

UNITED STATES TARIFF COMMISSION

 **SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1971**

TC Publication 614



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UNITED STATES TARIFF COMMISSION

**SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1971**

**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 614

UNITED STATES TARIFF COMMISSION

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INTRODUCTION

This is the fifty-fifth 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 1971 of benzenoid intermediates and finished benzenoid products, entered under schedule 4, parts 1B and 1C, of the Tariff Schedules of the United States.

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

PRODUCTION is the total quantity of a commodity made available by original manufacturers only. It is the sum--expressed in terms of 100% active ingredient unless otherwise specified in the reporting instructions--of the quantities:

Produced, separated, and consumed in the same plant or establishment. A commodity is considered separated when it is isolated from the reaction system and/or when it is weighed, analyzed, or otherwise measured.

This includes byproducts and coproducts that are not classifiable as waste materials;

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

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

Produced and held in stock.

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

INTRODUCTION

PRODUCTION EXCLUDES;

Purification of a commodity, unless inclusion of such processing is specifically requested in the reporting instructions for individual sections;
Intermediate products which are formed in the manufacturing process, but are not isolated from the reaction system--that is, not weighed, analyzed, or otherwise measured;
Materials that are used in the process but which are recovered for re-use or sale;
Waste products having no economic significance.

SALES are actual quantities of commodities sold by ORIGINAL MANUFACTURERS ONLY. Sales include the quantity and value of:

Shipments of a commodity for domestic use and for export, or segregation in a warehouse when title has passed to the purchaser in a bona fide sale;
Shipments of a commodity produced by others under toll agreements;
Shipments to subsidiary or affiliated companies.

SALES EXCLUDE:

All intra-company transfers within a corporate entity;
All sales of purchased commodities;
All shipments of a commodity produced for others under toll agreements.

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

SUMMARY

Combined production of all synthetic organic chemicals, tars, tar crudes, and crude products from petroleum and natural gas in 1971 was 237,961 million pounds--an increase of 2.1 percent over the output in 1970 (see table 1). Sales of these materials in 1971, which totaled 133,665 million pounds, valued at \$14,119 million, were 4.0 percent larger than in 1970 in terms of quantity and 3.5 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 1971, production of all synthetic organic chemicals, including cyclic intermediates and finished chemical products, totaled 142,503 million pounds, or 3.0 percent more than the output in 1970. Production increased in 1971 compared to 1970 for ten subgroups of products. Plasticizers (1,494 million pounds) was 11.8 percent more; pesticides and related products (1,136 million pounds) was 9.8 percent more; plastics and resin materials (21,071 million pounds) was 9.7 percent larger; rubber-processing chemicals (323 million pounds) increased in 1971 by 8.4 percent; cyclic intermediates (29,953 million pounds) was 6.0 percent more.

Production of several other groups was also larger in 1971 than in 1970. Medicinal chemicals, elastomers, and dyes each increased by approximately 4 percent while organic pigments (58 million pounds) was 3.2 percent larger and miscellaneous chemicals (79,460 million pounds) increased by 0.3 percent. Production of two groups of synthetic organic chemicals was smaller in 1971 than in 1970. Output of flavor and perfume materials (96 million pounds) declined 3.9 percent and the output of surface-active agents (3,828 million pounds) declined 1.5 percent.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS AND THEIR RAW MATERIALS:
U.S. PRODUCTION AND SALES, 1970 AND 1971

Chemical	Production			Sales					
				Quantity			Value		
	1970	1971	Increase or decrease (-), 1971 over 1970 ¹	1970	1971	Increase or decrease (-), 1971 over 1970 ¹	1970	1971	Increase or decrease (-), 1971 over 1970 ¹
	Million pounds	Million pounds	Percent	Million pounds	Million pounds	Percent	Million dollars	Million dollars	Percent
Grand total ² -----	233,110	237,961	2.1	128,478	133,665	4.0	13,638	14,119	3.5
Tar-----	7,609	6,794	-10.7	3,712	3,341	-10.0	36	36	.4
Tar crudes-----	9,300	7,621	-18.0	6,533	5,436	-16.8	132	123	-7.0
Crude products from petroleum and natural gas-----	77,879	81,043	4.1	43,439	45,752	5.3	1,061	1,078	1.6
Synthetic organic chemicals, total ² -----	138,322	142,503	3.0	74,794	79,137	5.8	12,409	12,883	3.8
Cyclic intermediates-----	28,257	29,953	6.0	12,976	12,971	(³)	1,260	1,252	-.6
Dyes-----	235	244	3.9	223	230	2.8	390	423	8.2
Organic pigments-----	57	58	3.2	47	47	.2	123	130	5.7
Medicinal chemicals-----	214	223	4.1	155	152	-1.5	510	487	-4.6
Flavor and perfume materials--	100	96	-3.9	92	85	-7.4	89	84	-5.8
Plastics and resin materials--	19,210	21,071	9.7	17,074	18,473	8.2	3,266	3,507	7.4
Rubber-processing chemicals---	298	323	8.4	228	246	8.0	149	159	7.0
Elastomers (synthetic rubbers)-----	4,438	4,616	4.0	3,820	4,031	5.5	1,032	1,034	.2
Plasticizers-----	1,336	1,494	11.8	1,239	1,404	13.3	235	258	9.8
Surface-active agents-----	3,886	3,828	-1.5	2,061	2,186	6.0	387	422	9.1
Pesticides and related products-----	1,034	1,136	9.8	881	946	7.4	870	979	12.5
Miscellaneous chemicals-----	79,257	79,460	.3	35,998	38,367	6.6	4,097	4,148	1.2

¹ Percentages calculated from figures rounded to thousands.

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

³ Less than 0.05 percent.

SYNTHETIC ORGANIC CHEMICALS, 1971

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 1971 was 142,503 million pounds, or 3.0 percent more than the output of 138,322 million pounds reported for 1970 and 36.1 percent more than the output of 104,711 million pounds reported for 1967 (see table 2). Sales of synthetic organic chemicals in 1971 amounted to 79,137 million pounds, valued at \$12,883 million, compared with 74,794 million pounds, valued at \$12,409 in 1970 and 55,177 million pounds, valued at \$10,438 million in 1967. Production of all cyclic products (intermediates and finished products combined) in 1971 totaled 46,273 million pounds, or 7.0 percent more than the 43,245 million pounds reported for 1970 and 38.2 percent more than the 33,479 million pounds reported for 1967. Production of all acyclic products in 1971 totaled 96,230 million pounds, or 1.2 percent more than the 95,077 million pounds reported for 1970 and 35.1 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, 1970 AND 1971

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

Chemical	1967 ¹	1970	1971	Increase, or decrease (-)	
				1971 over 1967	1971 over 1970
				Percent	Percent
Organic chemicals, cyclic and acyclic, grand total:					
Production-----	104,711,357	138,322,426	142,502,514	36.1	3.0
Sales-----	55,176,823	74,793,892	79,136,628	43.4	5.8
Sales value-----	10,438,453	12,409,252	12,882,816	23.4	3.8
Cyclic, total:					
Production-----	33,479,469	43,245,465	46,272,717	38.2	7.0
Sales-----	19,328,628	24,571,197	25,859,561	33.8	5.2
Sales value-----	4,610,293	5,470,865	5,793,591	25.7	5.9
Acyclic, total:					
Production-----	71,231,888	95,076,961	96,229,797	35.1	1.2
Sales-----	35,848,195	50,222,695	53,277,067	48.6	6.1
Sales value-----	5,828,160	6,938,387	7,089,225	21.6	2.2
1. Cyclic Intermediates					
Production-----	20,793,132	28,257,042	29,952,917	44.1	6.0
Sales-----	9,461,180	12,976,217	12,970,553	37.1	(.1)
Sales value-----	1,000,359	1,260,395	1,252,300	25.2	.6
2. Dyes					
Production-----	206,240	234,526	243,729	18.2	3.9
Sales-----	198,592	223,218	229,544	15.6	2.8
Sales value-----	332,049	390,429	422,627	27.3	8.2
3. Organic Pigments					
Production-----	53,322	56,524	58,326	9.4	3.2
Sales-----	42,867	47,166	47,052	9.8	-.2
Sales value-----	108,354	122,965	130,013	20.0	5.7
4. Medicinal Chemicals					
Cyclic:					
Production-----	110,129	132,190	132,582	20.4	.3
Sales-----	70,120	87,308	84,913	21.1	-2.7
Sales value-----	348,873	465,354	431,702	23.7	-7.2
Acyclic:					
Production-----	69,941	82,281	90,636	29.6	10.2
Sales-----	56,804	67,206	67,309	18.5	.2
Sales value-----	36,402	44,705	54,856	50.7	22.7

See footnote at end of table.

GENERAL

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES
OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1970 AND 1971--CONTINUED

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

Chemical	1967 ¹	1970	1971	Increase, or decrease (-)	
				1971 over 1967	1971 over 1970
<i>5. Flavor and Perfume Materials</i>				<i>Percent</i>	<i>Percent</i>
Cyclic:					
Production-----	57,978	52,543	49,682	-14.3	-5.4
Sales-----	47,285	42,916	42,180	-10.8	-1.7
Sales value-----	52,866	52,045	52,884	(²)	1.6
Acyclic:					
Production-----	53,558	47,778	46,744	-12.7	-2.2
Sales-----	49,311	48,587	42,585	-13.6	-12.4
Sales value-----	40,495	37,057	31,084	-23.2	-16.1
<i>6. Plastics and Resin Materials</i>					
Cyclic:					
Production-----	5,033,497	6,799,570	7,266,038	44.4	6.9
Sales-----	4,224,121	5,793,962	6,262,651	48.3	8.1
Sales value-----	1,036,940	1,298,725	1,400,553	35.1	7.8
Acyclic:					
Production-----	8,759,452	12,410,349	13,804,685	57.6	11.2
Sales-----	7,753,242	11,280,347	12,210,359	57.5	8.2
Sales value-----	1,635,690	1,967,356	2,105,989	28.8	7.0
<i>7. Rubber-Processing Chemicals</i>					
Cyclic:					
Production-----	220,139	255,477	276,146	25.4	8.1
Sales-----	169,970	196,485	211,065	24.2	7.4
Sales value-----	116,318	133,534	142,541	22.5	6.7
Acyclic:					
Production-----	43,994	42,814	47,312	7.5	10.5
Sales-----	30,878	31,376	34,926	13.1	11.3
Sales value-----	15,477	15,425	16,814	8.6	9.0
<i>8. Elastomers (Synthetic Rubbers)</i>					
Cyclic:					
Production-----	2,297,637	2,454,462	2,614,054	13.8	6.5
Sales-----	1,940,099	1,998,632	2,239,804	15.4	12.1
Sales value-----	439,580	485,092	484,130	10.1	- .2
Acyclic:					
Production-----	1,524,908	1,983,114	2,002,046	31.3	1.0
Sales-----	1,321,945	1,821,293	1,790,837	35.5	-1.7
Sales value-----	434,657	547,236	550,315	26.6	.6
<i>9. Elastomers</i>					
Cyclic:					
Production-----	929,871	998,475	1,130,440	21.6	13.2
Sales-----	865,084	937,504	1,074,541	24.2	14.6
Sales value-----	167,827	143,736	157,925	-5.9	9.9
Acyclic:					
Production-----	332,908	337,601	363,598	9.2	7.7
Sales-----	296,767	301,612	329,555	11.0	9.3
Sales value-----	93,142	91,100	99,840	7.2	9.6

See footnote at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1970 AND 1971--CONTINUED

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

Chemical	1967 ¹	1970	1971	Increase, or decrease (-)	
				1971 over 1967	1971 over 1970
<i>10. Surface-Active Agents</i>				<i>Percent</i>	<i>Percent</i>
Cyclic:					
Production-----	1,418,444	1,572,505	1,542,881	8.8	-1.9
Sales-----	852,238	916,922	995,580	16.8	8.6
Sales value-----	95,810	106,662	120,795	26.1	13.3
Acyclic:					
Production-----	2,060,851	2,313,681	2,285,379	10.9	-1.2
Sales-----	897,786	1,144,535	1,190,110	32.6	4.0
Sales value-----	220,877	280,539	301,685	36.6	7.5
<i>11. Pesticides and Related Products</i>					
Cyclic:					
Production-----	823,158	727,133	827,590	.5	13.8
Sales-----	681,532	601,755	669,143	-1.8	11.2
Sales value-----	627,742	701,558	819,028	30.5	16.7
Acyclic:					
Production-----	226,505	306,942	308,127	36.0	.4
Sales-----	215,831	279,159	277,194	28.4	-.7
Sales value-----	159,301	168,756	160,055	0.5	-5.2
<i>12. Miscellaneous Chemicals</i>					
Cyclic:					
Production-----	1,535,922	1,705,018	2,178,332	41.8	27.8
Sales-----	775,540	749,112	1,032,535	33.1	37.8
Sales value-----	283,575	310,370	379,093	33.7	22.1
Acyclic:					
Production-----	58,159,771	77,552,401	77,281,270	32.9	-.4
Sales-----	25,225,631	35,248,580	37,334,192	48.0	5.9
Sales value-----	3,192,119	3,786,213	3,768,587	18.1	-.5

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

The following tabulation shows, by chemical groups, the number of companies that reported production in 1971 of one or more of the chemicals included in the groups listed in table 2:

<i>Chemical group</i>	<i>Number of companies</i>	<i>Chemical group</i>	<i>Number of companies</i>
Cyclic intermediates-----	206	Rubber-processing chemicals-----	33
Dyes-----	44	Elastomers (synthetic rubbers)-----	40
Organic pigments-----	36	Plasticizers-----	57
Medicinal chemicals-----	100	Surface-active agents-----	203
Flavor and perfume materials-----	50	Pesticides and related products-----	86
Plastics and resin materials-----	257	Miscellaneous chemicals-----	338

TAR AND TAR CRUDES

Tar

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

The quantity of tar produced in the United States in 1971 was almost entirely coal tar which amounted to 679 million gallons, or 10.7 percent less than the 761 million gallons produced in 1970 (see table 1¹). U.S. production of water-gas and oil-gas tars was not reported to the Commission for 1970 or 1971; production of these tars amounted to 21 million gallons in 1968, according to trade publications. Sales of coal tar in 1971 amounted to 334 million gallons valued at \$36 million, compared with 371 million gallons, valued at \$36 million, in 1970.

Consumption of tar in 1971 amounted to 686 million gallons, of which 572 million gallons was consumed in distillation and (by tar distillers only) in other uses. Tar used as fuel amounted to 112 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 operators² in 1971 amounted to 1,076 million gallons--5.1 percent less than the 1,134 million gallons reported for 1970. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum operators in 1971 amounted to 593 mil-

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.

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lion gallons, valued at \$119 million, compared with 654 million gallons, valued at \$143 million, in 1970. In 1971 the output of toluene² (including material produced for use in blending in aviation fuel) amounted to 876 million gallons--5.6 percent more than the 830 million gallons reported for 1970. Sales of toluene in 1971 were 484 million gallons, valued at \$80 million, compared with 430 million gallons, valued at \$77 million, in 1970. The output of xylene² in 1971 (including that produced for blending in motor fuels) was 612 million gallons, compared with 538 million gallons in 1970. About 99 percent of the 612 million gallons of xylene produced in 1971 was obtained from petroleum sources.

Production of crude naphthalene in 1971 (including 258 million pounds of petroleum-derived naphthalene) amounted to 619 million pounds, compared with 719 million pounds in 1970. In 1971 the output of creosote oil for wood preservation was 142 million gallons (100 percent creosote basis), compared with 129 million gallons in 1970. Production of road tar in 1971 was 40 million gallons, compared with 53 million gallons in 1970.

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 \$617 million in 1971, compared with \$634 million in 1970 and \$640 million in 1969. 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 \$123 million in 1971, compared with \$132 million in 1970.

See footnote 2 on page 1.

TAR AND TAR CRUDES

TABLE 1.--TAR AND TAR CRUDES: U.S. PRODUCTION AND SALES, 1971

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

Product	Unit of quantity	Production	Sales		
			Quantity	Value <i>1,000 dollars</i>	Unit value ¹
Tar: ² Coke-oven operators-----	1,000 gal--	679,377	334,076	35,960	\$0.11
Crude light oil: ³ Coke-oven operators-----	1,000 gal--	201,626	91,423	8,654	.09
Intermediate light oil: Coke-oven operators-----	1,000 gal--	3,879	909	96	.11
Light-oil distillates:					
Benzene, specification and industrial grades, total ^{3,4} -----	1,000 gal--	1,075,907	592,748	118,942	.20
Coke-oven operators-----	1,000 gal--	72,147	73,145	14,493	.20
Petroleum operators-----	1,000 gal--	1,003,760	519,603	104,449	.20
Toluene, all grades, total ^{3,4} -----	1,000 gal--	876,266	484,069	80,123	.17
Coke-oven operators-----	1,000 gal--	13,345	13,265	2,300	.17
Petroleum operators-----	1,000 gal--	862,921	470,804	77,823	.17
Xylene, all grades ^{3,4} -----	1,000 gal--	612,325	504,415	82,919	.16
Coke-oven operators-----	1,000 gal--	2,906	2,724	513	.19
Petroleum operators-----	1,000 gal--	609,419	501,691	82,406	.16
Solvent naphtha: Coke-oven operators ³ -----	1,000 gal--	2,875	2,472	359	.15
Naphthalene, crude (tar distillers and coke-oven operators), total ⁵ -----	1,000 lb--	360,607	236,664	9,827	.04
Solidifying at--					
Less than 74° C-----	1,000 lb--	14,974	8,063	102	.01
74° C. to less than 79° C-----	1,000 lb--	345,633	228,601	9,725	.04
Crude tar-acid oils: ³ Coke-oven operators-----	1,000 gal--	7,279	7,815	1,092	.14
Creosote oil (Dead oil) (tar distillers and coke-oven operators) (100% creosote basis), total ⁶ -----	1,000 gal--	141,877	120,079	24,153	...
Distillate as such (100% creosote basis)-----	1,000 gal--	115,669	96,214	17,687	.18
Creosote content of coal-tar solution (100% creosote basis) ⁷ -----	1,000 gal--	26,208	23,865	⁷ 6,466	(?)
All other distillates, total-----	1,000 gal--	79,211	18,954	3,422	.18
Coke-oven operators, total-----	1,000 gal--	6,475	5,518	876	.16
From light oil-----	1,000 gal--	3,352	2,471	673	.27
Other ⁸ -----	1,000 gal--	3,123	3,047	203	.07
Tar distillers ⁹ -----	1,000 gal--	72,736	13,436	2,546	.19
Tar, road-----	1,000 gal--	40,135	42,339	7,568	.18
Tar, refined, for other uses-----	1,000 gal--	10,089	8,181	2,110	.26
Pitch of tar (tar distillers and coke-oven operators), total-----	1,000 tons	1,312	1,033	48,176	46.64
Soft (water softening point less than 110° F.)-----	1,000 tons	331	180	6,861	38.12
Medium (water softening point 110° F. to 160° F.)-----	1,000 tons	199	179	9,952	55.60
Hard (water softening point over 160° F.) ¹⁰ -----	1,000 tons	782	674	31,363	46.53

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 companies. Production of benzene, toluene, and xylene by tar distillers decreased in 1971, compared with 1970. The annual production statistics for petroleum operators on benzene, toluene, and xylene are not comparable with the combined monthly production figures, because of fiscal year revisions.

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.

SYNTHETIC ORGANIC CHEMICALS, 1971

Footnotes for table 1--Continued

- 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 1971, production of coal-tar solution containing creosote (100% solution basis) amounted to 39,489 thousand gallons; sales were 36,126 thousand gallons, valued at 6,466 thousand dollars, with a unit value of \$0.18 per gallon.
- ⁸ Includes data for crude sodium phenolate.
- ⁹ Includes data for crude light oil, benzene, toluene, xylene, solvent naphtha, ethylbenzene, rubber-reclaiming oils, pyridine crude bases, crude tar-acid oils, crude cresylic acid, neutral oils, methylnaphthalene, crude tar for other uses, and unspecified tar distillates.
- ¹⁰ Includes hard pitch and pitch emulsion.

TABLE 1A.--Tar: U.S. PRODUCTION AND CONSUMPTION, 1970 AND 1971

(In thousands of gallons)		
Product	1970	1971
PRODUCTION		
Coal tar from coke-oven byproduct plants, total ¹ -----	760,926	679,377
CONSUMPTION		
Total-----	767,299	685,684
Tar consumed by distillation, total-----	657,731	572,160
Coal tar distilled or topped by coke-oven operators ¹ -----	280,892	230,959
Coal tar and water-gas tar distilled by tar distillers ² -----	376,839	341,201
Tar consumed chiefly as fuel ¹ -----	107,967	111,877
Coal tar consumed at coke-oven plants for roads and upkeep ¹ -----	1,601	1,647

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 by tar distillers.

TAR AND TAR CRUDES

TABLE 1B.--TAR AND TAR CRUDES: SUMMARY OF U.S. PRODUCTION OF SPECIFIED PRODUCTS, 1967, 1970, AND 1971

Product	Unit of quantity	1967 ¹	1970	1971	Increase, or decrease (-)	
					1971 over 1967	1971 over 1970
					Percent	Percent
Tar ² -----	1,000 gal--	780,334	760,926	679,377	-12.9	-10.7
Benzene: ³						
Coke-oven operators-----	1,000 gal--	90,642	93,492	72,147	-20.4	-22.8
Petroleum operators-----	1,000 gal--	878,704	1,040,028	1,003,760	14.2	- 3.5
Total-----	1,000 gal--	969,346	1,133,520	1,075,907	11.0	- 5.1
Toluene: ³						
Coke-oven operators-----	1,000 gal--	19,357	17,041	13,345	-31.1	-21.7
Petroleum operators-----	1,000 gal--	624,454	812,566	862,921	38.2	6.2
Total-----	1,000 gal--	643,811	829,607	876,266	36.1	5.6
Xylene: ³						
Coke-oven operators-----	1,000 gal--	5,488	4,501	2,906	-47.0	-35.4
Petroleum operators-----	1,000 gal--	⁴ 449,349	⁴ 533,136	⁴ 609,419	35.6	14.3
Total-----	1,000 gal--	454,837	537,637	612,325	34.6	13.9
Naphthalene:						
Crude ⁵ -----	1,000 lb---	520,991	428,086	360,607	-30.8	-15.8
Petroleum naphthalene, all grades-----	1,000 lb---	376,679	290,545	258,312	-31.4	-11.1
Total-----	1,000 lb---	897,670	718,631	618,919	-31.1	-13.9
Creosote oil (Dead oil): ⁶						
Distillate as such (100% creosote basis)-----	1,000 gal--	108,832	103,374	115,669	6.3	11.9
Creosote content of coal-tar solution (100% creosote basis)-----	1,000 gal--	17,402	25,559	26,208	50.6	2.5
Total-----	1,000 gal--	126,234	128,933	141,877	12.4	10.0

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

² Includes only data for coal tar reported to the Division of Fossil Fuels, U.S. Bureau of Mines.

³ Data reported by tar distillers are not included because publication would disclose the operations of individual companies.

⁴ Includes data for material produced for use in blending motor fuels. Statistics are not comparable with monthly figures which included some o-xylene.

⁵ Naphthalene solidifying at less than 79° C. Figures include production by tar distillers and coke-oven operators and represent combined data for the commercial grades of naphthalene. Because of conversion between grades, the figures may include some duplication. Statistics on naphthalene refined from domestic crudes are reported in the section on cyclic intermediates.

⁶ Includes data for creosote oil produced by tar distillers and coke-oven operators and used only in wood preserving.

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TABLE 2.--TAR CRUDES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

[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 -----	KPT, PAI.
Pyridine crude bases ¹ -----	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.-----	ASC, KPT.
Methylnaphthalene-----	KPT.
*Crude tar-acid oils: ¹	
Tar-acid content 5% to less than 24%-----	KPT, RIL.
Tar-acid content 24% to 50%-----	ASC, RIL, WTC.
Cresylic acid, crude-----	ASC, KPT, PRD.
*Creosote oil (Dead oil):	
*Distillate as such ¹ -----	ASC, CBT, COP, HUS, KPT, RIL, WTC.
*Creosote in coal-tar solution ¹ -----	ASC, KPT, RIL, WTC.
*All other distillate products ¹ -----	ASC, KPT, PAI.
*Tar, road-----	ASC, KPT, RIL.
Tar for other uses:	
Crude-----	KPT, RIL.
*Refined ¹ -----	ASC, KPT, RIL.
*Pitch of tar:	
*Soft (water softening point less than 110° F.) ¹ -----	ASC, KPT, WTC.
*Medium (water softening point 110° F. to 160° F.) ¹ -----	ASC, CBT, COP, KPT, RIL, WTC.
*Hard (water softening point above 160° F.) ¹ -----	ASC, 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, August 23, 1972, entitled "Coke Producers in the U.S. in 1971".

TABLE 3.--TAR AND TAR CRUDES: DIRECTORY OF MANUFACTURERS, 1971
ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of tar and tar crudes to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACY	American Cyanamid Co.	KPT	Koppers Co., Inc., Organic Materials Div.
ASC	Allied Chemical Corp., Semet-Solvay Div.		
CBT	Samuel Cabot, Inc.	NEV	Neville Chemical Co.
COP	Coopers Creek Chemical Corp.		
HUS	Husky Industries, 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.--Complete names and addresses of the above reporting companies are listed in Table 1 of the Appendix.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

Crude products that are derived from petroleum and natural gas¹ are related to the intermediates and finished products made from such crudes in much the same way that crude products derived from the distillation of coal tar are related to their intermediates and finished products. Many of the crude products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and xylene). Considerable duplication exists in the statistics on the production and sales of petroleum crudes because some of these crude chemicals are converted to other crude products derived from petroleum and because data on some production and sales are reported at successive stages in the conversion process. 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 81,043 million pounds in 1971, or 4.1 percent more than the 77,879 million pounds reported for 1970 (table 1).² The larger output in 1971 is accounted for chiefly by increased production of propane. There were small increases in production of n-butane, xylenes, ethylene, propylene, and 1,3-butadiene. Sales of crude chemicals from petroleum in 1971 amounted to 45,752 million pounds, valued at \$1,078 million, compared with 43,439 million pounds, valued at \$1,061 million, in 1970.

The output of aromatic and naphthenic products from petroleum amounted to 21,449 million pounds in 1971, compared with 21,079 million pounds in 1970. Sales in 1971, which amounted to 13,646 million pounds, valued at \$308 million, were 75 million pounds larger, and valued at \$15 million less than those in 1970. The output of 1⁰ and 2⁰ benzene from petroleum amounted to 7,388 million pounds in 1971--3.7 percent less than the 7,675 million pounds produced in 1970. The output of toluene in 1971 was 6,273 million pounds--6.2 percent more than the 5,907 million pounds produced in 1970. Production of xylene was 4,394 million pounds in 1971, compared with 3,844 million pounds in 1970. These figures include toluene and xylene used in blends in aviation and motor-grade gasolines. Production of naphthalene was 258 million pounds in 1971, compared with an output of 291 million pounds in 1970. The output of naphthenic acids in 1971 amounted to 29.4 million pounds, an increase of 4.8 million pounds over 1970.

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

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

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Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 59,594 million pounds in 1971, compared with 56,800 million pounds in 1970. Sales of these products were 32,106 million pounds, valued at \$769 million, in 1971 compared with 29,868 million pounds, valued at \$738 million in 1970. 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 1971, production of acetylene from hydrocarbon sources, amounted to 356 million pounds. Production of ethylene was 18,450 million pounds in 1971--2.0 percent more than the 18,089 million pounds produced in 1970. The output of propylene and propane-propylene mixture was 6,891 million pounds in 1971--3.8 percent more than the 6,641 million pounds produced in 1970. Production of 1,3-butadiene, one of the principal ingredients of S-type synthetic rubber, was 3,340 million pounds in 1971, compared with 3,101 million pounds in 1970. The output of 1,3-butadiene in 1971 was the largest on record.

The following tabulation shows the number of companies that reported production of organic chemical crudes in 1971.

<i>Chemical group</i>	<i>Number of companies</i>
Tar crudes-----	13
Petroleum crudes-----	75

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

TABLE 1.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
U.S. PRODUCTION AND SALES, 1971

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

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	81,043,026	45,752,479	1,077,579	\$0.024
AROMATICS AND NAPHTHENES ²				
Total-----	21,448,660	13,646,210	308,482	.023
Benzene (1 ⁰ and 2 ⁰)-----	7,387,748	3,834,670	104,449	.027
Naphthalene, all grades-----	258,312	173,567	7,911	.046
Naphthenic acid, total-----	29,415	22,457	3,980	.177
Acid number less than 150-----	6,641	...	...	...
Acid number 150 and over-----	22,774	...	...	...
Toluene, all grades, total-----	6,273,439	3,422,749	77,823	.023
Nitration grade, 1 ⁰ -----	4,443,540	2,411,205	56,244	.023
Pure commercial grade, 2 ⁰ -----	360,585	135,745	3,071	.023
All other ³ -----	1,469,314	875,799	18,508	.021
Xylenes, mixed, total-----	4,393,912	3,617,193	82,406	.023
Xylene, 3 ⁰ -----	690,805	592,114	12,536	.021
Xylene, 5 ⁰ -----	636,953	621,567	14,499	.023
All other ³ -----	3,066,154	2,403,512	55,371	.023
All other aromatics and naphthenes ⁴ -----	3,105,834	2,575,574	31,913	.012
ALIPHATIC HYDROCARBONS				
Total-----	59,594,366	32,106,269	769,097	.024
C ₂ hydrocarbons, total-----	23,869,919	8,560,091	182,452	.021
Acetylene ⁵ -----	356,106	82,389	7,440	.090
Ethane-----	5,064,073	3,860,380	35,352	.009
Ethylene-----	18,449,740	4,617,322	139,660	.030
C ₃ hydrocarbons, total-----	17,562,040	12,246,379	188,222	.015
Propane-----	10,670,800	9,100,189	104,742	.012
Propylene ⁶ -----	6,891,240	3,146,190	83,480	.027
C ₄ hydrocarbons, total-----	11,548,776	7,223,799	268,849	.037
1,3-Butadiene, grade for rubbers (elastomers)-----	3,340,287	2,022,619	167,274	.083
Butadiene and butylene fractions-----	687,195	429,830	11,808	.027
n-Butane-----	3,596,168	1,689,098	18,632	.011
1-Butene-----	56,930	52,094	2,761	.053
1-Butene and 2-butene mixtures ⁷ -----	1,368,097	1,373,740	32,910	.024
Isobutane-----	1,036,362	280,425	4,114	.015
Isobutylene-----	322,522	331,904	12,344	.037
All other ⁸ -----	1,141,215	1,044,089	19,006	.018
C ₅ hydrocarbons, total-----	751,654	291,415	11,678	.040
Isoprene (2-Methyl-1,3-butadiene)-----	334,300	73,435	5,640	.077
Pentenenes, mixed-----	298,317	...	...	
All other ⁹ -----	119,037	217,980	6,038	.028

See footnotes at end of table.

SMNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
U.S. PRODUCTION AND SALES, 1971--CONTINUED

Product	Production	Sales		
		Quantity	Value	Unit value ¹
ALIPHATIC HYDROCARBONS--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
All other aliphatic hydrocarbons, derivatives, and mixtures, total-----	5,861,977	3,784,585	117,896	\$0.031
Alpha olefins ¹⁰ -----	430,585	338,685	17,465	.052
Heptenes, mixed-----	118,796	51,074	1,511	.030
Hexanes and other C ₆ hydrocarbons-----	262,799	256,950	7,640	.030
Nonene (Tripropylene)-----	317,836	277,230	9,653	.035
n-Paraffins, total-----	1,040,329	826,092	26,999	.033
Carbon chain length, C ₁₀ -C ₁₄ -----	450,325	472,835	15,389	.032
Other-----	590,004	353,257	11,610	.033
Polybutene ¹¹ -----	218,486	159,454	12,685	.080
Tetrapropylene-----	343,120	243,173	8,768	.036
Hydrocarbon derivatives ¹² -----	106,346	111,851	8,642	.077
All other ¹³ -----	3,023,680	1,520,076	24,533	.016

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 the report "Tar and Tar Crudes, 1971".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 mixed butanes, 2-butene, mixed butylenes, and mixed olefins.⁹ Includes data for isopentane, pentenes, and C₅ hydrocarbon mixtures.¹⁰ Includes data for the following molecular weight ranges: C₆-C₇; C₈-C₁₀; C₁₁-C₁₅; C₁₅-C₂₀; and C₁₆-C₃₀.¹¹ Includes compounds having a molecular weight of 3,000 or less.¹² Includes data for butyl, ethyl, methyl, and miscellaneous mercaptans.¹³ Includes data for di-isobutylene, methane-ethane-ethylene mixture, heptane, methane, octanes, and hydrocarbon mixtures.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

TABLE 2.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--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, APL, ATR, CSO, ENJ, GOC, PLC, PTT, SHO, SOC, TX, UOC.
*Isobutane-----	ATR, CSP, ELP, OMC, PAN, PLC, SHO, SUN, TX, UOC, USI.
*Isobutylene-----	ATR, ENJ, OCC, SHC, SHO, UOC.
All other-----	APL, APR, ATR, BFG, CBN, ENJ, JCC, MON, PLC, SM, TX, 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.
*Pentenes, mixed-----	GYR, MON, TX.
All other-----	ELP, MON, PLC, SHC.
*C ₆ hydrocarbons:	
Hexane-----	APR, ENJ, PLC, SOG, UOC.
Neohexane (2,2-Dimethylbutane)-----	PLC.
All other-----	APL, APR, PLC.
C ₇ hydrocarbons:	
n-Heptane-----	EKX, PLC, SOG.
*Heptenes, mixed-----	AIP, ENJ, GOC, SOI, TID.
All other-----	ENJ, HCR, PLC, UOC.
C ₈ hydrocarbons:	
Diisobutylene (Diisobutene)-----	APL, PTT, TX.
n-Octane-----	SOG.
All other-----	ENJ, PLC.
Hydrocarbons, C ₉ and above:	
*Nonene (Tripropylene)-----	AIP, ATR, CSD, ENJ, SUN, UOC.
*Polybutene-----	ACC, CSD, SOC.
*Tetrapropylene-----	ATR, CO, ENJ, SOC, SUN, UOC.
Tridecene concentrate-----	ENJ.
All other-----	ACC, AIP, ATR, CO, CPI, ENJ, KPP, PLC, SOC, TID, TNA, UCC, x.
*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, TNA.
C ₁₁ -C ₁₅ -----	GOC, SOC.
All other-----	EKX, GOC, SOC, TID, TNA.
*n-Paraffins--Carbon chain length:	
C ₆ -C ₉ -----	SOG.
C ₉ -C ₁₅ -----	HCR, SOG.
*C ₁₀ -C ₁₄ -----	ENJ, SOG, UCC.
C ₁₀ -C ₁₆ -----	CO.
All other-----	APL, 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-nonylpolsulfide-----	PAS.
Ethyl mercaptan (Ethanethiol)-----	PAS.
Isopropyl mercaptan-----	PAS, PLC.
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.

CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

TABLE 3.--CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION:
DIRECTORY OF MANUFACTURERS, 1971

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 1971 are listed below in the order of their identification codes as used in table 2]

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

CYCLIC INTERMEDIATES

Cyclic intermediates are synthetic organic chemicals derived principally from petroleum and natural gas and from coal-tar crudes produced by destructive distillation (pyrolysis) of coal. Most cyclic intermediates are used in the manufacture of more advanced synthetic organic chemicals and finished products, such as dyes, medicinal chemicals, elastomers (synthetic rubbers), pesticides, and plastics and resin materials. Some intermediates, however, are sold as end products without further processing. For example, refined naphthalene may be used as a raw material in the manufacture of 2-naphthol or of other more advanced intermediates, or it may be packaged and sold as a moth repellent or as a deodorant. In 1971 about four-tenths 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 1971--29,953 million pounds--was the largest on record, and was 6.0 percent larger than the output of 28,257 million pounds reported for 1970. The larger output of cyclic intermediates in 1971 reflects the increased demand by the chemical products industries, particularly those industries that produce plastics materials, dyes, pigments, and plasticizers. Sales of cyclic intermediates in 1971, however, were less than those in 1970. Sales in 1971 amounted to 12,971 million pounds, valued at \$1,252 million, compared with 12,976 million pounds, valued at \$1,260 million, in 1970.

Production of ethylbenzene in 1971 was 4,984 million pounds, or 3.2 percent more than the 4,827 million pounds reported for 1970. Output of styrene in 1971 was 4,682 million pounds, an increase of 8.0 percent from the 4,335 million pounds in 1970. Other intermediates whose production exceeded 1 billion pounds in 1971 were cumene (2,144 million pounds), phenol (1,784 million pounds), cyclohexane (1,748 million pounds), dimethyl terephthalate (1,739 million pounds), p-xylene (1,662 million pounds), and terephthalic acid (1,582 million pounds). The output of other large-volume intermediates in 1971 compared with 1970 were: Phthalic anhydride, 794 million pounds (8.2 percent more than in 1970); o-xylene, 785 million pounds (1.7 percent less); cyclohexanone, 756 million pounds (5.9 percent larger); straight chain alkylbenzenes, 550 million pounds (0.6 percent smaller); nitrobenzene, 445 million pounds (18.8 percent smaller); and isocyanates, 507 million pounds (1.1 percent smaller). Production of chlorobenzene amounted to 409 million pounds (15.7 percent less than in 1970), and production of aniline was 366 million pounds, a decrease of 8.1 percent from 1970. The above 16 chemicals accounted for 83 percent of the total output of cyclic intermediates in 1971.

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.

CYCLIC INTERMEDIATES

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1971

[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 1,000 pounds	Sales		
		Quantity 1,000 pounds	Value 1,000 dollars	Unit value ¹ Per pound
Total-----	29,952,917	12,970,553	1,252,300	\$0.10
Acetanilide, tech-----	3,669	...	...	...
Alkylbenzenes ² -----	550,079	457,082	47,637	.10
1-Aminoanthraquinone and salt-----	560	...	...	...
2-Aminoanthraquinone and salt-----	201	...	...	...
6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9)-----	13	...	...	...
7-(p-Aminobenzamidö)-4-hydroxy-2-naphthalenesulfonic acid-----	31	...	...	...
1-Amino-5-chloroanthraquinone-----	32	...	...	...
1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfonamido-2-anthracenesulfonic acid, sodium salt-----	43	...	...	...
N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide-----	27	...	...	...
2-Amino-5-nitrobenzenesulfonic acid [SO ₃ H=1]-----	23	...	...	...
p-[(p-Aminophenyl)azo]benzenesulfonic acid-----	310	...	...	...
Aniline (Aniline oil)-----	365,986	161,348	18,055	.11
7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid)-----	36	...	...	...
Anilinomethanesulfonic acid and salt-----	563	...	...	...
o-Anisidine-----	1,457	705	466	.66
Anisole, tech-----	195	...	...	...
Anthra[1,9-cd]pyrazol-6(2H)-one (Pyrazoleanthrone)-----	45	...	...	...
Benzaldehyde, tech-----	5,311	4,750	1,674	.35
7H-Benz[de]anthracen-7-one (Benzanthrone)-----	1,134	...	...	...
Benzoic acid, tech-----	142,940	17,220	2,350	.14
[3,3'-Bi]anthra[1,9-cd]pyrazole]-6,6'(2H,2'H)-dione (Pyrazoleanthrone yellow)-----	37	...	...	...
[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	567	...	...	...
1,4-Bis[1-anthraquinonylamino]anthraquinone-----	108	...	...	...
3-Bromo-7H-benz[de]anthracene-7-one (3-Bromobenzanthrone)-----	220	...	...	...
2-Bromo-4,6-dinitroaniline-----	258	...	...	...
1-Bromo-4-(methylamino)anthraquinone-----	9	...	...	...
1-Chloroanthraquinone-----	114	...	...	...
2-Chloroanthraquinone-----	254	...	...	...
Chlorobenzene, mono-----	408,908	71,475	3,779	.05
1-Chloro-2-methylanthraquinone-----	110	...	...	...
1-Chloro-5-nitroanthraquinone-----	33	...	...	...
4-Chloro-3-nitrobenzenesulfonamide-----	503	...	...	...
4-Chloro-3-nitrobenzenesulfonyl chloride-----	345	...	...	...
1-(p-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	139	...	...	...
α-Chlorotoluene (Benzyl chloride)-----	75,037	21,046	2,810	.13
Cresols, total ³ -----	87,674	76,521	16,805	.22
o-Cresol-----	22,736	19,762	3,035	.15
(m,p)-Cresol-----	39,182	33,741	5,106	.15
All other ⁴ -----	25,756	23,018	8,664	.38
Cresylic acid, refined ³ -----	69,475	79,157	11,708	.15
Cumene-----	2,144,086	1,135,201	41,037	.04
Cyclohexane-----	1,747,845	1,520,878	49,738	.03
Cyclohexanol-----	...	9,496	1,312	.14
Cyclohexanone-----	756,472	46,494	5,107	.11
Cyclohexylamine-----	...	4,775	1,335	.28
1,4-Diaminoanthraquinone-----	80	...	...	...
2,6-Diaminoanthraquinone-----	70	...	...	...
1,4-Diamino-2,3-dihydroanthraquinone-----	653	...	...	...
4,4'-Diamino-2,2'-stilbenedisulfonic acid-----	8,021	...	...	...

