau at the River, Detroit, MI 48207.
PSC	Passaic Color & Chemical Co	28-36 Paterson St., Paterson, NJ 07501.
CHP	C. H. Patrick & Co., Inc	P. O. Box 2526, Greensville, SC 29602.
CCH	Pearsall Co	P. O. Box 108, Phillipsburg, NJ 08865.
PEK	Peck's Products Co	610 E. Clarence Ave., St. Louis, MO 63147.
PCH	Peerless Chemical Co	12416 Cloverdale, Detroit, MI 48204.
PEL	Pelron Corp	7847 W. 47th St., Lyons, IL 60534.
PAI	Pennsylvania Industrial Chemical Corp	120 State St., Clairton, PA 15025.
PAR	Pennsylvania Refining Co	Union Bank Bldg., Butler, PA 16001.
PAS	Pennwalt Corp	Three Penn Center, Philadelphia, PA 19102.
WTL	Lucidol Div	1740 Military Rd., Buffalo, NY 14240.
PER	Perry & Derrick Co., Inc	2510 Highland Ave., Norwood, OH 45212.
PHE	Peter Hand, Inc	2 E. Madison St., Waukegan, IL 60085.
UDI	Petrochemicals Co., Inc	P. O. Box 2199, Fort Worth, TX 76101.
SPE	Petrochemical Investment Corp	P. O. Drawer F, Channelview, TX 77530.
PTT	Petro-Tex Chemical Corp	P. O. Box 2584, Houston, TX 77001.
PFN	Pfanstiehl Laboratories, Inc	1219 Glen Rock Ave., Waukegan, IL 60085.
PCW	Pfister Chemical, Inc	P. O. Box 15, Ridgefield, NJ 07657.
PFZ	Pfizer, Inc	235 E. 42d St., New York, NY 10017.
PHR	Pharmachem Corp	Broad and Wood Sts., Bethlehem, PA 18018.
PLC	Phillips Petroleum Co	4440 Frank Phillips Bldg., Bartlesville, OK 74003.
	Phillips Pacific Chemical Co	P. O. Box 6008, Kennewich, WA 99336.
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.
PCI	Pioneer Chemical Works, Inc	P. O. Box 237, Route 73, Maple Shade, NJ 08052.
PPL	Pioneer Plastics Corp	Pionite Rd., Auburn, ME 04210.
PM	Pitman-Moore, Inc	Fort Washington, PA 19034.
PIT	Pitt-Consol Chemical Co	191 Doremus Ave., Newark, NJ 07105.
PLS	Plastics Engineering Co	1607 Geele Ave., 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.
PLU	Plumb Chemical Corp	4837 James St., Philadelphia, PA 19137.
PFW	Polak's Frutal Works, Inc	33 Sprague Ave., Middletown, NY 10940.
PYL	Polychemical Laboratories, Inc	490 Hunts Point Ave., Bronx, NY 10474.
POL	Polymer Corp	2120 Fairmont Ave., Reading, PA 19603.
PII	Polymer Industries, Inc	Viaduct Rd., Springdale, CT 06879.
PYR	Poly Resins	11655 Wicks St., Sun Valley, CA 91352.
PYZ	Polyrez Co., Inc	P. O. Box 320, Woodbury, NJ 08096.
PVI	Polyvinyl Chemicals, Inc. Div. of Beatrice Foods Co.	730 Main St., Wilmington, MA 01887.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
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	P. O. Box 100, Pasadena, TX 77501
PCR	Princeton Chemical Research, Inc	P. O. Box 651, Princeton, NJ 08540.
PG	Procter & Gamble Co	Ivorydale Technical Ctr., Cincinnati, OH 45217.
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	Publicker Industries, Inc	1429 Walnut St., Philadelphia, PA 19102.
PTO	Puerto Rico Chemical Co., Inc	P. O. Box 496, Arecibo, PR 00613.
PRX	Purex Corp., Ltd	5101 Clark Ave., Lakewood, CA 90712 and 2244 N. Elston Ave., Chicago, IL 60614.
PUR	Puritan Chemical Co	916 Ashby St., NW., Atlanta, GA 30318.
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 90810.
RAB	Raybestos-Manhattan, Inc., Raybestos Div	74 E. Main St., Stratford, CT 06497.
RED	Red Spot Paint & Varnish Co., Inc	966 E. Columbia St., Evansville, IN 47708.
REH	Reheis Chemical Co. Div. of Armour Pharmaceutical Co.	325 Snyder Ave., Berkeley Heights, NJ 07922.
RCI & CCO	Reichhold Chemicals, Inc	525 N. Broadway, White Plains, NY 10602 and 2508 E. Bailey Rd., Cuyahoga Falls, OH 44221.
RIL	Reilly Tar & Chemical Corp	1615 Merchants Bank, Indianapolis, IN 46204.
REL	Reliance Universal, Inc. of Texas	6901 Cavalcade St., Houston, TX 77001.
	Rel-Rez Div	4730 Crittenden Dr., Louisville, KY 40221.
REM	Remington Arms Co., Inc	939 Barnum Ave., Bridgeport, CT 06602.
RSY	Resyn Corp	1401 W. Blancke St., Linden, NJ 07036.