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
4,5'-Dibenzamido-1,1'-iminodanthraquinone-----	44	...	...	...
1,5-Dibenzoylnaphthalene-----	89	...	...	...
o-Dichlorobenzene-----	53,640	55,935	5,829	\$0.10
p-Dichlorobenzene-----	70,418	69,187	5,805	.08
3,3'-Dichlorobenzidine base and salts-----	3,499	3,300	4,134	1.25
Dicyclopentadiene (includes cyclopentadiene)-----	79,459	52,769	2,452	.05
p-(Diethylamino)benzaldehyde-----	68	...	...	...
N,N-Diethylaniline-----	2,936	1,242	666	.54
9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid-----	...	28	88	3.14
9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt-----	112	...	...	...
9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt)-----	1,352	...	...	...
1,4-Dihydroxyanthraquinone (Quinizarin)-----	1,708	161	268	1.66
1,8-Dihydroxyanthraquinone (Chrysazin)-----	114	...	...	...
1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin)-----	150	...	...	...
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)-----	317	...	...	...
N,N-Dimethylaniline-----	...	7,724	1,668	.22
N,N-Dimethylbenzylamine-----	40	42	69	1.64
2,2-Dimethyl-1,1'-bianthraquinone-----	58	...	...	...
2,4-Dinitroaniline-----	...	88	66	.75
4,4'-Dinitrostilbene-2,2'-disulfonic acid-----	10,953	...	...	...
2,4-(and 2,6)-Dinitrotoluene-----	352,746	...	...	...
Diphenylamine-----	30,616	15,447	3,833	.25
1,4-Di-p-toluidinoanthraquinone-----	135	...	...	...
Divinylbenzene-----	2,919	2,226	1,437	.65
N-Ethylaniline, refined-----	1,564	1,019	501	.49
Ethylbenzene ⁵ -----	4,983,693	400,182	14,031	.04
N-Ethyl-N-phenylbenzylamine-----	1,004	...	...	...
Hydroquinone, tech-----	13,138	13,855	10,908	.79
p-Hydroxybenzenesulfonic acid-----	5,819	5,970	664	.11
3-Hydroxy-2-methylcinchoninic acid-----	303	...	...	...
6-Hydroxy-2-naphthalenesulfonic acid and sodium salt-----	573	...	...	...
1,1'-Iminobis[4-aminoanthraquinone]-----	22	...	...	...
1,1'-Iminobis[5-benzamidoanthraquinone]-----	26	...	...	...
1,1'-Iminobis[4-nitroanthraquinone]-----	33	...	...	...
Isocyanic acid derivatives, total-----	507,173	419,928	135,079	.32
Polymethylene polyphenylisocyanate-----	...	80,057	26,180	.33
Toluene-2,4- and 2,6-diisocyanate (80/20 mixture)-----	322,114	316,877	93,868	.30
Other isocyanic acid derivatives-----	185,059	22,994	15,031	.65
4,4'-Isopropylidenediphenol (Bisphenol A)-----	186,694	69,224	11,028	.16
Isoviolanthrone (Isodibenzanthrone)-----	35	...	...	...
Leuco quinizarin (1,4,9,10-Anthratetrol)-----	93	...	...	...
d1-p-Mentha-1,8-diene (Limonene)-----	10,481	...	...	...
Metanilic acid (m-Aminobenzenesulfonic acid)-----	1,086	...	...	...
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid-----	218	...	...	...
3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)-----	90	42	60	1.43
α-Methylstyrene-----	20,799	17,582	984	.06
Nitrobenzene-----	444,869	16,756	1,240	.07
p-Nitrophenol and sodium salt-----	...	16,158	5,099	.32
5-Nitro-o-toluenesulfonic acid [SO ₃ H=1]-----	7,164	...	...	...
5-Nitro-o-toluidine [NH ₂ =1]-----	137	123	183	1.49
Nonylphenol-----	83,618	35,983	3,964	.11
1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone-----	226	...	...	...
Phenol, grand total ³ -----	1,784,199	839,720	56,055	.07
Natural, from coal tar and petroleum-----	40,627	26,860	2,767	.10
Synthetic, total-----	1,743,572	812,860	53,288	.07
From cumene-----	1,388,469	649,380	41,980	.06
Other synthetic-----	355,103	163,480	11,308	.07

See footnotes at end of table.

CYCLIC INTERMEDIATES

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
1-Phenyl-1,2-propanedione, 2-oxime-----	153	...	...	...
Phthalic anhydride-----	794,419	484,390	35,388	\$0.07
Picolines, total ³ -----	4,919	3,247	1,562	.48
2-Picoline (α -Picoline)-----	1,402	...	...	...
Other picolines-----	3,517	3,247	1,562	.48
Piperidine-----	783	...	...	...
Salicylaldehyde-----	4,042	2,863	2,917	1.02
Salicylic acid, tech-----	41,505	9,310	3,855	.41
Styrene, all grades-----	4,681,604	2,067,847	124,594	.06
Terephthalic acid-----	1,581,959	...	...	...
Terephthalic acid, dimethyl ester-----	1,738,639	886,137	116,518	.13
1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative-----	77	...	...	...
3,3'-Thiobis[7H-benz[de]anthracen-7-one]-----	49	...	...	...
Toluene-2,4-diamine (4-m-Tolylenediamine)-----	133,331	...	...	...
4-(o-Tolyazo)-o-toluidine (C.I. Solvent Yellow 3)-----	326	...	...	...
1,2,4-Trichlorobenzene-----	11,034	12,130	1,361	.11
1,3,3-Trimethyl- Δ^2 , α -indolineacetaldehyde-----	374	...	...	...
1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)-----	814	...	...	...
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea)--	172	...	...	...
Veratraldehyde (3,4-Dimethoxybenzaldehyde)-----	16	...	...	...
Violanthrone (Dibenzanthrone)-----	239	...	...	...
o-Xylene-----	785,385	662,302	16,620	.03
p-Xylene-----	1,661,783	1,347,942	82,347	.06
All other cyclic intermediates-----	3,473,191	1,843,546	397,214	.22

¹ Calculated from rounded figures.² Includes straight-chain dodecylbenzene, tridecylbenzene and other straight-chain alkylbenzenes. Branched-chain alkylbenzenes are included in "All other cyclic intermediates".³ Includes data for coke ovens and gas-retort ovens, reported to the Division of Fossil Fuels, U.S. Bureau of Mines, and for tar and petroleum refineries and other producers, reported to the 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.

SYNTHETIC-ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

[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)
Acenaphthenequinone-----	BJL.
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, o-chlorophenyl ester-----	ABB.
Acetic acid, phenyl ester-----	UCC.
Acetoacetanilide-----	FMP, HST, UCC.
o-Acetoacetanilide-----	FMP, HST, UCC.
o-Acetoacetotoluidide-----	FMP, HST, UCC.
p-Acetoacetotoluidide-----	UCC.
2',4'-Acetoacetoxydide-----	HST, UCC.
1'-Acetonaphthone-----	GIV.
Acetone phenylhydrazine-----	DUP.
Acetophenone, tech-----	ACP, CLK, SKO, UCC.
p-Acetotoluidide-----	EK.
p-Acetylbenzenesulfonamide-----	LIL.
p-Acetylbenzenesulfonic acid, sodium salt-----	LIL.
p-Acetylbenzenesulfonylurethane-----	LIL.
DL-N-Acetyl(3,4-dimethoxyphenyl)alanine-----	PD.
N-Acetylsulfanilyl chloride-----	ACY, CTN, MRK, SAL.
*Alkylbenzenes:	
Dodecylbenzene (including tridecylbenzene):	
*Straight chain-----	BRP, CO, MON, UCC, WCC.
Other-----	CO, SOC.
Alkylphenols, mixed-----	GAF, ORO.
Alkylpiperazines, mixed-----	AIP.
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.
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)-----	GAF, TRC.
3'-Amino-p-acetanilide-----	SDC.
3'-Amino-o-acetophenetidine-----	AAP.
3'-Aminoacetophenone-----	CTN.
5-Amino-2-(p-aminoanilino)benzenesulfonic acid-----	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.
5-Amino-2-anilinobenzenesulfonic acid-----	YAW.
2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid-----	TRC.
3-Amino-p-anisamide-----	PCW.
3-Amino-p-anisamilide-----	PCW.
*1-Aminoanthraquinone and salt-----	AAP, ACY, MAY, SDC, TRC.
*2-Aminoanthraquinone and salt-----	ACS, ACY, GAF, TRC.
5(and 8)-Amino-1-anthraquinonesulfonic acid-----	TRC.
N-(4-Amino-1-anthraquinonyl)anthranilic acid-----	GAF.
N-(5-Amino-1-anthraquinonyl)anthranilic acid-----	DUP.
4-Aminoantipyrine-----	VPC.
*6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9).	ACY, CMG, TRC.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Aminoazoxylene toluene homologues-----	ACS.
p-Aminobenzamide-----	ICC, SDH.
1-Amino-4-benzamidoanthraquinone-----	MAY, TRC.
1-Amino-5-benzamidoanthraquinone-----	ACY, ICI, TRC.
7-[p-(p-Aminobenzamido)benzamido]-4-hydroxy-2-naphthalene-sulfonic acid.	CMG.
*7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid--	CMG, GAF, TRC.
3'-Aminobenzanilide-4'-sulfonic acid-----	TRC.
2-Amino-p-benzenedisulfonic acid [SO ₃ H=1]-----	DUP, ICC.
o-Aminobenzenethiol-----	FIS, FMT.
2-Aminobenzimidazole-----	EK.
5-Amino-2-benzimidazolinone-----	DUP.
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.
5(and 8)-Amino-8(and 5)-bromo-9,10-dihydro-9,10-dioxo-1,6(and 1,7) anthracenedisulfonic acid.	TRC.
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, HN.
1-Amino-4-bromo-2-methylantraquinone-----	ICI.
1-Amino-2-bromo-4-p-toluidinoanthraquinone-----	ACS, GAF.
*1-Amino-5-chloroanthraquinone-----	ACY, DUP, ICI, MAY, TRC.
1-Amino-8-chloroanthraquinone-----	DUP.
2-Amino-1-chloroanthraquinone-----	DUP.
2-Amino-3-chloroanthraquinone-----	ICI.
4-Amino-6-chloro-m-benzenedisulfonamide-----	ABB, MRK.
4-Amino-6-chloro-m-benzenedisulfonamide hydrochloride-----	ABB.
2-Amino-4-chlorobenzenethiol hydrochloride-----	EK.
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.
1-(2-Amino-5-chlorophenyl)-1-phenylmethylenimine-----	ABB.
2-Amino-6-chloropyrazine-----	ACY.
3-Amino-6-chloropyridazine-----	ACY.
2-Amino-5-chloro-p-toluenesulfonic acid [SO ₃ H=1]-----	ACY, HSC.
6-Amino-4-chloro-m-toluenesulfonic acid [SO ₃ H=1]-----	DUP, HSC.
2-Amino-p-cresol-----	TRC.
1-Amino-2,4-dibromoanthraquinone-----	AAP, DUP, HN.
1-Amino-2,4-dichloroanthraquinone-----	TRC.
6-Amino-2,4-dichloro-m-cresol-----	EK.
4'-Amino-2',5'-diethoxybenzanilide-----	ALL, 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.
p-Amino-N-ethyl-N-1-naphthylbenzamide-----	GAF.
N-[2-(4-Amino-N-ethyl-m-toluidino)ethyl]methanesulfonamide, hemisulfate.	WAY.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
N-Aminohexamethyleneimine-----	FMP.
5-Amino-4-hydroxy-m-benzenedisulfonic acid-----	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (H acid), monosodium salt.	ACS.
4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4- acid).	GAF, TRC.
6-Amino-4-hydroxy-2-naphthalenesulfonic acid (Gamma acid), sodium salt.	TRC.
7-Amino-4-hydroxy-2-naphthalenesulfonic acid (J acid), sodium salt.	HN, TRC.
3-Amino-2-hydroxy-5-nitroacetanilide-----	TRC.
2-(2-Amino-5-hydroxy-7-sulfo-1-naphthylazo)-5-nitro- benzoic acid.	TRC.
5-Aminoisophthalic acid-----	GAF.
*N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfon- amide.	AAP, DUP, GAF.
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid----	DUP, TRC.
8-Amino-6-methoxyquinoline-----	PD.
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-naphthalenedi- sulfonic acid.	TRC.
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-4-methylpyrimidine (2-Amino-4-methyl-1,3- diazine).	ACY.
2-Amino-4-(methylsulfonyl)phenol-----	TRC.
3-Amino-4-(N-methyl-N-tetradecylamino)cinnamic acid-----	GAF.
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-----	GAF.
2-Amino-1,5-naphthalenedisulfonic acid-----	ACY, SDH.
3-Amino-1,5-naphthalenedisulfonic acid (C acid)-----	TRC.
3-Amino-2,7-naphthalenedisulfonic acid-----	TRC.
4-Amino-1,6-naphthalenedisulfonic acid-----	DUP.
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)----	HN, TRC.
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)----	DUP, TRC.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid)--	DUP.
2-Amino-1-naphthalenesulfonic acid (Tobias acid)-----	ACY, SW.
4-Amino-1-naphthalenesulfonic acid (Naphthionic acid)----	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)-----	DUP.
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)-----	SNA, TRC.
7-Amino-1,3,6-naphthalenetrisulfonic acid-----	DUP.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid)--	ACS.
8-Amino-2-naphthol-----	TRC.
2-Amino-4-nitroacetanilide-----	SDC.
*2-Amino-5-nitrobenzenesulfonic acid [SO ₃ H=1]-----	ACS, GAF, TRC.
2-Amino-6-nitrobenzothiazole-----	ICC.
4-Amino-2-nitrophenol-----	ACY.
d-2-Amino-1-(p-nitrophenyl)-1,3-propanediol-----	PD.
ℓ-2-Amino-1-(p-nitrophenyl)-1,3-propanediol-----	PD.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid -----	HN, 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-benzimidazolyl)amino]benzenesul- fonic acid.	DUP
o-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.
5-Amino-8-(phenylazo)-2-naphthol-----	ALL.
8-Amino-5-(phenylazo)-2-naphthol-----	ALL.
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.
2-Aminopyridine-----	NEP, RIL.
3-Aminopyridine-----	NEP, RIL.
4-Aminopyridine-----	RIL.
2-Aminopyrimidine-----	ACY.
3-Aminoquinoline-----	EK.
N-(4-Amino-3-sulfo-1-anthraquinonyl)anthranilic acid----	GAF.
2-Amino-4-(1,1,3,3-tetramethylbutyl)phenol-----	GAF.
2-Amino-4-(1,1,3,3-tetramethylbutyl)phenol hydrochloride--	GAF
2-Aminothiazole-----	ACY, MRK.
3-Amino-p-toluamide-----	SDH.
α -Amino-p-toluenesulfonamide-----	SDW.
5-Amino-o-toluenesulfonanilide-----	GAF.
4-Amino-m-toluenesulfonic acid [SO ₃ H=1]-----	ACY, DUP.
6-Amino-m-toluenesulfonic acid [SO ₃ H=1]-----	DUP.
5-Amino-o-toluenesulfonic acid [SO ₃ H=1]-----	TRC.
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-----	TRC.
5-Amino-2,4-xylenesulfonic acid-----	DUP.
*Aniline (Aniline oil)-----	ACS, ACY, DUP, FST, MOB, RUC, USR.
Aniline hydrochloride-----	ACY, EK.
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)--	DUP, SDC.
8-Anilino-1-naphthalenesulfonic acid, magnesium salt----	EK.
p-Anilinophenol-----	SDC.
o-Anisaldehyde-----	ASL.
*o-Anisidine-----	AAP, DUP, x.
p-Anisidine-----	DUP, MON.
o-Anisidinomethanesulfonic acid-----	AAP, ATL, GAF, TRC, VPC.
*Anisole, tech-----	CTN, DUP, GIV, LIL, NES.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
3-(o-Anisylazo)benzenesulfonic acid, sodium salt-----	ACS.
Anthranilic acid (o-Aminobenzoic acid) ¹ -----	DUP, SW.
*Anthra[1,9-cd]pyrazol-6(2H)-one (Pyrazoleanthrone)-----	DUP, GAF, TRC.
Anthraquinone, 100%-----	TRC.
1,5-Anthraquinonedisulfonic acid-----	CMG.
1,8-Anthraquinonedisulfonic acid-----	CMG.
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, GAF.
Arsanilic acid and salt, tech-----	ABB, FLM.
4',4'''-Azobis[4-biphenylcarboxylic acid]-----	DUP, TRC.
Barbituric acid, sodium derivative-----	ABB.
*Benzaldehyde, tech-----	BPC, HN, MNR, 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-----	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.
Benzanilide-----	DUP, EK, PCW.
Benz(a)anthracene-----	EK.
Benz(a)anthracene-7,12-dione-----	EK.
*7H-Benz[de]anthracen-7-one (Benzanthrone)-----	AAP, ACY, DUP, GAF, ICI, MAY, SDC, TRC.
m-Benzenedisulfonic acid-----	KPT.
Benzenesulfonamide-----	NES.
Benzenesulfonic acid-----	NES.
Benzenesulfonic acid, methyl ester-----	EK.
Benzenesulfonyl chloride-----	NES.
1,2,4,5-Benzenetetracarboxylic-1,2:4,5-dianhydride-----	DUP, PCR.
1,3,5-Benzenetricarboxylic acid (Trimesic acid)-----	ACC.
1,2,4-Benzenetricarboxylic acid, 1,2-anhydride (Tri- mellitic anhydride).	ACC.
Benzhydrol (Diphenylmethanol)-----	UOP.
Benzidine hydrochloride and sulfate-----	ACS, LAK.
Benzilic acid, methyl ester-----	LEM.
2-Benzofuranacetoneitrile-----	EK.
*Benzoic acid, tech ¹ -----	HK, HN, KLM, MON, PFZ, VEL.
Benzoic anhydride-----	EK.
Benzoin-----	BPC.
α-Benzoin oxime-----	RSA.
Benzonitrile-----	VEL.
Benzophenonetetracarboxylic dianhydride-----	GOC.
2-Benzothiazolethiol sodium salt-----	ACY, GYR, USR, x.
1H-Benzotriazole-----	SW.
2H-3,1-Benzoxazine-2,4(1H)-dione-----	SW.
o-Benzoylbenzoic acid-----	ACY, GAF.
Benzoyl chloride-----	HK, VEL.
2-Benzoyl-4'-(p-toluenesulfonamido)acetanilide-----	EK.
N-Benzylacetamide-----	SDW.
Benzylamine-----	ARS, MLS.
p-(Benzylamino)phenol-----	EK.
1-Benzyl-4,5-dimethyl-6-(p-methoxybenzyl)-1,2,3,6-tetra- hydropyridine oxalate.	SDW.
Benzyl disulfide-----	CCW.

See footnotes at end of table.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
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'-Benzylidenedi-2,5-xylidine-----	ACS.
Benzylidene phthalide-----	LIL.
p-(Benzylloxy)phenol-----	EK.
1-Benzyl-4-phenylisonipecotic acid-----	SDW.
1-Benzyl-4-phenylisonipecotonitrile-----	SDW.
Benzyltrimethylammonium chloride-----	MLS.
Benzyltrimethylammonium hydroxide-----	MLS.
Benzyltrimethylammonium methoxide-----	MLS.
*[3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow).	DUP, GAF, TRC.
[3,3'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	DUP.
*[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione-----	ACY, DUP, ICI, MAY.
[1,1'-Binaphthalene]-8,8'-dicarboxylic acid-----	ACS.
Biphenyl-----	DOW, GOC, MON, PPR, SNA.
2-Biphenylamine-----	NES.
2,2',4,4'-Biphenyltetrol-----	FMT.
2,2'-Biquinoline-----	EK.
*1,4-Bis[1-anthraquinonylamino]anthraquinone-----	DUP, GAF, MAY, TRC.
1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-Bis [5-chloro-1-anthraquinonylamino]anthraquinone (mixed).	TRC.
2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone-----	WAY.
Bis(chlorosulfonyl)phthalocyaninedisulfonic acid, copper derivative.	TRC.
4,4'-Bis[diethylamino]benzhydrol, 2,6-naphthalenedi- sulfonate.	GAF.
4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base)----	DSC, SDH.
4,4'-Bis[dimethylamino]benzhydrol (Michler's hydrol)-----	SDH.
4,4'-Bis[dimethylamino]benzophenone (Michler's ketone)----	DSC, DUP, SDH.
Bis[p-(dimethylamino)phenyl]methanesulfonic acid and salt.	ACS.
3'-[Bis(2-hydroxyethyl)amino]acetanilide-----	GAF.
3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester--	DUP.
3'-[Bis(2-hydroxyethyl)amino]methanesulfoanilide, diacetate 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.
o-Bromoaniline-----	EK.
p-Bromoaniline-----	EK.
p-Bromoanisole-----	EK, OPC.
*3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone)--	ACY, GAF, ICI, MAY, TRC.
Bromobenzene, mono-----	DOW.
p-Bromobenzenesulfonyl chloride-----	EK.
p-Bromobenzhydrol-----	PD.
4-Bromobenzophenone-----	PD.
Bromochlorobenzene-----	DOW.
2-Bromo-6-chloro-4-nitroaniline-----	AAP, SDC.
*2-Bromo-4,6-dinitroaniline-----	AAP, ICC, SDC, ICC, TRC.
Bromoethylbenzene-----	RSA.
2-Bromo-3'-hydroxyacetophenone-----	SW.
2-Bromo-3'-hydroxyacetophenone benzoate-----	SDH.
3-Bromo-2-hydroxy-4,4,5,5-tetramethyl-2-cyclopentene-----	x.
*1-Bromo-4-(methylamino)anthraquinone-----	AAP, ACS, ICI.
6-Bromo-3-methyl-7H-dibenz[f,i]isoquinoline-2,7-(3H)- dione.	AAP, ICI.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
3-(Bromomethyl)thiophene-----	SDW.
1-Bromonaphthalene-----	EK.
2-Bromo-4'-nitroacetophenone-----	GAF.
α -Bromo-p-nitrotoluene-----	BPC.
N-(4-Bromopentyl)phthalimide-----	SDW.
p-Bromophenol-----	EK.
(p-Bromophenyl)acetonitrile-----	BPC.
p-Bromophenylhydrazine hydrochloride-----	EK.
4-Bromo-1-phthalamidopentane-----	PD.
4-Bromoresorcylic acid-----	ALL, PCW.
α -Bromotoluene-----	EK.
o-Bromotoluene-----	RSA.
p-Bromotoluene-----	BPC, EK.
2-Bromo-1,3,5-triethylbenzene-----	DUP.
1-(Butylamino)anthraquinone-----	AAP.
p-Butylaniline-----	DUP.
2-tert-Butylanthraquinone-----	DUP.
p-tert-Butylbenzaldehyde-----	GIV.
n-Butylbenzene-----	EK, PLC.
sec-Butylbenzene-----	PLC.
tert-Butylbenzene-----	EK, MTR, PLC.
p-tert-Butylbenzoic acid-----	SHC.
o-(p-tert-Butylbenzoyl)benzoic acid-----	DUP.
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.
2-tert-Butyl-4-ethylphenol-----	ACY.
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-1,2,3-trimethylbenzene-----	GIV.
5-tert-Butyl-m-xylene-----	GIV.
Camphoric acid DL (racemic)-----	FIN.
Camphosulfonic acid-----	KF, LIL.
Carbazole, refined-----	SDC.
1-(4-Carbonyl-o-anisyl)-3-methyl-3-(2-sulfoethyl)triazene-----	GAF.
4,4'-Carbonylbis[phthalic anhydride]-----	PCR.
3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate-----	GAF.
[(o-Carboxyphenyl)thio]ethylmercury-----	LIL.
Cedrene-----	GIV.
2'-Chloroacetoacetanilide-----	FMP, UCC.
2'-Chloroacetophenone-----	EK.
3'-Chloroacetophenone-----	EK.
4'-Chloroacetophenone-----	LIL.
4'-(Chloroacetyl)acetanilide-----	DUP.
9-Chloroacridine-----	EK.
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.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
5-Chloro-o-anisidine hydrochloride-----	GAF.
*1-Chloroanthraquinone-----	ACY, GAF, MAY, TRC.
*2-Chloroanthraquinone-----	ACY, GAF, TRC.
N-(5-Chloro-1-anthraquinonyl)-p-toluenesulfonamide-----	ICI.
o-Chlorobenzaldehyde-----	HN.
p-Chlorobenzaldehyde-----	HN.
4-(p-Chlorobenzamido)anthraquinone-1,2-acridone-----	GAF.
Chloro-7H-benz[de]anthracen-7-one (Chlorobenzanthrone)----	ACY, TRC.
*Chlorobenzene, mono-----	ACS, DOW, DVC, HK, MON, MTO, 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, GAF, ICI.
p-Chlorobenzoyl chloride-----	HN.
4,4'-(o-Chlorobenzylidene)di-2,5-xylidine-----	GAF.
α-(p-Chlorobenzyl)-α-phenyl-1-pyrrolidinepropanol hydro- chloride.	LIL.
Chloro(p-chlorophenyl)phenylmethane-----	OPC, UOP.
Chlorocyclohexane-----	ACY, ARA.
4-Chloro-m-cresol-----	OTA.
4-Chloro-2-cyclopentylphenol-----	DOW.
1-Chloro-2,5-diethoxy-4-nitrobenzene-----	GAF.
2-Chloro-N,N-diethyl-4-nitroaniline-----	DUP.
2-Chloro-3',4'-dihydroxyacetophenone-----	SDW.
2-Chloro-1,4-dihydroxyanthraquinone-----	HSB.
4'-Chloro-2',5'-dimethoxyacetoacetanilide-----	FMP, PCW.
5-Chloro-2,4-dimethoxyaniline-----	PCW.
4-Chloro-N,N-dimethyl-3-nitrobenzenesulfonamide-----	SDC.
[(4-Chloro-2,5-dimethylphenyl)thio]acetic acid-----	ACS.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)-----	DUP, SDC.
3-Chloro-4,6-dinitrobenzenesulfonic acid-----	TRC.
4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt--	SDC.
3-Chlorodiphenylamine-----	SK.
Chlorodiphenylmethane-----	OPC, UOP.
n-(2-Chloroethyl)-4-(2-chloro-4-nitrophenylazo)-N-ethyl aniline.	GAF.
4-[(2-Chloroethyl)ethylamino]-o-tolualdehyde-----	GAF.
N-(2-Chloroethyl)-N-ethylaniline-----	GAF.
p-[(2-Chloroethyl)methylamino]benzaldehyde-----	GAF.
Chloroformic acid, benzyl ester-----	CTN, EK, RSA.
Chloroformic acid, p-nitrobenzyl ester-----	EK.
Chloroformic acid, phenyl ester-----	CTN.
3-Chloro-4-hydroxyphenylacetothiomorpholide-----	ABB.
3'-Chloro-4'-hydroxyacetophenone-----	ABB.
1-Chloro-4-hydroxyanthraquinone-----	ICI.
4-Chlorometanilic acid-----	DUP.
5-Chlorometanilic acid-----	ACS.
6-Chlorometanilic acid-----	AAP, GAF.
5-Chloro-2-methoxybenzenediazonium chloride-----	GAF.
N-[(5-Chloro-2-methoxyphenyl)azo]sarcosine-----	ATL.
p-(Chloromethyl)anisole-----	EK, SDW.
*1-Chloro-2-methylanthraquinone-----	ACY, DUP, ICI, TRC.
6-Chloro-4-methylbenzo[b]thiophene-2-ol-----	ACY.
4-Chloro-7-methylbenzo[b]thiophen-3(2H)-one-----	ACS.
4-(Chloromethyl)-1,3-dimethylbenzene-----	BPC.
α-Chloromethylnaphthalene, crude-----	BPC.
4-Chloro-N-methyl-3-nitrobenzenesulfonamide-----	TRC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Chloromethylphenyl ether-----	BPC.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide-----	ABB.
4-Chloro-3-(methylsulfonyl)nitrobenzene-----	TRC.
Chloronaphthalenes-----	KPT.
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)-----	DUP.
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)-----	DUP.
*1-Chloro-5-nitroanthraquinone-----	ACY, DUP, MAY, TRC.
4-Chloro-3-nitrobenzaldehyde-----	GAF.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)-----	DUP, MON.
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)-----	DUP, GAF.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)-----	DUP, MON.
2-Chloro-5-nitrobenzenesulfuric acid-----	TRC.
*4-Chloro-3-nitrobenzenesulfonamide-----	AAP, DUP, GAF, ICC, TRC.
2-Chloro-5-nitrobenzenesulfonic acid-----	ACS, TRC.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt-----	DUP.
4-Chloro-3-nitrobenzenesulfonic acid-----	ACS, GAF.
*4-Chloro-3-nitrobenzenesulfonyl chloride-----	AAP, DUP, SDC.
2-Chloro-4-nitrobenzoic acid-----	SAL.
2-Chloro-5-nitrobenzoic acid-----	TRC.
o-(4-Chloro-3-nitrobenzoyl)benzoic acid-----	AAP, GAF.
4-Chloro-3-nitrocinnamic acid-----	GAF.
4-Chloro-2-nitrophenol-----	DUP.
4-Chloro-3-nitrophenyl methyl sulfone-----	TRC.
2-Chloro-4-nitrotoluene-----	DUP.
4-Chloro-2-nitrotoluene-----	DUP.
4-Chloro-3-nitrotoluene-----	BUC.
m-Chlorophenol-----	EK.
o-Chlorophenol-----	DOW, MON.
p-Chlorophenol-----	DOW, MON.
2-Chlorophenothiazine-----	SK.
(p-Chlorophenoxy)acetic acid-----	EK.
2-(p-Chlorophenyl)acetoacetonitrile-----	BJL.
(p-Chlorophenyl)acetonitrile-----	OPC, UOP.
4-Chloro- α -phenyl-o-cresol-----	MON.
4-Chloro-o-phenylenediamine-----	FMT.
2,2'-[(m-Chlorophenyl)imino]diethanol, diacetate ester---	SDC.
3-(o-Chlorophenyl)-5-methyl-4-isoxazolecarboxylic acid---	ARS.
3-(o-Chlorophenyl)-5-methyl-4-isoxazolecarboxylic acid, acid chloride.	ARS.
1-(m-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	TRC.
1-(o-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	HST.
*1-(p-Chlorophenyl)-3-methyl-2-pyrazolin-5-one-----	DUP, HST, TRC.
p-Chlorophenyl methyl sulfone-----	TRC.
2-Chloro-4-phenylphenol-----	DOW.
4-Chlorophthalic acid-----	SW.
(3-Chloropropenyl)benzene (Cinnamyl chloride)-----	SDW.
1-(3-Chloropropyl)-4-methylpiperazine-----	SK.
7-Chloro-4-quinolinol-----	SDW.
4-Chlororesorcinol-----	AAP, GAF, PCW.
5-Chlorosalicylic acid-----	PCW.
5-Chlorosalicylic acid, methyl ester-----	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, MON, VEL.
3-Chloro-o-toluidine [NH ₂ =1]-----	DUP.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
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-----	ALL, ATL.
1-(6-Chloro-o-tolyl)-3-methyl-2-pyrazolin-5-one-----	HST.
[(5-Chloro-o-tolyl)thio]acetic acid-----	ACS.
4-Chloro- α,α,α -trifluoro-3-nitrotoluene-----	GAF, PCW.
p-Chloro- α,α,α -trifluorotoluene-----	HK.
6-Chloro- α,α,α -trifluoro-m-toluidine-----	PCW.
Chlorotriphenylmethane-----	EK.
4-Chloro-o-xylene-----	CWN.
α -Chloro-p-xylene-----	BPC.
2-Chloro-p-xylene-----	DUP.
4-Chloro-2,5-xylenesulfonyl chloride-----	ACS.
4-Chloro-3,5-xyleneol-----	OTA.
Cholesteryl nonanoate-----	EK.
Cholesteryl oleyl carbonate (Mesomorphic)-----	EK.
Cholestyramine, pure-----	MRK.
Cholic acid-----	WIL.
Cinnamoyl chloride-----	ARS, UOP, x.
*Cresols: ²	
m-Cresol-----	KPT, PRD.
*o-Cresol:	
From coal tar-----	KPT, PRD.
From petroleum-----	MER, NPC, PRD, SW.
p-Cresol-----	HPC, SW.
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.
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, SHC, SKO, SNT, SOC, TX.
p-Cumylphenol-----	PCW.
2-[p-(Cyanoacetamido)phenyl]-6-methyl-7-benzothiazole- sulfonic acid.	DUP.
4-[(2-Cyanoethyl)ethylamino]-o-tolualdehyde-----	DUP, GAF.
p-[(2-Cyanoethyl)methylamino]benzaldehyde-----	DUP, GAF.
α -Cyano- β -methylcinnamic acid, ethyl ester-----	PD.
*Cyclohexane	ASH, CSD, ENJ, GOC, GRS, PLC, PPR, SWC, TX, UOC.
Cyclohexanebutyric acid, lead salt-----	EK.
1,2-Cyclohexanedicarboxylic anhydride-----	ACS.
1,3-Cyclohexanedione-----	PD.
Cyclohexane oxide-----	USR.
*Cyclohexanol-----	ACP, CEL, CNP, DUP, MON.
*Cyclohexanone-----	ACP, CEL, CNP, DBC, DUP, MON.
Cyclohexanone oxime-----	ACP, ACS, CNP.
Cyclohexene-----	PLC, USR.
3-Cyclohexene-1-carboxaldehyde-----	UCC.
4-Cyclohexene-1,2-dicarboximide-----	SFC.
4-Cyclohexene-1,2-dicarboxylic anhydride-----	PTT.
*Cyclohexylamine-----	ABB, MON, VGC.
N ¹ -Cyclohexylmetanilamide-----	CMG.
Cyclohexyl-2-propanone-----	GIV.
N-Cyclohexyltaurine, sodium salt-----	GAF.
Cyclopentadienyliron-----	ARA.

See footnotes at end of table.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
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.
Diacenaphtho[1,2-j:1,2'-k]fluoranthene(Decacycene)-----	SDC.
1,5(and 1,8)-Diacetamidoanthraquinone-----	AAP.
1,5-Diacetamido-4,8-dibromoanthraquinone-----	TRC.
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-----	CMG, DUP, SDC, 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-----	AAP, TRC, x.
2,4-Diaminobenzenesulfonic acid [SO ₃ H=1]-----	DUP, TRC.
2,5-Diaminobenzenesulfonic acid [SO ₃ H=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-----	CMG, DUP.
*1,4-Diamino-2,3-dihydroanthraquinone-----	AAP, ACY, ATL, DUP, GAF, HSH, ICC, ICI, MAY TRC.
4,8-Diamino-9,10-dihydro-1,5-dihydroxy-9,10-dioxo-2,6-anthracenedisulfonic acid.	TRC.
1,4-Diamino-9,10-dihydro-9,10-dioxo-2,3-anthracenedi-carboximide.	DUP.
1,5-Diamino-4,8-dihydroxyanthraquinone-----	VPC.
1,8-Diamino-4,5-dihydroxyanthraquinone-----	AAP.
4,5-Diamino-1,8-dihydroxyanthraquinone-----	ICI.
2,4-Diamino-6-phenyl-s-triazine-----	RH, VEL.
2,6-Diaminopyridine-----	RIL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid-----	ACY, CGY, GAF, SDH, TRC, VPC.
3,5-Diamino-p-toluenesulfonic acid [SO ₃ H=1]-----	GAF.
4,6-Diamino-m-toluenesulfonic acid [SO ₃ H=1]-----	ACS.
3,5-Diamino-2,4,6-triiodobenzoic acid-----	SDW.
1,4:3,6-Dianhydroglucitol-----	APD.
2,5-Dianilinoterephthalic acid-----	SDC, x.
Diarylguanidine-----	DUP.
p-Diazo-N,N-dimethylaniline-1-amino-8-naphthol-3-sulfonate-6-sulfonic acid, sodium salt.	IDC.
1,5-Dibenzamidoanthraquinone-----	TRC.
6,11-Dibenzamido-16H-dinaphtho[2,3-α,2',3'-i]carbazole-5,10,15,17-tetrone.	ICI.
*4,5'-Dibenzamido-1,1'-iminodianthraquinone-----	ACY, GAF, ICI, MAY, TRC.
*1,5-Dibenzoylnaphthalene-----	ACY, DUP, GAF, TRC, VPC.
Dibenzylazodicarboxylate-----	KF, WTL.
N,N'-Dibenzylethylenediamine-----	WYT.
N,N'-Dibenzylethylenediamine diacetate-----	WYT.
N,N'-Dibenzylidenetoluene-α,α-diamine-----	SDH.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
3,4-Dibenzyloxybutyrophenone-----	SDW.
N,N-Dibenzylsulfanilic acid-----	ICI.
2,4'-Dibromoacetophenone-----	EK.
3,9-Dibromo-7H-benz[de]anthracen-7-one-----	MAY, TRC.
m-Dibromobenzene-----	EK.
o-Dibromobenzene-----	EK.
p-Dibromobenzene-----	DOW.
4,4'-Dibromobenzil-----	NES.
ar-Dibromoethylbenzene-----	DOW.
2,6-Dibromo-1,5-naphthalenediol-----	EK.
2,6-Dibromo-4-nitroaniline-----	SDC.
2,6-Dibromo-4-nitrophenol-----	SW.
α,α -Dibromo-p-nitrotoluene-----	DUP.
5,13-Dibromo-8,16-pyranthrene-dione-----	ICI.
3,5-Dibromo-3'-trifluoromethylsalicylanilide-----	PCW.
p-Dibutoxybenzene (DBB)-----	ALL.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate-----	ALL.
1,1'-Di-n-butylidicyclopentadienyliron-----	ARA.
2,6-Di-tert-butyl-4-nonylphenol-----	GAF.
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-----	TRC.
1,5(and 1,8)-Dichloroanthraquinone-----	AAP.
Dichlorobenzanthrone-----	ACY.
m-Dichlorobenzene-----	EK.
*o-Dichlorobenzene-----	ACS, DOW, DUP, MON, NEV, PPG, SCC, SVT.
o(and p)-Dichlorobenzene-----	DVC.
*p-Dichlorobenzene-----	ACS, DOW, DVC, MON, NEV, PPG, SCC, SVT.
2,5-Dichlorobenzenesulfonyl chloride-----	ACS.
*3,3'-Dichlorobenzidine base and salts-----	ACS, CWN, LAK.
2,2'-Dichlorobenzil-----	MTO.
2,4-Dichlorobenzoic acid-----	HN.
4,4'-Dichlorobenzophenone-----	NES.
4,7-Dichlorobenzo[b]thiophen-3(2H)one-----	ACS.
2,4-Dichlorobenzoyl chloride-----	HN.
Dichlorobenzyl chloride-----	BPC.
4,4-(2,6-Dichlorobenzylidene)di-2,6-xylylidine-----	DUP.
7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone----	ICI.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbo-nitrile.	ARA.
Dichlorodiphenylsilane-----	UCC.
2',7'-Dichlorofluorescein-----	EK.
2-(5,8-Dichloro-1-hydroxy-2-naphthylazo)-1-phenol-4-sulfonamide.	TRC.
5,14-Dichloroisoviolanthrone-----	ICI.
Di(chloromethyl)diphenyl oxide-----	BPC.
2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzene sulfonic acid.	HST, TRC, VPC.
2,6-Dichloro-4-nitroaniline-----	CWN, SW.
1,2-Dichloro-4-nitrobenzene-----	DUP, MON.
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)-----	DUP.
2,4-Dichlorophenol-----	DOW, MON.
3,4-Dichlorophenyl isocyanate-----	OTC.
3-(2',6'-Dichlorophenyl)-5-methyl-isoxazole-4-carbonyl chloride.	OTC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
[(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 ₃ H=1]-----	DUP.
2,5-Dichloro-4-sulfobenzenediazonium sulfate-----	TRC.
p,α-Dichlorotoluene-----	HN.
α,α-Dichlorotoluene (Benzal chloride)-----	BPC.
2,4-Dichloro-3,5-xylene-----	OTA.
Dicyclohexylamine-----	ABB, MON.
*Dicyclopentadiene (includes cyclopentadiene)-----	ENJ, GOC, MON, UCC, VEL.
Dicyclopentadiene dioxide-----	VEL.
Didodecylbenzene-----	CO.
2,5-Diethoxyaniline-----	ALL.
2',5'-Diethoxybenzanilide-----	ALL.
p-Diethoxybenzene-----	ALL, GAF.
2',5'-Diethoxy-4'-nitrobenzanilide-----	ALL.
*p-(Diethylamino)benzaldehyde-----	ACS, DUP, GAF, TRC.
p-(Diethylamino)benzenediazonium chloride, zinc salt-----	HST.
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.
3-[(4'-N,N-Diethylamino)phenylazo]-1H-1,2,4-triazole-----	TRC.
3-(Diethylamino)propiofenone-----	ACY.
4-(Diethylamino)-o-tolualdehyde-----	DUP.
*N,N-Diethylaniline-----	ACS, ACY, DSC, DUP, SDH.
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',N'-Diethyl-4-methoxymetanilamide-----	PCW.
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.
Difurfurylidinepentaerythritol-----	SDC.
6,15-Dihydro-5,9,14,18-anthrazinetetrone-----	TRC.
10,11-Dihydro-5H-dibenzo[a,d]cycloheptan-5-one-----	LIL.
9,10-Dihydro-1,5(and 1,8)-dihydroxy-9,10-dioxo-3,7(and 3,6)-anthracenedisulfonic acid, disodium salt.	GAF.
*9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracene- sulfonic acid (2-Quinizarinsulfonic acid).	AAP, HSH, PAT.
N-(5,13-Dihydro-5,13-dioxoaceanthryleno [2,1-α]-acean- thrylen-7-yl)-9,10-dihydro-1-nitro-9,10-dioxo-2- anthramide	ICI.
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid-----	TRC.
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt.	GAF, TRC.
9,10-Dihydro-9,10-dioxo-1,5(and 1,8)-anthracene- disulfonic acid and salt.	TRC.
9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt.	GAF, TRC.
*9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt.	AAP, GAF, ICI, TRC.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt).	AAP, ACY, DUP, 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.	MAY, TRC.
9,10-Dihydro-5(and 8)-nitro-9,10-dioxo-1-anthracene-sulfonic acid.	TRC.
9,10-Dihydro-1-nitro-9,10-dioxo-2-anthracic acid-----	DUP.
1,2-Dihydrotriamicinolone-----	x.
*1,4-Dihydroxyanthraquinone (Quinizarin)-----	AAP, ACY, DUP, GAF, HSH, ICC, ICI, MAY, TRC.
1,5-Dihydroxyanthraquinone (Anthrarufin)-----	GAF, TRC.
1,5(and 1,8)-Dihydroxyanthraquinone-----	ACY, TRC.
*1,8-Dihydroxyanthraquinone (Chrysazin)-----	CMG, GAF, TRC.
2,6-Dihydroxyanthraquinone (Anthraflavic acid)-----	GAF, TRC.
2,4-Dihydroxybenzaldehyde-----	EK.
2,5-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-Dinitro-chrysazin).	DUP, GAF, ICI.
17 α ,21-Dihydroxy-16 β -methyl-4,9(11)-pregnadien-3,20-dione, 21-benzoate.	x.
17,21-Dihydroxy-16 α -methylpregna-4,9(11)-diene-3,20-dione, 21-acetate.	x.
17,21-Dihydroxy-16 α -methylpregna-1,4,9(11)-triene-3,20-dione.	x.
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid).	ACS.
6,7-Dihydroxy-2-naphthalenesulfonic acid-----	IDC.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalene-disulfonic acid, trisodium salt.	EK.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)----	ACY, DUP, ICI, MAY.
m-Diiodobenzene-----	EK.
o-Diiodobenzene-----	EK.
3,5-Diiodosalicylic acid-----	EK.
3,5-Diiodosalicylic acid, lithium salt-----	EK.
Diisopropylbenzene-----	DOW.
N,N'-Diisopropyl-p-phenylenediamine-----	DUP, USR.
2',5'-Dimethoxyacetoacetanilide-----	HST.
2,5-Dimethoxyaniline-----	EKT, PCW.
1,5(and 1,8)-Dimethoxyanthraquinone-----	TRC.
m-Dimethoxybenzene-----	ACY.
3,3'-Dimethoxybenzidine (o-Dianisidine)-----	CWN, SDH.
3,3'-Dimethoxybenzidine hydrochloride-----	CWN.
5-(3,4-Dimethoxybenzylidene)hydantoin-----	PD.
N,N'-[(3,3'-Dimethoxy-4,4'-biphenylene)bis(azo)]bis(N-methyltaurine).	GAF.
2,5-Dimethoxy- β -methyl- β -nitrostyrene-----	x.
2,5-Dimethoxy- α -methylphenethylamine-----	x.
2,5-Dimethoxy- α -methylphenethylamine hydrobromide-----	x.
N-(3,4-Dimethoxy- α -methylphenethyl)-2-(3-methyl-4-ethoxyphenyl)acetamide.	LIL.
1,4-Dimethoxy-2-nitrobenzene-----	PCW.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
2,5-Dimethoxy-4'-nitrostilbene-----	x.
3,4-Dimethoxyphenethylamine (Homoveratrylamine)-----	LIL.
N-(3,4-Dimethoxyphenethyl)-2-(3,4-dimethoxyphenyl)- acetamide.	LIL.
(3,4-Dimethoxyphenyl)acetic acid-----	LIL.
(3,4-Dimethoxyphenyl)acetonitrile-----	LIL.
3-(3,4-Dimethoxyphenyl)-L-alanine-----	PD.
1-(3,4'-Dimethoxyphenyl)-2-aminopropane-----	LIL.
1-(3,4'-Dimethoxyphenyl)-2-nitropropene-----	LIL.
2,5-Dimethoxytetrahydrofuran-----	HEX.
16,17-Dimethoxyviolanthrone-----	ICI, MAY.
p-(Dimethylamino)benzaldehyde-----	TRC.
p-Dimethylaminobenzenediazonium chloride, zinc chloride salt.	HST.
m-(Dimethylamino)benzoic acid-----	NES, x.
α-(Dimethylamino)-p-cresol-----	TKL.
6-Dimethylamino-2-[2-(2,5-dimethyl-1-phenyl-3-pyrryl)- vinyl]-1-methyl-1-quinolinium methyl sulfate.	x.
2-[[2-(dimethylamino)ethyl]-3-thenylamino]pyridine-----	SDW.
m-(Dimethylamino)phenol-----	ACY.
*N,N-Dimethylaniline-----	ACS, ACY, DSC, DUP.
7,12-Dimethylbenz[a]anthracene-----	EK.
3,3'-Dimethylbenzidine (o-Tolidine)-----	CWN.
3,3'-Dimethylbenzidine hydrochloride-----	CWN, 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-----	ACY, DUP, ICI, TRC.
N,N-Dimethylcyclohexylamine-----	ABB, DUP, JCC.
5,5-Dimethylhydantoin-----	GLY.
1,1-Dimethyl-3-(m-hydroxyphenyl)urea-----	CWN.
2,3-Dimethylindole-----	DUP.
D,L-cis, trans-2,2-Dimethyl-3-iso-butenylcyclopropane- 1-carboxylic acid, ethyl ester.	BPC.
2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydro- chloride.	IDC.
N,N-Dimethyl-1-naphthylamine-----	EK.
N,N-Dimethyl-p-nitrosoaniline-----	ACY.
6,6-Dimethyl-2-norpinene-2-ethanol-----	RDA.
2,4-Dimethylphenol-----	EK.
N,N-Dimethyl-p-phenylazoaniline-----	EK.
N,N-Dimethyl-p-phenylenediamine-----	EKT.
N,N-Dimethyl-m-phenylenediamine dihydrochloride-----	EK.
N,N-Dimethyl-p-phenylenediamine dihydrochloride-----	EK.
N,N-Dimethyl-p-phenylenediamine monohydrochloride-----	EK.
N,N-Dimethyl-p-phenylenediamine sulfate-----	EK.
1,4-Dimethylpiperazine-----	JCC.
N,N-Dimethylsulfanilic acid-----	AAP, GAF.
Dimethyl-5-sulfoisophthalate-----	x.
2,4-Dimethylthiazole-----	EK.
N,N-Dimethyl-o-toluidine-----	RSA.
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.
3',4-Dinitrobenzanilide-----	TRC.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
m-Dinitrobenzene-----	DUP.
2,4-Dinitrobenzenesulfonic acid-----	EK, TRC.
2,4-Dinitrobenzenesulfonic acid, sodium salt-----	EK, NES.
3,5-Dinitrobenzoic acid-----	FIS, SAL.
3,5-Dinitrobenzoyl chloride-----	EK.
10,10'-Dinitro[3,3'-bi-7H(de)anthracene]-7,7'-dione-----	DUP, MAY.
Dinitrocaprylphenol-----	RH.
3,5'-Dinitro-2'-hydroxyacetanilide-----	TRC.
1-(3,5-Dinitro-7-hydroxyphenylazo)-2-naphthol-----	TRC.
2,6-Dinitro-4-isopropylphenol-----	SDC.
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, HN, SDH, TRC.
2,4-Dinitrotoluene-----	ACS, DUP, RUC.
*2,4(and 2,6)-Dinitrotoluene-----	AIP, DUP, MOB, UCC.
3,5-Dinitro-p-toluenesulfonic acid-----	GAF.
Dinonylphenol-----	GAF, JCC.
Di-tert-pentylphenol-----	PAS.
Di-tert-pentylphenoxyacetyl chloride-----	EK.
2-(2,4-Di-tert-pentylphenoxy)butyric acid-----	EK.
1,5-Diphenoxyanthraquinone-----	VPC.
Diphenylacetic acid-----	ARA.
Diphenylacetoneitrile, tech-----	FIS.
*Diphenylamine-----	ACY, DUP, ORO, RUC, USR.
2,8-Diphenylanthra[2,1-d:6,5-d']bisthiazole-6,12-dione----	GAF, ICI.
2,5-Diphenyl-p-benzoquinone-----	EK.
2,2'-Diphenyl-4-dimethylamine-----	LIL.
1,1-Diphenylethylene-----	EK.
N,N'-Diphenylethylenediamine-----	RPC.
5,5-Diphenylhydantoin-----	PD.
Diphenylmethane-----	PD.
2,5-Diphenyloxazole-----	ARA, EK.
1,3-Diphenyl-1,3-propanedione-----	EK.
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, x.
*Divinylbenzene-----	DOW, FG, KPP.
Dodecylbenzene. (See Alkylbenzenes.)	
Dodecylbenzyl chloride-----	BPC, CO.
Dodecylmethylbenzyl chloride-----	BPC, RH.
p-Dodecylphenol-----	GAF, MON, x.
Eosin (2',4',5',7'-Tetrabromofluorescein)-----	ICC.
1,2-Epoxy-3-(2-biphenyl)propane-----	NES.
Erythrosin-----	EK.
p-Ethoxybenzaldehyde-----	EK.
o-Ethoxybenzoic acid-----	ACY.
p[p-(Ethoxybenzylidene)amino]benzonitrile-----	EK.
4-Ethoxy-3-methoxybenzaldehyde-----	LIL.
4-Ethoxy-3-methoxybenzyl alcohol-----	LIL.
1-(4-Ethoxy-3-methoxybenzyl)-6,7-dimethoxy-3-methyl- isoquinidine (Dioxylene base).-----	LIL.
(4-Ethoxy-3-methoxyphenyl)acetic acid-----	LIL.
2-Ethoxy-1-naphthoyl chloride-----	WYT.
4-Ethoxy-o-phenylenediamine-----	TRC.
N ¹ -(6-Ethoxy-3-pyridazinyl)sulfanilamide-----	ACY.
Ethyl-m-aminobenzoate methanesulfonate-----	EK.
3-(Ethylamino)-p-cresol-----	DUP.
3-(Ethylamino)-p-toluenesulfonic acid [SO ₃ H=1]-----	DUP.
*N-Ethylaniline, refined-----	ACS, ACY, DUP, SDH.
2-(N-Ethylanilino)ethanol-----	DUP, EKT.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride-----	DUP.
α-(N-Ethylanilino)-m-toluenesulfonic acid-----	GAF, SDH, WJ.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--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, 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, USR.
1-Ethylcytosine-----	PD.
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-----	DSC, 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.
Ethylphenylmalonic acid, diethylester-----	BPC, MAL.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine) (MEP)-----	UCC.
1-Ethylpiperidine-----	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, GAF.
α -(N-Ethyl-m-toluidino)-m-toluenesulfonic acid-----	GAF.
1-Ethynyl-1-cyclohexanol-----	EKT.
Fluorescein (3',6'-Dihydroxyfluoran)-----	ICC.
o-Fluorobenzoic acid-----	FIN.
1-Fluoro-2,4-dinitrobenzene-----	EK.
d-2-Formamido-1-phenyl-1,3-propanediol-----	PD.
4-Formyl-m-benzenedisulfonic acid-----	GAF.
o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)-----	SDH.
Furan-----	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.
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.
Hexamethylbenzene-----	EK.
Hexamethylenimine-----	CEL, DUP.
Hexamethylmelamine-----	PD.
*Hippuric acid-----	BPC, HEX.
Hydantoin-----	PD.
p-Hydrazinobenzenesulfonic acid-----	GAF, WJ.
4-Hydrazino-m-toluenesulfonic acid-----	GAF.
Hydrazobenzene-----	HEX.
Hydroquinone, di(β -Hydroxyethyl) ether-----	CTN.
*Hydroquinone, tech-----	CRS, DA, DUP, EKT.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
β-Hydroxy-p-acetophenetidine-----	GAF.
3'-Hydroxyacetophenone-----	CTN, SDH.
3'-Hydroxyacetophenone benzoate-----	SDH.
6'-Hydroxy-m-acetotoluidide-----	TRC.
p-Hydroxybenzaldehyde-----	DOW.
*p-Hydroxybenzenesulfonic acid-----	DOW, MON, PRD, UPF.
p-Hydroxybenzoic acid-----	HN.
3'-Hydroxy-2-(N-benzyl-N-methylamino)acetophenone-----	SDW.
4-Hydroxy-7-chloroquinidine hydrochloride-----	PD.
4-Hydroxycoumarin-----	ABB.
3-[N-(2-Hydroxyethyl)anilino]propionitrile-----	ICC.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, benzoate ester.	DUP, x.
N-β-Hydroxyethyl-2,4-dihydroxybenzamide-----	IDC.
N-β-Hydroxyethyl-3,5-dihydroxybenzamide-----	IDC.
N-[7-Hydroxy-8-[2-hydroxy-5-(methylsulfonylphenyl)azo]-1-naphthyl]acetamide.	TRC.
3-Hydroxy-N-(2-hydroxyethyl)-2-naphthamide-----	IDC.
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]-3,3'-dimethyl-4-biphenyl)azo]-1,3-naphthalenedisulfonic acid.	TRC.
4-Hydroxymetanilamide-----	DUP, TRC, VPC.
4-Hydroxymetanilic acid-----	CWN, TRC.
3'-Hydroxy-2-(methylamino)acetophenone-----	CTN.
*3-Hydroxy-2-methylcinchoninic acid-----	AAP, DUP, GAF, ICC, SDC, TRC.
4-Hydroxy-N ¹ -methylmetanilamide-----	TRC.
N-(Hydroxymethyl)phthalimide-----	ACY.
3-Hydroxy-N-(3-N-morpholinopropyl)-2-naphthamide-----	IDC.
3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt--	ACS, ACY, TRC, WJ.
7-Hydroxy-1,3-naphthalenedisulfonic acid-----	DUP, TRC.
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt--	ACY.
4-Hydroxy-1-naphthalenesulfonic acid-----	DUP.
*6-Hydroxy-2-naphthalenesulfonic acid-----	SNA, TMS.
*6-Hydroxy-2-naphthalenesulfonic acid, sodium salt-----	ACY, TRC, WJ.
8-Hydroxy-1-naphthalenesulfonic acid-----	VPC.
8-Hydroxy-1-naphthalenesulfonic acid, γ-sulfone-----	TRC.
3-Hydroxy-2-naphthanilide (Naphthol AS)-----	ATL.
1-Hydroxy-2-naphthoic acid-----	ACS.
1-Hydroxy-2-naphthoic acid, methyl ester-----	x.
3-Hydroxy-2-naphthoic acid (B.O.N.)-----	BUC, PCW.
3-Hydroxy-2-naphthoic acid, methyl ester-----	PCW, WAY.
3-Hydroxy-2-naphtho-o-toluidide-----	ATL, PCW.
N-(2-Hydroxy-1-naphthyl)acetamide-----	ACY.
N-(7-Hydroxy-1-naphthyl)acetamide-----	TRC.
N-(7-Hydroxy-1-naphthyl)benzamide-----	TRC.
1-(2-Hydroxy-1-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
3-[(7-Hydroxy-1-naphthyl)carbamoyle]acetanilide-----	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-Hydroxy-4-(phenylazo)-2-naphthoic acid-----	ICC.
11α-Hydroxyprogesterone-----	UPJ.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
2-Hydroxy-4-sulfo-1-naphthalenediazonium hydroxide inner salt.	ACY.
1-Hydroxy-4-p-toluidinoanthraquinone-----	GAF, ICI.
2-Imidazolidinone-----	VAL.
2-Imidazolidinone modifications-----	RH.
*1,1'-Iminobis[4-aminoanthraquinone]-----	ACY, GAF, ICI, TRC.
1,1'-Iminobis[4-benzamidoanthraquinone]-----	ACY, MAY.
*1,1'-Iminobis[5-benzamidoanthraquinone]-----	GAF, ICI, TRC.
7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid]-----	GAF, TRC.
*1,1'-Iminobis[4-nitroanthraquinone]-----	ACY, ICI, MAY, TRC.
1,1'-Iminodianthraquinone (1,1'-Dianthrimide)-----	ICI, TRC.
1-Indanone-----	EK.
Indole-2,3-dione-----	ACS.
Indophenol, sodium salt-----	EK.
5-Iodoanthranilic acid-----	SDW.
o-Iodobenzoic acid-----	RSA.
Isobutylbenzene-----	PLC.
2-Isobutyl-3-methoxypyrazine-----	EK.
*Isocyanic acid derivatives:	
Bitolylene diisocyanate (TODI)-----	UPJ.
p-Chlorophenyl isocyanate-----	MOB.
Cyclohexyl isocyanate-----	OTC.
Dianisidine diisocyanate (DADI)-----	CWN, UPJ.
Diphenylmethane-4,4'-diisocyanate (MDI)-----	ACS, MOB, UPJ.
Phenylisocyanate-----	MOB.
Polyisocyanates (complex)-----	MOB.
*Polymethylene polyphenylisocyanate-----	KAI, MOB, UPJ.
Toluene 2,4-diisocyanate-----	DUP, MOB.
Toluene 2,4- and 2,6-diisocyanate (65/35 mixture)-----	DUP, MOB.
*Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)-----	ACS, DUP, MOB, OMC, RUC, UCC, WYN.
p-Toluenesulfonyl isocyanate-----	CWN.
Other-----	DUP, EK, MOB, UPJ.
Isonicotinamide-----	RIL.
Isonicotinic acid, methyl ester-----	RIL.
Isonicotinonitrile-----	RIL.
Isooctylphenol-----	PRD.
Isophthalic acid (Benzene-1,3-dicarboxylic acid)-----	ACC, ATR.
Isophthalic acid, diallyl ester-----	FMP.
Isophthalic acid, dimethyl ester-----	MTR.
Isophthalic acid, diphenyl ester-----	BJL.
Isophthaloyl chloride-----	DUP.
4,4'-Isopropylidenebis[2,6-dibromophenol] (Tetrabromo- bisphenol A).	DOW.
4,4'-Isopropylidenebis[2,6-dichlorophenol] (Tetrachloro- bisphenol A).	DVC.
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, KPT.
4-Isopropyl-m-phenylenediamine-----	DUP.
*Isoviolanthrone (Isodibenzanthrone)-----	ACY, GAF, ICI, MAY, TRC.
*Leuco quinizarin (1,4,9,10-Anthraketrol)-----	AAP, ACS, ACY, EKT, HN, HSH, ICC, TRC.
2,4-Lutidine-----	KPT.
2,6-Lutidine-----	RIL.
3,4-Lutidine-----	UCC.
Malonanilide-----	PCW.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Mandelonitrile-----	KF.
Melamine-----	ACY, 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)-----	LIL, WAY.
*Metanilic acid (m-Aminobenzenesulfonic acid)-----	ACY, DUP, TRC.
6-(2'-Methoxybenzenesulfonamido)-2-benzoxazolinone-----	SDC.
N-(p-Methoxybenzylidene)-p-butylaniline-----	EK.
4-Methoxymetanilic acid-----	GAF.
6-Methoxymetanilic acid-----	GAF.
4'-Methoxy-2-(p-methoxyphenyl)acetophenone-----	CTN.
Methoxymethyldiphenyl oxide-----	BPC.
(p-Methoxyphenyl)acetic acid-----	UOP.
4-Methoxy-m-phenylenediamine sulfate-----	WAY.
6-Methoxy-2-(phenylthio)quinoline-----	EK.
4'-Methoxypropiofenone-----	LIL.
1-(Methylamino)anthraquinone-----	AAP, ACY, ICI.
1-(Methylamino)-4-p-toluidinoanthraquinone-----	GAF, ICI.
N-Methylaniline-----	ACY, DUP.
3-(N-Methylanilino)propionitrile-----	DUP.
5-Methyl-o-anisidine [NH ₂ =1]-----	SW.
m-Methylanisole-----	GIV.
N-Methylantranilic acid-----	GIV.
2-Methylantraquinone-----	ACY.
3-Methylbenzo[f]quinoline-----	ACY.
2-Methylbenzothiazole-----	FMT.
α-Methylbenzyl alcohol-----	UCC.
N-Methylbenzylamine-----	MLS, SDW.
Methylbenzyl ether-----	UCC.
5-(1-Methylbutyl)barbituric acid-----	LIL.
3-Methylcholanthrene-----	EK.
Methylcyclohexane-----	PLC.
4-Methylcyclohexanone-----	EK.
1-Methyl-4-cyclohexene-1,2-dicarboxylic anhydride-----	UCC.
Methylcyclopentadiene-----	ENJ.
N-Methyldicyclohexylamine-----	ABB.
N-Methyleneaniline-----	PCW.
4,4'-Methylenebis[2-chloroaniline]-----	DUP.
4,4'-Methylenebis[N,N-diethylaniline]-----	ACY, GAF.
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, 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-p-nitroaniline-----	ACY.
5-Methyl-4-nitro-o-anisidine-----	PCW.
4-Methyl-2-nitroanisole-----	SW.
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----	VPC.
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide----	CMG.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid--	TRC.
*p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid--	AAP, ACY, GAF, HST, TRC, VPC.
3-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,5-naphthalene- disulfonic acid.	TRC.
6-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,3-naphthalene- disulfonic acid.	TRC.
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO ₃ H=1].	CMG.
2-Methyl-5-phenylbenzoxazole-----	EK.
1-Methyl-1-phenylhydrazine-----	EK.
1-Methyl-4-phenylisonipecotic acid-----	SDW.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid-----	ARS.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid hydro- chloride.	ARS.
*3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)-----	ACY, DUP, GAF, SDH, VPC.
1-Methyl-4-piperidinol-----	ARA.
3-(α-Methylpiperidine)propanol-----	LIL.
3-Methyl-2-pyrazolin-5-one-----	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-(thiosulfonyl)-2-pyrazolin-5-one, sodium salt.	SDC.
3-Methyl-6-p-toluidino-7H-dibenz[f,i]isoquinoline- 2,7(3H)-dione.	ICI.
3-Methyl-1-p-tolyl-2-pyrazolin-5-one-----	HST.
1-Naphthaldehyde-----	BLK.
Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude).	KPT, RIL, WTC.
1-Naphthalenesulfonic acid-----	TRC.
1-Naphthalenesulfonic acid, sodium salt-----	TRC.
2-Naphthalenesulfonic acid-----	ACY, EK, HN.
2-Naphthalenesulfonic acid, sodium salt-----	ACY.
1,4,5,8-Naphthalenetetracarboxylic acid-----	TRC.
Naphthalimide-----	ACS.
1-Naphthol (α-Naphthol)-----	UCC.
2-Naphthol, tech. (8-Naphthol) ¹ -----	ACY.
p-Naphtholbenzein-----	EK.
1-Naphthol-3,6-disulfonic acid, monosodium salt-----	HN.
1,2-Naphthoquinone-----	EK.
Naphthostyryl-----	ACS, RIL.
Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid-----	GAF, TRC.
2-(2H-Naphth[1,2-d]triazol-2-yl)-4-(1,1,3,3-tetramethyl- butyl)phenol.	x.
1-Naphthylamine (α-Naphthylamine)-----	DUP.
1-Naphthylamine hydrochloride-----	GAF.
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2- naphthylamine).	SDC.
N-(1-Naphthyl)ethylenediamine dihydrochloride-----	SDC.
(2-Naphthyl)oxyacetic acid-----	BKL.
(2-Naphthyl)oxyacetic acid, sodium salt-----	BKL.
(2-Naphthylthio)acetic acid-----	ACY.
Nicotinonitrile (3-Cyanopyridine)-----	NEP, RIL.
3'-Nitroacetanilide-----	AAP.

See footnotes at end of table.

CYCLIC INTERMEDIATES

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TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
4'-Nitroacetaniline-----	GAF, TRC.
2'-Nitro-p-acetanisidide-----	DUP.
3'-Nitro-p-acetanisidide-----	SDC.
4'-Nitro-o-acetanisidide-----	DUP.
3'-Nitroacetophenone-----	CTN, SDH.
m-Nitroaniline-----	x.
o-Nitroaniline-----	AAP, MON.
p-Nitroaniline-----	AAP, MON.
p-Nitroaniline sulfat-----	BJL.
3-Nitro-p-anisic acid-----	PCW.
2-Nitro-p-anisidine [NH ₂ =1]-----	DUP.
4-Nitro-o-anisidine [NH ₂ =1]-----	DUP.
5-Nitro-o-anisidine [NH ₂ =1]-----	BUC.
o-Nitroanisole-----	DUP, x.
p-Nitroanisole-----	DUP.
5-Nitroanthranilic acid-----	TRC.
1-Nitroanthraquinone-----	ACY, TRC.
2-(4-Nitro-2-anthraquinonyl)anthra[2,3-d]-oxazole-5,10- dione.	GAF.
m-Nitrobenzaldehyde-----	SDH.
p-Nitrobenzamide-----	ICC.
3'-Nitrobenzanilide-----	AAP.
*Nitrobenzene-----	ACS, ACY, DUP, FST, MOB, MON, RUC.
m-Nitrobenzenesulfonic acid-----	ACY, DUP.
m-Nitrobenzenesulfonic acid, sodium salt-----	GAF, MON, MRA, SAL.
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.
p-Nitrobenzoyl chloride-----	HK.
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.
2-Nitroindazole-----	WAY.
5-Nitroisophthalic acid-----	FIS.
1-Nitronaphthalene-----	DUP.
3-Nitro-1,5-naphthalenedisulfonic acid-----	TRC.
7(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid.	ACS, GAF, TRC.
4'-Nitrooxanilic acid-----	DUP.
p-Nitrophenethyl alcohol-----	PCW.
o-Nitrophenol-----	MON.
*p-Nitrophenol-----	DUP, MON, UOP.
*p-Nitrophenol, sodium salt-----	MON, UOP.
4'-(p-Nitrophenyl)acetophenone-----	DUP, FIS.
4-[(p-Nitrophenyl)azo]-o-anisidine-----	AAP.
2-Nitro-p-phenylenediamine-----	WAY.
4-Nitro-o-phenylenediamine-----	DUP, FMT.
(p-Nitrophenyl)hydrazine-----	EK.
2,2'-[(m-Nitrophenyl)imino]diethanol-----	DUP.
2,2'-[(m-Nitrophenyl)imino]diethanol, diacetate ester----	DUP.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
p-Nitrophenyl isocyanate-----	EK.
2-(p-Nitrophenyl)-2H-naphthol[1,2-d]triazole-6,8-disulfonic acid.	TRC.
2-(p-Nitrophenyl)-1-octadecyl-5-benzimidazolesulfonic acid.	GAF.
1-(m-Nitrophenyl-5-oxo-2-pyrazoline-3-carboxylic acid.	DUP, VPC.
3-Nitrophthalic acid-----	EK.
3-Nitrophthalic anhydride-----	EK.
4-Nitrophthalimide-----	SDC.
5-Nitrosalicylaldehyde-----	EK.
1-Nitroso-2-naphthol-----	EK.
p-Nitrosophenol-----	ACY, SDC.
4-Nitrostilbene-----	GAF.
β -Nitrostyrene-----	CWN.
4-Nitro-4'-(5-sulfo-2H-naphthol[1,2-d]triazol-2-yl)-2,2'-stilbenedisulfonic acid.	TRC.
m-Nitrotoluene-----	DUP, FST.
o-Nitrotoluene-----	DUP, FST.
p-Nitrotoluene-----	DUP, FST.
Nitrotoluene mixtures-----	DUP, FST, HN.
p-Nitrotoluenesulfonic acid-----	CGY.
* 5-Nitro-o-toluenesulfonic acid [SO ₃ H=1]-----	ACS, ACY, DUP, GAF, SDH, TRC.
3-Nitro-p-toluenesulfonic acid [SO ₃ H=1]-----	CMG.
2-Nitro-m-toluic acid-----	SAL.
3-Nitro-p-toluic acid, methyl ester-----	SDH.
* 5-Nitro-o-toluidine [NH ₂ =1]-----	BUC, DUP, PCW, SDH.
2-Nitro-p-toluidine [NH ₂ =1]-----	DUP, SW.
5-Nitro-2-p-toluidinobenzenesulfonic acid-----	TRC.
16-Nitroviolanthrone-----	ICI, MAY.
4-Nitro-m-xylene-----	DUP.
* Nonylphenol-----	GAF, JCC, MON, RH, UCC.
5-Norbornene-2,3-dicarboxylic anhydride-----	VEL.
Octylphenol-----	RH.
Octylphenyl acid phosphate, diethanolamine salt-----	SM.
Oxalacetic acid, diethyl ester, (p-sulfohenyl)-hydrazone.	TRC.
Oxanilide-----	EK, FIN.
* 1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone.	ACY, DUP, GAF, ICI, MAY, TRC.
1,1'-[(7-Oxo-7H-benz[de]anthracen-3,9-xylene)diimino]-dianthraquinone.	MAY TRC.
5-Oxo-1-(p-sulfohenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	AAP, STG.
5-Oxo-1-(p-sulfohenyl)-2-pyrazoline-3-carboxylic acid, ethyl ester.	STG.
4,4'-Oxydianiline-----	x.
Penicillin G, N-ethylpiperidine salt-----	MRK.
Pentachloropyridine-----	DOW.
Pentamethylbenzene-----	SNT.
1,1,3,3,5-Pentamethylindan-----	GIV.
p-Pentyloxybenzoyl chloride-----	EK.
o-Pentylphenol (o-Amylphenol)-----	PAS.
p-tert-Pentylphenol-----	PAS.
3,4,9,10-Perylenetetra-carboxylic acid-----	ACS, GAF.
3,4,9,10-Perylenetetra-carboxylic-3,4:9,10-diimide-----	ACS.
Phenethylamine-----	MLS.
α -Phenethylamine-----	MLS.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
Phenethylamine sulfate-----	MLS.
o-Phenethylbenzoic acid-----	LIL.
o-Phenetidine-----	MON.
p-Phenetidine-----	MON.
*Phenol:	
*Natural:	
*From coal tar: ²	
39° C., n.p.-----	KPT, PRD.
82%-84%-----	ACP.
All other-----	ACP, KPT.
*From petroleum:	
U.S.P.-----	MAL.
Other-----	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.-----	ACY, CLK, HPC, MON, PCC, SHC, SKO, SOC, UCC.
Other-----	KLM.
Phenolphthalein, disodium salt-----	EK.
Phenolsulfonaphthalein, sodium salt-----	EK.
Phenolsulfonic acid, lithium salt-----	SAL.
Phenoxyacetic acid, sodium salt-----	ARA, BPC.
2-Phenoxypropionyl chloride-----	ARS.
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.
Phenylacetoneitrile (α-Tolunitrile)-----	BPC, SDW, UOP.
4'-Phenylacetophenone-----	DUP, NES.
Phenylacetyl chloride-----	BJL.
N-Phenylanthranilic acid-----	SDW.
Phenylarsine oxide-----	EK.
p-Phenylazoaniline (C. I. Solvent Yellow 1) and hydrochloride.	ACS, ACY, DUP.
4-(Phenylazo)diphenylamine-----	EK.
1-Phenylbiguanide hydrochloride-----	SDC.
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.
p-Phenylenediamine dihydrochloride-----	EK.
d-Phenylephrine base-----	SDW.
dl-Phenylephrine base-----	SDW.
Phenyl ether (Diphenyl oxide)-----	DOW.
d(-)Phenylglycine-----	KF, OTC.
d-2-Phenylglycine-----	BKL.
dl-Phenylglycine (racemic)-----	KF.
Phenylglycine, sodium salt-----	ACS
d(-)Phenylglycyl chloride hydrochloride-----	KF, OTC.
5-Phenylhydantoin-----	ABB.
Phenylhydrazine hydrochloride-----	EK
2,2'-[(Phenyl)imino]diethanol, diacetate ester-----	SDC.

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
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-p-phenylenediamine-----	USR.
Phenylphosphinic acid-----	SFS.
Phenylphosphonothioic dichloride-----	SFA.
Phenylphosphorous dichloride-----	SFA.
1-Phenylpiperazine-----	RSA.
*1-Phenyl-1,2-propanedione, 2-oxime-----	NEP, ORT, PD.
Phenyl-2-propanone-----	ORT.
N-3-Phenylpropyl-p-toluidine-----	EK.
dl-Phenylsuccinic acid-----	PD.
Phenyl sulfide-----	EK.
Phenyl sulfone-----	NES.
(Phenylthio)acetic acid, sodium salt-----	BJL.
1-Phenyl-2-thiourea-----	EK.
Phenylundecanoic acid-----	EK.
Phloroglucinol-----	MRT.
1(2H)-Phthalazinone-----	x.
Phthalic acid-----	EK.
Phthalic acid, diallyl ester-----	FMP.
Phthalic acid, monopotassium salt-----	EK.
*Phthalic anhydride-----	ACP, GRH, KPT, MON, PCC, PTO, RCI, SOC, STP, SW, UCC.
Phthalide-----	ACS, FMT.
Phthalimide-----	SW.
Phthalimide, potassium salt-----	EK, PD.
[Phthalocyaninato(2-)]copper-----	GAF, TRC.
Phthalocyanine, copper complex, di-(and tri)-chloro methyl.	TRC.
Phthaloyl chloride (Phthalyl chloride)-----	DUP, MON.
*Picolines: ²	
*2-Picoline (α -Picoline)-----	KPT, NEP, RIL, UCC.
3-Picoline (β -Picoline)-----	NEP, RIL.
4-Picoline (γ -Picoline)-----	NEP, RIL, UCC.
Picoline (3,4-mixture)-----	KPT.
Picolinic acid-----	NEP.
Picolinonitrile (2-Cyanopyridine)-----	NEP.
3-Picolylamine-----	RIL.
Picric acid (Trinitrophenol)-----	SDC.
2-Pipecoline-----	LIL.
1-Piperazinecarboxylic acid, ethyl ester-----	RSA.
*Piperidine-----	ABB, DUP, MRK, RIL.
3-Piperidinopropiophenone hydrochloride-----	ACY.
Polychlorobiphenyl-----	MON.
Poly(methylenephenylene) polyamide-----	KAI.
Poly-m-phenoxyene-----	EK.
Potassium cyclohexanebutyrate-----	EK.
Primuline base-----	DUP.
Primulinesulfonic acid-----	ATL.
Propiophenone-----	ORT, UOP.
2-Propyl-4-amino-5-methoxymethylpyrimidine amino-----	MRK.
n-Propylbenzene-----	EK.
8,16-Pyranthrene-dione-----	ICI, TRC.
Pyridine, refined: ²	
2° Pyridine-----	KPT, NEP, RIL.
Other grades-----	KPT.
Pyridine hydrochloride-----	EK.

See footnotes at end of table.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
3-Pyridinemethanol-----	RIL.
Pyridine-N-oxide-----	RIL.
2-Pyrimidinol-----	CGY.
2(1H)-Pyrimidinone-----	VAL.
Pyrocatechol-----	RDA.
2-Pyrrolidinone-----	GAF.
3-(1-Pyrrolidiny)propiofenone hydrochloride-----	LIL.
Quinaldine-----	ACS, ACY.
Quinoline:	
1° and 2° Quinoline-----	KPT.
Quinoline (synthetic)-----	EK.
Other grades-----	KPT.
2,4-Quinolinediol-----	PCW.
Quinophthalone (Quinoline yellow, base)-----	ACS.
Resorcinol, monoacetate (non-medicinal grade) ¹ -----	AAP.
Resorcinol, tech ¹ -----	KPT, UPF.
β-Resorcylic acid-----	KPT, UPF.
*Salicylaldehyde-----	DOW, HN, MTR, RDA.
Salicylaldehyde oxime-----	EK.
*Salicylic acid, tech-----	DOW, HN, MON, SDH.
Salicylic acid, ammonium chromium complex-----	TRC.
Salicylic acid, sodium chromium complex-----	TRC.
Sodium phenoxide-----	DUP.
*Styrene, all grades-----	ACC, CSD, DOW, ELP, ENJ, FG, GOC, KPP, MCB, MON. SHC, SKC, SNT, UCC.
5-Sulfamoylanthranilic acid-----	TRC.
Sulfanilamide, tech-----	SAL.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt---	ACS, ACY.
4-Sulfoanthranilic acid-----	CMG.
5-Sulfoanthranilic acid-----	ICI.
m-Sulfobenzoic acid, monosodium salt-----	EK.
5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt-----	PCW.
5-Sulfoisophthalic acid, lithium salt-----	PCW.
5-Sulfoisophthalic acid, sodium salt-----	PCW.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)----	MON, UPF.
4-Sulfoisophthalic acid-----	CWN, HSC.
5-(3-Sulfopropoxy)isophthalic acid, dimethyl ester, sodium salt-----	HST.
*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.
3,3',4,4'-Tetraaminobenzophenone-----	BJL.
[4,4',4'',4'''-Tetraaminophthalocyaninato(2)]copper-----	SDC.
3,3'',5',5'''-Tetrabromo-m-cresolsulfonephthalein, sodium salt-----	EK.
3',3'',5',5'''-Tetrabromophenolphthalein, ethyl ester----	EK.
Tetrabromophthalic anhydride-----	MCH.
Tetrabromo-8,16-pyranthrene-dione-----	ACS, TRC.
1,2,4,5-Tetrachlorobenzene-----	DOW, HK.
1,2,4,5-Tetrachloro-3-nitrobenzene-----	SDH.
Tetrachlorophthalic anhydride-----	MON.
3,3',4',5-Tetrachlorosalicylanilide-----	EK.
α,α,2,6-Tetrachlorotoluene-----	DUP.
Tetrachloroviolanthrone-----	GAF.
Tetrahydrofuran-----	DUP, QKO.
Tetrahydrofurfuryl methacrylate-----	SAR.

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative-----	ACS, GAF, HN, ICC, TRC.
1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone (Pentanthrimide).	GAF.
1,2,4,5-Tetramethylbenzene (Durene)-----	SNT.
N,N,N',N'-Tetramethylbenzidine-----	EK.
p-(1,1,3,3-Tetramethylbutyl)phenol-----	GAF, SCN.
N,N,N',N'-Tetramethyl-p-phenylenediamine dihydro- chloride.	EK.
Thiobenzamide-----	EK.
*3,3'-Thiobis[7H-benz[de]anthracen-7-one]-----	GAF, ICI, MAY, TRC.
1,1'-Thiobis[2-naphthol]-----	ACY.
2,2'-Thiobis[5-nitrobenzenesulfonic acid]-----	GAF.
4,4'-Thiodianiline-----	ACY.
6,6'-Thiodimetanilic acid-----	ACS, ATL, GAF.
Thiopheneacetic acid-----	BPC.
2-Thiopheneacetone nitrile-----	BPC.
2-Thiopheneacetyl chloride-----	LIL.
2-Thiophenecarboxaldehyde-----	ABB.
Thiosalicylic acid-----	AMB.
sym-Thymol-----	GIV, KPT, UPF.
*Toluene-2,4-diamine (4-m-Tolylenediamine)-----	ACS, ACY, DUP, OMC, RUC, UCC.
Toluene-2,4-disulfonic acid-----	GAF.
p-Toluenesulfonic acid, sodium salt-----	NES.
o-Toluenesulfonamide-----	MON.
p-Toluenesulfonamide-----	MON.
o-(and p)-Toluenesulfonic acid-----	EK, MON, SW, UPF.
p-Toluenesulfonic acid-----	TEN, UPF.
p-Toluenesulfonic acid, 2-methoxyethyl ester-----	EK.
p-Toluenesulfonic acid, methyl ester-----	ICI.
p-Toluenesulfonic acid, monohydrate-----	NES.
p-Toluenesulfonyl chloride-----	MON.
α-Toluenesulfonyl fluoride-----	EK.
m-Toluic acid-----	BPC.
o-Toluic acid-----	BPC.
p-Toluic acid-----	BPC, EK.
m-Toluidine-----	DUP.
o-Toluidine-----	DUP, FST.
p-Toluidine-----	DUP.
o-Toluidine hydrochloride-----	AAP, ACY.
p-Toluidine hydrochloride-----	EK.
Toluidines, mixed-----	DUP.
m-Toluidinomethanesulfonic acid-----	TRC, VPC.
o-Toluidinomethanesulfonic acid-----	GAF, TRC.
o-(p-Toluoyl)benzoic acid-----	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.
Tolylene-2,5-diamine sulfate-----	WAY.
2,2'-(m-Tolylimino)diethanol-----	EKT.
2,2'-(m-Tolylimino)diethanol, diacetate ester-----	SDC.
p-Tolylmercuric chloride-----	EK.
p-Tolylsulfonylcarbamic acid, methyl ester-----	HST.
Tolyltriazole-----	SW.
N,N,N-Tribenzylamine-----	MLS.
3,4',5-Tribromosalicylanilide-----	PCW, SW.
1,2,3(and 1,2,4)-Trichlorobenzene-----	PPG.
*1,2,4-Trichlorobenzene-----	DOW, DVC, HK, SVT.
N,2,6-Trichloro-p-benzoquinoneimine-----	EK.