RTF	Retzloff Chemical Co	P. O. Box 45296, Houston, TX 77045.
RCC	Rexene Polymers Co	P. O. Box 37, Paramus, NJ 07652.
RDA	Rhodia, Inc	600 Madison Ave., New York, NY 10022.
RCD	Richardson Co	2708 Lake St., Melrose Park, IL 60160.
PLA	Polymeric Div	425 Morgan Lane, West Haven, CT 06516.
RIK	Riker Laboratories, Inc., Sub. of 3M Co	19901 Nordhoff St., Northridge, CA 91324.
RT	F. Ritter & Co	4001 Goodwin Ave., Los Angeles, CA 90039.
RTC	Ritter Chemical Co., Inc	403 W. Main St., Amsterdam, NY 12010.
RIV	Riverdale Chemical Co	220 E. 17th St., Chicago Heights, IL 60411.
ROB	Robeco Chemicals, Inc	51 Madison Ave., New York, NY 10010.
RBC	Roberts Chemicals Div. of Security Chemicals, Inc.	P. O. Box 546, Nitro, WV 25143.
ORT	Roehr Chemicals, Inc	52-20 37th St., Long Island City, NY 11101.
RGC	Rogers Corp	Main St., Rogers, CT 06263.
RH	Rohm & Haas Co	Independence Mall West, Philadelphia, PA 19105.
RSB	Rosenberg Bros. & Co	100 Landing Ave., Smithtown, NY 11787.
ROY	Royce Chemical Co	P. O. Box 237, E, Rutherford, NJ 07073
RUC	Rubicon Chemicals, Inc	P. O. Box 517, Geismar, LA 70734.
GLD	SCM Corp. and Glidden-Durkee Div	900 Union Commerce Bldg., Cleveland, OH 44115 and 2333 W. Logan Blvd., Chicago, IL 60647.
NPR	Safeway Stores, Inc., Brookside Div	1111 Marina Blvd., San Leandro, CA 94577.
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, Hanover, NJ 07936.
SAR	Sartomer Resins, Inc	P. O. Box 56, Essington, PA 19029.
SCF	Schaefer Varnish Co., Inc	1350 S. 15th St., Louisville, KY 40210.
SCN	Schenectady Chemicals, Inc	Congress St. and 10th Ave., 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	P. O. Box 1409, Madison WI 53701.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
SEA	Seaboard Chemicals, Inc	30 Foster St., Salem, MA 01970.
SRL	G. D. Searle & Co	P. O. Box 5110, Chicago, IL 60680.
SEL	Selney Co., Inc	185 Court St., Brooklyn, NY 11201.
SEY	Seydel-Woolley & Co., Inc	762 Marietta Blvd., NW., Atlanta, GA 30318.
SHA	Shanco Plastics & Chemicals, Inc	111 Wales St., Tonawanda, NY 14150.
SWC	Shell & Commonwealth Chemicals, Inc	P. O. Box 3623, Ponce, PR 00731.
SHO	Shell Oil Co	P. O. Box 2463, Houston, TX 77001.
SHC	Shell Chemical Co. Div	52 W. 52d St., New York, NY 10020.
SHP	Shepherd Chemical Co	4900 Beech St., Cincinnati, OH 45212.
SW	Sherwin-Williams Co	101 Prospect Ave., NW Cleveland, OH 44101.
SID	George F. Siddall Co., Inc	P. O. Box 925, Spartanburg, SC 29301.
SIM	Simpson Timber Co	2301 N. Columbia Blvd., Portland, OR 97217.
KPP	Sinclair-Koppers Co	900 Koppers Bldg., Pittsburgh, PA 15219.
SKC	Sinclair-Koppers Chemical Co	9822 La Porte Freeway, Houston, TX 77012.
SPC	Sinclair Paint Co	3960 E. Washington Blvd., Los Angeles, CA 90023.
SIP	Sipes Chemical Coatings Co	P. O. Box 13090, Pittsburgh, PA 15243.
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.
SOL	Solar Chemical Corp	P. O. Box 90, Leominster, MA 01453.
SLC	Soluol Chemical Co., Inc	Green Hill and Market Sts., W. Warwick, RI 02893.
SVT	Solvent Chemical Co., Inc	335-341 Commercial St., Malden, MA 02148.
SFD	Sonford Chemical Co	P. O. Box 127, Port Neches, TX 77651.
SNC	Sonoco Products Co	2d St., Hartsville, SC 29550.
STC	Sou-Tex Chemical Co., Inc	E. Catawba Ave., Mount Holly, NC 28120.
SAC	Southeastern Adhesives Co	P. O. Box 791, Lenoir, NC 28645.
SOP	Southern Chemical Products Co	420 Lower Boundary St., 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., Brunswich, NJ 08903.
STA	A. E. Staley Manufacturing Co	22nd & Elorado Sts., Decatur, IL 62525.
CCL	Charlotte Chemicals Labs. Div	P. O. Box 948, Charlotte, NC 28201.
UBS	Staley Chemicals Div	320 Schuyler Ave., Kearny, NJ 07032.
SMC	Stamford Chemical Industries	P. O. Box 1131, Stamford, CT 06940.
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.
SCP	Standard Chemical Products, Inc	1301 Jefferson St., Hoboken, NJ 07030.