CYCLIC INTERMEDIATES

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
1,1,1-Trichloro-2,2-diphenylethane-----	CWN.
Trichloromelamine-----	AMB.
1,3,5-Trichloromelamine-----	NES.
1,2,4-Trichloro-5-nitrobenzene-----	ALL, PCW.
2,4,6-Trichlorophenylhydrazine-----	SW.
Trichlorophenylsilane-----	DCC, UCC.
α,α,α -Trichlorotoluene (benzotrichloride)-----	HK, VEL.
$\alpha,2,4$ -Trichlorotoluene-----	HN.
$\alpha,3,4$ -Trichlorotoluene-----	HN.
2,4,6-Trichloro-s-triazine (Cyanuric chloride)-----	CGY, NIL.
1,3,5-Triethylbenzene-----	DUP.
2-(Trifluoromethyl)phenothiazine-----	SK.
α,α,α -Trifluoro-N-phenyl-m-toluidine (3-(Trifluoro- methyl)diphenylamine).-----	SK,
α,α,α -Trifluorotoluene-----	HK.
α,α,α -Trifluoro-o-toluidine-----	SW.
α,α,α -Trifluoro-p-toluidine-----	SW.
1,2,4-Trihydroxyanthraquinone-----	GAF.
1,2,3-Trimethylbenzene (Hemimellitine)-----	SNT.
1,2,4-Trimethylbenzene (Pseudocumene)-----	PLC, SNT.
1,3,5-Trimethylbenzene (Mesitylene)-----	SNT.
3,5,5-Trimethylcyclohexanol-----	ARS.
3,3',5,5'-Tetramethyldiphenquinone-----	DUP.
2,3,3-Trimethyl-3H-indole-----	GAF.
*1,3,3-Trimethyl- Δ^2 , α -indolineacetaldehyde-----	ACS, ATL, DUP, GAF, TRC, VPC.
*1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)----	DUP, GAF, TRC, VPC.
Trimethylphenylammonium chloride-----	x.
Trimethylphenylammonium iodide-----	EK.
$\alpha,\alpha',2$ -Trimethyl-1,4-piperazinediethanol-----	WYN.
2,4,6-Trimethylpyridine-----	KPT, RIL.
1-(Trimethylsilyl)imidazole-----	EK.
1,3,5-Trinitrobenzene-----	EK.
2,4,6-Trinitrobenzenesulfonic acid-----	EK.
2,4,7-Trinitrofluorene-9-one-----	EK, WAY, x.
2,4,6-Trinitroresorcinol, lead derivative-----	EK.
Triphenylamine-----	EK.
Triphenylarsine oxide-----	EK.
Triphenylmethane-----	EK.
Triphenylmethanol-----	EK.
α,α',α' -Tris(dimethylamino)mesitol-----	RH, TKL.
Tris(2-methyl-1-aziridinyl)phosphine oxide-----	ARS, ICC.
Tris(1,10-phenanthroline)iron(II) sulfate-----	EK.
Tri-o-tolylphosphine-----	EK.
Tropine-----	CTN.
m-Ureidoaniline-----	ICI.
*7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea).-----	ATL, CMG, GAF, TRC, VPC.
*Veratraldehyde (3,4-Dimethoxybenzaldehyde)-----	GIV, PD, SLV.
Veratryl alcohol (3,4-Dimethoxybenzyl alcohol)-----	LIL.
p-Vinylbenzenesulfonic acid, sodium salt-----	DUP.
Vinylcyclohexane-----	APL.
2-Vinylcyclohexene-----	UCC.
5-Vinyl-2-picoline (MVP)-----	PLC.
2-Vinylpyridine-----	RIL.
4-Vinylpyridine-----	RIL.
Vinyl toluene-----	FG.
*Violanthrone (Dibenzanthrone)-----	ACS, ACY, DUP, GAF, SDC, TRC.
Xanthene-9-carboxylic acid-----	MAL.
m-Xylene-----	ATR, SNT, SOC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*o-Xylene-----	ATR, CCP, CPI, CSD, CSO, ENJ, MON, PPR, SHC, SHO, SNT, SOC, TOC.
*p-Xylene-----	ACC, ATR, CSO, ENJ, HCR, PPR, SHC, SHO, SNT, SOC, SOG, TOC.
m-Xylenesulfonic acid-----	NES.
2,5-Xylenesulfonic acid-----	EK.
Xylenesulfonic acid, mixed isomers-----	NES.
Xylenol crystals-----	ACP.
2,6-Xylenol-----	GE.
2,6-Xylenol, synthetic-----	KPI.
Xylenols:	
Low b.p-----	NPC.
Medium b.p-----	NPC.
Not classified as to b.p-----	NPC.
Xylidines:	
2,4-Xylidine (m-4-Xylidene)-----	DUP.
2,5-Xylidine (p-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-----	ABB, ALL, ARA, ATL, ATR, BKL, BPC, CGY, CMG, CTN, DUP, EK, FMP, GAF, GYR, HN, JCC, KF, LIL, MON, MRK, NEP, OTC, PCW, PRD, RH, SAL, SW, UCC, USR, WTC, x, x, x.

¹ See report on Medicinal Chemicals for data on medicinal grade of this item.

² Does not include manufacturers' identification codes for producers that report to the Division of Fossil Fuels, U.S. Bureau of Mines. These producers are listed in the U.S. Bureau of Mines Mineral Industry Survey, August 23, 1972, Coke Producers in the United States in 1971.

ALPHABETICAL DIRECTORY BY CODE

Code	Name of company	Code	Name of company
AAP	American Aniline Products, Inc.	FMP	FMC Corp., Organic Chemicals Division
ABB	Abbott Laboratories	FMT	Fairmount Chemical Co., Inc.
ACC	Amoco Chemical Corp.	FST	First Chemical Corp.
ACP	Allied Chemical Corp:		
	Plastics Division	GAF	GAF Corp., Chemical Division
ACS	Specialty Chemicals Division	GE	General Electric Co.
ACY	American Cyanamid Co.	GIV	Givaudan Corp.
AIP	Air Products & Chemicals, Inc.	GLY	Glyco Chemicals, Inc.
ALD	Aldrich Chemical Co., Inc.	GOC	Gulf Oil Corp., Gulf Oil Co. Chemical Co. - United States
ALL	Alliance Chemical, Inc.	GRH	W.R. Grace & Co., Hatco Chemical Division
AMB	American Bio-Synthetics Corp.	GRS	Champlin Petroleum Co.
APD	ICI America, Inc., Atlas Chemical Division	GYR	Goodyear Tire & Rubber Co.
APL	Ameripol, Inc., Sub. of B.F. Goodrich Co.		
ARA	Arapahoe Chemical Division of Syntex Corp.	HCR	Hercor Chemical Corp.
ARK	Armstrong Cork Co.	HEX	Hexagon Laboratories, Inc.
ARS	Arsynco, Inc.	HK	Hooker Chemical Corp.:
ARZ	Arizona Chemical Co.	HKD	Durez Division
ASH	Ashland Oil, Inc.	HN	Tenneco Chemicals, Inc.
ASL	Ansul Chemical Co.	HPC	Hercules, Inc.
ATL	Atlantic Chemical Corp.	HSC	Chemetron Corp., Pigments Division
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.	HSB	Harshaw Chemical Co., Division of Kewanee Oil Co.
		HST	American Hoechst Corp.
BJL	Burdick & Jackson Laboratories, Inc.	ICC	Inmont Corp.
BKL	Millmaster Onyx Corp., Millmaster Chemical Division, Berkeley Chemical Dept.	ICI	ICI America, Inc.
BPC	Stauffer Chemical Co., Specialty-Chemical Div., Benzol Products Dept.	IDC	Industrial Dyestuff Co.
BRP	BP Oil Corp.	JCC	Jefferson Chemical Co., Inc.
BUC	Blackman-Uhler Chemical Co.		
CCP	Crown Central Petroleum Corp.	KAI	Kaiser Aluminum & Chem. Corp., Kaiser Chem. Div.
CCW	Cincinnati Milacron Chemicals, Inc.	KF	Kay-Fries Chemicals, Inc.
CEL	Celanese Corp.	KLM	Kalama Chemical Co.
CGY	Ciba-Geigy Corp.	KPP	Sinclair-Koppers Co.
CLK	Clark Oil & Refining Corp., Clark Chemical Co.	KPT	Koppers Co., Inc., Organic Materials Division
CMG	Nyanza, Inc.		
CNP	Nipro, Inc.	LAK	Lakeway Chemical Co.
CO	Continental Oil Co.	LEM	Lenke Chemicals, Inc.
CPI	Commonwealth Petrochemicals, Inc.	LIL	Eli Lilly & Co. & Puerto Rico
CRS	Carus Corp., Carus Chemical Co.		
CRZ	Crown Zellerbach Corp., Chemical Products Div.	MAL	Mallinckrodt Chemical Works
CSD	Cosden Oil & Chemical Co.	MAY	Otto B. May, Inc.
CSO	Cities Service Oil Co.	MCB	Borg-Warner Corp., Marbon Chemical Division
CSP	Coastal States Petrochemical Co.	MCH	Michigan Chemical Corp.
CTN	Chemetron Corp., Organic Chemical Division	MER	Merichem Co.
CWN	Upjohn Co., Fine Chemical Division	MLS	Miles Laboratories, Inc., Marshall Division
DA	Diamond Shamrock Corp.	MNR	Monroe Chemical Co.
DBC	Dow Badische Co.	MOB	Mobay Chemical Co.
DCC	Dow Corning Corp.	MOC	Marathon Oil Co., Texas Refining Division
DOW	Dow Chemical Co.	MON	Monsanto Co.
DSC	Dye Specialties, Inc.	MRA	Crown-Metro, Inc.
DUP	E.I. duPont de Nemours & Co., Inc.	MRK	Merck & Co., Inc.
DVC	Dover Chemical Corp.	MRT	Morton Chemical Co.
EK	Eastman Kodak Co.:	MTO	Montrose Chemical Co.
EKT	Tennessee Eastman Co. Division	MTR	Chris-Craft Industries, Inc., Montrose Chemical Division
ELP	El Paso Products Co.		
ENJ	Enjay Chemical Co.	NCI	Union Carb Corp., Chemicals Division
FG	Foster Grant Co., Inc.	NEP	Nepera Chemical Co., Inc.
FIN	Fine Organics, Inc.	NES	Nease Chemical Co., Inc.
FIS	Fisher Chemical Co., Inc., Fisher Melamine Corp.	NEV	Neville Chemical Co.
FIM	Fleming Laboratories, Inc.	NIL	Nilok Chemicals, Inc.
		NOR	Norwich Pharmacal Co.
		NPC	Northwest Petrochemical Corp.

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TABLE 3.--CYCLIC INTERMEDIATES: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

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

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

DYES

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 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 1971 amounted to 244 million pounds, or 3.9 percent more than the 235 million pounds produced in 1970 (table 1).¹ Sales of dyes in 1971 amounted to 230 million pounds, valued at \$423 million, compared with 223 million pounds, valued at \$390 million, in 1970. In terms of quantity, sales of dyes in 1971 were 2.8 percent larger than in 1970 and in terms of value, 8.2 percent larger. The average unit value of sales of all dyes in 1971 was \$1.84 a pound, compared with \$1.75 in 1970.

For many important dyes, production was larger in 1971 than in 1970: Acid Yellow 151 production increased 54.3 percent, from 843,000 pounds in 1970 to 1,301,000 pounds in 1971; Disperse Yellow 3 output increased 32.5 percent, from 1,870,000 pounds in 1970 to 2,478,000 pounds in 1971. Other important dyes whose output in 1971 was substantially larger than in 1970 were Disperse Blue 79 (29.6 percent increase), Direct Black 38 (28.1 percent increase), Direct Blue 2 (24.3 percent increase), Direct Yellow 106 (15.5 percent increase), and Disperse Blue 3 (8.7 percent increase).

On the other hand, the output of several important dyes was smaller in 1971 than in 1970. Production of Vat Black 25 was 1,542,000 pounds in 1971, or 50.5 percent less than the 3,113,000 pounds produced in 1970. Production of Vat Green 3 in 1971 was 2,070,000 pounds, or 45.2 percent less than the 3,780,000 pounds produced in 1970. The output of Vat Orange 1 was 45.1 percent smaller in 1971 than in 1970; that of Vat Yellow 2 was 39.4 percent smaller, that of FD and C Red No. 2 was 27.1 Percent smaller; that of Direct Blue 218 was 24.6 percent smaller; and that of Acid blue 9 was 21.4 percent smaller.

Table 1A summarizes production and sales of dyes in 1971 by class of application. Five application classes of dyes accounted for approx-

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

SYNTHETIC ORGANIC CHEMICALS, 1971

imately three-fourths of all the dyes produced in 1971. Vat dyes accounted for 20.9 percent of the total; disperse dyes, for 14.3 percent; direct dyes, for 14.2 percent; fluorescent brighteners, for 12.2 percent; and acid dyes, for 11.0 percent. Of these five classes of dyes, the output of Vat dyes was 9.8 percent smaller in 1971 than in 1970, and the output of fluorescent brighteners was 4.8 percent smaller. The output of disperse dyes, however, was 20.5 percent larger in 1971 than in 1970; the output of acid dyes was 16.1 percent larger; and the output of direct dyes was 7.6 percent larger.

Of the remaining classes, the output of fiber-reactive dyes in 1971 was 66.1 percent more than the 1970 production; that of azoic compositions was 33.2 percent larger in 1971 than in 1970; and that of basic dyes was 14.7 percent larger in 1971. Production of mordant dyes decreased 28.9 percent in 1971 from the 1970 output; food, drug and cosmetic colors decreased 9.3 percent in 1971; and solvent dye output in 1971 was 7.2 percent less than the 1970 output.

Table 1B shows production and sales of dyes, by chemical class. In 1971, three chemical classes of dyes accounted for about two-thirds of all dyes produced: Azo dyes accounted for 33.7 percent of the total; anthraquinone dyes, for 19.4 percent; and stilbene dyes, for 13.2 percent. The output of azo dyes was 13.7 percent larger in 1971 than in 1970, that of the stilbene dyes was 0.7 percent larger, and that of the anthraquinone dyes, 9.2 percent smaller. Of the remaining chemical classes for which statistics are published, the output of thiazole dyes was 55.7 percent larger in 1971 than in 1970; cyanine dyes 20.1 percent larger; oxazine dyes, 29.5 percent larger; methine dyes, 19.6 percent larger; quinoline dyes, 28.9 percent larger; azoic dyes and components, 25.4 percent larger; and phthalocyanine dyes, 3.2 percent larger. On the other hand, the output of the nitro dyes was 15.9 percent smaller in 1971 than in 1970; that of the xanthene dyes was 4.1 percent smaller, and that of the triarylmethane dyes was 3.1 percent smaller.

DYES

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TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1971

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

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	243,729	229,544	422,627	\$1.84
ACID DYES				
Total-----	26,798	24,098	60,548	2.51
Acid yellow dyes, total-----	6,404	5,549	14,209	2.56
Acid Yellow 11-----	78	81	152	1.88
Acid Yellow 17-----	569	505	1,160	2.30
Acid Yellow 23-----	312	320	759	2.37
Acid Yellow 34-----	78	...	...	...
Acid Yellow 36-----	192	196	337	1.72
Acid Yellow 38-----	160	138	462	3.35
Acid Yellow 40-----	339	249	776	3.12
Acid Yellow 42-----	81	72	139	1.93
Acid Yellow 44-----	17	18	53	2.94
Acid Yellow 54-----	38	75	172	2.29
Acid Yellow 76-----	52	29	77	2.66
Acid Yellow 99-----	105	87	231	2.66
Acid Yellow 124-----	...	46	120	2.61
Acid Yellow 151-----	1,301	1,084	2,309	2.13
Acid Yellow 159-----	588	489	1,330	2.72
All other-----	2,494	2,160	6,132	2.84
Acid orange dyes, total-----	4,078	3,869	7,445	1.92
Acid Orange 7-----	559	519	640	1.23
Acid Orange 8-----	283	315	453	1.44
Acid Orange 10-----	271	281	415	1.48
Acid Orange 24-----	934	859	1,388	1.62
Acid Orange 60-----	190	172	483	2.81
Acid Orange 64-----	48	63	181	2.87
Acid Orange 74-----	82	62	141	2.27
Acid Orange 116-----	746	662	1,505	2.27
All other-----	965	936	2,239	2.39
Acid red dyes, total-----	4,958	4,151	11,023	2.66
Acid Red 1-----	433	439	454	1.03
Acid Red 4-----	102	106	186	1.75
Acid Red 14-----	113	112	203	1.81
Acid Red 18-----	115	97	122	1.26
Acid Red 26-----	45	31	48	1.55
Acid Red 37-----	78	86	333	3.87
Acid Red 73-----	258	252	744	2.95
Acid Red 85-----	162	208	449	2.16
Acid Red 88-----	819	272	477	1.75
Acid Red 89-----	18	29	48	1.66
Acid Red 99-----	174	138	253	1.83
Acid Red 114-----	344	314	783	2.49
Acid Red 115-----	75	55	117	2.13
Acid Red 137-----	180	167	627	3.75
Acid Red 151-----	643	568	1,284	2.26
Acid Red 182-----	67	67	212	3.16
Acid Red 186-----	27	26	59	2.27
Acid Red 266-----	123	104	504	4.85
All other-----	1,182	1,080	4,120	3.81
Acid violet dyes, total-----	473	478	1,194	2.50
Acid Violet 1-----	38	37	61	1.65
Acid Violet 3-----	87	83	173	2.08
Acid Violet 7-----	96	112	158	1.41

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1971--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-----	...	31	50	\$1.61
Acid Violet 17-----	70	63	156	2.48
Acid Violet 43-----	13	10	37	3.70
Acid Violet 49-----	98	96	281	2.93
All other-----	71	46	278	6.04
Acid blue dyes, total-----	5,070	4,411	14,148	3.21
Acid Blue 7-----	30	30	114	3.80
Acid Blue 9-----	1,468	1,121	1,611	1.44
Acid Blue 25-----	275	286	1,623	5.67
Acid Blue 27-----	99	107	443	4.14
Acid Blue 40-----	328	313	1,433	4.58
Acid Blue 41-----	66	47	200	4.26
Acid Blue 45-----	372	320	1,228	3.84
Acid Blue 62-----	30	41	276	6.73
Acid Blue 78-----	16	19	150	7.89
Acid Blue 80-----	...	45	408	9.07
Acid Blue 92-----	98	...	...	...
Acid Blue 113-----	832	694	1,604	2.31
Acid Blue 118-----	89	73	157	2.15
Acid Blue 120-----	...	37	78	2.11
Acid Blue 158 and 158A-----	101	122	248	2.03
Acid Blue 230-----	...	30	214	7.13
All other-----	1,266	1,126	4,361	3.87
Acid green dyes, total-----	716	683	2,113	3.09
Acid Green 3-----	122	128	218	1.70
Acid Green 9-----	...	13	55	4.23
Acid Green 16-----	...	37	164	4.43
Acid Green 20-----	52	44	94	2.14
Acid Green 25-----	355	310	1,057	3.41
All other-----	187	151	525	3.48
Acid brown dyes, total-----	1,602	1,537	3,631	2.36
Acid Brown 14-----	869	780	1,509	1.93
All other-----	733	757	2,122	2.80
Acid black dyes, total-----	3,497	3,420	6,785	1.98
Acid Black 1-----	941	827	1,434	1.73
Acid Black 24-----	...	54	112	2.07
Acid Black 48-----	...	8	55	6.88
Acid Black 52-----	694	699	1,370	1.96
Acid Black 107-----	206	211	616	2.92
All other-----	1,656	1,621	3,198	1.97
AZOIC DYES AND COMPONENTS				
Azoic Compositions				
Total-----	3,506	2,552	4,690	1.84
Azoic Yellow 2-----	48	...	...	...
Azoic Orange 3-----	113	...	...	...
Azoic Red 1-----	520	...	...	...
Azoic Red 2-----	97	...	...	...
Azoic Blue 3-----	379	242	383	1.58
Azoic Brown 9-----	486	303	317	1.05
Azoic black dyes-----	849	670	1,457	2.17
All other azoic compositions-----	1,014	1,337	2,533	1.89

See footnotes at end of table.

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
AZOIC DYES AND COMPONENTS--Continued				
<i>Azoic Diazo Components, Bases</i> (Fast Color Bases)				
Total-----	1,399	1,041	1,539	\$1.48
Azoic Diazo Component 4, base-----	179	202	257	1.27
Azoic Diazo Component 32, base-----	...	153	234	1.53
All other azoic diazo components, bases-----	1,220	686	1,048	1.53
<i>Azoic Diazo Components, Salts</i> (Fast Color Salts)				
Total-----	3,158	3,049	3,500	1.15
Azoic Diazo Component 1, salt-----	245	228	259	1.14
Azoic Diazo Component 3, salt-----	639	668	479	.72
Azoic Diazo Component 5, salt-----	287	267	305	1.14
Azoic Diazo Component 6, salt-----	...	66	84	1.27
Azoic Diazo Component 8, salt-----	106	109	171	1.57
Azoic Diazo Component 9, salt-----	265	256	188	.73
Azoic Diazo Component 10, salt-----	55	56	84	1.50
Azoic Diazo Component 11, salt-----	...	18	32	1.78
Azoic Diazo Component 12, salt-----	339	360	472	1.31
Azoic Diazo Component 13, salt-----	351	355	313	.88
Azoic Diazo Component 49, salt-----	83	93	292	3.14
All other azoic diazo components, salts-----	788	573	821	1.43
<i>Azoic Coupling Components</i> (Naphthol AS and Derivatives)				
Total-----	2,274	1,227	2,639	2.15
Azoic Coupling Component 2-----	20	...	...	...
Azoic Coupling Component 7-----	965	483	934	1.93
Azoic Coupling Component 15-----	...	19	113	5.95
Azoic Coupling Component 18-----	...	239	304	1.27
Azoic Coupling Component 43-----	36	...	...	...
All other azoic coupling components-----	1,253	486	1,288	2.65
BASIC DYES				
Total-----	16,580	15,519	44,211	2.85
Basic yellow dyes, total-----	4,341	4,119	11,301	2.74
Basic Yellow 11-----	1,174	999	3,262	3.27
Basic Yellow 13-----	269	198	434	2.19
All other-----	2,898	2,922	7,605	2.60
Basic orange dyes, total-----	1,974	1,794	4,290	2.39
Basic Orange 1-----	307	315	460	1.46
Basic Orange 2-----	493	481	720	1.50
Basic Orange 21-----	977	823	2,424	2.95
All other-----	197	175	686	3.92
Basic red dyes, total-----	2,686	2,547	8,231	3.23
Basic Red 9-----	...	21	75	3.57
Basic Red 13-----	37	40	127	3.18
Basic Red 14-----	602	556	1,500	2.70
All other-----	2,047	1,930	6,529	3.38

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
BASIC DYES--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Basic violet dyes, total-----	3,363	2,996	7,472	\$2.49
Basic Violet 1-----	1,223	916	1,528	1.67
Basic Violet 10-----	215	259	1,265	4.88
Basic Violet 16-----	412	312	1,019	3.27
All other-----	1,513	1,509	3,660	2.43
Basic blue dyes, total-----	2,952	2,652	9,834	3.71
Basic Blue 1-----	...	137	448	3.27
Basic Blue 5-----	22	20	122	6.10
Basic Blue 7-----	152	...	...	...
All other-----	2,778	2,495	9,264	3.71
Basic Green 1-----	78	114	430	3.77
Basic Green 4-----	514	552	1,384	2.51
Basic Brown 1-----	65	143	224	1.57
Basic Brown 4-----	481	483	745	1.54
All other basic dyes-----	126	119	300	2.52
DIRECT DYES				
Total-----	34,705	34,137	58,381	1.71
Direct yellow dyes, total-----	10,596	10,390	19,289	1.86
Direct Yellow 4-----	471	480	950	1.98
Direct Yellow 5-----	192	226	709	3.14
Direct Yellow 6-----	482	497	881	1.77
Direct Yellow 11-----	2,124	2,145	2,219	1.03
Direct Yellow 12-----	257	249	821	3.30
Direct Yellow 28-----	242	223	522	2.34
Direct Yellow 29-----	43	42	111	2.64
Direct Yellow 44-----	872	903	1,740	1.93
Direct Yellow 50-----	487	438	933	2.13
Direct Yellow 84-----	760	734	1,021	1.39
Direct Yellow 105-----	390	359	832	2.32
Direct Yellow 106-----	1,135	1,119	1,937	1.73
All other-----	3,141	2,975	6,613	2.22
Direct orange dyes, total-----	2,268	2,134	5,559	2.60
Direct Orange 1-----	22	46	76	1.65
Direct Orange 8-----	62	88	95	1.08
Direct Orange 15-----	232	220	285	1.30
Direct Orange 26-----	59	57	139	2.44
Direct Orange 29-----	125	153	378	2.47
Direct Orange 34-----	108	105	272	2.59
Direct Orange 37-----	39	39	95	2.44
Direct Orange 39-----	195	179	427	2.39
Direct Orange 72-----	396	339	784	2.31
Direct Orange 73-----	...	179	797	4.45
Direct Orange 102-----	257	279	816	2.92
All other-----	773	450	1,395	3.10
Direct red dyes, total-----	4,138	4,031	9,696	2.41
Direct Red 1-----	124	143	276	1.93
Direct Red 2-----	248	231	515	2.23
Direct Red 4-----	41	37	112	3.03
Direct Red 10-----	10	12	18	1.50
Direct Red 13-----	45	55	101	1.84
Direct Red 23-----	240	194	529	2.73
Direct Red 24-----	398	335	714	2.13
Direct Red 26-----	95	103	290	2.82
Direct Red 28-----	106	136	234	1.72
Direct Red 31-----	16	15	53	3.53

See footnotes at end of table.

DYES

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TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1971--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--Continued				
Direct Red 37-----	108	136	411	\$3.02
Direct Red 39-----	148	129	387	3.00
Direct Red 72-----	189	218	517	2.37
Direct Red 75-----	20	20	73	3.65
Direct Red 79-----	82	106	315	2.97
Direct Red 80-----	602	548	1,030	1.88
Direct Red 81-----	535	530	1,379	2.60
Direct Red 83-----	234	189	319	1.69
Direct Red 122-----	...	26	136	5.23
Direct Red 123-----	...	18	63	3.50
All other-----	897	850	2,224	2.62
Direct violet dyes, total-----	362	356	1,068	3.00
Direct Violet 7-----	...	7	29	4.14
Direct Violet 9-----	193	196	399	2.04
Direct Violet 51-----	...	8	69	8.62
All other-----	169	145	571	3.94
Direct blue dyes, total-----	7,128	6,840	11,717	1.71
Direct Blue 1-----	300	322	654	2.03
Direct Blue 2-----	1,278	1,328	1,442	1.09
Direct Blue 6-----	263	334	308	.92
Direct Blue 8-----	141	164	364	2.22
Direct Blue 15-----	207	172	299	1.74
Direct Blue 22-----	...	14	36	2.57
Direct Blue 24-----	...	8	9	1.12
Direct Blue 25-----	50	48	131	2.73
Direct Blue 67-----	...	15	77	5.13
Direct Blue 71-----	...	69	217	3.14
Direct Blue 76-----	117	98	162	1.65
Direct Blue 78-----	141	125	400	3.20
Direct Blue 80-----	629	598	1,086	1.82
Direct Blue 86-----	716	786	1,214	1.54
Direct Blue 98-----	86	70	133	1.90
Direct Blue 120 and 120A-----	...	232	524	2.26
Direct Blue 126-----	203	160	537	3.36
Direct Blue 218-----	1,054	1,086	2,127	1.96
All other-----	1,943	1,211	1,997	1.65
Direct green dyes, total-----	966	1,017	2,144	2.11
Direct Green 1-----	239	229	270	1.18
Direct Green 6-----	518	573	855	1.49
All other-----	209	215	1,019	4.74
Direct brown dyes, total-----	1,952	1,952	3,203	1.64
Direct Brown 1A-----	...	109	156	1.43
Direct Brown 2-----	263	253	420	1.66
Direct Brown 31-----	166	176	582	3.31
Direct Brown 74-----	68	69	134	1.94
Direct Brown 95-----	529	549	600	1.09
Direct Brown 111-----	...	78	337	4.32
Direct Brown 154-----	443	416	412	.99
All other-----	483	302	562	1.86
Direct black dyes, total-----	7,295	7,417	5,705	.77
Direct Black 4-----	87	136	173	1.27
Direct Black 9-----	46	38	55	1.45
Direct Black 19-----	...	43	72	1.67
Direct Black 22-----	666	727	398	.55
Direct Black 38-----	5,286	5,300	3,391	.64
Direct Black 51-----	50	56	182	3.25
Direct Black 80-----	668	659	642	.97
All other-----	492	458	792	1.73

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
DISPERSE DYES	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total-----	34,877	31,129	89,838	\$2.89
Disperse yellow dyes, total-----	7,513	7,171	15,541	2.17
Disperse Yellow 3-----	2,478	2,441	3,846	1.58
Disperse Yellow 23-----	1,160	1,043	1,593	1.53
Disperse Yellow 33-----	333	326	522	1.60
Disperse Yellow 34-----	133	173	292	1.69
Disperse Yellow 42-----	766	704	1,292	1.84
Disperse Yellow 54-----	811	878	3,843	4.38
All other-----	1,832	1,606	4,153	2.59
Disperse orange dyes, total-----	3,924	3,561	7,352	2.06
Disperse Orange 3-----	135	128	239	1.87
Disperse Orange 5-----	220	216	530	2.45
Disperse Orange 17-----	265	198	233	1.18
Disperse Orange 25-----	463	398	792	1.99
All other-----	2,841	2,621	5,558	2.12
Disperse red dyes, total-----	7,047	5,909	20,482	3.47
Disperse Red 1-----	306	290	507	1.75
Disperse Red 5-----	138	137	193	1.41
Disperse Red 11-----	92	93	618	6.65
Disperse Red 13-----	...	21	30	1.43
Disperse Red 15-----	128	95	277	2.92
Disperse Red 17-----	213	167	250	1.50
Disperse Red 55-----	547	...	...	...
Disperse Red 60-----	1,550	1,309	4,686	3.58
Disperse Red 65-----	231	179	399	2.23
All other-----	3,842	3,618	13,522	3.74
Disperse violet dyes, total-----	1,029	809	3,107	3.84
Disperse Violet 1-----	167	119	434	3.65
Disperse Violet 4-----	54	36	152	4.22
Disperse Violet 27-----	284	183	379	2.07
All other-----	524	471	2,142	4.55
Disperse blue dyes, total-----	13,619	12,117	40,253	3.32
Disperse Blue 1-----	479	408	1,796	4.40
Disperse Blue 3-----	1,855	1,599	2,685	1.68
Disperse Blue 7-----	275	303	2,349	7.75
Disperse Blue 64-----	250	191	371	1.94
Disperse Blue 79-----	1,857	1,699	5,673	3.34
All other-----	8,903	7,917	27,379	3.46
Disperse Brown 2-----	148	...	...	...
Disperse black dyes, total-----	1,306	1,229	2,184	1.78
Disperse Black 1-----	...	207	392	1.89
All other-----	1,306	1,022	1,792	1.75
All other disperse dyes-----	291	333	919	2.76
FIBER-REACTIVE DYES				
Fiber-reactive dyes, total-----	3,712	3,495	12,474	3.57
Reactive yellow dyes-----	372	397	1,435	3.61
Reactive blue dyes-----	1,021	975	3,629	3.72
Reactive black dyes-----	...	123	314	2.55
All other reactive dyes-----	2,319	2,000	7,096	3.55

See footnotes at end of table.

TABLE 1.--Dyes: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
FLUORESCENT BRIGHTENING AGENTS	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Total-----	29,812	27,194	41,568	\$1.53
Fluorescent Brightening Agent 28-----	1,574	1,633	2,265	1.39
All other fluorescent brightening agents-----	28,238	25,561	39,303	1.54
FOOD, DRUG, AND COSMETIC COLORS				
Total-----	3,948	3,960	15,340	3.87
<i>Food, Drug, and Cosmetic Dyes</i>				
Total-----	3,757	3,782	13,859	3.66
FD&C Blue No. 1-----	80	109	1,073	9.84
FD&C Blue No. 2-----	...	47	426	9.06
FD&C Red No. 2-----	1,043	1,198	3,373	2.82
FD&C Red No. 3-----	253	251	2,180	8.69
FD&C Violet No. 1-----	45	35	386	11.03
FD&C Yellow No. 5-----	1,233	1,057	3,097	2.93
FD&C Yellow No. 6-----	1,021	1,026	2,828	2.76
All other food, drug, and cosmetic dyes-----	82	59	496	8.41
<i>Drug and Cosmetic and External Drug and Cosmetic Dyes</i>				
Total-----	191	178	1,481	8.32
D&C Green dyes-----	14	...	...	...
D&C Orange No. 4-----	7	...	...	...
D&C red dyes, total-----	116	100	585	5.85
D&C Red No. 6-----	9	...	...	...
D&C Red No. 7-----	...	12	52	4.33
D&C Red No. 9-----	36	24	76	3.17
D&C Red No. 19-----	8	7	101	14.43
D&C Red No. 21-----	...	9	36	4.00
D&C Red No. 36-----	...	4	16	4.00
All other-----	63	44	304	6.91
D&C Yellow dyes-----	23	22	230	10.45
All other drug & cosmetic and external drug & cosmetic dyes-----	31	56	666	11.89
MORDANT DYES				
Total-----	1,297	1,289	2,237	1.74
Mordant yellow dyes, total-----	93	100	175	1.75
Mordant Yellow 1-----	17	15	30	2.00
Mordant Yellow 8-----	...	6	14	2.33
All other-----	76	79	131	1.66
Mordant orange dyes-----	175	224	374	1.67
Mordant red dyes-----	76	74	223	3.01
Mordant brown dyes, total-----	222	244	580	2.38
Mordant Brown 1-----	26	39	92	2.36
Mordant Brown 33-----	49	52	118	2.27
Mordant Brown 40-----	...	12	25	2.08
All other-----	147	141	345	2.45

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
MORDANT DYES--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Mordant black dyes, total-----	714	627	822	\$1.31
Mordant Black 11-----	547	419	527	1.26
Mordant Black 17-----	100	121	140	1.16
All other-----	67	87	155	1.78
All other mordant dyes-----	17	20	63	3.15
SOLVENT DYES				
Total-----	10,636	10,346	18,337	1.77
Solvent yellow dyes, total-----	965	989	2,498	2.53
Solvent Yellow 2-----	22	25	46	1.84
Solvent Yellow 14-----	574	580	776	1.34
Solvent Yellow 47-----	35	45	264	5.87
All other-----	334	339	1,412	4.17
Solvent orange dyes, total-----	785	710	1,445	2.04
Solvent Orange 3-----	54	42	76	1.81
Solvent Orange 7-----	76	70	118	1.69
All other-----	655	598	1,251	2.09
Solvent red dyes, total-----	2,433	2,404	4,455	1.85
Solvent Red 26-----	295	275	621	2.26
Solvent Red 49-----	63	53	368	6.94
All other-----	2,075	2,076	3,466	1.67
Solvent violet dyes-----	354	333	862	2.59
Solvent Blue 38-----	71	108	557	5.16
Solvent Green 3-----	101	53	246	4.64
Solvent Brown 12-----	23	15	46	3.07
All other solvent dyes-----	5,904	5,734	8,228	1.43
VAT DYES				
Total-----	50,925	51,610	53,925	1.04
Vat yellow dyes, total-----	4,119	4,654	7,967	1.71
Vat Yellow 2, 8-1/2%-----	2,211	2,816	2,927	1.04
Vat Yellow 4, 12-1/2%-----	529	532	833	1.57
All other-----	1,379	1,306	4,207	3.22
Vat orange dyes, total-----	3,156	3,110	8,256	2.65
Vat Orange 1, 20%-----	918	1,106	3,149	2.85
Vat Orange 2, 12%-----	501	503	1,093	2.17
Vat Orange 9, 12%-----	190	141	349	2.48
Vat Orange 15, 10%-----	498	454	1,198	2.64
All other-----	1,049	906	2,467	2.72
Vat red dyes, total-----	1,271	1,232	2,834	2.30
Vat Red 1, 13%-----	396	425	936	2.20
Vat Red 13, 11%-----	275	198	692	3.49
All other-----	600	609	1,206	1.98
Vat violet dyes, total-----	1,426	1,093	2,350	2.15
Vat Violet 1, 11%-----	236	258	774	3.00
Vat Violet 9, 12%-----	158	124	492	3.97
Vat Violet 13, 6-1/4%-----	721	532	668	1.26
All other-----	311	179	416	2.32

See footnotes at end of table.

DYES

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TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Dye	Production	Sales		
		Quantity	Value	Unit value ¹
VAT DYES--Continued	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Vat blue dyes, total-----	24,935	25,305	13,059	\$0.52
Vat Blue 6, 8-1/3%-----	2,757	2,853	3,129	1.10
Vat Blue 18, 13%-----	716	...	...	...
All other-----	21,462	22,452	9,930	.44
Vat green dyes, total-----	7,688	7,476	6,549	.88
Vat Green 1, 6%-----	3,966	3,614	2,466	.68
Vat Green 3, 10%-----	2,070	1,923	2,122	1.10
Vat Green 9, 12-1/2%-----	867	969	854	.88
All other-----	785	970	1,107	1.14
Vat brown dyes, total-----	4,705	4,580	8,331	1.82
Vat Brown 1, 11%-----	747	699	1,192	1.71
Vat Brown 3, 11%-----	746	845	1,660	1.96
All other-----	3,212	3,036	5,479	1.80
Vat black dyes, total-----	3,625	4,160	4,579	1.10
Vat Black 25, 12-1/2%-----	1,542	1,932	1,769	.92
Vat Black 27, 12-1/2%-----	491	668	985	1.47
All other-----	1,592	1,560	1,825	1.17
All other dyes ² -----	20,102	18,898	13,400	.71

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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1A.--DYES: U.S. PRODUCTION AND SALES, BY CLASS OF APPLICATION, 1971

Class of application	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total-----	243,729	229,544	422,627	\$1.84
Acid-----	26,798	24,098	60,548	2.51
Azoic dyes and components:				
Azoic compositions-----	3,506	2,552	4,690	1.84
Azoic diazo components, bases (Fast color bases)-----	1,399	1,041	1,539	1.48
Azoic diazo components, salts (Fast color salts)-----	3,158	3,049	3,500	1.15
Azoic coupling components (Naphthol AS derivatives)-----	2,274	1,227	2,639	2.15
Basic-----	16,580	15,519	44,211	2.85
Direct-----	34,705	34,137	58,381	1.71
Disperse-----	34,877	31,129	89,838	2.89
Fiber-reactive-----	3,712	3,495	12,474	3.57
Fluorescent brightening agents-----	29,812	27,194	41,568	1.53
Food, drug, and cosmetic colors-----	3,948	3,960	15,340	3.87
Mordant-----	1,297	1,289	2,237	1.74
Solvent-----	10,636	10,346	18,337	1.77
Vat-----	50,925	51,610	53,925	1.04
All other ² -----	20,102	18,898	13,400	.71

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, 1971

Chemical class	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total-----	243,729	229,544	422,627	\$1.84
Aminoketone-----	...	29	229	7.90
Anthraquinone-----	47,191	45,320	108,252	2.39
Azo, total-----	82,050	77,325	165,827	2.14
Monazo-----	33,402	30,906	76,202	2.47
Disazo-----	25,995	24,755	50,618	2.04
Trisazo-----	9,432	9,455	10,656	1.13
Polyazo-----	2,418	2,281	3,654	1.60
Not specified-----	10,803	9,928	24,697	2.49
Azoic-----	10,385	7,904	12,436	1.57
Coumarin-----	2,368	2,506	7,935	3.17
Cyanine-----	871	754	1,934	2.56
Methine-----	3,889	3,374	10,452	3.10
Nitro-----	1,463	1,444	2,669	1.85
Oxazine-----	509	473	2,592	5.48
Phthalocyanine-----	1,811	1,781	3,743	2.10
Quinoline-----	2,237	2,140	7,574	3.54
Stilbene-----	32,162	28,998	39,487	1.36
Thiazole-----	369	363	1,054	2.90
Triarylmethane-----	7,718	7,017	16,980	2.42
Xanthene-----	1,060	963	5,929	6.16
All other ² -----	49,646	49,153	35,534	.72

¹ Calculated from rounded figures.² Includes production and sales of acridine, aminoketone, azine, indophenol, ketone imine, nitroso, 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, 1971

[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 signified that the manufacturer did not consent to his identification with the designated product]

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES	
*Acid yellow dyes:	
Acid Yellow 1-----	ACY.
Acid Yellow 3-----	ACS, ACY.
*Acid Yellow 11-----	ATL, BDO, CMG, VPC.
Acid Yellow 14-----	TRC.
*Acid Yellow 17-----	ACS, ACY, ATL, BDO, CMG, DUP, HN, PDC, SDH, TRC, VPC.
Acid Yellow 19-----	ATL.
*Acid Yellow 23-----	AAP, ACS, ACY, GAF, MRX, PDC, SDH, 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, ATL, 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, HN, TRC, VPC.
Acid Yellow 59-----	VPC.
Acid Yellow 63-----	AAP, ACS.
Acid Yellow 65-----	ALT, FAB, TRC.
Acid Yellow 73-----	ACS, DUP, SDH.
*Acid Yellow 76-----	ACS, GAF, TRC.
Acid Yellow 77-----	ACY.
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, HN.
Acid Yellow 127-----	TRC.
Acid Yellow 128-----	ALT, TRC.
Acid Yellow 129-----	CMG, TRC.
Acid Yellow 135-----	GAF.
*Acid Yellow 151-----	ACY, ATL, CMG, DUP, FAB, GAF, HN, TRC, VPC.
Acid Yellow 152-----	ACY.
*Acid Yellow 159-----	ACS, ALT, FAB, GAF, HN, TRC, VPC.
Acid Yellow 174-----	DUP, VPC.
Acid Yellow 175-----	DUP.
Other acid yellow dyes-----	ACY, ALT, BAS, CMG, GAF, HST, TRC, VPC.
*Acid orange dyes:	
Acid Orange 1-----	GAF, HN.
Acid Orange 2-----	ACS.
Acid Orange 5-----	ACY.
Acid Orange 6-----	ACS.
*Acid Orange 7-----	AAP, ACS, ACY, ATL, CPC, DUP, GAF, HN, PDC, TRC, VPC, YAW.
*Acid Orange 8-----	ACS, ACY, ATL, DUP, GAF, HN, TRC, VPC.
*Acid Orange 10-----	ACS, ACY, ATL, DUP, GAF, PDC, TRC, VPC.
Acid Orange 12-----	ACS.
*Acid Orange 24-----	ACS, ACY, DUP, GAF, TRC, YAW.
Acid Orange 31-----	AAP.
Acid Orange 45-----	ACS, TRC.
Acid Orange 51-----	CMG, TRC.
Acid Orange 52-----	ACS, ATL.
Acid Orange 56-----	GAF.
*Acid Orange 60-----	ATL, CMG, DUP, GAF, HN, TRC.
Acid Orange 62-----	TRC.
Acid Orange 63-----	GAF, TRC.
*Acid Orange 64-----	ACS, ACY, DUP.
Acid Orange 69-----	ACY.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid orange dyes--Continued	
Acid Orange 72-----	GAF.
*Acid Orange 74-----	ACS, CMG, GAF, TRC.
Acid Orange 76-----	TRC.
Acid Orange 85-----	ACS.
Acid Orange 86-----	ACS, ALT, TRC.
*Acid Orange 116-----	ACS, ALT, FAB, GAF, HN, TRC, YAW.
Acid Orange 119-----	TRC.
Acid Orange 128-----	DUP.
Acid Orange 132-----	DUP.
Other acid orange dyes-----	ALT, GAF, HST, TRC, VPC.
*Acid red dyes:	
*Acid Red 1-----	AAP, ACS, ACY, ATL, BDO, DUP, GAF, HN, SDH, TRC, VPC, YAW.
*Acid Red 4-----	AAP, ATL, BDO, CMG, GAF, PDC, TRC, VPC, YAW.
*Acid Red 14-----	ACS, ATL, GAF, PDC, YAW.
Acid Red 17-----	ACS, ATL, TRC.
*Acid Red 18-----	ACS, ATL, BDO, GAF, 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, HN, TRC.
Acid Red 42-----	GAF.
Acid Red 52-----	GAF.
Acid Red 57-----	ATL, TRC.
Acid Red 66-----	AAP, ATL.
*Acid Red 73-----	ACS, ACY, ATL, DUP, GAF, PSC, TRC, YAW.
Acid Red 80-----	ATL, GAF, ICI.
*Acid Red 85-----	ACS, ACY, ALT, ATL, CMG, DUP, GAF, HN, 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, HN.
Acid Red 97-----	ATL, GAF.
*Acid Red 99-----	ATL, CMG, FAB, HN, TRC, YAW.
Acid Red 100-----	VPC.
Acid Red 106-----	YAW.
Acid Red 111-----	ATL.
*Acid Red 114-----	ACS, ALT, ATL, DUP, GAF, TRC, VPC.
*Acid Red 115-----	ACS, ATL, GAF.
*Acid Red 119-----	ALT, ATL.
Acid Red 133-----	GAF.
Acid Red 134-----	TRC.
*Acid Red 137-----	ACS, ATL, DUP, GAF, HN, TRC.
Acid Red 138-----	ALT.
*Acid Red 151-----	AAP, ACY, ALT, ATL, DUP, HN, TRC, VPC, YAW.
Acid Red 167-----	ACS, ATL, DUP, TRC.
Acid Red 175-----	DUP.
Acid Red 178-----	DUP.
*Acid Red 182-----	ACS, ALT, ATL, BDO, CMG, DUP, GAF, HN.
Acid Red 183-----	CMG, TRC.
*Acid Red 186-----	ACY, ATL, CMG, GAF, VPC.
Acid Red 191-----	TRC.
Acid Red 194-----	CMG, TRC.
Acid Red 201-----	TRC.
Acid Red 211-----	DUP.
Acid Red 212-----	TRC.
Acid Red 213-----	TRC.
*Acid Red 266-----	DUP, TRC, VPC.
Acid Red 292-----	ACY.
Acid Red 299-----	ALT, TRC.
Acid Red 309-----	TRC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid red dyes--Continued	
Acid Red 337-----	DUP, TRC, VPC.
Acid Red 345-----	DUP.
Acid Red 350-----	GAF.
Other acid red dyes-----	ALT, CMG, DUP, GAF, HN, TRC, VPC.
*Acid violet dyes:	
*Acid Violet 1-----	BDO, CMG, GAF.
*Acid Violet 3-----	ACS, ACY, TRC, YAW.
*Acid Violet 7-----	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-----	ATL, DUP, ICI.
Acid Violet 41-----	CMG.
*Acid Violet 43-----	ATL, HSH, ICI.
*Acid Violet 49-----	ACS, ACY, SDH, TRC.
Acid Violet 56-----	CMG, GAF.
Acid Violet 58-----	GAF.
Acid Violet 76-----	ACS.
Other acid violet dyes-----	TRC.
*Acid blue dyes:	
Acid Blue 1-----	ACS, GAF.
*Acid Blue 7-----	ACS, ACY, ATL, GAF, SDH.
*Acid Blue 9-----	ACS, GAF, SDH.
Acid Blue 10-----	AAP, ACS.
Acid Blue 15-----	GAF.
Acid Blue 20-----	ACS.
Acid Blue 23-----	TRC.
*Acid Blue 25-----	ACS, ATL, BDO, CMG, DUP, GAF, HN, TRC, VPC.
*Acid Blue 27-----	ALT, ATL, BDO, CMG, GAF.
Acid Blue 29-----	PDC, YAW.
Acid Blue 34-----	ACS.
*Acid Blue 40-----	ACS, ALT, ATL, BDO, DUP, GAF, ICI, TRC, VPC.
*Acid Blue 41-----	ACS, ATL, BDO, CMG, GAF.
Acid Blue 43-----	ACY, TRC.
*Acid Blue 45-----	ACS, ACY, ATL, CMG, DUP, GAF, HN, TRC.
Acid Blue 47-----	ICI.
Acid Blue 48-----	HSC.
*Acid Blue 62-----	ACS, ALT, BDO, CMG, GAF, VPC.
Acid Blue 69-----	GAF.
Acid Blue 74-----	ACS, DUP.
*Acid Blue 78-----	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, ATL, 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, HN, PDC, TRC.
*Acid Blue 118-----	ACS, ATL, HN.
*Acid Blue 120-----	ACS, ATL, GAF, HN.
Acid Blue 122-----	DUP.
Acid Blue 129-----	CMG.
Acid Blue 145-----	ACS, DUP.
*Acid Blue 158 and 158A-----	BDO, GAF, HN, TRC, VPC.
Acid Blue 161-----	VPC.
Acid Blue 165-----	DUP.
Acid Blue 179-----	GAF.
Acid Blue 198-----	VPC.
Acid Blue 221-----	VPC.
*Acid Blue 230-----	ACS, DUP, TRC.
Acid Blue 231-----	TRC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
ACID DYES--Continued	
*Acid blue dyes--Continued	
Acid Blue 232-----	VPC.
Acid Blue 264-----	VPC.
Other acid blue dyes-----	ACY, ALT, ATL, CMG, GAF, HN, HST, 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, TRC.
Acid Green 19-----	ALT.
*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 84-----	VPC.
Other acid green dyes-----	ALT, VPC.
*Acid brown dyes:	
Acid Brown 1-----	GAF.
Acid Brown 6-----	GAF.
*Acid Brown 14-----	AAP, ACY, DUP, GAF, TRC, YAW.
Acid Brown 19-----	TRC.
Acid Brown 22-----	DUP.
Acid Brown 28-----	TRC.
Acid Brown 31-----	GAF.
Acid Brown 45-----	TRC.
Acid Brown 96-----	ACY, CMG.
Acid Brown 97-----	ACY.
Acid Brown 98-----	ACY, TRC, YAW.
Acid Brown 152-----	GAF.
Acid Brown 158-----	GAF.
Acid Brown 243-----	GAF.
Other acid brown dyes-----	ACY, ALT, DUP, GAF, VPC.
*Acid black dyes:	
Acid Black 1-----	AAP, ACS, ACY, ATL, DUP, GAF, HN, PDC, TRC, YAW.
Acid Black 2-----	ACS, ACY.
*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, HN, TRC.
Acid Black 58-----	CMG, DUP, TRC.
*Acid Black 60-----	BDO, TRC.
Acid Black 92-----	ACY.
*Acid Black 107-----	ACS, ALT, GAF, TRC.
Acid Black 108-----	GAF.
Acid Black 138-----	VPC.
Acid Black 140-----	CMG.
Other acid black dyes-----	ALT, ATL, HN, PDC, VPC, YAW.
AZOIC DYES AND COMPONENTS	
Azoic Compositions	
Azoic yellow dyes:	
Azoic Yellow 1-----	ALL, ATL.
*Azoic Yellow 2-----	ALL, ATL, BUC, x.
Azoic Yellow 3-----	BUC.
Other azoic yellow dyes-----	ATL.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
AZOIC DYES AND COMPONENTS--Continued	
<i>Azoic Compositions--Continued</i>	
Azoic orange dyes:	
*Azoic Orange 3-----	ALL, ATL, BUC, x.
Azoic Orange 10-----	BUC.
Other azoic orange dyes-----	ATL.
Azoic red dyes:	
*Azoic Red 1-----	ALL, ATL, BUC, x.
*Azoic Red 2-----	ALL, ATL, BUC, GAF, x.
Azoic Red 6-----	ATL, BUC, x.
Azoic Red 16-----	ATL.
Azoic Red 73-----	GAF.
Azoic Red 74-----	GAF.
Other azoic red dyes-----	ALL, ATL, 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.
Azoic Blue 7-----	GAF.
Azoic Blue 8-----	ALL.
Other azoic blue dyes-----	ALL, ATL.
Azoic green dyes:	
Azoic Green 1-----	ATL.
Other azoic green dyes-----	ALL, BUC, VPC.
Azoic brown dyes:	
Azoic Brown 3-----	x.
Azoic Brown 7-----	ATL, BUC.
*Azoic Brown 9-----	ALL, ATL, BUC, GAF, HST, VPC, x.
Azoic Brown 10-----	BUC.
Azoic Brown 26-----	GAF.
Other azoic brown dyes-----	ALL, ATL, GAF, VPC.
*Azoic black dyes:	
Azoic Black 1-----	HST.
Azoic Black 4-----	ATL, BUC, GAF.
Azoic Black 15-----	GAF.
Other azoic black dyes-----	ALL, ATL, GAF, VPC.
<i>Azoic Diazo Components, Bases (Fast Color Bases)</i>	
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, SDH.
Azoic Diazo Component 8, base-----	SDH.
Azoic Diazo Component 10, base-----	BUC, GAF.
Azoic Diazo Component 12, base-----	BUC, 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, GAF.
*Azoic Diazo Component 32, base-----	AAP, ALL, ATL, BUC, SDH.
Azoic Diazo Component 34, base-----	SDH.
Azoic Diazo Component 44, base-----	BUC.
Azoic Diazo Component 46, base-----	ATL.
Azoic Diazo Component 48, base-----	CWN, GAF.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
AZOIC DYES AND COMPONENTS--Continued	
<i>Azoic Diazo Components, Salts (Fast Color Salts)</i>	
*Azoic Diazo Component 1, salt-----	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 2, salt-----	ALL, BUC.
*Azoic Diazo Component 3, salt-----	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 4, salt-----	ALL.
*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.
*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 41, salt-----	ALL, BUC.
Azoic Diazo Component 42, salt-----	GAF.
Azoic Diazo Component 44, salt-----	ALL, BUC.
Azoic Diazo Component 48, salt-----	BUC, SDH.
*Azoic Diazo Component 49, salt-----	AAP, ALL, BUC, GAF.
Azoic Diazo Component 121, salt-----	GAF.
Other azoic diazo components, salts-----	SDH.
<i>Azoic Coupling Components (Naphthol AS and Derivatives)</i>	
Azoic Coupling Component 2-----	ATL, BUC, GAF.
Azoic Coupling Component 3-----	BUC.
Azoic Coupling Component 4-----	ATL, BUC, GAF.
Azoic Coupling Component 5-----	BUC.
*Azoic Coupling Component 7-----	ALL, BUC, HST, SDH.
Azoic Coupling Component 8-----	ATL, BUC.
Azoic Coupling Component 10-----	ATL.
Azoic Coupling Component 11-----	ATL, BUC.
Azoic Coupling Component 12-----	BUC.
Azoic Coupling Component 13-----	GAF.
Azoic Coupling Component 14-----	ATL, BUC.
Azoic Coupling Component 15-----	ALL, BUC, GAF.
Azoic Coupling Component 16-----	BUC, GAF.
Azoic Coupling Component 17-----	ATL, BUC.
*Azoic Coupling Component 18-----	ALL, ATL, BUC, GAF.
Azoic Coupling Component 19-----	BUC, GAF.
Azoic Coupling Component 20-----	ATL, BUC, GAF.
Azoic Coupling Component 21-----	ATL, BUC.
Azoic Coupling Component 29-----	ATL, BUC.
Azoic Coupling Component 34-----	ATL, BUC.
Azoic Coupling Component 35-----	ALL, BUC.
*Azoic Coupling Component 43-----	ATL, BUC, GAF.
Azoic Coupling Component 44-----	PCW.
Azoic Coupling Component 107-----	HST.
Other azoic coupling components-----	ATL, GAF.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--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, ATL, DUP, FAB, GAF, TRC, VPC.
*Basic Yellow 13-----	ACS, ATL, DUP, GAF, VPC.
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.
Basic Yellow 53-----	DUP.
Other basic yellow dyes-----	ATL, DUP, EKT, GAF, 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 21-----	ACS, ACY, ALT, ATL, DUP, FAB, GAF, TRC, VPC.
Basic Orange 22-----	ACS, GAF.
Basic Orange 24-----	DUP.
Basic Orange 25-----	DUP.
Basic Orange 26-----	DUP.
Basic Orange 27-----	VPC.
Basic Orange 28-----	VPC.
Basic Orange 31-----	ACY.
Basic Orange 39-----	DUP.
Other basic orange dyes-----	ATL.
*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, TRC.
Basic Red 16-----	DUP.
Basic Red 17-----	DUP.
Basic Red 18-----	ATL, 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 48-----	DUP.
Basic Red 49-----	DUP, GAF.
Other basic red dyes-----	ATL, DUP, EKT, VPC.
*Basic violet dyes:	
*Basic Violet 1-----	ACS, ACY, DSC, DUP, HSC.
Basic Violet 2-----	DSC.
Basic Violet 3-----	ACS, DSC, DUP, SDH.
Basic Violet 4-----	DSC, DUP.
Basic Violet 7-----	ATL, 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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
BASIC DYES--Continued	
*Basic blue dyes:	
*Basic Blue 1-----	DSC, GAF, SDH, VPC.
Basic Blue 2-----	DSC.
Basic Blue 3-----	ACY, DUP, GAF, HST.
Basic Blue 4-----	DUP.
*Basic Blue 5-----	DSC, SDH, VPC.
Basic Blue 6-----	ACY.
*Basic Blue 7-----	DSC, DUP, SDH.
Basic Blue 9-----	ACS, ACY, DUP.
Basic Blue 11-----	DSC, DUP, SDH.
Basic Blue 21-----	DUP.
Basic Blue 22-----	ACS, DUP, VPC.
Basic Blue 26-----	DSC, DUP, SDH.
Basic Blue 35-----	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 97-----	DUP.
Other basic blue dyes-----	ALT, BAS, DUP, EKT, VPC.
Basic green dyes:	
*Basic Green 1-----	ACS, ACY, DSC, DUP.
Basic Green 3-----	DUP.
*Basic Green 4-----	ACS, ACY, DSC, SDH, VPC.
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:	
Basic Black 9-----	VPC.
Other basic black dyes-----	ALT, DSC.
DIRECT DYES	
*Direct yellow dyes:	
*Direct Yellow 4-----	ACS, ACY, ATL, DUP, GAF, HN, TRC, VPC.
*Direct Yellow 5-----	ACS, ACY, GAF.
*Direct Yellow 6-----	ACS, ACY, DUP, GAF, TRC.
Direct Yellow 7-----	ATL.
Direct Yellow 8-----	ACS, ATL, GAF.
Direct Yellow 9-----	ATL.
*Direct Yellow 11-----	ACS, ACY, ALT, DUP, GAF, HN, TRC, VPC.
*Direct Yellow 12-----	ACS, ATL, DUP, FAB, GAF, TRC.
Direct Yellow 20-----	TRC.
Direct Yellow 23-----	DUP.
Direct Yellow 26-----	ALT, ATL, HN.
Direct Yellow 27-----	GAF.
*Direct Yellow 28-----	ACS, ATL, DUP, GAF, PDC, TRC.
*Direct Yellow 29-----	ATL, DUP, GAF.
Direct Yellow 34-----	ALT, HN.
Direct Yellow 39-----	TRC.
Direct Yellow 41-----	ATL.
*Direct Yellow 44-----	ACS, ALT, ATL, DUP, FAB, GAF, HN, TRC, VPC.
*Direct Yellow 50-----	ALT, ATL, DUP, FAB, GAF, HN, HSH, TRC, VPC.
Direct Yellow 59-----	DUP.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct yellow dyes--Continued	
Direct Yellow 63-----	DUP.
Direct Yellow 81-----	ATL.
*Direct Yellow 84-----	ATL, DUP, FAB, HN, TRC, VPC.
Direct Yellow 103-----	ACS.
*Direct Yellow 105-----	ALT, GAF, HN, TRC.
*Direct Yellow 106-----	ACS, ALT, FAB, GAF, HN, TRC.
Direct Yellow 107-----	GAF, TRC.
Direct Yellow 114-----	ACY.
Direct Yellow 117-----	TRC.
Direct Yellow 118-----	TRC.
Direct Yellow 119-----	DUP.
Direct Yellow 120-----	DUP.
Direct Yellow 121-----	TRC.
Direct Yellow 123-----	DUP.
Direct Yellow 125-----	ACY.
Direct Yellow 127-----	DUP, TRC.
Direct Yellow 131-----	DUP.
Direct Yellow 132-----	VPC.
Other direct yellow dyes-----	AAP, ALT, ATL, GAF, HN, HSH, TRC, VPC.
*Direct orange dyes:	
*Direct Orange 1-----	AAP, ACS, ALT, 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, HN, TRC.
*Direct Orange 26-----	ACS, ATL, CMG, GAF, HSH, TRC.
*Direct Orange 29-----	ATL, FAB, HN, 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, HN.
Direct Orange 59-----	DUP, GAF.
Direct Orange 61-----	TRC.
Direct Orange 67-----	ACS, VPC.
*Direct Orange 72-----	ACS, ATL, FAB, HN, HSH, TRC, VPC.
*Direct Orange 73-----	DUP, GAF, TRC, VPC.
Direct Orange 74-----	DUP, HSH.
Direct Orange 78-----	VPC.
Direct Orange 79-----	DUP.
Direct Orange 80-----	VPC.
Direct Orange 81-----	DUP, GAF, VPC.
Direct Orange 83-----	GAF.
Direct Orange 88-----	DUP.
*Direct Orange 102-----	ACS, ACY, ATL, DUP, GAF.
Direct Orange 110-----	TRC.
Other direct orange dyes-----	ALT, DUP, VPC.
*Direct red dyes:	
*Direct Red 1-----	ACS, ATL, DUP, GAF, TRC, VPC, YAW.
*Direct Red 2-----	ACS, ATL, DUP, FAB, HN, 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-----	ACS, ATL, DUP, TRC.
Direct Red 20-----	ACS, ATL, GAF.
*Direct Red 23-----	ACS, ATL, CMG, DUP, FAB, GAF, HN, TRC, VPC.
*Direct Red 24-----	AAP, ACS, ATL, FAB, HN, HSH, TRC, VPC.
*Direct Red 26-----	ACS, ATL, CMG, DUP, FAB, GAF, HN, HSH, TRC, VPC.
*Direct Red 28-----	ACS, ATL, DUP, TRC, YAW.
*Direct Red 31-----	ACS, ATL, DUP, GAF, HSH, TRC.
Direct Red 32-----	ACS.
*Direct Red 37-----	ACS, ATL, DUP, GAF, TRC, YAW.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct red dyes--Continued	
*Direct Red 39-----	ATL, DUP, GAF, TRC, YAW.
Direct Red 46-----	ATL.
Direct Red 62-----	ATL, TRC.
*Direct Red 72-----	ACS, DUP, GAF, TRC.
Direct Red 73-----	ACS, ATL.
*Direct Red 75-----	ACS, ATL, CMG, GAF.
Direct Red 76-----	GAF.
*Direct Red 79-----	ATL, CMG, HN, TRC, VPC.
*Direct Red 80-----	ACS, ALT, ATL, BDO, CMG, FAB, HN, HSH, SDH, TRC, VPC.
*Direct Red 81-----	ACS, ACY, ALT, ATL, CMG, DUP, GAF, HN, HSH, TRC, VPC, YAW.
*Direct Red 83-----	ACS, ALT, ATL, FAB, HN, HSH, TRC, VPC.
Direct Red 84-----	ATL.
Direct Red 95-----	VPC.
Direct Red 100-----	ATL.
Direct Red 111-----	GAF.
Direct Red 117-----	DUP.
Direct Red 120-----	CMG, VPC.
*Direct Red 122-----	ATL, CMG, TRC, VPC.
*Direct Red 123-----	ATL, CMG, GAF.
Direct 127 and 127A-----	ATL, CMG.
Direct Red 139-----	ATL, VPC.
Direct Red 149-----	ATL, CMG, DUP.
Direct Red 152-----	CMG.
Direct Red 153-----	ATL, CMG.
Direct Red 209-----	TRC, VPC.
Direct Red 212-----	VPC.
Direct Red 236-----	DUP.
Direct Red 238-----	DUP.
Other direct red dyes-----	ALT, ATL, GAF, HN, HSH, TRC.
*Direct violet dyes:	
Direct Violet 1-----	ACS, ATL.
*Direct Violet 7-----	ACS, ATL, GAF.
*Direct Violet 9-----	ACS, ATL, DUP, GAF, HN, 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, HN, TRC, VPC, YAW.
*Direct Blue 2-----	AAP, ACS, ATL, DUP, FAB, GAF, HN, HSH, TRC, VPC, YAW.
*Direct Blue 6-----	AAP, ACS, ACY, ATL, DUP, GAF, HN, HSH, TRC, YAW.
*Direct Blue 8-----	ACS, ALT, ATL, DUP, GAF.
Direct Blue 14-----	ACS, ATL, TRC.
*Direct Blue 15-----	ACS, ATL, DUP, GAF, VPC, YAW.
*Direct Blue 22-----	ACS, ATL, CMG.
*Direct Blue 24-----	ATL, HN, 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, VPC.
Direct Blue 74-----	DUP.
Direct Blue 75-----	TRC.
*Direct Blue 76-----	ACS, ALT, ATL, GAF, HN, HSH, TRC, VPC.
*Direct Blue 78-----	ACS, ATL, CMG, DUP, TRC.
*Direct Blue 80-----	ACS, ALT, ATL, DUP, FAB, GAF, HN, HSH, TRC, VPC.
Direct Blue 81-----	ATL.
*Direct Blue 86-----	AAP, ACS, ALT, ATL, DUP, FAB, GAF, HN, ICC, SDH, TRC, VPC.

TABLE 2.--DYES FOR WHICH U.S PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct blue dyes--Continued	
Direct Blue 87-----	ICI.
Direct Blue 91-----	TRC.
*Direct Blue 98-----	ATL, GAF, TRC, VPC.
Direct Blue 100-----	ALT, ATL, HN.
Direct Blue 104-----	DUP.
*Direct Blue 120, 120A-----	ATL, DUP, FAB, HN, TRC.
*Direct Blue 126-----	ATL, DUP, HSH, TRC, VPC.
Direct Blue 136-----	GAF.
Direct Blue 143-----	DUP.
Direct Blue 151-----	ATL, TRC.
Direct Blue 160-----	TRC.
Direct Blue 189-----	TRC.
Direct Blue 191-----	AAP, ACS, ALT, GAF.
Direct Blue 199-----	DUP, GAF, HN.
*Direct Blue 218-----	ACS, ALT, ATL, DUP, FAB, GAF, HN, TRC, VPC.
Direct Blue 224-----	ATL.
Direct Blue 238-----	ACY.
Direct Blue 263-----	DUP.
Other direct blue dyes-----	ALT, GAF, VPC.
*Direct green dyes:	
*Direct Green 1-----	AAP, ACS, ACY, ATL, FAB, GAF, TRC, YAW.
*Direct Green 6-----	AAP, ACS, ATL, FAB, GAF, HN, TRC, YAW.
Direct Green 8-----	TRC.
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.
Direct Green 46-----	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, HN.
*Direct Brown 1A-----	GAF, TRC, YAW.
*Direct Brown 2-----	AAP, ACS, ACY, ATL, DUP, GAF, HN, HSH, TRC, YAW.
Direct Brown 3-----	VPC.
Direct Brown 6-----	TRC, YAW.
*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-----	YAW.
*Direct Brown 74-----	AAP, ACS, DUP.
*Direct Brown 95-----	ACS, ATL, DUP, FAB, GAF, HN, HSH, TRC, YAW.
Direct Brown 106-----	GAF.
*Direct Brown 111-----	DUP, GAF, TRC.
Direct Brown 112-----	ATL.
*Direct Brown 154-----	ACS, DUP, FAB, TRC, YAW.
Direct Brown 218-----	ACS.
Other direct brown dyes-----	ALT, ATL, HN, HSH, VPC.
*Direct black dyes:	
*Direct Black 4-----	ACS, ATL, GAF, HN, TRC, YAW.
Direct Black 8-----	TRC, YAW.
*Direct Black 9-----	ACS, ATL, DUP, HN.
Direct Black 17-----	GAF.
*Direct Black 19-----	ATL, GAF, HN, TRC.
*Direct Black 22-----	ALT, ATL, GAF, HN, TRC, VPC, YAW.
Direct Black 36-----	AAP.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DIRECT DYES--Continued	
*Direct black dyes--Continued	
Direct Black 37-----	AAP.
*Direct Black 38-----	ACS, ACY, FAB, GAF, HN, HSH, 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, HN.
*Direct Black 80-----	AAP, ACS, ATL, FAB, HN, HSH, TRC, YAW.
Direct Black 190-----	ACS, HN, TRC.
Other direct black dyes-----	ACY, ALT, ATL, HSH, TRC, YAW.
DISPERSE DYES	
*Disperse yellow dyes:	
Disperse Yellow 1-----	GAF, ICI.
Disperse Yellow 2-----	DUP.
*Disperse Yellow 3-----	AAP, ALT, DUP, GAF, HN, HSH, ICC, TRC.
Disperse Yellow 5-----	GAF, HN, ICC.
Disperse Yellow 8-----	TRC.
*Disperse Yellow 23-----	AAP, ALT, DUP, EKT, GAF, HN, ICC, TRC.
Disperse Yellow 31-----	GAF.
Disperse Yellow 32-----	DUP.
*Disperse Yellow 33-----	AAP, EKT, GAF, ICC, TRC.
*Disperse Yellow 34-----	AAP, EKT, ICC.
*Disperse Yellow 42-----	AAP, ALT, BUC, DUP, EKT, GAF, HN, ICC, MAY, SDC, TRC.
Disperse Yellow 50-----	TRC.
*Disperse Yellow 54-----	AAP, DUP, GAF, ICC, SDC, TRC.
Disperse Yellow 58-----	HST.
Disperse Yellow 63-----	HST.
Disperse Yellow 67-----	DUP.
Disperse Yellow 68-----	HST.
Disperse Yellow 69-----	ACY.
Disperse Yellow 74-----	VPC.
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 118-----	AAP.
Disperse Yellow 125-----	SDC.
Other disperse yellow dyes-----	EKT, MAY, SDC, TRC, VPC.
*Disperse orange dyes:	
*Disperse Orange 3-----	AAP, DUP, GAF, HN, HSH, ICC, TRC.
*Disperse Orange 5-----	AAP, BUC, EKT, GAF, ICC, SDC.
Disperse Orange 13-----	HST.
Disperse Orange 16-----	AAP.
*Disperse Orange 17-----	AAP, EKT, GAF, HN, HSH, ICC.
Disperse Orange 21-----	TRC.
*Disperse Orange 25-----	DUP, EKT, HN, TRC.
Disperse Orange 28-----	AAP.
Disperse Orange 29-----	AAP, GAF.
Disperse Orange 30-----	ICC, TRC.
Disperse Orange 33-----	ALT, HST.
Disperse Orange 37-----	TRC.
Disperse Orange 38-----	TRC.
Disperse Orange 41-----	DUP.
Disperse Orange 44-----	DUP.
Disperse Orange 57-----	EKT.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse orange dyes--Continued	
Disperse Orange 58-----	AAP, EKT.
Disperse Orange 59-----	EKT, ICC.
Disperse Orange 62-----	BUC, DUP.
Disperse Orange 65-----	VPC.
Disperse Orange 75-----	DUP.
Disperse Orange 78-----	TRC.
Disperse Orange 89-----	AAP.
Disperse Orange 90-----	AAP.
Disperse Orange 94-----	SDC.
Other disperse orange dyes-----	AAP, ALT, ATL, EKT, GAF, MAY, SDC, VPC.
*Disperse red dyes:	
*Disperse Red 1-----	AAP, DUP, DKT, GAF, HN, HSH, ICC, TRC.
Disperse Red 4-----	GAF, ICC, TRC.
*Disperse Red 5-----	AAP, EKT, GAF, HSH, ICC.
Disperse Red 7-----	AAP, GAF.
Disperse Red 9-----	ATL.
*Disperse Red 11-----	AAP, DUP, GAF, ICC.
*Disperse Red 13-----	AAP, DUP, GAF, ICC.
*Disperse Red 15-----	GAF, HSH, ICC, TRC.
*Disperse Red 17-----	AAP, DUP, EKT, GAF, ICC, TRC.
Disperse Red 30-----	EKT, TRC.
Disperse Red 31-----	ICC.
Disperse Red 35-----	EKT.
Disperse Red 54-----	ICC.
*Disperse Red 55-----	AAP, DUP, GAF, HN, TRC.
Disperse Red 56-----	DUP.
Disperse Red 59-----	ACY, DUP, GAF.
*Disperse Red 60-----	AAP, ALT, ATL, DUP, EKT, GAF, HN, SDC, TRC, VPC.
*Disperse Red 65-----	DUP, EKT, ICC, TRC.
Disperse Red 66-----	AAP.
Disperse Red 73-----	TRC.
Disperse Red 78-----	ICC, TRC.
Disperse Red 82-----	VPC.
Disperse Red 86-----	EKT, GAF.
Disperse Red 88-----	EKT.
Disperse Red 90-----	VPC.
Disperse Red 96-----	ACY.
Disperse Red 117-----	EKT.
Disperse Red 133-----	VPC.
Disperse Red 136-----	EKT.
Disperse Red 137-----	EKT.
Disperse Red 138-----	EKT.
Disperse Red 140-----	DUP.
Disperse Red 159-----	VPC.
Disperse Red 161-----	DUP.
Disperse Red 167-----	GAF.
Disperse Red 176-----	ICC.
Disperse Red 177-----	ICC.
Disperse Red 178-----	ICC.
Disperse Red 179-----	ICC.
Disperse Red 180-----	ICC.
Other disperse red dyes-----	AAP, ATL, 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 17-----	DUP.
Disperse Violet 18-----	DUP.
Disperse Violet 26-----	DUP.
*Disperse Violet 27-----	AAP, ACY, DUP, EKT, ICC, TRC.
Disperse Violet 28-----	TRC.
Disperse Violet 41-----	EKT.
Disperse Violet 42-----	EKT.
Disperse Violet 43-----	EKT.
Disperse Violet 44-----	EKT.
Other disperse violet dyes-----	GAF, MAY, SDC.

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TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
DISPERSE DYES--Continued	
*Disperse blue dyes:	
*Disperse Blue 1-----	AAP, BAS, GAF, ICC, TRC.
*Disperse Blue 3-----	AAP, DUP, EKT, GAF, HN, HSH, ICC, TRC.
*Disperse Blue 7-----	EKT, GAF, HN, HSH, ICC, TRC.
Disperse Blue 9-----	GAF, ICC.
Disperse Blue 27-----	EKT, TRC.
Disperse Blue 35-----	ICI.
Disperse Blue 54-----	ICC.
Disperse Blue 55-----	TRC.
Disperse Blue 56-----	VPC.
Disperse Blue 59-----	TRC.
Disperse Blue 60-----	DUP.
Disperse Blue 61-----	DUP.
Disperse Blue 62-----	DUP, GAF, SDC.
Disperse Blue 63-----	DUP.
*Disperse Blue 64-----	DUP, EKT, GAF, TRC.
Disperse Blue 70-----	AAP.
Disperse Blue 71-----	VPC.
Disperse Blue 72-----	ICI.
Disperse Blue 73-----	TRC.
*Disperse Blue 79-----	AAP, EKT, TRC.
Disperse Blue 81-----	VPC.
Disperse Blue 85-----	TRC.
Disperse Blue 94-----	BAS.
Disperse Blue 95-----	GAF.
Disperse Blue 102-----	EKT.
Disperse Blue 109-----	DUP.
Disperse Blue 112-----	EKT.
Disperse Blue 117-----	EKT.
Disperse Blue 118-----	EKT.
Disperse Blue 119-----	EKT.
Disperse Blue 120-----	EKT, GAF.
Disperse Blue 121-----	EKT.
Disperse Blue 123-----	EKT.
Disperse Blue 125-----	TRC.
Disperse Blue 133-----	DUP.
Disperse Blue 139-----	VPC.
Disperse Blue 150-----	DUP.
Disperse Blue 152-----	HST.
Disperse Blue 155-----	GAF.
Disperse Blue 166-----	ICC.
Other disperse blue dyes-----	ALT, ATL, DUP, EKT, GAF, HN, HSH, ICC, MAY, SDC, TRC, VPC.
Disperse green dyes-----	GAF, TRC, VPC.
Disperse brown dyes:	
Disperse Brown 1-----	TRC.
*Disperse Brown 2-----	DUP, EKT, GAF.
Disperse Brown 7-----	EKT.
Disperse Brown 8-----	VPC.
Disperse Brown 11-----	AAP.
Other disperse brown dyes-----	GAF, ICC, SDC.
*Disperse black dyes:	
*Disperse Black 1-----	AAP, DUP, GAF, TRC.
Disperse Black 2-----	ATL, TRC.
Disperse Black 9-----	AAP, EKT.
Disperse Black 33-----	EKT.
Disperse Black 34-----	EKT.
Other disperse black dyes-----	ALT, ATL, DUP, GAF, ICC, SDC, VPC.
FIBER-REACTIVE DYES	
*Reactive yellow dyes:	
Reactive Yellow 1-----	HST, ICI.
Reactive Yellow 2-----	TRC.
Reactive Yellow 3-----	TRC.
Reactive Yellow 4-----	HST, ICI.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FIBER-REACTIVE DYES--Continued	
*Reactive yellow dyes--Continued	
Reactive Yellow 6-----	HST, TRC.
Reactive Yellow 7-----	HST, ICI.
Reactive Yellow 13-----	HST.
Reactive Yellow 18-----	ICI.
Reactive Yellow 22-----	ICI.
Reactive Yellow 25-----	VPC.
Reactive Yellow 31-----	HST.
Reactive Yellow 37-----	HST.
Reactive Yellow 60-----	ACY.
Reactive Yellow 61-----	ACY.
Reactive Yellow 62-----	ACY.
Other reactive yellow dyes-----	HST.
Reactive orange dyes:	
Reactive Orange 1-----	ICI.
Reactive Orange 4-----	ICI.
Reactive Orange 5-----	TRC.
Reactive Orange 12-----	ICI.
Reactive Orange 13-----	ICI.
Reactive Orange 14-----	ICI.
Reactive Orange 16-----	HST.
Reactive Orange 50-----	HST.
Other reactive orange dyes-----	HST.
Reactive red dyes:	
Reactive Red 1-----	ICI.
Reactive Red 2-----	ICI.
Reactive Red 4-----	TRC.
Reactive Red 5-----	ICI.
Reactive Red 8-----	ICI.
Reactive Red 11-----	ICI, TRC.
Reactive Red 21-----	HST.
Reactive Red 29-----	ICI.
Reactive Red 31-----	ICI.
Reactive Red 33-----	ICI.
Reactive Red 35-----	HST.
Reactive Red 40-----	VPC.
Reactive Red 41-----	VPC.
Reactive Red 58-----	ICI.
Reactive Red 92-----	ACY.
Reactive Red 93-----	ACY.
Reactive Red 94-----	HST.
Reactive violet dyes:	
Reactive Violet 1-----	ICI.
Reactive Violet 2-----	TRC, VPC.
Reactive Violet 4-----	HST.
Reactive Violet 5-----	HST.
Other reactive violet dyes-----	HST.
*Reactive blue dyes:	
Reactive Blue 1-----	ICI.
Reactive Blue 2-----	TRC.
Reactive Blue 3-----	ICI.
Reactive Blue 4-----	ICI.
Reactive Blue 5-----	ICI, TRC.
Reactive Blue 7-----	TRC.
Reactive Blue 9-----	ICI.
Reactive Blue 19-----	HST.
Reactive Blue 20-----	HST.
Reactive Blue 21-----	HST.
Reactive Blue 25-----	ICI.
Reactive Blue 29-----	VPC.
Reactive Blue 30-----	VPC.
Reactive Blue 38-----	HST.
Reactive Blue 86-----	ACY.
Reactive Blue 87-----	ACY.
Reactive Blue 88-----	ACY.
Reactive Blue 89-----	HST.
Reactive Blue 90-----	HST.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FIBER-REACTIVE DYES--Continued	
*Reactive blue dyes--Continued	
Reactive Blue 91-----	HST.
Other reactive blue dyes-----	HST, ICI.
Reactive green dyes:	
Reactive Green 6-----	ICI.
Reactive Green 20-----	HST.
Reactive brown dyes:	
Reactive Brown 10-----	ICI.
Other reactive brown dyes-----	HST.
*Reactive black dyes:	
Reactive Black 1-----	HST, TRC.
Reactive Black 9-----	ICI.
FLUORESCENT BRIGHTENING AGENTS	
Fluorescent Brightening Agent 1-----	CGY.
Fluorescent Brightening Agent 6-----	ACY.
Fluorescent Brightening Agent 8-----	ACY.
Fluorescent Brightening Agent 9-----	GAF, SDH.
Fluorescent Brightening Agent 22-----	CGY.
Fluorescent Brightening Agent 24-----	CGY.
Fluorescent Brightening Agent 25-----	GAF.
*Fluorescent Brightening Agent 28-----	ACY, CCW, DUP, SDH, VPC.
Fluorescent Brightening Agent 30-----	GAF.
Fluorescent Brightening Agent 33-----	GAF.
Fluorescent Brightening Agent 45-----	TRC.
Fluorescent Brightening Agent 46-----	CGY.
Fluorescent Brightening Agent 49-----	S.
Fluorescent Brightening Agent 52-----	S.
Fluorescent Brightening Agent 54-----	CGY.
Fluorescent Brightening Agent 59-----	CGY.
Fluorescent Brightening Agent 61-----	ACY.
Fluorescent Brightening Agent 68-----	CCW, GAF.
Fluorescent Brightening Agent 71-----	ACY, 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 125-----	ACY.
Fluorescent Brightening Agent 126-----	SDH.
Fluorescent Brightening Agent 128-----	SDH.
Fluorescent Brightening Agent 130-----	ACY.
Fluorescent Brightening Agent 134-----	CGY.
Fluorescent Brightening Agent 136-----	CGY.
Fluorescent Brightening Agent 139-----	CGY.
Fluorescent Brightening Agent 158-----	ACY.
Fluorescent Brightening Agent 159-----	ACY.
Fluorescent Brightening Agent 189-----	CGY.
Other fluorescent brightening agents-----	ACY, CCW, CGY, GAF, PCW, S, VPC.
FOOD, DRUG, AND COSMETIC COLORS	
<i>Food, Drug, and Cosmetic Dyes</i>	
*FD&C Blue No. 1-----	ACS, ALT, KON, SDH, WJ.
*FD&C Blue No. 2-----	ACS, ALT, KON, SDH, WJ.
FD&C Green No. 3-----	ALT, WJ.
*FD&C Red No. 2-----	ACS, ALT, KON, SDH, STG, WJ.
*FD&C Red No. 3-----	ACS, ALT, KON, SDH, STG, WJ.
FD&C Red No. 4-----	ALT, KON, STG.
*FD&C Violet No. 1-----	ACS, SDH, WJ.
*FD&C Yellow No. 5-----	ACS, ALT, KON, STG, WJ.
*FD&C Yellow No. 6-----	ACS, ALT, KON, SDH, STG, WJ.
Other food, drug, and cosmetic dyes-----	STG.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
FOOD, DRUG, AND COSMETIC COLORS--Continued	
<i>Drug and Cosmetic Dyes</i>	
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. 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.
*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-----	SNA, TMS.
D&C Red No. 13-----	SNA, TMS.
D&C Red No. 17-----	KON.
*D&C Red No. 19-----	ACS, KON, SNA, TMS.
*D&C Red No. 21-----	KON, SNA, TMS.
D&C Red No. 22-----	KON.
D&C Red No. 27-----	SDH, SNA, TMS.
D&C Red No. 28-----	ACS, TMS.
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, TMS.
D&C Yellow No. 6-----	KON.
D&C Yellow No. 7-----	ALT, KON.
D&C Yellow No. 8-----	KON, TMS.
D&C Yellow No. 10-----	KON.
D&C Yellow No. 11-----	KON.
<i>Drug and Cosmetic Dyes, External</i>	
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 3-----	ICI.
MORDANT DYES	
*Mordant yellow dyes:	
*Mordant Yellow 1-----	ATL, GAF, PDC.
Mordant Yellow 3-----	ATL.
Mordant Yellow 5-----	TRC.
*Mordant Yellow 8-----	ACS, PDC, VPC.
Mordant Yellow 14-----	ACS.
Mordant Yellow 16-----	ACY.
Mordant Yellow 20-----	ACS, ATL.
Mordant Yellow 26-----	VPC.
Mordant Yellow 29-----	GAF.
Mordant Yellow 30-----	TRC, VPC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
MORDANT DYES--Continued	
*Mordant orange dyes:	
Mordant Orange 1-----	ACY, PDC, TRC.
Mordant Orange 4-----	GAF.
Mordant Orange 6-----	ATL, GAF, PDC, TRC.
Mordant Orange 8-----	TRC.
*Mordant red dyes:	
Mordant Red 3-----	ACY.
Mordant Red 5-----	PDC.
Mordant Red 7-----	ACY, ATL, BDO, CMG, GAF, PDC, TRC, VPC.
Mordant Red 9-----	MRX.
Mordant Red 11-----	ACY.
Mordant Red 64-----	PDC.
Mordant violet dyes:	
Mordant Violet 5-----	PDC.
Mordant Violet 11-----	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 11-----	ACY.
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, CMG, GAF, VPC, YAW.
Mordant Brown 50-----	TRC.
Mordant Brown 63-----	TRC.
Mordant Brown 70-----	DUP, PDC.
*Mordant black dyes:	
Mordant Black 1-----	ACS.
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.
OXIDATION BASES	
Oxidation Base 8 and 8A-----	ACY.
Oxidation Base 21-----	PDC.
Oxidation Base 22-----	ACY.
Oxidation Base 25-----	ACY.
Other oxidation bases-----	ACY, CMG.
SOLVENT DYES	
*Solvent yellow dyes:	
Solvent Yellow 1-----	AAP.
*Solvent Yellow 2-----	AAP, DUP, GAF, PSC.
Solvent Yellow 3-----	ACS, PSC.
Solvent Yellow 13-----	ACY, GAF, PSC.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
SOLVENT DYES--Continued	
*Solvent yellow dyes--Continued	
*Solvent Yellow 14-----	AAP, ACS, ACY, DUP, GAF, PSC.
Solvent Yellow 19-----	GAF.
Solvent Yellow 29-----	GAF.
Solvent Yellow 30-----	ACS.
Solvent Yellow 33-----	AAP, ACS, ACY.
Solvent Yellow 34-----	ACY, 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, ATL, 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, 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 48-----	ACY.
Solvent Orange 51-----	ACY.
Other solvent orange dyes-----	AAP, ACY, DSC, DUP, PAT.
*Solvent red dyes:	
Solvent Red 1-----	PSC.
Solvent Red 8-----	GAF.
Solvent Red 22-----	GAF.
Solvent Red 24-----	ACY, DUP, GAF.
*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 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, ICI, PAT.
*Solvent violet dyes:	
Solvent Violet 8-----	ACY, DSC.
Solvent Violet 9-----	DSC.
Solvent Violet 13-----	AAP, ATL, HSH, ICI.
Solvent Violet 14-----	AAP, ICI.
Other solvent violet dyes-----	AAP, DSC, PAT.
Solvent blue dyes:	
Solvent Blue 3-----	ACY, SW.
Solvent Blue 4-----	DSC, DUP, SDH.
Solvent Blue 5-----	DSC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
SOLVENT DYES--Continued	
Solvent blue dyes--Continued	
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 57-----	DUP.
Solvent Blue 58-----	ACY.
Solvent Blue 59-----	ACY.
Solvent Blue 60-----	ACY.
Other solvent blue dyes-----	AAP, ACY, DSC, GAF, ICI, PAT, x.
Solvent green dyes:	
Solvent Green 1-----	ACY, DSC.
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, 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.
Solvent Black 12-----	ACS.
Solvent Black 13-----	ACS.
Solvent Black 17-----	DUP.
Solvent Black 26-----	ACY.
Other solvent black dyes-----	ATL, DSC, GAF.
SULFUR DYES	
Sulfur yellow dyes:	
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 11-----	SDC.
Leuco Sulfur Blue 13-----	ACY.
Other sulfur blue dyes-----	ACY, SDC.