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.
SPY	Standard Pyroxoloid Corp	85 Pleasant St., Leominster, MA 01453.
STG	Stange Co	342 N. Western Ave., Chicago, IL 60612.
	Stauffer Chemical Co.:	
BPC	Benzol Products Div	Menlo Park Office Bldg., Edison, NJ 08817.
CHO	Calhio Chemicals, Inc	636 California St., San Francisco, CA 94119.
CWL	Cowles Chemical Div	12000 Shaker Blvd., Cleveland, OH 44120.
SFI	Industrial Div	636 California St., San Francisco, CA 24119.
SFA	Specialty Chemical Div	636 California St., San Francisco, CA 24119.
STP	Stepan Chemical Co	R.R. #1, Elwood, IL 60421.
MYW	Maywood Div	100 W. Hunter Ave., Maywood, NJ 07607.
	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.
SRR	Stresen-Reuter International, International Minerals & Chemical Corp.	400 W. Roosevelt Ave., Bensenville, IL 60106.
STY	Styrochem Corp. Sub. of Commonwealth Oil Refining Co., Inc.	P. O. Box 3623, Ponce, PR 00731.
SCT	Sucrest Corp	120 Wall St., New York, NY 10005.
SBP	Sugar Beet Products Co	302 Waller St., Saginaw, MI 48605.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
CFC	Sun Chemical Corp	441 Tompkins Ave., Rosebank, NJ 10305.
SNA	Ansbacher-Siegle Div	441 Tompkins Ave., Rosebank, NJ 10305.
SNW	Chemicals Div	Route 91, Wood River Junction, RI 02894.
TV	General Printing Ink Div	135 W. Lake St., North Lake, IL 60164.
SKG	Sunkist Growers, Inc	720 E. Sunkist St., Ontario, CA 91764.
SUN	Sun Oil Co., Sunoco Div	1608 Walnut St., Philadelphia, PA 19103.
SNO	SunOlin Chemical Co	P. O. Box F, Claymount, DE 19703.
SNT	Suntide Refining Co	P. O. Box 2608, Corpus Christi, TX 78403.
SWT	Swift & Co., Swift Chemical Co. Div	1211 W. 22d St., Oak Brook, IL 60521.
SYP	Synthetic Products Co	1636 Wayside Rd., Cleveland, OH 44112.
SYV	Synvar Corp	917 Washington St., Wilmington, DE 19899.
TCC	Tanatex Chemical Corp	P. O. Box 388, Lyndhurst, NJ 07071.
CST	Charles S. Tanner Co	450 Furman Hall Rd., Greensville, SC 29608.
TEK	Teknor Apex Co	505 Central Ave., Pawtucket, RI 02662.
HN	Tenneco Chemicals, Inc	280 Park Ave., New York, NY 10017.
CIK	Cal/Ink Div	711 Camelia St., Berkeley, CA 94710.
HNX	Nuodex Div	P. O. Box 2, Piscataway, NJ 08854.
TCD	Tenneco Colors Div	1729 N. 11th St., Reading, PA 19604.
TOC	Tenneco Oil Co., Refining & Marketing Accounting.	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, Inc	P. O. Box 368, Greenville, SC 29602.
TXN & TXT	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.
THM	Wm. T. Thompson Co., Thompson Chemical Div	23529 So. Figueroa St., Carson, CA 90745.
TMH	Thompson-Hayward Chemical Co	5200 Speaker Rd., Kansas City, KS 66110.
TZC	Tizon Chemical Corp	Flemington, NJ 08822.
TRC	Toms River Chemical Corp	P. O. Box 71, Toms River, NJ 08753.
ACT	Arthur C. Trask Co	327 S. LaSalle St., Chicago, IL 60604.
TRI	Triad Chemical	P. O. Box 310, Donaldsonville, LA 70346.
TRO	Troy Chemical Co	One Avenue L, Newark, NJ 07105.
TCH	Trylon Chemicals, Inc	P. O. Box 628, Mauldin, SC 29662.
JTC	Joseph Turner & Co	Pleasant View Terrace, P.O. Box 88, Ridgefield, NJ 07451.
ARM	USS Agri-Chemicals Div of U.S. Steel Corp	P. O. Box 1684, Atlanta, GA 30301.
PCC	USS Chemicals Div. of U.S. Steel Corp	Grant Bldg., 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	Union Oil Center, Los Angeles, CA 90017.
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 and Colgate Sts., Jersey City, NJ 07302.
UNO	United-Erie, Inc	438 Huron 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, California Operations, Shasta Div.	P. O. Box 2713, Redding, CA 96002.
UVC	Universal Chemicals Corp	1224 Mendon Rd., Ashton, RI 02864.
UMP	Universal Oil Products Co	30 Algonquin Rd., Des Plaines, IL 60018.
UOP	UOP Chemical Div	State Highway 17, E. Rutherford, NJ 07073.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1970--Continued

Identification code	Name of company	Office address
UPJ	Upjohn Co	7000 Portage Rd., Kalamazoo, MI 49001.
CWN	Carwin Organic Chemicals	Sackett Point Rd., North Haven, CT 06473
VAL	Valchem	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 93721.
VDM	Van De Mark Chemical Co., Inc	N. Transit Rd., Lockport, NY 14094.
VNC	Vanderbilt Chemical Corp	33 Winfield St., Norwalk, CT 06801.
VND	Van Dyk & Co., Inc	Main & Williams Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp	341 E. Ohio St., Chicago, IL 60611.
WRC	Ventron Corp	Park Place E., Wood Ridge, NJ 07075.
MHI	Chemicals Div	1224 Congress St., Beverly, MA 01915.
VB	Vermilye-Bell	21707 Bothell Way, Bothell, WA 98011.
VPC	Verona Corp	Iorio Ct., P. O. Box 385, Union, NJ 07083.
VPT	Vickers Refining Co., Inc	P. O. Box 2240, Wichita, KS 67201.
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	12335 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.
ABR & ISC	West Agro-Chemicals, Inc	501 Santa Fe, 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.
WES	Weston Chemical Co., Inc	103 Spring Valley Rd., Montvale, NJ 07645.
WVA	Westvaco Corp., Chemical Div., Polychemicals Dept.	P. O. Box 5207, N. Charleston, SC 29406.
WRD	Weyerhaeuser Co	115 S. Palmetto Ave., Marshfield, WI 54449.
WBG	White & Bagley Co	P. O. Box 706, Worcester, MA 01613.
WHI	White & Hodges, Inc	576 Lawrence St., Lowell, MA 01852.
WHL	Whitmoyer Laboratories, Inc	19 N. Railroad St., Myerstown, PA 17067.
	Whittaker Corp.:	
APT	Mol Rez Div	3134 California St., NE, Minneapolis, MN 55426.
WHC	Research & Development	3540 Aero Ct., San Diego, CA 92123.
WHW	Whittemore-Wright Co., Inc	62 Alford St., Boston, MA 02129.
WIC	Wica Chemicals, Inc	P. O. Box 506, Charlotte, NC 28201.
	Wilson Pharmaceutical & Chemical Corp.:	
WIL	Wilson Laboratories Div	4221 S. Western Blvd. Chicago, IL 60609.
WM	Wilson-Martin Div	Jackson and Swanson Sts., Philadelphia, PA 19148.
WTC	Witco Chemical Co., Inc	P. O. Box 305, Paramus, NJ 07652.
WCC	Witfield Chemical Div	P. O. Box 1243, Wilmington, CA 90744.
WAW	W. A. Wood Co	108 Spring St., Everett, MA 02149.
WON	Woonsocket Color & Chemical Co	176 Sunnyside Ave., Woonsocket, RI 02895.
WBC	Worthington Biochemical Corp	Halls Mills Rd., Freehold, NJ 07728.
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 8299, Paoli, PA 19101.
YAW	J. S. Young Co., Young Aniline Works Div	2731 Boston St., Baltimore, MD 21224.