DYES

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--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-----	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-----	SDC.
Leuco Sulfur Brown 10-----	SDC.
Solubilized Sulfur Brown 10-----	SDC.
Sulfur Brown 12-----	SDC.
Sulfur Brown 14-----	SDC.
Leuco Sulfur Brown 14-----	SDC.
Leuco Sulfur Brown 20-----	STC.
Solubilized Sulfur Brown 21-----	STC.
Sulfur Brown 26-----	ACY.
Leuco Sulfur Brown 26-----	STC.
Sulfur Brown 30-----	ACY.
Sulfur Brown 37-----	SDC.
Solubilized 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-----	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, ATL, GAF, ICI, TRC, VPC.
Solubilized Vat Yellow 2, 25%-----	GAF.
Vat Yellow 3, 12-1/2%-----	DUP.
*Vat Yellow 4, 12-1/2%-----	ATL, GAF, HST, VPC.
Solubilized Vat Yellow 4, 37-1/2%-----	ICI.
Vat Yellow 10, 10%-----	GAF.
Vat Yellow 14, 12-1/2%-----	TRC.
Vat Yellow 15, 11-1/2%-----	ACY.
Vat Yellow 21, 9-1/2%-----	ATL.
Vat Yellow 22, 10%-----	DUP.
Vat Yellow 33, 15%-----	TRC, VPC.
Vat Yellow 41-----	ACY.
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, ICI.
*Vat Orange 2, 12%-----	ACS, ACY, CMG, DUP, GAF, ICI, TRC.
Vat Orange 3, 13-1/2%-----	CMG, HST.
Vat Orange 4, 6%-----	ACY, DUP.
Vat Orange 5, 10%-----	AAP, ACY, HST.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES--Continued	
*Vat orange dyes--Continued	
Solubilized Vat Orange 5, 30%-----	HST, ICI.
Vat Orange 7, 11%-----	GAF, HST, TRC.
*Vat Orange 9, 12%-----	ACY, DUP, GAF, ICI, TRC.
Vat Orange 11, 6%-----	DUP.
*Vat Orange 15, 10%-----	AAP, ACS, ACY, GAF, ICI, TRC, VPC.
Vat Orange 24-----	DUP.
Other vat orange dyes-----	SDC.
*Vat red dyes:	
*Vat Red 1, 13%-----	AAP, ACY, HST, ICI.
Solubilized Vat Red 1, 37%-----	HST, ICI.
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 29-----	GAF.
*Vat Red 32, 20%-----	ACS, DUP, GAF.
Vat Red 41, 20%-----	HST.
Vat Red 52, 10%-----	DUP.
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, MAY, 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-----	MAY.
*Vat blue dyes:	
Vat Blue 1, 20%-----	ACS.
Solubilized Vat Blue 1, 25%-----	GAF.
Vat Blue 4, 10%-----	ACY, DUP, GAF.
Vat Blue 5, 16%-----	ATL, 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%-----	HST.
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, 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.
*Vat green dyes:	
*Vat Green 1, 6%-----	ACY, DUP, GAF, ICI, MAY.
Solubilized Vat Green 1, 12-1/2%-----	ICI.
*Vat Green 3, 10%-----	AAP, ACY, ATL, DUP, GAF, ICI, MAY, TRC.
Solubilized Vat Green 3, 26%-----	ICI.
Vat Green 8, 8-1/2%-----	ATL, DUP, GAF.
*Vat Green 9, 12-1/2%-----	ACS, ACY, GAF, MAY, SDC, TRC.
Vat Green 20, 6%-----	DUP.
Vat Green 32-----	VPC.
Other vat green dyes-----	ACY, GAF, SDC.

DYES

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Dye	Manufacturers' identification codes (according to list in table 3)
VAT DYES--Continued	
*Vat brown dyes:	
*Vat Brown 1, 11%-----	ACY, DUP, GAF, MAY, TRC.
Solubilized Vat Brown 1, 17%-----	GAF.
*Vat Brown 3, 11%-----	AAP, ACY, DUP, GAF, ICI, TRC, VPC.
Vat Brown 5, 13%-----	ACY, HST.
Vat Brown 11, 12%-----	MAY, TRC.
Vat Brown 12, 12-1/2%-----	DUP.
Vat Brown 13, 17%-----	MAY.
Vat Brown 14, 12%-----	HST.
Vat Brown 20, 10-1/2%-----	GAF.
Vat Brown 28, 22%-----	ICI.
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.
Vat Black 11, 17-1/2%-----	ACY.
Vat Black 13, 14%-----	DUP.
Vat Black 14, 11-1/2%-----	DUP.
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, VPC.
All other dyes-----	ACY, GAF, HSH, PAT, SDC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3.--DYES: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of dye manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

ORGANIC PIGMENTS

As the terms are used in this report, organic pigments are toners and lakes derived in whole or in part from benzenoid chemicals and colors. 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 1971 are given in table 1. 1/ Statistics on sales of a few selected pigments by commercial forms (dry full-strength form, dry extended form, dry dispersions, aqueous dispersions, and flushed colors) are given in table 1A. Individual toners and lakes are identified in this report by the names used in the third edition of the Colour Index.

Total production of organic pigments in 1971 was 58.3 million pounds--3.2 percent more than the 56.5 million pounds produced in 1970 and 4.4 percent less than the 61.0 million pounds produced in 1969. Total sales of organic pigments in 1971 amounted to 47.1 million pounds, valued at \$130.0 million, compared with 47.2 million pounds, valued at \$123.0 million, in 1970 and 50.8 million pounds valued at \$133.1 million, in 1969. In terms of quantity, sales of organic pigments in 1971 were 0.2 percent less than in 1970 and 7.4 percent less than in 1969; in terms of value, sales in 1971 were 5.7 percent more than in 1970 and 2.4 percent less than in 1969.

Production of toners in 1971 amounted to 55.1 million pounds--4.8 percent more than the 52.5 million pounds reported for 1970. Sales in 1971 were 44.2 million pounds, valued at \$126.6 million, compared with 43.8 million pounds, valued at \$119.4 million, in 1970. Sales in 1971 were thus 1.1 percent more than those in 1970 in terms of quantity, and 6.0 percent more in terms of value. The individual toners listed in the report which were produced in the largest quantities in 1971 were Pigment Yellow 12, 5.6 million pounds; Pigment Blue 15, beta form, 5.1 million pounds; and Pigment Red 49, barium toner, 4.3 million pounds.

Production of lakes totaled 3.2 million pounds in 1971--18.5 percent less than the 4.0 million pounds reported for 1970. Sales of lakes in 1971 amounted to 2.8 million pounds, valued at \$3.4 million, compared with sales in 1970 of 3.4 million pounds, valued at \$3.6 million. Sales in 1971 were thus 17.8 percent less than those in 1970 in terms of quantity, and 4.5 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 codes. These codes are listed in table 3.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1971

[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
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	58,326	47,052	130,013	\$2.76
TONERS				
Total-----	55,086	44,247	126,564	2.86
Yellow toners, total-----	11,647	7,774	22,256	2.86
Acetoacetarylide yellows, total-----	1,726	1,306	3,486	2.67
Pigment Yellow 1, C.I. 11 680-----	397	365	749	2.05
Pigment Yellow 3, C.I. 11 710-----	223	116	289	2.49
Pigment Yellow 74, C.I. 11 741-----	535	298	1,034	3.47
Other acetoacetarylide yellows-----	571	527	1,414	2.68
Benzidine yellows, total-----	9,657	6,328	16,833	2.66
Pigment Yellow 12, C.I. 21 090-----	5,610	3,275	7,095	2.17
Pigment Yellow 14, C.I. 21 095-----	2,278	1,715	4,168	2.43
Pigment Yellow 17, C.I. 21 105-----	570	405	1,159	2.86
Other benzidine yellows-----	1,199	933	4,411	4.73
All other-----	264	140	1,937	13.84
Orange toners, total-----	1,276	985	2,838	2.88
Pigment Orange 5, C.I. 12 075-----	400	341	582	1.71
Pigment Orange 13, C.I. 21 110-----	144	142	523	3.68
Pigment Orange 16, C.I. 21 160-----	336	300	830	2.77
Pigment Orange 34, C.I. 21 115-----	122	103	342	3.32
All other-----	274	99	561	5.67
Red toners, total-----	22,916	18,438	38,214	2.07
Naphthol reds, total-----	915	564	2,205	3.91
Pigment Red 2, C.I. 12 310-----	62	42	111	2.64
Pigment Red 5, C.I. 12 490-----	85	39	203	5.21
Pigment Red 17, C.I. 12 390-----	67	46	152	3.30
Pigment Red 22, C.I. 12 315-----	134	88	285	3.24
Pigment Red 23, C.I. 12 355-----	194	162	573	3.54
Other naphthol reds-----	373	187	881	4.71
Pigment Red 1, C.I. 12 070, dark-----	86	80	116	1.45
Pigment Red 1, C.I. 12 070, light-----	103	113	158	1.40
Pigment Red 3, C.I. 12 120-----	1,626	1,430	2,419	1.69
Pigment Red 4, C.I. 12 085-----	309	290	478	1.65
Pigment Red 38, C.I. 21 120-----	133	99	486	4.91
Pigment Red 48, C.I. 15 865-----	2,713	2,411	4,877	2.02
Pigment Red 49, C.I. 15 630:-----				
Barium toner-----	4,297	3,793	4,321	1.14
Calcium toner-----	1,253	1,166	1,395	1.20
Sodium toner-----	266	265	312	1.18
Pigment Red 52, C.I. 15 860-----	1,740	1,574	2,641	1.68
Pigment Red 53, C.I. 15 585, barium toner-----	2,428	1,882	2,796	1.49
Pigment Red 54, C.I. 14 830, calcium toner-----	69	...	...	...
Pigment Red 57, C.I. 15 850, calcium toner-----	1,023	898	1,502	1.67
Pigment Red 63, C.I. 15 880-----	42	39	65	1.67
Pigment Red 81, C.I. 45 160, PMA-----	521	478	2,810	5.88
Pigment Red 81, C.I. 45 160, PTA-----	138	107	652	6.09
Pigment Red 90, C.I. 45 380-----	1,996	1,053	2,275	2.16
All other-----	3,258	2,196	8,706	3.96

See footnotes at end of table.

TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Pigment	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
TONERS--Continued				
Violet toners, total-----	2,303	1,842	14,496	\$7.86
Pigment Violet 1, C.I. 45 170, PMA-----	60	64	369	5.77
Pigment Violet 1, C.I. 45 170, PTA-----	102	91	604	6.64
Pigment Violet 3, C.I. 42 535, fugitive-----	491	271	485	1.79
Pigment Violet 3, C.I. 42 535, PMA-----	333	308	1,038	3.37
Pigment Violet 3, C.I. 42 535, PTA-----	53	53	233	4.40
Pigment Violet 23, C.I. 51 319-----	310	217	3,616	16.66
All other-----	954	838	8,151	9.73
Blue toners, total-----	12,458	11,386	35,438	3.11
Pigment Blue 1, C.I. 42 595, PMA-----	171	150	703	4.69
Pigment Blue 1, C.I. 42 595, PTA-----	4	9	51	5.67
Pigment Blue 14, C.I. 42 600, PMA-----	289	244	706	2.89
Pigment Blue 15, C.I. 74 160, alpha form-----	3,316	3,092	9,535	3.08
Pigment Blue 15, C.I. 74 160, beta form-----	5,128	4,154	13,519	3.25
Pigment Blue 19, C.I. 42 750A-----	3,129	3,392	8,984	2.65
Pigment Blue 22, C.I. 69 810-----	10	18	328	18.22
Pigment Blue 25, C.I. 21 180-----	193	170	606	3.39
All other-----	218	148	1,006	6.80
Green toners, total-----	4,049	3,444	12,750	3.70
Pigment Green 1, C.I. 42 040, PMA-----	6	8	35	4.38
Pigment Green 2, C.I. 42 040 and 49 005, PMA-----	52	53	300	5.66
Pigment Green 2, C.I. 42 040 and 49 005, PTA-----	59	54	271	5.02
Pigment Green 7, C.I. 74 260-----	3,275	2,776	9,964	3.59
Pigment Green 8, C.I. 10 006-----	141	122	153	1.25
Pigment Green 36, C.I. 74 265-----	296	272	1,067	3.92
All other-----	220	159	960	6.04
Brown toners, total-----	179	130	274	2.11
Pigment Brown 5, C.I. 15 800-----	153	97	169	1.74
All other-----	26	33	105	3.18
Black toners-----	258	248	298	1.20
LAKES				
Total-----	3,240	2,805	3,449	1.23
Red lakes:				
Pigment Red 60, C.I. 16 105-----	278	277	524	1.89
Pigment Red 83, C.I. 58 000-----	51	52	190	3.65
(Acid Red 26), C.I. 16 150-----	194	198	116	.59
Violet lakes: Pigment Violet 5, C.I. 58 055-----	218	125	262	2.10
All other lakes ² -----	2,499	2,153	2,357	1.09

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

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1A.--U.S. SALES OF SELECTED DRY FULL-STRENGTH COLORS, DRY EXTENDED COLORS, DRY DISPERSIONS, AQUEOUS DISPERSIONS, AND FLUSHED COLORS, 1971

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-----	3,275	7,278	\$2.22
Dry full-strength toner-----	1,043	2,168	2.08
Dry extended toner, dry dispersions, ³ and aqueous dispersions ^{3 4} -----	79	171	2.16
Flushed color-----	2,153	4,939	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-----	3,053	9,738	3.19
Dry full-strength toner, dry extended toner, and dry dispersions ⁴ -----	2,083	7,182	3.45
Aqueous dispersions ³ -----	714	1,791	2.51
Flushed color-----	256	765	2.99
Pigment Red 3, C.I. 12 120, total-----	1,430	2,499	1.75
Dry full-strength toner and dry dispersions ⁴ -----	884	1,453	1.64
Aqueous dispersions ³ -----	83	154	1.86
Flushed color-----	463	892	1.93
Pigment Red 48, C.I. 15 865, total-----	2,411	4,878	2.02
Dry full-strength toner, dry extended toner, and dry dispersions ⁴ -----	2,213	4,506	2.04
Aqueous dispersions ³ -----	72	109	1.51
Flushed color-----	126	263	2.09
Pigment Red 49, C.I. 15 630, barium toner, total-----	3,793	4,381	1.16
Dry full-strength toner-----	3,227	3,663	1.14
Dry extended toner, dry dispersion and aqueous dispersion ^{3 4} -----	17	26	1.53
Flushed color-----	549	692	1.26
Pigment Red 49, C.I. 15 630, calcium toner, total-----	1,166	1,459	1.25
Dry full-strength toner and dry dispersions ⁴ -----	1,013	1,201	1.19
Aqueous dispersions ³ and flushed color ⁴ -----	153	258	1.69
Pigment Red 49, C.I. 15 630, sodium toner ⁴ -----	265	312	1.18
Pigment Red 53, C.I. 15 585, barium toner, total-----	1,882	2,843	1.51
Dry full-strength toner and dry dispersions ⁴ -----	1,064	1,561	1.47
Aqueous dispersions ³ and flushed color ⁴ -----	818	1,282	1.57
Pigment Red 90, C.I. 45 380, total-----	1,053	2,414	2.29
Dry full-strength toner, dry extended toner, dry dispersions, and aqueous dispersions ^{3 4} -----	82	172	2.10
Flushed color-----	971	2,242	2.31
Pigment Violet 3, C.I. 42 535, fugitive, total-----	271	485	1.79
Dry full-strength toner-----	225	419	1.86
Dry extended toner and flushed color ⁴ -----	46	66	1.43
Pigment Violet 3, C.I. 42 535, PMA and PTA, total-----	361	1,282	3.55
Dry full-strength toner-----	256	875	3.42
Dry extended toner and aqueous dispersions ^{3 4} -----	19	134	7.05
Flushed color-----	86	273	3.17
Pigment Blue 15, C.I. 74 160, alpha form, total-----	3,092	9,536	3.08
Dry full-strength toner-----	1,004	3,396	3.39
Dry extended toner and dry dispersions ⁴ -----	916	3,148	3.44
Aqueous dispersions ³ -----	786	1,724	2.19
Flushed color-----	386	1,268	3.28

See footnotes at end of table.

ORGANIC PIGMENTS

TABLE 1A.--U.S. SALES OF SELECTED DRY FULL-STRENGTH COLORS, DRY EXTENDED COLORS, DRY DISPERSIONS, AQUEOUS DISPERSIONS, AND FLUSHED COLORS, 1971--CONTINUED

Selected pigments by commercial forms	Sales		
	Quantity ¹	Value	Unit value ²
	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Pigment Blue 15, C.I. 74 160, beta form, total-----	4,154	13,521	\$3.25
Dry full-strength toner, dry extended toner, and dry dispersions ⁴ -----	2,023	6,807	3.36
Aqueous dispersions ³ -----	678	1,902	2.81
Flushed color-----	1,453	4,812	3.31
Pigment Blue 19, C.I. 42 750A, total-----	3,392	8,984	2.65
Dry full-strength toner and aqueous dispersions ^{3 4} -----	467	1,174	2.51
Flushed color-----	2,925	7,810	2.67
Pigment Green 7, C.I. 74 260, total-----	2,776	9,964	3.59
Dry full-strength toner-----	1,120	4,194	3.74
Dry extended toner-----	499	1,920	3.85
Aqueous dispersions ³ -----	869	2,720	3.13
Dry dispersions and flushed color ⁴ -----	288	1,130	3.92

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

² Calculated from rounded figures.

³ Includes presscake.

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

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

[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, SW.
Pigment Yellow 4, C.I. 11 665-----	ACS, HSC, LVR.
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, C.I. 11 738-----	ACS, SNA, x.
*Pigment Yellow 74, C.I. 11 741-----	DUP, HSC, IMP, SDH, SW.
Pigment Yellow 75, C.I. 11 770-----	IMP.
All other acetoacetarylide yellows-----	DUP, KCW.
*Benzidine yellows:	
*Pigment Yellow 12, C.I. 21 090-----	ACS, ACY, AMS, APO, CIK, DUP, HSC, HSH, HST, ICC, IMP, KON, LVR, MRX, ROM, S, SDH, SNA, SW.
*Pigment Yellow 13, C.I. 21 100-----	APO, BUC, GAF, HST, ICC, IMP, ROM, SDH, SNA.
*Pigment Yellow 14, C.I. 21 095-----	ACS, ACY, AMS, APO, BUC, CIK, CPC, DUP, GAF, HSC, HSH, HST, ICC, IMP, KON, ROM, S, SDH, SNA, x.
*Pigment Yellow 17, C.I. 21 105-----	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.
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 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, TRC.
(Basic Yellow 2), C.I. 41 000 fugitive-----	LVR, MRX.
(Basic Yellow 37), C.I. 41 001-----	LVR.
All other-----	ACS, ICC, S.
*Orange toners:	
Pigment Orange 1, C.I. 11 725-----	ACS.
Pigment Orange 2, C.I. 12 060-----	IMP, SDH, SNA, SW, UHL.
*Pigment Orange 5, C.I. 12 075-----	ACY, HSC, IMP, SNA, SW.
*Pigment Orange 13, C.I. 21 110-----	ACS, ACY, AMS, IMP, KON, MRX, S, SNA.
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.
*Pigment Orange 34, C.I. 21 115-----	BUC, ICC, ROM, SDH, SNA.
Pigment Orange 43, C.I. 71 105-----	ACS, GAF.
(Vat Orange 4), C.I. 59 710-----	ACS.
(Vat Orange 15), C.I. 69 025-----	TRC.
All other-----	GAF, KON, LVR, SNA.
*Red toners:	
*Naphthol reds:	
*Pigment Red 2, C.I. 12 310-----	ACS, HSH, IMP, KCW, SW.
*Pigment Red 5, C.I. 12 490-----	DUP, GAF, HSH, ICC, ICI, IMP, ROM, SDH.
Pigment Red 7, C.I. 12 420-----	ICI.
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.
Pigment Red 15, C.I. 12 465-----	DUP.
*Pigment Red 17, C.I. 12 390-----	ACY, ICC, IMP, KON, SNA, SW, UHL.
Pigment Red 18, C.I. 12 350-----	ACS, IMP.

ORGANIC PIGMENTS

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TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Red toners--Continued	
*Naphthol reds--Continued	
*Pigment Red 22, C.I. 12 315-----	ACY, DUP, GAF, IMP, MRX, ROM, SNA.
*Pigment Red 23, C.I. 12 355-----	ACY, BUC, DUP, ICC, IMP, ROM, SDH, UHL.
Pigment Red 31, C.I. 12 360-----	SNA.
Pigment Red 112, C.I. 12 370-----	IMP.
All other naphthol reds-----	ICC, KCW, ROM, SDH, SNA, x.
*Pigment Red 1, C.I. 12 070, dark-----	ACY, AMS, HSC, HSH, IMP, SW.
*Pigment Red 1, C.I. 12 070, light-----	ACY, HSC, HSH, IMP, PPG, SDH, SW.
*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, SDH, SNA, SW, UHL.
Pigment Red 6, C.I. 12 090-----	DUP, HSH, KCW.
*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, LVY, S, SNA, SW.
Pigment Red 49, C.I. 15 630:	
*Barium toner-----	ACY, AMS, CIK, HSC, KON, LVY, MRX, PPG, SDH, SNA, SW, UHL.
*Calcium toner-----	ACY, AMS, CIK, HSC, LVY, PPG, SDH, SNA, SW.
*Sodium toner-----	ACY, HSC, KON, SDH, SW.
*Pigment Red 52, C.I. 15 860-----	APD, 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.
*Pigment Red 54, C.I. 14 830, calcium toner-----	HSH, IMP, SDH.
Pigment Red 55, C.I. 15 820-----	HSH, IMP.
*Pigment Red 57, C.I. 15 850, calcium toner-----	AMS, CIK, DUP, HSC, IMP, KON, LVY, MGR, S, SDH, SNA, SW.
Pigment Red 58, C.I. 15 825-----	DUP, IMP.
*Pigment Red 63, C.I. 15 880-----	ACS, HSH, KON, SNA.
Pigment Red 64, C.I. 15 800-----	ACS.
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, SNA, UHL.
*Pigment Red 81, C.I. 45 160, PTA-----	ACY, AMS, DUP, GAF, HN, IMP, KCW, KON, MGR, MRX, S, SNA, UHL.
Pigment Red 87, C.I. 73 310-----	ACS.
Pigment Red 88-----	ACS, SDH.
*Pigment Red 90, C.I. 45 380-----	AMS, HN, ICC, IMP, LVY, SDH, SNA.
Pigment Red 91-----	HN.
Pigment Red 92-----	HN.
Pigment Red 94-----	HN.
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.
All other-----	ACS, DUP, HSC, 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, S, SNA, UHL.
*Pigment Violet 1, C.I. 45 170, PTA-----	ACY, AMS, DUP, GAF, IMP, MGR, MRX, SNA.
*Pigment Violet 3, C.I. 42 535, fugitive-----	ACY, AMS, HSC, IMP, KON, MGR, UHL.
*Pigment Violet 3, C.I. 42 535, PMA-----	AMS, CIK, DUP, GAF, HSC, IMP, KON, LVR, MGR, MRX, PPG, SDH, SNA, SW, UHL.
*Pigment Violet 3, C.I. 42 535, PTA-----	ACY, AMS, HN, HSC, IMP, KON, MRX, SNA.
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, SDC, SNA.
Pigment Violet 31, C.I. 60 010-----	ACS, DUP.
Pigment Violet 36, C.I. 73 385-----	ACS.
Pigment Violet 38, C.I. 73 395-----	ACS.
(Basic Violet 2), C.I. 42 520-----	HN.
All other-----	BUC, ICC, IMP, ROM.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Pigment	Manufacturers' identification codes (according to list in table 3)
TONERS--Continued	
*Blue toners:	
*Pigment Blue 1, C.I. 42 595, PMA-----	DUP, GAF, HN, IMP, KON, LVY, MGR, MRX, SW, UHL.
*Pigment Blue 1, C.I. 42 595, PTA-----	AMS, GAF, IMP, KON, MGR.
Pigment Blue 2, C.I. 44 045, PMA-----	GAF, KON.
Pigment Blue 9, C.I. 42 025, PTA-----	GAF, IMP, MGR.
Pigment Blue 10, C.I. 44 040, PMA-----	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, APO, DUP, GAF, HSC, ICC, ICI, IMP, MGR, SNA, SW, TMS, TRC.
*Pigment Blue 15, C.I. 74 160, Beta form-----	ACS, ACY, AMS, BAS, BUC, DUP, GAF, HSC, ICC, IMP, LVY, ROM, SNA, SW, TMS.
*Pigment Blue 19, C.I. 42 750A-----	AMS, HN, HSC, SW.
*Pigment Blue 22, C.I. 69 810-----	ACS, DUP, HN, TRC.
*Pigment Blue 25, C.I. 21 180-----	ACS, DUP, GAF, ICC, S, SNA.
Pigment Blue 64, C.I. 69 825-----	ICI, TRC.
(Basic Blue 1), C.I. 42 025-----	GAF.
(Basic Blue 2) -----	IMP.
All other-----	DUP, GAF, SDH, TNI.
*Green toners:	
*Pigment Green 1, C.I. 42 040, PMA-----	GAF, IMP, MRX, UHL.
Pigment Green 1, C.I. 42 040, PTA-----	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-----	ACY, AMS, DUP, GAF, IMP, KON, MRX, S.
Pigment Green 4, C.I. 42 000, fugitive-----	GAF.
Pigment Green 4, C.I. 42 000, PMA-----	KON, MGR.
Pigment Green 4, C.I. 42 000, PTA-----	ACY, KON.
*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, GAF, HSC, IMP, SNA.
*Pigment Green 36, C.I. 74 265-----	ACS, ACY, DUP, GAF, SNA.
All other-----	IMP.
*Brown toners:	
Pigment Brown 1, C.I. 12 480-----	ICI.
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, SDH.
*Black toners-----	DUP, GAF, UHL.
LAKES	
Yellow lakes:	
(Acid Yellow 23), C.I. 19 140-----	KON, MGR, MRX.
(Acid Yellow 73), C.I. 45 350-----	HN.
Orange lakes:	
Pigment Orange 7, C.I. 15 530-----	CPC.
Pigment Orange 17, C.I. 15 510-----	IMP, KCW, KON.
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.
*Pigment Red 26, C.I. 16 150-----	CPC, IMP, KCW.
All other-----	IMP.

ORGANIC PIGMENTS

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TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Pigment	Manufacturers' identification codes (according to list in table 3)
LAKES--Continued	
*Violet lakes: Pigment Violet 5, C.I. 58 055-----	ACS, DUP, HSH, IMP, KON, UHL.
Blue lakes:	
Pigment Blue 17, C.I. 74 180-----	CPC.
Pigment Blue 24, C.I. 42 090-----	AMS, KON, LVY, SDH.
(Acid Blue 93), C.I. 42 780-----	LVR.
Green lakes-----	IMP.
Brown lakes-----	KON.
Black lakes: (Natural Black 3), C.I. 75 291-----	CPC, KON.

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

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3.--ORGANIC PIGMENTS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of organic pigment manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

MEDICINAL CHEMICALS

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

Table 1 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class, while table 2 lists separately each product for which data were reported and identifies the manufacturers.¹ The statistics shown in table 1 are for bulk chemicals only; finished pharmaceutical preparations and products put up in pills, capsules, tablets, or other measured doses are excluded.² The difference between production and sales reflects inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the difference may also include quantities of medicinal grade products used as intermediates, e.g., penicillin G **salts** used as intermediates in the manufacture of 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 1971 amounted to 223 million pounds, or 4.1 percent more than the 214 million pounds produced in 1970 and 11.6 percent more than the 200 million pounds produced in 1969. Total sales of bulk medicinal chemicals in 1971 amounted to 152 million pounds, valued at \$487 million, compared with sales in 1970 of 155 million pounds, valued at \$510 million, and sales in 1969 of 145 million pounds, valued at \$462 million. In terms of quantity, sales in 1971 were thus 1.4 percent smaller than in 1970 and 5.2 percent larger than in 1969. In terms of value, sales in 1971 were 4.6 percent smaller than in 1970 and 5.4 percent larger than in 1969.

Production of the more important groups of medicinal chemicals in 1971 was as follows: Antibiotics, 17.9 million pounds (5.7 percent larger than in 1970), of which 10.8 million pounds was for medicinal

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.

SYNTHETIC ORGANIC CHEMICALS, 1971

use and 7.1 million pounds was for other uses; anti-infective agents other than antibiotics, 31.7 million pounds (6.6 percent smaller than in 1970; central nervous system depressants and stimulants, 46.3 million pounds (7.2 percent smaller); gastrointestinal agents and therapeutic nutrients, 72.3 million pounds (9.4 percent larger); and vitamins, 26.1 million pounds (13.9 percent larger). Production of some of the more important individual products listed in table 1 was as follows: Choline chloride, 45.7 million pounds (15.5 percent larger than in 1970); aspirin, 31.7 million pounds (10.0 percent smaller); salicylic acid, 18.4 million pounds (30.5 percent larger); ascorbic acid, 11.2 million pounds (13.9 percent larger); anti-infective sulfonamides, 6.1 million pounds (2.0 percent larger); penicillins (except semi-synthetic), 4,670 trillion units (24.2 percent larger); tetracyclines, 2.2 million kilograms (5.9 percent smaller); vitamin A, 1,053 trillion units (17.3 percent smaller); and vitamin E, 982 billion units (63.7 percent larger).

MEDICINAL CHEMICALS

TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1971

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

Chemical	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	223,218	152,222	486,558	\$3.20
Acyclic-----	90,636	67,309	54,856	.81
Benzenoid ³ -----	112,475	71,113	333,374	4.69
Cyclic nonbenzenoid ⁴ -----	20,107	13,800	98,328	7.13
Antibiotics, total ⁵ -----	17,907	6,672	136,741	20.49
Ampicillin, for medicinal use-----	548	241	26,364	109.39
Ampicillin, sodium, for medicinal use-----	22	...	...	...
Bacitracin, for medicinal use-----	14	13	1,202	92.46
Neomycin, for all uses-----	527	...	...	...
Penicillins (except semi-synthetic), total-----	7,429	2,734	27,295	9.98
Penicillin G, potassium, for medicinal use-----	2,422	...	...	...
Penicillin G, procaine, for all uses-----	2,738	1,701	14,833	8.72
All other, for all uses-----	2,269	1,033	12,462	12.06
Tetracyclines, for all uses-----	4,812	1,068	22,493	21.06
Other antibiotics, total-----	4,555	2,616	59,387	22.70
For medicinal use ⁶ -----	2,775	1,741	47,561	27.32
For nonmedicinal uses ⁷ -----	1,780	875	11,826	13.52
Antihistamines, total-----	437	183	7,938	43.38
Antinauseants-----	57	...	...	...
Chlorpheniramine maleate-----	20	5	102	20.40
Pheniramine maleate-----	6	...	...	...
All other-----	354	178	7,836	44.02
Anti-infective agents (except antibiotics), total-----	31,731	20,265	79,662	3.93
Anthelmintics, total-----	12,092	9,292	29,564	3.18
Piperazine-----	3,409	1,141	939	.82
Piperazine dihydrochloride-----	2,588	1,839	1,488	.81
All other-----	6,095	6,312	27,137	4.30
Antifungal agents-----	947	...	...	...
Antiprotozoan agents, total-----	9,018	6,006	34,806	5.80
Arsenic and bismuth compounds-----	3,196	...	...	...
Diiodohydroxyquin-----	22	...	...	...
All other-----	5,800	6,006	34,806	5.80
Mercury compounds-----	25	27	730	27.04
Sulfonamides-----	6,063	1,765	6,794	3.85
Urinary antiseptics, total-----	611	418	1,250	2.99
Methenamine base and salts-----	539	...	...	...
All other-----	72	418	1,250	2.99
Other anti-infective agents ⁸ -----	2,975	2,757	6,518	2.36
Autonomic drugs, total-----	568	431	8,654	20.08
Parasympatholytic (anticholinergic) quaternary ammonium compounds-----	25	...	...	...
Parasympatholytic (anticholinergic) tertiary amines-----	56	32	1,414	44.19
Sympathomimetic (adrenergic) agents, total-----	477	376	5,751	15.30
Epinephrine hydrochloride (racemic)-----	1	1	95	95.00
Phenylpropanolamine hydrochloride-----	197	220	1,283	5.83
All other-----	279	155	4,373	28.21
Other autonomic drugs-----	10	23	1,489	64.74
Cardiovascular agents, total-----	1,515	...	...	...
Vasodilators-----	75	...	...	...
Other cardiovascular agents-----	1,440	...	...	...

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Central depressants and stimulants, total-----	46,327	34,014	57,993	\$1.70
Amphetamines-----	28	33	316	9.58
Analgesics and antipyretics, total-----	40,161	29,116	31,882	1.09
Aspirin-----	31,668	...	...	...
Meperidine hydrochloride-----	46	...	...	...
Salicylates (except aspirin)-----	2,570	2,594	2,660	1.03
All other-----	5,877	26,522	29,222	1.10
Antidepressants-----	152	...	...	...
Barbiturates-----	611	373	1,811	4.86
Hypnotics and sedatives (except barbiturates)-----	293	30	114	3.80
Skeletal muscle relaxants-----	130	...	...	...
Tranquilizers-----	905	...	...	...
Other central depressants and stimulants ⁹ -----	4,047	4,462	23,870	5.35
Dermatological agents and local anesthetics, total-----	19,996	12,572	6,336	.50
Salicylic acid-----	18,440	11,411	4,524	.40
All other-----	1,556	1,161	1,812	1.56
Diagnostic agents-----	938	...	...	...
Expectorants and mucolytic agents, total-----	2,279	2,173	5,107	2.35
Guaiacol and its derivatives-----	...	1,126	2,112	1.88
All other-----	2,279	1,047	2,995	2.86
Gastrointestinal agents and therapeutic nutrients, total-----	72,292	53,424	23,925	.45
Amino acids and salts-----	2,000	1,928	2,724	1.41
Calcium gluconate-----	...	655	481	.73
Choline chloride (all grades)-----	45,688	34,715	7,067	.20
Ferrous gluconate-----	425	244	324	1.33
All other-----	24,179	15,882	13,329	.84
Hematological agents, total-----	25	21	1,965	93.57
Sodium heparin-----	4	...	...	...
All other-----	21	21	1,965	93.57
Hormones and synthetic substitutes, total-----	1,360	153	15,079	98.56
Corticosteroids-----	46	...	...	...
Estrogens and progestogens-----	...	14	880	62.86
Synthetic hypoglycemic agents-----	1,121	99	572	5.78
All other-----	193	40	13,627	340.68
Renal-acting and edema-reducing agents, total-----	1,525	155	4,580	29.55
Benzothiadiazine derivatives-----	...	69	2,881	41.75
Mercurial diuretics-----	...	(10)	11	37.54
Theophylline derivatives-----	64	...	...	...
All other-----	1,461	86	1,688	19.63
Vitamins, total-----	26,094	20,993	106,597	5.08
Vitamin A alcohol and esters, total ¹¹ -----	1,127	966	19,784	20.48
Vitamin A palmitate (feed grade)-----	647	620	9,072	14.63
All other-----	480	346	10,712	30.96
Vitamin B-complex, total-----	9,242	7,014	39,611	5.65
Niacinamide-----	1,519	...	...	...
Pantothenic acid and derivatives, total-----	2,673	1,647	5,234	3.18
Calcium pantothenate (racemic) (feed grade)-----	1,795	864	2,414	2.79
All other-----	878	783	2,820	3.60
Riboflavin (feed grade)-----	695	511	6,084	11.91
Other B-complex vitamins-----	4,355	4,856	28,293	5.83
Vitamin C, total-----	13,661	11,270	20,363	1.81
Ascorbic acid-----	11,195	8,787	15,247	1.74
All other-----	2,466	2,483	5,116	2.06

See footnotes at end of table

MEDICINAL CHEMICALS

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TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ¹		
		Quantity	Sales	Unit value ²
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Vitamins--Continued				
Vitamin D ¹¹ -----	14	8	1,089	\$136.12
Vitamin E, total ¹¹ -----	1,819	1,670	25,305	15.15
d-and dl-Alpha tocopheryl acetate (all grades)-----	1,343	1,187	16,082	13.55
All other-----	476	483	9,223	19.10
Vitamin K-----	231	65	445	6.85
Miscellaneous medicinal chemicals ¹² -----	224	1,166	31,981	27.43

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

² Calculated from rounded figures.