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 Tariff Commission annually and published in detail in a separate report.[1] General imports of benzenoid items entered in parts 1B and 1C totaled 193.7 million pounds with a foreign invoice value of $135.2 million in 1970 compared with 152.4 million pounds with a foreign invoice value of $118.7 million in 1969.

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 1970 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, 41.6 percent of all the benzenoid imports under part 1B in 1970 came from West Germany; 25.5 percent, from Japan; 10.5 percent, from Italy; and 9.2 percent from Switzerland.

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, 35.4 percent of all finished benzenoid imports under part 1C in 1970 came from West Germany; 24.1 percent, from Switzerland; 11.2 percent, from Japan; and 10.6 percent from the United Kingdom.

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[1] *Imports of Benzenoid Chemicals and Products, 1970*, TC Publication 413, 1971 [processed].

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, 1970

Part and competitive status	Number of items	Quantity	Percent of total quantity	Foreign invoice value	Percent of foreign value	Unit foreign value
		1,000 pounds		*1,000 dollars*		*Per pound*
Schedule 4, Part 1B						
Total[1]	707	124,287	100.0	47,111	100.0	$0.38
Competitive:						
Duty based on ASP[2]	390	100,570	80.9	33,325	70.7	.33
Noncompetitive:						
Duty based on U.S. value	207	8,012	6.5	9,400	20.0	1.17
Duty based on export value	68	13,571	10.9	3,306	7.0	.24
Competitive status not available	42	2,133	1.7	1,080	2.3	.51
Schedule 4, Part 1C						
Total[1]	2,067	69,416	100.0	88,092	100.0	1.27
Competitive:						
Duty based on ASP[2]	689	38,226	55.1	33,556	38.1	.88
Noncompetitive:						
Duty based on U.S. value	1,198	22,615	32.5	43,343	49.2	1.92
Duty based on export value	96	6,432	9.3	9,035	10.3	1.40
Competitive status not available	84	2,142	3.1	2,158	2.4	1.01
Summary (Schedule 4, Parts 1B and 1C)						
Total[1]	2,774	193,703	100.0	135,203	100.0	.70
Competitive:						
Duty based on ASP[2]	1,079	138,796	71.7	66,881	49.5	.48
Noncompetitive:						
Duty based on U.S. value	1,405	30,627	15.8	52,743	39.0	1.72
Duty based on export value	164	20,003	10.3	12,341	9.1	.62
Competitive status not available	126	4,275	2.2	3,238	2.4	.76

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

Source: Compiled by the U.S. Tariff 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 1970 varies from a low of 75 percent for drugs to almost complete coverage for intermediates, drugs, and pigments.

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