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

⁴ Includes antibiotics of unknown structure.

⁵ With the exception of bacitracin, the penicillins (except 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	
Ampicillin, for medicinal use-----	---Kg---	248,752	109,313	26,364	\$241.18
Ampicillin, sodium, for medicinal use-----	---Kg---	10,203	...	...	...
Bacitracin, for medicinal use-----	---BU---	327	295	1,202	4,074.58
Neomycin, for all uses-----	---Kg---	238,958	...	...	...
Penicillins (except semi-synthetic), total-----	---BU---	4,670,454	1,531,103	27,295	17.83
Penicillin G, potassium, for medicinal use-----	---BU---	1,751,356	...	...	...
Penicillin G, procaine, for all uses-----	---BU---	1,253,809	779,056	14,833	19.04
All other, for all uses-----	---BU---	1,665,289	752,047	12,462	16.57
Tetracyclines, for all uses-----	---Kg---	2,182,735	484,346	22,493	46.44

⁶ Production of all antibiotics for medicinal use amounted to 10,779,000 pounds; sales amounted to 4,063,000 pounds, valued at \$104,693,000.

⁷ Production of all antibiotics for animal feeds and other nonmedicinal uses amounted to 7,128,000 pounds; sales amounted to 2,609,000 pounds, valued at \$32,048,000.

⁸ Includes sales of antifungal agents.

⁹ Includes production and sales of anticonvulsants, antitussives, general anesthetic, and stimulants; also includes sales of antidepressants, skeletal muscle relaxants, and tranquilizers.

¹⁰ Sales of mercurial diuretics amounted to 293 pounds.

SYNTHETIC ORGANIC CHEMICALS, 1971

Footnotes for table 1--Continued

¹¹ All quantities for vitamin A, B₁₂, D, and E were reported in terms of grams or units, but were converted to pounds for inclusion in the main statistical table (1.317 billion units of vitamin A acetate, 0.824 billion units of vitamin A palmitate, 453.6 grams of vitamins B₁₂, 18.14 billion units of vitamin D, 617,000 units of d-alpha tocopheryl acetate, 454,000 units of dl-alpha tocopheryl acetate, etc. = 1 pound). The following tabulation shows statistics for these vitamins, except for B₁₂, 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---	1,053,034	868,491	19,784	\$22.78
Vitamin A palmitate (feed grade)-----	---BU---	532,868	511,363	9,072	17.74
All other-----	---BU---	520,166	357,128	10,712	29.99
Vitamin D-----	---BU---	250,703	136,328	1,089	7.99
Vitamin E, Total-----	---MU---	981,664	919,127	25,305	27.53
d-and dl-Alpha tocopheryl acetate (all grades)---	---MU---	705,675	640,219	16,082	25.12
All other-----	---MU---	275,989	278,908	9,223	33.07

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

MEDICINAL CHEMICALS

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

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

Chemical	Manufacturers' identification codes (according to list in table 3)
*Antibiotics: ¹	
*Ampicillin-----	BEE, BRS, OMS, TRD, WYT.
*Ampicillin, sodium-----	BEE, OMS, WYT.
*Bacitracin-----	COM, PEN, PFZ, PMP.
*Neomycin:	
For medicinal use-----	OMS, PEN, PFZ, UPJ.
For nonmedicinal uses-----	PFZ.
*Penicillins (except semi-synthetic):	
*Penicillin G, potassium-----	OMS, PFZ, WYT.
*Penicillin G, procaine:	
For medicinal use-----	OMS, PFZ, WYT.
For nonmedicinal uses-----	MRK, OMS.
*All other:	
Penicillin G, benzathine-----	WYT.
Penicillin G, benzathine, for nonmedicinal uses----	WYT.
Penicillin G, sodium-----	OMS.
Penicillin O, sodium-----	PFZ.
Phenoxymethylpenicillin (Penicillin V)-----	BRS, LIL, OMS.
Phenoxymethylpenicillin, benzathine-----	WYT.
Phenoxymethylpenicillin, hydrabamine-----	ABB.
Phenoxymethylpenicillin, potassium-----	ABB, LIL.
*Tetracyclines:	
Chlortetracycline-----	ACY, RLS.
Chlortetracycline, for nonmedicinal uses-----	ACY.
Demeclocycline-----	ACY.
Doxycycline-----	PFZ.
Methacycline-----	PFZ.
Minocycline-----	ACY.
Oxytetracycline-----	PFZ, RLS.
Oxytetracycline, for nonmedicinal uses-----	PFZ.
Tetracycline-----	ACY, BRS, PFZ, RLS.
*Other antibiotics:	
*For medicinal use:	
Amphotericin B-----	OMS.
Candididin-----	PEN.
Cephalexin-----	LIL.
Cephaloglycin-----	LIL.
Cephaloridine-----	LIL.
Cephalothin-----	LIL.
Chloramphenicol-----	PD, RLS.
Clindamycin-----	x.
Cycloserine-----	COM.
Dihydrostreptomycin-----	MRK, PFZ.
Erythromycin-----	ABB, LIL, UPJ.
Fumagillin-----	ABB.
Gentamycin-----	SCH.
Gramicidin-----	PEN.
Kanamycin-----	BRS.
Lincomycin-----	UPJ.
Novobiocin-----	MRK, UPJ.
Nystatin-----	ACY, OMS.
Oleandomycin-----	PFZ.
Paromomycin-----	MRK.
Polymyxin B-----	PFZ.
Semi-synthetic penicillins:	
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-----	BRS, PFZ.

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Antibiotics: ¹ --Continued	
*Other antibiotics--Continued	
*For medicinal use--Continued	
Spectinomycin-----	ABB, UPJ.
Streptomycin-----	MRK, PFZ.
Thiostrepton-----	OMS.
Troleandomycin-----	PFZ.
Vancomycin-----	LIL.
Viomycin-----	PFZ.
*For nonmedicinal uses:	
Bacitracin-----	COM, DLI, GPR, PEN, PMP.
Cycloheximide-----	UPJ.
Hygromycin B-----	LIL.
Novobiocin-----	UPJ.
Nystatin-----	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.
Chlorothen citrate-----	ACY.
*Chlorpheniramine maleate-----	HEX, HFT, SCH, SK.
Cyproheptadine hydrochloride-----	MRK.
Dexbrompheniramine maleate-----	SCH.
Dexchlorpheniramine maleate-----	SCH.
Dimethindene maleate-----	CGY.
Diphenhydramine-----	PD.
Diphenhydramine hydrochloride-----	GAN, PD.
Doxylamine succinate-----	BKC.
Methapyrilene fumarate-----	ABB.
Methapyrilene hybenzate-----	LIL.
Methapyrilene hydrochloride-----	ABB.
Phenindamine tartrate-----	HOF.
*Pheniramine maleate-----	HEX, HFT, SCH.
Phenyltoloxamine citrate-----	BRS.
Pyrilamine maleate-----	HEX, MRK.
Pyrilamine resin adsorbate-----	MRK.
Pyrrobutamine phosphate-----	LIL.
Thenyldiamine hydrochloride-----	SDW.
Thonzylamine hydrochloride-----	NEP.
Tripeleannamine-----	CGY.
Tripeleannamine citrate-----	CGY.
Tripeleannamine hydrochloride-----	CGY, RSA.
Triprolidine hydrochloride-----	BUR.
*Anti-infective agents (except antibiotics):	
*Anthelmintics:	
Cadmium anthranilate-----	MAL.
2,2-Dichlorovinyl dimethyl phosphate (DVPP)-----	SHC.
Diethylcarbamazine citrate-----	ACY.
Gentian violet-----	SDH.
Hexylresorcinol-----	MRK.
Phenothiazine-----	WAG.
*Piperazine-----	DOW, FLM, JCC, UCC.
Piperazine citrate-----	BUR.
*Piperazine dihydrochloride-----	DOW, FLM, JCC, WHL.
Piperazine hexahydrate-----	JCC.
Piperazine hydrochloride-----	DOW, JCC.
Piperazine phosphate-----	BUR, JCC.
Piperazine sulfate-----	JCC.

See footnotes at end of table.

MEDICINAL CHEMICALS

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Anthelmintics--Continued	
Pyrvinium pamoate-----	x.
Stibophen-----	SDW.
Thiabendazole-----	MRK.
*Antifungal agents:	
Benzoic acid-----	MON.
Calcium undecylenate-----	WTL.
Fuchsin, basic-----	ACS.
Sodium caprylate-----	LEM.
Sodium undecylenate-----	NTL.
Undecylenic acid-----	NTL.
Zinc undecylenate-----	NTL, WTL.
*Antiprotozoan agents:	
Aklomide-----	SAL.
Amodiaquin-----	PD.
Amodiaquin hydrochloride-----	PD.
Amprolium-----	MRK.
*Arsenic and bismuth compounds:	
Arsanilic acid-----	WHL.
Bismuth dipropylacetate-----	x.
Bismuth sodium triglycollamate-----	BPC.
Bismuth subsalicylate-----	MAL, NOR, PEN.
Carbarsone-----	LIL, WHL.
Glycobiarsol-----	SDW.
Nitarson-----	SAL.
Roxarsone-----	SAL.
Roxarsone sodium-----	SAL.
Sodium arsanilate-----	SAL.
Chloroquine phosphate-----	SDW.
Dimetridazole-----	RDA.
*Diiodohydroxyquin-----	CGY, RSA, SRL.
3,5-Dinitro-o-toluidine-----	DOW.
Furazolidone-----	NOR.
Hydroxychloroquine sulfate-----	SDW.
Iodochlorhydroxyquin-----	CGY.
Metronidazole-----	RDA.
Nifuroxime-----	NOR.
Nifursol-----	SAL.
Nihydrazone-----	NOR.
Nithiazide-----	MRK.
Nitromide-----	PEN, SAL.
Nitrophenide-----	ACY.
Primaquine phosphate-----	PD, SDW.
Pyrimethamine-----	BUR.
*Mercury compounds:	
Merbromin-----	HYN.
Mercuric salicylate-----	MRK.
Nitromersol-----	ABB.
Phenylmercuric acetate-----	WRC.
Phenylmercuric benzoate-----	MRK.
Phenylmercuric borate-----	MRK, WRC.
Phenylmercuric nitrate-----	WRC.
Thimerosal-----	LIL.
*Sulfonamides:	
Acetyl sulfamethoxypyridazine-----	ACY.
Acetyl sulfisoxazole-----	HOF.
Dinsed-----	SAL.
Mafenide acetate-----	SDW.
Mafenide hydrochloride-----	SDW.
Phthalylsulfacetamide-----	CTN.
Phthalylsulfathiazole-----	MRK.
Salicylazosulfapyridine-----	NEP.
Succinylsulfathiazole-----	MRK.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Sulfonamides--Continued	
Sulfabenzamide-----	ACY.
Sulfabenzamide, sodium-----	ACY.
Sulfabromomethazine, sodium-----	MRK.
Sulfacetamide-----	CTN.
Sulfacetamide, sodium-----	CTN.
Sulfachloropyrazine, sodium-----	ACY, CGY.
Sulfachloropyridazine, sodium-----	ACY.
Sulfadiazine-----	ACY.
Sulfadiazine, sodium-----	ACY.
Sulfadimethoxine-----	HOF.
Sulfaguanidine-----	ACY, SAL.
Sulfamerazine-----	ACY.
Sulfamerazine, sodium-----	ACY, CTN.
Sulfamethazine-----	ACY, CTN.
Sulfamethazine, sodium-----	ACY, CTN.
Sulfamethizole-----	ACY, CTN.
Sulfamethoxazole-----	HOF.
Sulfamethoxypyridazine-----	ACY.
Sulfanilamide-----	MRK, SAL.
Sulfanitran-----	SAL.
Sulfapyridine-----	ACY, CTN.
Sulfapyridine, sodium-----	CTN.
Sulfaquinoxaline-----	MRK.
Sulfathiazole-----	ACY, MRK.
Sulfathiazole, sodium-----	ACY, MRK.
Sulfisoxazole-----	HOF.
Sulfisoxazole, sodium-----	HOF.
*Urinary antiseptics:	
Mandelic acid-----	MAL.
*Methenamine base and salts:	
Methenamine-----	HN.
Methenamine hippurate-----	RIK.
Methenamine mandelate-----	ARN, NEP.
Methylene blue-----	ACY.
Nitrofurantoin-----	NOR, RLS.
Phenazopyridine hydrochloride-----	HOF, NEP.
*Other anti-infective agents:	
Acriflavine-----	ACS.
Aminacrine-----	SDW.
Aminacrine hydrochloride-----	SDW.
Antileprotic and antitubercular agents:	
Aminosalicyclic acid-----	MLS.
Ethionamide-----	RDA.
Isoniazid-----	RIL.
Potassium aminosalicylate-----	MLS.
Pyrazinamide-----	MRK.
Sodium aminosalicylate-----	MLS.
Sodium sulfoxone-----	ABB.
Antiviral agent: Amantadine hydrochloride-----	DUP.
Benzalkonium chloride-----	SDH.
Bromoform-----	DOW.
Camphor, monobromated-----	PEN.
Cetalkonium chloride-----	FIN, SDW.
Cetylpyridinium chloride-----	FIN, HEX.
Chlorobutanol-----	BPC, FD.
Furaltadone-----	NOR.
Furamazone-----	NOR.
8-Hydroxy-5-quinolinesulfonic acid-----	MRK.
Iodoform-----	MAL.
Nalidixic acid-----	SDH.

See footnotes at end of table.

MEDICINAL CHEMICALS

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Anti-infective agents (except antibiotics)--Continued	
*Other anti-infective agents--Continued	
Nitrofurathiazide-----	SCH.
Nitrofurazone-----	NOR.
Oxolinic acid-----	NEP.
Oxyquinoline-----	FIS, MRK.
Oxyquinoline benzoate-----	FIS.
Oxyquinoline citrate-----	FIS, MRK.
Oxyquinoline sulfate-----	FIS, MRK.
Phenolic antiseptics and disinfectants:	
Betanaphthol ³ -----	ACY.
Bithionol-----	x.
Resorcinol ³ -----	KPT.
Thymol-----	GIV.
Thymol iodide-----	MAL.
Povidine - iodine complex-----	GAF.
*Autonomic drugs:	
Parasympatholytic (anticholinergic) agents (except tropane derivatives):	
*Quaternary ammonium compounds:	
Ambutonium bromide-----	BJL.
Diphenamil methylsulfate-----	SCH.
Hexocyclium methylsulfate-----	ABB.
Isopropamide iodide-----	SK.
Mepenzolate bromide-----	LKL.
Pipenzolate bromide-----	LKL.
Propantheline bromide-----	SRL.
Tridihexethyl iodide-----	ACY.
*Tertiary amines:	
Adiphenine hydrochloride-----	CGY.
Cyclopentolate hydrochloride-----	RSA.
Cyrimine hydrochloride-----	LIL.
Dicyclomine hydrochloride-----	BKC.
Orphenadrine citrate-----	RIK.
Orphenadrine hydrochloride-----	RIK.
Oxyphenacylimine hydrochloride-----	PFZ.
Piperidolate hydrochloride-----	LKL.
Thiophenamil hydrochloride-----	BJL, CTN.
Trihexyphenidyl hydrochloride-----	ACY, SDW.
*Sympathomimetic (adrenergic) agents:	
Cinnamedrine hydrochloride-----	SDW.
Cyclopentamine hydrochloride-----	LIL.
Epinephrine bitartrate (levo)-----	SDW.
*Epinephrine hydrochloride (racemic)-----	
L-Isoproterenol bitartrate-----	ECL, VB, x.
Isoproterenol hydrochloride-----	SDW.
Levarterenol bitartrate-----	SDW.
Metaraminol bitartrate-----	SDW.
Methoxyphenamine hydrochloride-----	x.
Naphazoline hydrochloride-----	CGY.
Nordefrin hydrochloride-----	SDW.
Nylidrin hydrochloride-----	BKL.
Phenylephrine-----	CTN, GAN, SDW.
Phenylephrine bitartrate-----	GAN.
Phenylephrine hydrochloride-----	CTN, GAN, HEX, SDW.
*Phenylpropanolamine hydrochloride-----	
Propylhexedrine-----	ARS, BKL, HEX, NEP, ORT, PD.
Protokylol hydrochloride-----	HEX, SK.
Pseudoephedrine hydrochloride-----	LKL.
Pseudoephedrine sulfate-----	BUR, GAN.
Tetrahydrozoline hydrochloride-----	GAN.
	PFZ.

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Autonomic drugs--Continued	
*Other autonomic drugs:	
Ganglionic blocking agents:	
Hexamethonium chloride-----	RSA.
Tetraethylammonium chloride-----	RSA.
Parasympatholytic (anticholinergic) tropane derivatives:	
Anisotropine methylbromide-----	x.
Benztropine mesylate-----	x.
Homatropine-----	CTN.
Homatropine hydrobromide-----	CTN.
Homatropine methylbromide-----	CTN, HEX.
Homatropine terephthalate-----	EN.
Parasympathomimetic (cholinergic) agents:	
Acetylcholine chloride-----	MRK.
Methacholine chloride-----	MRK.
Neostigmine bromide-----	HEX, HOF.
Neostigmine methylsulfate-----	HOF.
Physostigmine salicylate-----	PEN.
Pyridostigmine bromide-----	HOF.
Sympatholytic (antiadrenergic) agent: Ergonovine maleate.	LIL.
*Cardiovascular agents:	
*Vasodilators:	
Cyclandelate-----	WYT.
Dioxyline phosphate-----	LIL.
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.
Cardiac drugs:	
Procainamide hydrochloride-----	OMS.
Quinidine sulfate-----	HEX.
Colestipol hydrochloride-----	UPJ.
*Central depressants and stimulants:	
*Amphetamines:	
Amphetamine (racemic)-----	HEX, ORT.
Amphetamine sulfate (racemic)-----	ARN, HEX.
Dextroamphetamine-----	HEX.
Dextroamphetamine hydrochloride-----	ARN, HEX.
Dextroamphetamine phosphate-----	ARN, HEX.
Dextroamphetamine sulfate-----	ARN, HEX, SK.
Levamphetamine succinate-----	ARN.
Methamphetamine (dextro)-----	HEX.
Methamphetamine (levo)-----	HEX.
Methamphetamine hydrochloride (dextro)-----	ARN, GAN, HEX.
Methamphetamine hydrochloride (racemic)-----	ARN, HEX.

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Analgesics and antipyretics:	
*Aspirin-----	DOW, MLS, MON, NOR, SDG.
*Meperidine hydrochloride-----	PEN, SDW, WYT.
*Salicylates (except aspirin):	
Aluminum aspirin-----	ABB, SCH.
Phenyl salicylate-----	DOW.
Potassium salicylate-----	HN.
Salicylamide-----	PEN.
Salicylsalicylic acid-----	PD.
Sodium salicylate-----	DOW, HN.
*Other analgesics and antipyretics:	
Acetaminophen-----	ATP, NEP, PEN.
p-Aminobenzoic acid and salts:	
Aminobenzoic acid-----	LEM
Calcium aminobenzoate-----	GAN.
Potassium aminobenzoate-----	GAN.
Sodium aminobenzoate-----	GAN.
Anileridine hydrochloride-----	MRK.
Calcium succinate-----	LEM.
Colchicine-----	PEN.
Dextropropoxyphene napsylate-----	LIL.
Ethoheptazine citrate-----	WYT.
Indomethacin-----	MRK.
Mefenamic acid-----	PD.
Methadone hydrochloride-----	LIL, PEN.
Oxycodone hydrochloride-----	EN.
Oxycodone terephthalate-----	EN.
Oxyphenbutazone-----	CGY.
Pentazocine-----	SDW.
Pentazocine hydrochloride-----	SDW.
Phenacetin-----	MON.
Phenylbutazone-----	CGY.
Propoxyphene hydrochloride-----	LIL.
Tilidine-----	NEP.
*Antidepressants:	
Amitriptyline-----	MRK.
Desipramine hydrochloride-----	CGY, LKL.
Doxepin hydrochloride-----	PFZ.
Imipramine hydrochloride-----	CGY.
Isocarboxazid-----	HOF.
Nialamide-----	PFZ.
Nortriptyline-----	LIL.
Phenelzine sulfate-----	NEP.
Protriptyline-----	MRK.
*Barbiturates:	
Allylbarbituric acid-----	GAN.
Allylbarbituric acid, sodium-----	GAN.
Amobarbital-----	LIL.
Amobarbital, sodium-----	GAN, LIL.
Barbital-----	GAN.
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.
Phenobarbital-----	GAN, MAL.
Phenobarbital, sodium-----	GAN, MAL, SDW.
Secobarbital-----	GAN.
Secobarbital, sodium-----	GAN, LIL.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Barbiturates--Continued	
Talbutal-----	SDW.
Thiamylal, sodium-----	PD.
Thiopental, sodium-----	ABB.
*Hypnotics and sedatives (except barbiturates):	
Carbromal-----	PD.
Ethchlorvynol-----	ABB.
Ethinamate-----	LIL.
Glutethimide-----	CGY.
Methypylon-----	HOF.
*Skeletal muscle relaxants:	
Carisoprodol-----	BKL.
Chlorphenesin carbamate-----	UPJ.
Mephenesin-----	BLK, HEX.
Phenaglycodol-----	LIL.
Succinylcholine chloride-----	ABB, BUR.
Tubocurarine-----	ABB, OMS.
*Tranquilizers:	
Bucazine hydrochloride-----	PFZ.
Chlordiazepoxide hydrochloride-----	HOF.
Chlormezanone-----	SDW.
Chlorprothixene-----	HOF.
Diazepam-----	HOF.
Hydroxyzine hydrochloride-----	PFZ.
Hydroxyzine pamoate-----	PFZ.
Mebutamate-----	BKL.
Meprobamate-----	ABB, BKL.
Methaqualone-----	HEX, x.
Methaqualone hydrochloride-----	x.
Oxazepam-----	WYT.
Phenothiazine derivatives:	
Chlorpromazine hydrochloride-----	SK.
Fluphenazine hydrochloride-----	SCH.
Perphenazine-----	SCH.
Prochlorperazine edisylate-----	SK.
Prochlorperazine maleate-----	SK.
Promazine hydrochloride-----	WYT.
Promethazine hydrochloride-----	WYT.
Trifluoperazine hydrochloride-----	SK.
Prazepam-----	NEP.
Thiothixene hydrochloride-----	NEP.
*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.
Carbetapentane citrate-----	PFZ.
Codeine-----	MRK.
Dextromethorphan hydrobromide-----	HOF.
Dimethoxanate hydrochloride-----	BKL.
Ethylmorphine hydrochloride-----	MAL, MRK.
Hydrocodone bitartrate-----	MAL, MRK, PEN.
Levopropoxyphene napsylate-----	LIL.
Thebaine-----	MRK.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Central depressants and stimulants--Continued	
*Other central depressants and stimulants--Continued	
General anesthetic: Vinyl ether-----	MRK.
Stimulants:	
Benzphetamine hydrochloride-----	UPJ.
Caffeine:	
Natural-----	GNF.
Synthetic-----	PFZ.
Caffeine, citrated-----	MAL, MRK.
Caffeine sodium benzoate-----	GAN, MAL.
Chlorphentermine hydrochloride-----	NEP.
Deanol acetamidobenzoate-----	RIK.
Diethylpropion hydrochloride-----	BKC, x.
Nikethamide-----	CGY.
Phentermine-----	HEX.
*Dermatological agents and local anesthetics:	
Dermatological agents:	
Allantoin-----	FIN.
Aluminum phenolsulfonate-----	MAL, SAL.
Ammonium phenolsulfonate-----	SAL.
Bismuth subgallate-----	MAL.
Glycol salicylate-----	RDA.
*Salicylic acid *	DOW, HN, MON, SDH.
Scarlet red-----	ACS.
Sodium phenolsulfonate-----	SAL.
Zinc phenolsulfonate-----	MAL, SAL.
Local anesthetics:	
Butacaine sulfate-----	ABB.
Butamben picrate-----	ABB.
Butyl aminobenzoate (Butamben)-----	ABB.
Dibucaine-----	CGY.
Dibucaine hydrochloride-----	CGY.
Isobutyl aminobenzoate-----	RSA.
Lidocaine-----	AST, RLS, SDW.
Oxethazaine-----	WYT.
Piperocaine hydrochloride-----	LIL.
Pramoxine hydrochloride-----	ABB.
Procaine hydrochloride-----	PFZ, UOP.
Proparacaine hydrochloride-----	OMS.
Propyl aminobenzoate-----	RSA.
*Diagnostic agents:	
Roentgenographic contrast media:	
Acetrizoate, sodium-----	MAL.
Diatrizoate, meglumine-----	OMS, SDW.
Diatrizoate, sodium-----	OMS, SDW.
Iodipamide, meglumine-----	OMS.
Iodipamide, sodium-----	OMS.
Iodohippurate, sodium-----	MAL.
Iopanoic acid-----	SDW.
Iophendylate-----	x.
Iothalamate, meglumine-----	MAL.
Iothalamate, sodium-----	MAL.
Methiodal, sodium-----	SDW.
Other diagnostic agents:	
Indocyanine green (cardiac output test)-----	x.
Metyrapone (pituitary function test)-----	CGY.
Phenolsulfonphthalein (kidney function test)-----	EK.

See footnotes at end of table.

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
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Chemical	Manufacturers' identification codes (according to list in table 3)
*Expectorants and mucolytic agents:	
Ethylenediamine dihydriodide-----	HFT, WAG, WHL.
*Guaiacol and its derivatives:	
Glyceryl guaiacolate-----	GAN, HEX, PEN.
Guaiacol-----	MON.
Potassium guaiacolsulfonate-----	HN.
Iodinated glycerol-----	x.
Lobeline sulfate-----	ABB.
Terpin hydrate-----	PEN.
Thonzonium bromide-----	NEP.
*Gastrointestinal agents and therapeutic nutrients:	
*Amino acids and salts:	
Amino acid mixtures-----	MDJ.
Aspartic acid-----	HEX.
Beta-alanine-----	DA, HFT.
Glutamic acid and salts:	
Ammonium glutamate-----	IMC.
Glutamic acid-----	IMC.
Glutamic acid, hydrochloride-----	IMC, LEM.
Potassium glutamate-----	IMC, LEM.
Lysine (feed grade)-----	MRK.
Lysine hydrochloride-----	MRK.
L-Tyrosine-----	MDJ.
*Calcium gluconate-----	DLI, MAL, PFZ, WHL.
*Choline chloride:	
Feed grade-----	COM, DA, HFT, TMH.
Medicinal grade-----	HFT.
*Ferrous gluconate-----	DLI, PFZ, SDW.
*Other gastrointestinal agents and therapeutic nutrients:	
Gastrointestinal agents:	
Cathartics:	
Magnesium citrate-----	MAL.
Oxyphenisatin acetate-----	HEX.
Phenolphthalein-----	MON.
Podophyllin-----	ABB.
Sodium tartrate-----	MAL.
Choleretics and hydrocholeretics:	
Bile acids, oxidized-----	SRL, WIL.
Dehydrocholic acid-----	WIL.
Florantyrone-----	SRL.
Iron bile salts-----	WIL.
Ox bile extract-----	ABB, LIL, WIL.
Sodium dehydrocholate-----	WIL.
Tocamphyl-----	x.
Lipotropic agents:	
Betaine base-----	HFT, MAL.
Betaine hydrochloride-----	HFT.
Choline bicarbonate-----	COM.
Choline bitartrate-----	ACY, HFT.
Choline citrate (Tricholine citrate)-----	ACY, HFT.
Choline dihydrogen citrate-----	ACY, HFT.
Methionine, hydroxy analogue, calcium salt-----	DUP, MON.
Sitosterols-----	LIL, UPJ.
Other gastrointestinal agents:	
Dihydroxyaluminum aminoacetate-----	CHT, KCH.
Pectin-----	SKG.
Therapeutic nutrients:	
Calcium glucoheptonate-----	PFN.
Calcium phytate-----	STA.
Copper gluconate-----	PFZ.
Liver concentrate-----	WIL.
Liver, desiccated-----	WIL.
Magnesium gluconate-----	PFZ.
Manganese gluconate-----	PFZ.
Potassium gluconate-----	DLI, PFZ.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Hematological agents:	
Anticoagulants:	
Ammonium heparin-----	ABB, WIL.
Anisindione-----	SCH.
Bishydroxycoumarin-----	ABB.
Potassium heparin-----	WIL.
Potassium warfarin-----	RSA.
*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 phosphate-----	SCH.
Betamethasone valerate-----	SCH.
Cortisone acetate-----	MRK, UPJ.
Dexamethasone-----	MRK, SCH.
Dexamethasone phosphate-----	MRK.
Fludrocortisone acetate-----	UPJ.
Fluorometholone-----	UPJ.
9 α -Fluoroprednisolone acetate-----	UPJ.
Fluprednisolone-----	UPJ.
Hydrocortisone-----	MRK, PFZ, UPJ.
Hydrocortisone acetate-----	MRK, UPJ.
Medrysone-----	UPJ.
Methylprednisolone-----	UPJ.
Prednisolone-----	MRK, UPJ.
Prednisolone acetate-----	UPJ.
Prednisone-----	OMS, UPJ.
Triamcinolone-----	ACY.
Triamcinolone acetonide-----	OMS.
*Estrogens and progestogens:	
Chlorotrianisene-----	BJL, BKC.
Dienestrol diacetate-----	SCH.
Diethylstilbestrol-----	CTN, LIL.
Diethylstilbestrol diphosphate-----	x.
Estrogenic substances, conjugated-----	ORG.
Medroxyprogesterone acetate-----	UPJ.
Natural estrogenic substance-----	ORG.
Norgestrel-----	WYT.
Progesterone-----	UPJ.
*Synthetic hypoglycemic agents:	
Acetohexamide-----	LIL.
Chlorpropamide-----	PFZ.
Phenformin hydrochloride-----	BKL.
Tolazamide-----	UPJ.
Tolbutamide-----	UPJ.
*Other hormones and synthetic substitutes:	
Anabolic agents and androgens:	
Fluoxymesterone-----	UPJ.
Methandrostenolone-----	CGY.
Testosterone cypionate-----	UPJ.
Antithyroid agents:	
Methimazole-----	LIL.
Propylthiouracil-----	CTN.
2-Thiouracil-----	ACY.
Corticotropin (ACTH)-----	ARP, ORG.
Glucagon-----	LIL.
Insulin-----	ARP, LIL.
Thyroid-----	LIL.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Renal-acting and edema-reducing agents:	
*Benzothiadiazine derivatives:	
Bendroflumethiazide-----	OMS.
Benzthiazide-----	PFZ.
Chlorothiazide-----	MRK.
Flumethiazide-----	OMS.
Hydrochlorothiazide-----	ABB, CGY, MRK.
Hydroflumethiazide-----	x.
Methyclothiazide-----	ABB.
Polythiazide-----	PFZ.
Trichlormethiazide-----	SCH.
*Mercurial diuretics:	
Meralluride-----	LKL.
Mersalyl acid-----	SDW.
Sodium mercaptomerin-----	WYT.
*Theophylline derivatives:	
Aminophylline-----	GAN, SRL.
Oxtriphylline-----	NEP.
Theophylline sodium glycinate-----	CHT.
*Other renal-acting and edema-reducing agents:	
Acetazolamide-----	ACY.
Chlorthalidone-----	CGY.
Dichlorphenamide-----	MRK.
Ethacrynic acid-----	MRK.
Probenecid-----	MRK.
Triamterene-----	ACY, SK.
*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:	
*Niacinamide-----	MRK, NEP, PD, RIL, SCR.
*Pantothenic acid and derivatives:	
Calcium pantothenate (dextro)-----	HFT.
*Calcium pantothenate (racemic) (feed grade)-----	CKL, DA, DLI, HFT, PHF.
Calcium pantothenate (racemic) (medicinal grade)-----	DA, HFT, LIL.
Calcium pantothenate (racemic) - calcium chloride complex.	CKL, DA, HFT.
Choline pantothenate-----	DLI.
Dexpanthenol-----	HFT, HOF.
Panthenol (racemic)-----	HOF, PD.
Sodium pantothenate-----	PD.
*Riboflavin (feed grade)-----	GPR, HOF, MRK, PMP.
*Other B-complex vitamins:	
Biotin-----	HOF.
Cyanocobalamin (feed grade)-----	MRK, PMP.
Cyanocobalamin (medicinal grade)-----	MRK.
Cyanocobalamin (U.S.P. crystalline)-----	MRK.
Cyanocobalamin with intrinsic factor concentrate.	WIL.
Inositol-----	STA.
Niacin (nicotinic acid) (feed grade)-----	DA, MRK, RIL.
Niacin (nicotinic acid) (medicinal grade)-----	MRK, RIL, SCR.
Niacinamide hydrochloride-----	NEP.
Pyridoxine-----	HOF, MRK.
Riboflavin (medicinal grade)-----	DA, HOF, MRK.
Riboflavin-5-phosphate, sodium-----	HOF.
Thiamine hydrochloride-----	HOF, MRK.
Thiamine mononitrate-----	HOF, MRK.

MEDICINAL CHEMICALS

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TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
*Vitamins--Continued	
*Vitamin C:	
*Ascorbic acid-----	HOF, MRK, PFZ.
Calcium ascorbate-----	PFZ.
Sodium ascorbate-----	HOF, MRK, PFZ.
*Vitamin D:	
Cholecalciferol (Vitamin D ₃)-----	DA, DLI, PHF, VTU.
Ergocalciferol (Vitamin D ₂)-----	PHF, SCR, VTU.
*Vitamin E:	
d-Alpha tocopherol-----	CW, EKT.
dl-Alpha tocopherol-----	HOF.
*d- and dl-Alpha tocopheryl acetate (all grades):	
d-Alpha tocopheryl acetate-----	CW, EKT.
dl-Alpha tocopheryl acetate:	
Feed grade-----	HOF.
Medicinal grade-----	DA, EKT, HOF.
Technical grade-----	DA.
d-Alpha tocopheryl acid succinate-----	CW, EKT.
*Vitamin K:	
Menadione-----	ABB, HET, WHL.
Menadione sodium bisulfite-----	ABB, DA, DLI, HET, HOF, WHL.
Phytonadione-----	MRK.
*Miscellaneous medicinal chemicals:	
Antineoplastic agents:	
Azathioprine-----	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, PEN.
Unclassified medicinal chemicals:	
Allopurinol-----	BUR.
Dopamine hydrochloride-----	SDW.
Hydrastine-----	PEN.
Levodopa-----	BID, HOF.
Penicillamine (copper chelating agent)-----	MRK.

¹ All antibiotics listed are for medicinal use unless otherwise specified.

² Producers of technical grade are listed in "Miscellaneous chemicals."

³ Producers of technical grade are listed in "Cyclic intermediates."

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3.--MEDICINAL CHEMICALS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of medicinal chemicals to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

FLAVOR AND PERFUME MATERIALS

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

Total domestic production of flavor and perfume materials in 1971 amounted to 96.4 million pounds -- a decrease by 3.9 percent from the 100.3 million pounds produced in 1970 (table 1).¹ Sales of these materials in 1971 amounted to 84.8 million pounds, valued at \$84.0 million, compared with 91.5 million pounds, valued at \$89.1 million in 1970.

Production of cyclic flavor and perfume materials in 1971 amounted to 49.7 million pounds; sales amounted to 42.2 million pounds, valued at \$52.9 million. The individual chemical in the cyclic group produced in the greatest volume in 1971 again was benzyl alcohol (9.3 million pounds).

U.S. output of acyclic flavor and perfume materials in 1971 amounted to 46.7 million pounds; sales of these materials amounted to 42.6 million pounds, valued at \$31.1 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 1971 totaled 36.4 million pounds, compared with 37.2 million pounds in 1970.

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1971

[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 manufacturer of each]

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	96,426	84,765	83,968	\$0.99
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total-----	49,682	42,180	52,884	1.25
<i>Benzenoid and Naphthalenoid</i>				
Total-----	41,026	35,201	40,453	1.15
4-Allyl-2-methoxyphenol (Eugenol)-----	467	418	1,178	2.82
4-Allyl-1,2-(methylenedioxy)benzene (Safrole)-----	...	49	49	.99
p-Anisaldehyde-----	...	1,045	1,417	1.36
Benzophenone ² -----	407	159	178	1.12
Benzyl acetate-----	1,636	1,584	666	.42
Benzyl alcohol ² -----	9,313	8,266	2,689	.33
Benzyl benzoate-----	363	495	243	.49
Benzyl butyrate-----	19	12	18	1.49
Benzyl cinnamate-----	...	7	27	4.11
Benzyl ether-----	294	246	40	.16
Benzyl salicylate-----	428	428	443	1.03
Cinnamaldehyde-----	1,374	949	699	.74
Cinnamyl acetate-----	6	6	17	2.70
Cinnamyl alcohol-----	214	192	307	1.60
Cinnamyl anthranilate-----	1	1	7	11.18
Ethyl phenylglycidate-----	25	...	...	...
Isobutyl phenylacetate-----	28	17	19	1.16
Isobutyl salicylate-----	...	19	17	.85
Isopentyl salicylate-----	607	566	363	.64
2-Methoxy-4-propenylphenol (Isoeugenol)-----	109	105	400	3.80
4'-Methylacetophenone-----	19	21	35	1.62
Methyl anthranilate-----	...	227	360	1.59
α-Methylbenzyl acetate (Styralyl acetate)-----	72	87	76	.88
α-Methylcinnamaldehyde-----	...	7	14	2.14
Methyl phenylacetate-----	19	17	30	1.79
Methyl salicylate-----	5,027	5,230	2,401	.46
Phenethyl acetate-----	83	67	78	1.17
3-Phenyl-1-propanol (Hydrocinnamic alcohol)-----	35	33	61	1.89
p-Propenylanisole (Anethole)-----	2,498	2,636	1,634	.62
p-Tolualdehyde-----	...	36	79	2.19
All other benzenoid and naphthalenoid materials-----	17,982	12,276	26,908	2.19
<i>Terpenoid, Heterocyclic, and Alicyclic</i>				
Total-----	8,656	6,979	12,431	1.78
Cedryl acetate-----	165	132	333	2.52
Essential oils, chemically modified-----	254	146	552	3.83
α-Ionone-----	71	72	330	4.61
Isobornyl acetate-----	807	819	293	.36
p-Menthan-3-one (Menthone)-----	9	7	26	3.95
Menthol, synthetic, U.S.P.-----	505	428	1,759	4.10
Methylionones-----	548	386	1,728	4.48

See footnotes at end of table.

FLAVOR AND PERFUME MATERIALS

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TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Material	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued				
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>				
Nopyl acetate-----	75	...	...	...
Terpineols-----	3,003	2,847	1,150	\$0.40
α-Terpinyl acetate-----	623	...	...	...
Vetivenyl acetate-----	26	21	416	19.85
All other terpenoid, heterocyclic, and alicyclic materials--	2,570	2,121	5,844	2.75
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total-----	46,744	42,585	31,084	.73
Allyl hexanoate-----	23	15	38	2.49
Citronellyl isobutyrate-----	10	...	...	...
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)-----	36	29	83	2.84
3,7-Dimethyl-trans-2,6-octadienal (Citral a; Geranial)-----	110	75	281	3.71
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)-----	1,399	1,289	1,584	1.23
3,7-Dimethyl-6-octen-1-ol (Citronellol)-----	1,072	875	1,308	1.50
Ethyl butyrate-----	487	440	288	.66
Ethyl hexanoate (Ethyl caproate)-----	9	3	6	1.86
Ethyl nonanoate-----	...	2	8	3.32
Geranyl acetate-----	78	85	166	1.96
Geranyl formate-----	21	22	63	2.87
Glutamic acid, monosodium salt (Monosodium glutamate)-----	36,423	33,764	17,353	.51
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)-----	541	453	2,501	5.52
Isopentyl butyrate-----	66	84	66	.78
Isopentyl formate-----	9	6	8	1.27
Isopentyl isovalerate-----	18	...	...	...
Rhodinol-----	14	...	...	...
All other acyclic materials-----	6,428	5,443	7,331	1.35

¹Calculated from the unrounded figures.

²Includes some technical grade.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

[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. An x signifies that the manufacturer did not consent to his identification with the designated product]

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
<i>Benzenoid and Naphthalenoid</i>	
2'Acetonaphthone-----	GIV.
Acetophenone-----	GIV.
5-Acetyl-1,1,2,3,3,6-hexamethylindan-----	PFW.
p-Allylanisole-----	GIV.
Allyl cinnamate-----	RT.
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)-----	GIV, UOP.
*4-Allyl-2-methoxyphenol (Eugenol)-----	ARS, CI, FB, GIV, IFF, LUE, PEN, RT, UNG, UOP.
4-Allyl-2-methoxyphenol acetate (Eugenol acetate)-----	CI, GIV.
*4-Allyl-1,2-(methylenedioxy)benzene (Safrole)-----	FB, GIV, OPC.
Allyl phenoxyacetate-----	GIV.
*p-Anisaldehyde-----	GIV, OPC, UOP.
Anisyl acetate-----	ELN, GIV.
Anisyl butyrate-----	RT.
Anisyl formate-----	RT.
Benzaldehyde-----	SHL.
*Benzophenone-----	GAF, GIV, NEO, PD, UOP.
*Benzyl acetate-----	GIV, MON, NEO, OPC, SHL, UOP.
Benzyl acetoacetate-----	GIV.
*Benzyl alcohol-----	BPC, HN, MNR, SHL, UOP, VEL.
*Benzyl benzoate-----	MON, OPC, PFZ, UOP, VEL.
*Benzyl butyrate-----	ELN, FB, GIV.
*Benzyl cinnamate-----	FB, GIV, UOP.
*Benzyl ether-----	SHL, UOP, VEL.
Benzyl formate-----	GIV, UOP.
Benzyl glyceryl acetal-----	CI, GIV.
Benzyl isobutyrate-----	GIV.
Benzyl isopentyl ether-----	GIV.
Benzyl isovalerate-----	FB.
1-(Benzyl-oxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether).-----	GIV, UOP.
Benzyl phenylacetate-----	ELN, GIV.
Benzyl propionate-----	ELN, FB, GIV.
*Benzyl salicylate-----	GIV, MON, 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, UOP.
Butyl phenyl acetate-----	GIV.
Butyl salicylate-----	x.
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene (Musk tibetene).-----	GIV, UOP.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)-----	GIV.
Carvacrol-----	GIV.
*Cinnamaldehyde-----	CI, FB, UOP.
Cinnamic acid-----	BPC.
*Cinnamyl acetate-----	ELN, FB, GIV.
*Cinnamyl alcohol-----	FB, GIV, NEO, UOP.
*Cinnamyl anthranilate-----	FEL, GIV, RT.
Cinnamyl butyrate-----	FB.
Cinnamyl cinnamate-----	FB.
Cinnamyl propionate-----	GIV.
Cinnamyl tiglate-----	FB.
Coumarin-----	DOW, RDA.
Cuminy alcohol-----	GIV.

FLAVOR AND PERFUME MATERIALS

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
trans-Decahydro- β -naphthol-----	IFF.
Dihydrocoumarin (Melilotol)-----	ARS.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrole)-----	GIV, UOP.
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-octadienylphenylacetate (Geranyl phenylacetate).-----	GIV.
trans-3,7-Dimethyl-2,6-octadien-1-ol, benzoate (Geranyl benzoate).-----	GIV.
α , α -Dimethylphenethyl acetate-----	IFF.
α , α -Dimethylphenethyl alcohol-----	GIV, IFF.
Diphenylmethane (Benzylbenzene)-----	ARA, UOP.
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-----	ELN, GIV.
Ethyl α , β -epoxy- β -methylhydrocinnamate-----	ELN.
2-Ethylhexyl salicylate-----	FEL.
Ethyl phenylacetate-----	GIV.
*Ethyl phenylglycidate-----	GIV, PFW, UOP.
Ethyl salicylate-----	FB.
3'-Ethyl-5',6',7',8'-tetrahydro-5',5',8',8' - tetramethyl-2'-acetonaphthone.-----	GIV, UOP.
1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl cyclopenta-gamma-2-benzopyran (Galaxolide 50).-----	IFF.
α -Hexylcinnamaldehyde-----	CI, IFF.
Hydratropaldehyde-----	GIV, IFF.
Hydratropaldehyde, dimethyl acetal-----	GIV, IFF.
Hydrocoumarin-----	GIV, UOP.
Hydroxycitronellalmethyl anthranilate-----	GIV.
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone-----	GIV.
Indole-----	GIV.
Isoamyl phenylacetate-----	GIV.
Isobutyl benzoate-----	ELN.
p-Isobutyl- α -methylhydrocinnamaldehyde (Rhodial)-----	RDA.
*Isobutyl phenylacetate-----	ELN, FB, GIV, OPC.
*Isobutyl salicylate-----	FB, GIV, UOP.
Isohexenyl tetrahydrobenzaldehyde-----	IFF.
Isopentyl benzoate-----	GIV.
*Isopentyl salicylate-----	FB, GIV, MON, OPC, UOP.
p-Isopropyl benzaldehyde (Cumaldehyde)-----	GIV.
Isopropyl cinnamate-----	RT.
p-Isopropyl- α -methylhydrocinnamaldehyde (Cyclamenaldehyde)-----	GIV, RDA.
Isovanillin (3-Hydroxy-4-methoxybenzaldehyde)-----	SLV.
p-Mentha-1,8-diene (Limonene)-----	SKG.
Menthyl anthranilate-----	PFW.
4'-Methoxyacetophenone (Acetanisol)-----	GIV, UOP.
p-Methoxybenzyl alcohol (Anisyl alcohol)-----	GIV, UOP.
o-Methoxycinnamaldehyde-----	CI.
2-Methoxynaphthalene-----	GIV.
1-(p-Methoxyphenyl)-1-penten-3-one-----	GIV.
*2-Methoxy-4-propenylphenol (Isoeugenol)-----	CI, GIV, SHL.
2-Methoxy-4-propenylphenol, acetate-----	UOP.
*4'-Methylacetophenone-----	ELN, GIV, UOP.
p-Methylanisol-----	CI, GIV, UOP.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
*Methyl anthranilate-----	FB, OPC, PFW, SHL, SW, UNG.
Methyl benzoate-----	HN.
* α -Methylbenzyl acetate (Styralyl acetate)-----	CI, ELN, GIV, UNG.
* α -Methylcinnamaldehyde-----	CI, FB, GIV.
Methyl cinnamate-----	CI, FB, UOP.
6-Methylcoumarin-----	GIV.
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-----	DOW, HN, MON, PEN.
1H-Naphtho-[2,3-c]pyran-3,4,6,7,8,9-hexahydro-4,6,6,9,9-pentamethyl (Musk 89).	IFF.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan-----	GIV.
α -Pentylcinnamaldehyde-----	CI, FB, GIV, UOP.
*Phenethyl acetate-----	GIV, IFF, NEO.
Phenethyl alcohol-----	IFF.
Phenethyl formate-----	ELN, IFF.
Phenethyl isobutyrate-----	GIV, IFF.
Phenethyl isovalerate-----	GIV.
2-Phenethyl phenylacetate-----	CI, ELN, GIV, IFF.
Phenethyl propionate-----	GIV, IFF.
Phenethyl salicylate-----	GIV.
2-Phenoxyethyl isobutyrate-----	ELN, GIV.
Phenylacetaldehyde-----	GIV.
Phenylacetaldehyde, dimethyl acetal-----	GIV.
o-Phenylanisole (2-Methoxybiphenyl)-----	GIV.
4-Phenyl-3-buten-2-one (Benzylideneacetone)-----	FB.
Phenylethyl acetal-----	GIV.
Phenylethyl tiglate-----	FB.
*3-Phenyl-1-propanol (Hydrocinnamic alcohol)-----	ELN, FB, GIV, UOP.
3-Phenylpropyl acetate-----	GIV.
3-Phenylpropyl cinnamate-----	FB.
Piperonal (Heliotropin)-----	GIV, SHL, UOP.
*p-Propenylanisole (Anethole)-----	ARZ, GLD, HN, HPC, NCI, UOP.
p-Propylanisole (Dihydroanethole)-----	FB, GIV.
N-Propylphenylethyl alcohol-----	GIV.
2-H-Pyran-4-ol, 3-butyl-tetrahydro-5-methyl acetate and 1,3-Octanediol, 2-methyl, diacetate (Jessema).	IFF.
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, ammonium salt-----	SW.
Saccharin, calcium salt-----	MON, SW.
Saccharin, sodium salt-----	LAK, MON, SW.
*p-Tolualdehyde-----	GIV, HN, TCC.
p-Tolylacetaldehyde-----	GIV.
p-Tolyl acetate-----	FB, GIV.
p-Tolyl phenylacetate-----	GIV.
Vanillin (4-Hydroxy-3-methoxybenzaldehyde)-----	MON, SLV.
<i>Terpenoid, Heterocyclic, and Alicyclic</i>	
Allyl cyclohexyl propionate-----	GIV.
p-tert-Amyl cyclohexanone-----	IFF.
2-sec-Butylcyclohexanone-----	GIV.
p-tert-Butylcyclohexyl acetate-----	CI, IFF.
Cadinene-----	FB.

FLAVOR AND PERFUME MATERIALS

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>	
8-Caryophyllene-----	CI, GIV.
Caryophyllene alcohol-----	FB.
Caryophyllene oxide-----	GIV.
Cedrenol-----	GIV.
Cedrol-----	ELN, GIV, IFF.
*Cedryl acetate-----	ELN, GIV, IFF, UNG.
Cedryl formate-----	IFF.
2-Cyclohexylcyclohexanone-----	GIV.
Cyclopentanone-----	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, RT, 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, α -lactone (Hexadecanolide)-----	IFF.
4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-10-carboxaldehyde (Lyrall)-----	IFF.
3-Hydroxy-2-methyl-4-pyrone (Maltol)-----	PFZ.
4-Hydroxynonanoic acid, γ -lactone (γ -Nonalactone)-----	GIV, UOP.
4-Hydroxyoctanoic acid, γ -lactone (γ -Octalactone)-----	GIV, UOP.
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)-----	ELN, FB.
Ionones:	
* α -Ionone-----	GIV, HOF, IFF, MYW.
β -Ionone-----	HOF, MYW.
Ionone (α - and β -)-----	GIV, MYW.
Isoborneol-----	RDA.
*Isobornyl acetate-----	FB, OPC, RDA.
Isobornyl propionate-----	GIV.
Isobutylquinoline-----	IFF.
Isomenthone-----	GIV.
2-Isopropylcyclohexanol-----	GIV.
Jasmal-----	IFF.
p-Mentha-6,8-dien-2-ol (ℓ -carveol)-----	FB.
p-Mentha-6,8-dien-2-one (Carvone; Carvol)-----	FB, FRM.
p-Mentha-6,8-dien-2-ol, acetate (ℓ -carvyl acetate)-----	FB.
*p-Menthan-3-one (Menthone)-----	GIV, HN, NEO.
p-Menth-8-en-3-ol (Isopulegol)-----	GIV.
p-Menth-1-en-3-one-----	GIV.
1,1-p-Menthen-6-yl-1-propanone-----	GIV.
Menthol, synthetic:	
Tech-----	GIV.
*U.S.P-----	GIV, GLD, HN, NEO.
Menthyl acetate-----	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, RDA, SHL.
Santalol-----	GIV, IFF.
Santalyl acetate-----	GIV.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>	
*Terpineols:	
α -Terpineol-----	GLD, HPC, NCI.
Terpineol (α - and β -)-----	GIV, NEO.
Terpinol hydrate (Terpin hydrate), tech-----	HPC.
* α -Terpinyl acetate-----	GIV, NEO, PFW, UNG.
Terpinyl acetate (mixed α - β)-----	RDA.
α -Terpinyl propionate-----	ELN, GIV.
Tetrahydropseudo ionone-----	CI.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl- α -ionone).-----	IFF.
Vetivenol-----	GIV, UOP.
*Vetivenyl acetate-----	ELN, FB, GIV, IFF, NEO, UOP.
All other terpenoid, heterocyclic, and alicyclic-----	GIV.
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
Acetylbutyryl (2,3-Hexanedione)-----	FB.
Acetyl propionyl-----	FB.
Acetylvaleryl (2,3-Heptanedione)-----	FB.
Allyl heptanoate-----	FB.
*Allyl hexanoate-----	ELN, FB, GIV, PFW.
Allyl isothiocyanate (Synthetic mustard oil)-----	MRT.
Allyl mercaptan-----	RT.
Allyl octanoate (Allyl caprylate)-----	RT.
Allyl sulfide-----	RT.
Amyl propionate-----	GIV.
Butyl butyrate-----	FB.
Butyl butyryl lactate-----	ARS.
Butyl 10-undecylenate-----	GIV.
Citral dimethyl acetal-----	GIV, IFF.
Citronellyl acetate-----	ELN, GIV, IFF.
Citronellyl butyrate-----	GIV.
Citronellyl formate-----	ELN, GIV, IFF.
*Citronellyl isobutyrate-----	ELN, GIV, IFF.
Citronellyl methyl acetal-----	IFF.
Citronellyl oxyacetaldehyde-----	IFF.
Citronellyl propionate-----	GIV, IFF.
Decanal (Capraldehyde)-----	GIV, IFF.
Decen-9-ol (Omega-decanol)-----	IFF.
Decyl acetate-----	GIV.
Diethyl acetal-----	FB.
Diethyl sebacate-----	ELN, FEL, UOP.
Diethyl succinate-----	ELN, UCC.
Dihydromyrcenol-----	IFF.
Dihydromyrcenol and dihydromyrcenyl formate (Dimyrcetol)---	IFF.
Dihydro safrol-----	CI.
2,6-Dimethyl-5-hepten-1-ol-----	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-nonadienenitrile-----	GIV.
3,7-Dimethyl-2,6-octadienal (Citral)-----	HOF.
cis-3,7-Dimethyl-2,6-octadien-1-ol acetate (Nerylacetate)---	FB.
*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, UOP.
3,7-Dimethyl-1,6-octadien-3-ol (Linalool; Linalyl alcohol).-----	ELN, FB, FEL, GIV, GLD, HOF, LUE, SHL, UNG.

FLAVOR AND PERFUME MATERIALS

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
3,7-Dimethyl-1,6-octadien-3-ol acetate (Linalyl acetate).	ELN, FB, GIV, GLD, HOF, NEO, 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.
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 (Citronella)-----	FB, GIV, IFF, NEO, UOP.
*3,7-Dimethyl-6-octen-1-ol (Citronellol)-----	CI, ELN, FB, GIV, GLD, IFF, NEO.
3,7-Dimethyl-7-octenol and 6-octenol isomer-----	GIV.
*Ethyl butyrate-----	FB, NW, UOP.
Ethyl caprate-----	FB.
Ethyl formate-----	FB.
Ethyl heptanoate-----	ELN, FEL, UOP.
*Ethyl hexanoate (Ethyl caproate)-----	ELN, FB, NW, PFW.
2-Ethyl-1-hexanol-----	GIV.
Ethyl isohexanoate-----	PFW.
Ethyl isovalerate-----	FB, PFW.
Ethyl laurate-----	ELN.
*Ethyl nonanoate-----	FB, FEL, GIV.
Ethyl octanoate-----	FB.
Ethyl propionate-----	FB.
Ethyl valerate-----	PFW.
Ethylene brassylate-----	RDA.
Geranic acid-----	FB.
Geranonitrile-----	IFF.
*Geranyl acetate-----	CI, ELN, FEL, GIV, IFF.
Geranyl butyrate-----	CI, GIV.
*Geranyl formate-----	CI, ELN, GIV.
Geranyl isobutyrate-----	IFF.
Geranyl isovalerate-----	FB.
Geranyl neryl formate-----	IFF.
Geranyl propionate-----	FB, IFF.
Geranyl tiglate-----	FB.
*Glutamic acid, monosodium salt (Monosodium glutamate)-----	COM, GRW, IMC.
γ-Heptalactone-----	FB.
Heptanal (Enanthaldehyde)-----	NTL.
Heptyl alcohol (1-Heptanol)-----	NTL, UCC.
2-Hexanal-----	FB.
Hexanoic acid (Caproic acid)-----	FB.
2-Hexanol-----	FB.
cis-3-Hexen-1-ol-----	GIV, x.
cis-3-Hexen-1-yl acetate-----	GIV.
cis-3-Hexen-1-ol lactate-----	RT.
Hexyl caproate-----	FB.
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, UOP.
Isoamyl geranate-----	FB.
Isoamyl propionate-----	FB.
Isobutyl acetate-----	FB, PFW.
Isobutyl butyrate-----	FB.
Isodihydro lavandulylaldehyde-----	FB.
Isodihydro lavandulol-----	FB.
Isodihydro lavandulyl acetate-----	FB.
Isojasmone-----	FB.
*Isopentyl butyrate-----	FB, GIV, NW, PFW, UOP.
*Isopentyl formate-----	ELN, FB, GIV, RT.
*Isopentyl isovalerate-----	ELN, FB, PFW.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE
REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Material	Manufacturers' identification codes (according to list in table 3)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Lauraldehyde-----	GIV, IFF.
Methyl amyl ketone-----	CI.
Methyl isobutyrate-----	PFW.
Methyl 2-nonenolate-----	GIV.
Methylol methyl hexyl ketone-----	GIV.
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.
Nonanol-----	GIV.
Nonyl acetate-----	GIV.
Ocimenol and acetate-----	IFF.
Octanal-----	GIV, IFF.
3-Octanone (Ethyl amyl ketone)-----	GIV.
Octyl acetate-----	FB.
n-Octyl acetate-----	GIV.
n-Octyl alcohol-----	GIV.
Pentyl acetate-----	UOP.
Propionic acid ethyl ester-----	UOP.
Pseudo linalyl acetate-----	IFF.
Pyrolysate ester-----	GIV.
*Rhodinol-----	FB, FEL, GIV, IFF, NEO, SHL.
Rhodinyll acetate-----	GIV, IFF.
Sodium allyl sulfonate-----	SHL.
Tepyl acetate-----	UOP.
3,7,8,8-Tetramethyl-1,6-nonadiene-3-ol (Isobutyl linalool).	HOF.
3,7,11-Trimethyl-1,6,10-dodecatriene-3-ol-----	HOF.
2,6,10-Trimethyl-9-undecen-1-al-----	GIV.
3,6,10-Trimethyl-9-undecen-2-one-----	GIV.
Undecanal-----	GIV.
9-Undecenal-----	GIV, IFF.
γ-Valerolactone-----	GIV.

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TABLE 3.--FLAVOR AND PERFUME MATERIALS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of flavor and perfume materials to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

PLASTICS AND RESIN MATERIALS

Plastics and resin materials are high molecular weight polymers which, at some stage in their manufacture, exist in such physical condition that they can be shaped or otherwise processed by the application of heat and pressure. Depending on the chemical composition, manufacturing process or intended use, the commercial products may contain plasticizers, fillers, extenders, stabilizers, coloring agents or other additives. Plastics materials may be molded, cast or extruded into 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 1971 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-71); 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 February 16, 1972 containing 12-month cumulative totals for 1971. 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 1971 totaled 21,071 million pounds, or 9.7 percent more than the 19,210 million pounds produced in 1970. Sales in 1971 totaled 18,473 million pounds, valued at \$3,507 million compared with 17,074 million pounds, valued at \$3,266 million in 1970.

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 3,615 million pounds in 1971 compared with 3,525 million pounds in 1970. Production of the most important products in 1971 included phenolic resins (1,181 million pounds), amino (or urea and melamine) resins (770 million pounds), polyester resins (707 million pounds), and alkyd resins (543 million pounds).

Thermoplastic materials are those which can be repeatedly softened by heat and shaped. U.S. production of thermoplastic materials totaled 17,455 million pounds in 1971 compared with 15,685 million pounds in 1970. Production of the most important products in 1971 included polyethylene (6,381 million pounds), vinyl resins (4,103 million pounds), and styrene type materials (3,990 million pounds).

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, 1971

[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
	<i>1,000 pounds dry basis³</i>	<i>1,000 pounds dry basis³</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	21,070,723	18,473,010	3,506,542	\$0.19
Plastics and resin materials, benzenoid ⁴ -----	7,266,038	6,262,651	1,400,553	.22
Plastics and resin materials, nonbenzenoid-----	13,804,685	12,210,359	2,105,989	.17
THERMOSETTING RESINS				
Total-----	3,615,318	2,863,420	694,396	.24
Alkyd resins, total-----	542,920	294,249	81,386	.28
Phthalic anhydride type-----	512,677	277,124	76,230	.28
Polybasic acid type-----	30,243	17,125	5,156	.30
Polyester resins, total ⁵ -----	706,698	617,012	139,614	.23
Reinforced plastics-----	...	483,212	...	...
Non-reinforced uses-----	...	125,500	...	...
Export sales-----	...	8,300	...	...
Styrene-alkyd polyesters-----	7,357	5,810	1,873	.32
Dicyandiamide resins-----	1,953	1,928	994	.52
Epoxy resins; ⁶				
Unmodified, total-----	167,874	158,314	75,002	.47
Bonding and adhesives-----	...	11,265	...	...
Flooring, paving and exposed aggregate-----	...	8,274	...	...
Protective coatings-----	...	71,090	...	...
Reinforced laminates and composites-----	...	19,268	...	...
Tooling, casting and molding resins-----	...	14,500	...	...
All other domestic uses-----	...	15,195	...	...
Export sales-----	...	18,722	...	...
Modified and "advanced" ⁷ -----	(25,163)	(19,386)	(11,571)	.60
Furfuryl type resins-----	2,215	...	...	...
Phenolic and other tar acid resins, total-----	1,180,866	⁸ 921,330	⁸ 191,901	.21
Molding compounds-----	...	268,840	...	...
Bonding and adhesives resins for:				
Laminating-----	...	66,619	...	...
Coated and bonded abrasives-----	...	15,915	...	...
Friction materials-----	...	37,457	...	...
Insulation materials-----	...	75,747	...	...
Foundry or shell molding-----	...	72,246	...	...
Plywood-----	...	178,038	...	...
Fibrous and granulated wood-----	...	43,158	...	...
Protective coatings, unmodified and modified-----	...	28,710	...	...
All other uses-----	...	117,851	...	...
Export sales-----	...	16,749	...	...
Polyurethane and diisocyanate resins (excluding foam and elastomers)-----	79,606	41,327	19,187	.46
Amino resins, total-----	769,815	690,381	122,982	.18
Melamine-formaldehyde resins-----	152,288	129,635	45,337	.35
Urea-formaldehyde resins-----	617,527	560,746	77,645	.14
Sales of amino resins: ⁹				
Textile treating and coating resins-----	...	55,573	...	...
Paper treating and coating resins-----	...	31,885	...	...
Bonding and adhesives resins for:				
Laminating-----	...	28,164	...	...
Plywood-----	...	97,233	...	...
Fibrous and granulated wood-----	...	243,456	...	...

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Kind and use	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	<i>1,000 pounds dry basis³</i>	<i>1,000 pounds dry basis³</i>	<i>1,000 dollars</i>	<i>Per pound</i>
THERMOSETTING RESINS--Continued				
Amino resins--Continued				
Sales of amino resins ⁹ --Continued				
Protective coatings (straight and modified)-----	...	47,506	...	...
All other domestic uses (including molding)-----	...	103,214	...	...
Export sales-----	...	10,296	...	...
Silicone resins-----	16,771	14,053	23,189	\$1.65
All other thermosetting resins ¹⁰ -----	139,243	119,016	38,268	.32
THERMOPLASTIC RESINS				
Total-----	17,455,405	15,609,590	2,812,146	.18
Acrylic resins ¹¹ -----	618,983	536,677	251,895	.47
Cellulosic plastics and resins ¹¹ -----	196,626	177,752	98,220	.55
Polyamide resins, nylon type ¹¹ -----	109,908	100,328	81,330	.81
Polyamide resins, non-nylon type-----	20,578	...	...	...
Coumarone-indene resins-----	55,765	53,789	6,057	.11
Petroleum hydrocarbon resins-----	219,802	215,890	25,750	.12
Rosin modifications, total-----	112,400	107,840	23,945	.22
Rosin and rosin esters, unmodified (ester gums)-----	27,348	26,566	6,685	.25
All other-----	85,052	81,274	17,260	.21
Polyethylene and copolymers, total-----	6,381,270	5,686,344	706,899	.12
Density 0.940 and below: ¹²				
Production and sales, total-----	4,491,518	4,018,777	507,635	.13
Sales and use-----	...	4,334,781	...	...
Injection molding-----	...	471,762	...	...
Blow molding-----	...	51,125	...	...
Film and sheet-----	...	2,292,058	...	...
Extrusion coating-----	...	410,843	...	...
Wire and cable-----	...	398,906	...	...
Pipe and conduit-----	...	27,737	...	...
Other extruded products-----	...	36,812	...	...
All other domestic uses-----	...	396,280	...	...
Export sales-----	...	249,258	...	...
Density over 0.940:				
Production and sales, total-----	1,889,752	1,667,567	199,264	.12
Sales and use-----	...	1,927,256	...	...
Injection molding-----	...	367,582	...	...
Blow molding-----	...	656,001	...	...
Film and sheet-----	...	86,806	...	...
Extrusion coating-----	...	26,229	...	...
Wire and cable-----	...	32,840	...	...
Pipe and conduit-----	...	91,041	...	...
Other extruded products-----	...	23,064	...	...
All other domestic uses-----	...	377,246	...	...
Export sales-----	...	266,447	...	...
Polypropylene, production and sales, total-----	1,339,413	1,233,714	216,286	.18
Sales and use ⁹ -----	...	1,293,735	...	...
Injection molding-----	...	537,789	...	...
Blow molding-----	...	7,098	...	...
Film and sheet-----	...	105,003	...	...
Fibers and filaments-----	...	323,814	...	...
Other extruded products-----	...	39,036	...	...
All other domestic uses (including extrusion coating, wire and cable, and pipe and conduit)-----	...	120,237	...	...
Export sales-----	...	160,758	...	...

See footnotes at end of table.

PLASTICS AND RESIN MATERIALS

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TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Kind and use	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	<i>1,000 pounds dry basis³</i>	<i>1,000 pounds dry basis³</i>	<i>1,000 dollars</i>	<i>Per pound</i>
THERMOPLASTIC RESINS--Continued				
Styrene plastics materials, total-----	3,990,409	3,740,466	696,689	\$0.19
ABS (acrylonitrile-butadiene-styrene) resins-----	686,294	657,961	189,341	.29
SAN (styrene-acrylonitrile) resins-----	77,291	75,623	17,942	.24
Sales and use of ABS and SAN resins ⁹ -----	...	736,014	...	...
Molding-----	...	371,392	...	...
Extrusion-----	...	232,088	...	...
All other domestic uses-----	...	92,913	...	...
Export sales-----	...	39,621	...	...
Styrene polymers and copolymers, other: ¹³				
Production and sales, total-----	3,226,824	3,006,882	489,406	.16
Sales and use ⁹ -----	...	3,012,792	...	...
Molding-----	...	1,473,812	...	...
Textile and paper coating and treating-----	...	342,141	...	...
Emulsion paint-----	...	30,461	...	...
Extrusion-----	...	521,553	...	...
Foam and foamable materials-----	...	269,017	...	...
All other domestic uses (including some foam and foamable materials)-----	...	232,852	...	...
Export sales-----	...	142,956	...	...
Vinyl and vinylidene resins, total ¹⁴ -----	4,102,828	3,517,384	549,449	.16
Polyvinyl chloride and copolymers, production and sales, total-----	3,437,328	2,995,434	402,723	.13
Suspension homopolymer resins-----	2,474,906	...	...	...
Suspension copolymer resins-----	504,461	...	...	...
Dispersion (paste) resins and latexes-----	457,961	...	...	...
Polyvinyl chloride and copolymers, sales and use, total---Calendering:	...	3,394,185	...	...
Flooring-----	...	274,544	...	...
Textile coating-----	...	86,934	...	...
All other calendering uses-----	...	473,636	...	...
Coating:				
Flooring-----	...	116,629	...	...
Textile and paper coating-----	...	142,465	...	...
Protective coatings and adhesives-----	...	41,060	...	...
All other coating uses-----	...	49,035	...	...
Extrusion:				
Wire and cable-----	...	342,919	...	...
Film and sheet-----	...	178,935	...	...
Rigid pipe and tubing-----	...	497,062	...	...
All other extruded products-----	...	275,768	...	...
Molding:				
Bottles-----	...	36,119	...	...
Sound records-----	...	137,846	...	...
All other molding-----	...	135,105	...	...
Plastisol formulation-----	...	105,945	...	...
All other domestic uses-----	...	330,729	...	...
Export sales-----	...	169,454	...	...
Polyvinyl acetate: ¹⁵				
Production and sales, total-----	440,994	359,046	85,894	.24
Latexes-----	351,000	...	...	...
Resins-----	89,994	...	...	...
Sales and use, total-----	...	417,084	...	...
Emulsion paints-----	...	143,142	...	...
Adhesives-----	...	135,543	...	...

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Kind and use	Production ¹	Sales ¹		
		Quantity	Value	Unit value ²
	<i>1,000 pounds dry basis³</i>	<i>1,000 pounds dry basis³</i>	<i>1,000 dollars</i>	<i>Per pound</i>
THERMOPLASTIC RESINS--Continued				
Vinyl and vinylidene resins--Continued				
Polyvinyl acetate ⁵ --Continued				
Sales and use--Continued				
Paper-treating-----	...	27,944	...	...
Textile-treating-----	...	18,475	...	...
All other domestic uses-----	...	86,585	...	...
Export sales-----	...	5,395	...	...
Polyvinyl alcohol ⁹ -----	57,703	45,564	14,705	\$0.32
Other vinyl and vinylidene resins ¹⁶ -----	166,803	117,340	46,127	.39
All other thermoplastic resins ^{11 17} -----	307,423	239,406	155,626	.65

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 materials including resin and coloring agents, extenders, fillers, plasticizers, and other additives, but excluding water and other liquids diluents unless they are an integral part of the materials.

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.

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 and "advanced" epoxy resins are that part of the unmodified epoxy resins which is further processed.

⁸ Data represent sales only.

⁹ Sales and use data, and sales data broken down by end use, are from preliminary monthly reports and are not necessarily consistent with final annual data.

¹⁰ Includes polycarbamate resins, toluenesulfonamide resins, acetone-formaldehyde resins, other thermosetting resins and their precursors, and sales of furfuryl-type resins.

¹¹ Does not include production or sales for fiber use.

¹² 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 preliminary monthly reports which are not necessarily consistent with final annual data.

¹³ Data from preliminary monthly reports suggests that production was divided as follows: 40% straight polystyrene (solid), 42% rubber-modified polystyrene, 14% styrene-butadiene copolymers, and 4% other copolymers.

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, fluorocarbon resins, α -methylstyrene resins, polybutylene type resins, polycarbonate resins, polyester resins (saturated), polyimide-type resins, polyphenylene oxide type resins, polyterpene resins, other thermoplastics, and sales of non-nylon polyamide resins.

PLASTICS AND RESIN MATERIALS

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

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

Chemical	Manufacturers' identification codes (according to list in table 3)
THERMOSETTING RESINS	
Acetone-formaldehyde resins-----	ACY, AMR, SNW.
*Alkyd resins, domestic:	
*Phthalic anhydride type-----	ACY, APT, ASH, BAL, BEN, BRU, CEL, CGL, CM, COM, DAV, DEG, DUN, EW, FAR, FLW, FOC, GIL, GLD, GRV, ICF, IPC, JOB, JSC, JWL, KMC, KMP, KPT, MCC, MID, MNP, NCI, NPV, OBC, PER, PFP, PLS, PPG, PRT, PRX, RCI, RED, REL, RH, SCN, SED, SIP, SKT, SM, SW, x.
*Polybasic acid type-----	ACY, ASH, BEN, CM, COM, DEG, DUN, EW, FOC, GRV, HYC, ICF, KMC, KMP, MCC, MID, MOB, NPV, PPG, RCI, RED, RH, SCN, SKT, SW, WIC.
*Dicyandiamide resins-----	CGY, ECC, JSC, MRA, RPC, S, SBC, VAL, WIC.
*Polyester resins-----	ACP, ACR, ACY, APD, ASH, CGL, COM, CPV, DA, DEG, DSO, EPC, EW, FMP, FRE, GEI, GLD, GNT, GRG, GRV, HKD, ICF, IPC, KMC, KPT, MFG, MMM, MRB, MRO, OCF, ORO, POL, PLU, PPG, RCI, RH, SCN, SHA, SIC, SW, TXT.
*Silicone resins-----	ASH, CGL, DCC, GLD, SFW, SPD, UCC.
*Styrene-alkyd polyesters-----	ASH, CGL, EW, FLW, GLD, GRV, MCC, REL.
Epoxy resins:	
*Unmodified-----	CEL, CGY, DOW, RCI, RSY, SHC, UCC.
*Modified and "advanced"-----	ASH, BEN, DSO, EW, FAR, GLD, GRV, ICF, MID, MMM, MRB, MRT, NPV, OCF, POL, PPG, PRX, RCI, REL, REZ, RSY, SCN, SED, SKT.
*Furfuryl-type resins-----	HVG, NTC, TXT, UNO, WRD.
*Melamine-formaldehyde resins-----	ACP, ACY, AMR, BOR, CBD, CEL, CGL, CLK, DAN, DUP, FOM, GLD, GRV, HAN, JSC, KPT, MON, MRA, NPP, OCF, PMC, PPG, PPL, QCP, RCI, REL, RH, SBC, SED, STC, SW, SWN, VAL, WRD.
*Phenolic and other tar acid resins-----	ABS, ACR, AMR, BME, BOR, CBC, CBD, CBM, CD, CGL, CLK, DSO, EW, FOM, FRL, GE, GEI, GLD, GRG, HER, HKD, HVG, ICF, INL, IRI, KPT, KYN, MCA, MID, MMM, MON, MRB, NCI, NPP, NTC, OCF, PAI, PGU, PLS, PPL, PRX, PYZ, RAB, RCD, RCI, REL, RGC, RH, RPC, SCN, SHA, SIM, SKT, SNC, SPL, SW, UCC, UNO, UPL, VSV, WCA, WRD.
Polycarbamate resins-----	ASH, DAN.
*Polyurethane and diisocyanate resins-----	ARK, ASH, CEL, CGL, DUP, EW, FAR, FRE, GLD, GPM, HAP, HYC, ICI, JWL, KMC, MCC, MID, NPV, PEL, PFP, PVI, PYR, QUN, RCI, REZ, SCN, SKT, UPJ, WTC.
*Polyurethane and polyester polyols-----	MOB, PFZ, RCI, UNO, WTC.
*Urea-formaldehyde resins-----	ACP, ACY, AMR, APX, ASH, BOR, CBC, CBD, CEL, CGL, CLK, CMP, CPV, DAN, DSO, DUP, EFH, FOM, GAF, GLD, GRV, HNC, HPC, HRT, IRI, JSC, KPS, MID, MMM, MON, MRA, NTC, OCF, PC, PGU, PPG, PPL, RCI, REL, RH, RPC, SAC, SED, SNW, SOR, SW, TXT, UNO, UPL, USO, VAL, WCL, x.
All other thermosetting resins-----	AMR, CGY, DOW, DUP, EW, GLD, MON, S, SHC, UCC, USR, VAL.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

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

PLASTICS AND RESIN MATERIALS

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TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production or sales of plastics and resin materials to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

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

PLASTICS AND RESIN MATERIALS

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

Code	Name of company	Code	Name of company
UPJ	Upjohn Co.	VSV	Valentine Sugars, Inc.
UPL	U.S. Plywood, WCM Operations, Shasta Area	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Division
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.	WCA	West Coast Adhesives Co.
USI	National Petro Chemical Corp.	WCL	Wright Chemical Co.
USO	U.S. Oil Co.	WIC	Wica Chemical Inc.
USR	Uniroyal, Inc., Chemical Division	WRD	Weyerhaeuser Co., Wood Products Division
VAL	Valchem	WTC	Witco Chemical Co., Inc.
VEL	Veliscol Chemical Corp.	ZGL	Ziegler Chemical & Mineral Corp.
VPC	Verona Corp.		

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

SYNTHETIC ORGANIC CHEMICALS, 1971

RUBBER-PROCESSING CHEMICALS

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 1971 are given in table 1.¹

Production of rubber-processing chemicals as a group in 1971 amounted to 323 million pounds, or 8.4 percent more than the 298 million pounds reported for 1970. Sales of rubber-processing chemicals in 1971 amounted to 246 million pounds, valued at \$159 million, compared with 228 million pounds, valued at \$149 million, in 1970. The increased production and sales of rubber-processing chemicals in 1971 is attributable principally to the increased production and sales of cyclic antioxidants, antiozonants, and stabilizers.

The output of cyclic rubber-processing chemicals in 1971 amounted to 276 million pounds, or about 8.1 percent more than was reported for 1970. Sales in 1971 were 211 million pounds, valued at \$143 million, compared with 196 million pounds, valued at \$134 million in 1970. Of the total output of cyclic rubber-processing chemicals in 1971, accelerators accounted for 33.8 percent and antioxidants for 61.4 percent. Production of antioxidants, which amounted to 169.6 million pounds in 1971, included 119.8 million pounds of amino compounds and 49.8 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants in 1971 were 95.6 million pounds, valued at \$66.9 million; sales of phenolic and phosphite antioxidants were 32.6 million pounds, valued at \$22.0 million.

Production of acyclic rubber-processing chemicals in 1971 amounted to 47.3 million pounds, an increase of 10.5 percent from the 42.8 million pounds reported for 1970. Sales in 1971 totaled 34.9 million pounds, valued at \$16.8 million, compared with 31.4 million pounds, valued at \$15.4 million, in 1970. Accelerators, principally dithiocarbamic acid derivatives and tetramethylthiuram sulfides, accounted for 48.2 percent of the output of acyclic rubber-processing chemicals for 1971. Dodecyl mercaptans accounted for 33.4 percent. Blowing agents, modifiers, shortstops, and lubricating and conditioning agents accounted for the remainder of the output of acyclic compounds.

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

RUBBER-PROCESSING CHEMICALS

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TABLE 1.--RUBBER-PROCESSING CHEMICALS: U.S. PRODUCTION AND SALES, 1971

[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-----	323,458	245,991	159,355	\$0.65
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total-----	276,146	211,065	142,541	.68
Accelerators, activators, and vulcanizing agents, total-----	93,279	71,159	43,664	.61
Aldehyde-amine reaction products-----	2,001	1,628	1,474	.91
Dithiocarbamic acid derivatives-----	365	239	616	2.58
Thiazole derivatives, total-----	80,605	59,202	33,526	.57
N-Cyclohexyl-2-benzothiazolesulfenamide-----	7,585	4,588	4,237	.92
2,2'-Dithiobis(benzothiazole)-----	21,116	10,523	5,640	.54
2-Mercaptobenzothiazole-----	6,808	4,157	1,647	.40
All other thiazole derivatives-----	45,096	39,934	22,002	.55
All other accelerators, activators, and vulcanizing agents ² -----	10,308	10,090	8,048	.80
Antioxidants, antiozonants, and stabilizers, total-----	169,554	128,226	88,929	.69
Amino compounds, total-----	119,789	95,592	66,930	.70
Substituted p-phenylenediamines, total-----	64,040	45,892	42,033	.92
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine-----	6,134	...	...	...
N,N'-Diphenyl-p-phenylenediamine-----	1,665	1,690	1,856	1.10
All other substituted p-phenylenediamines-----	56,241	44,202	40,177	.91
Octyldiphenylamine-----	2,847	3,055	1,747	.57
N-Phenyl-2-naphthylamine-----	3,838	...	...	...
All other amino compounds ³ -----	49,064	46,645	23,150	.50
Phenolic and phosphite compounds, total-----	49,765	32,634	21,999	.67
Polyphenolics (including bisphenols)-----	12,850	12,019	13,836	1.15
Phenol, alkylated-----	7,586	2,858	1,424	.50
Phenol, styrenated-----	1,920	1,271	481	.38
All other phenolic and phosphite compounds-----	27,409	16,486	6,258	.38
Retarder: N-Nitrosodiphenylamine-----	1,660	781	490	.63
All other cyclic rubber-processing chemicals ⁴ -----	11,653	10,899	9,458	.87
RUBBER-PROCESSING CHEMICALS, ACYCLIC				
Total-----	47,312	34,926	16,814	.48
Accelerators, activators, and vulcanizing agents, total-----	22,811	17,471	10,535	.60
Dithiocarbamic acid derivatives, total ⁵ -----	8,137	7,481	5,852	.78
Dibutyldithiocarbamic acid, zinc salt-----	2,842	2,961	2,604	.88
Diethyldithiocarbamic acid, zinc salt-----	2,117	1,977	1,132	.57
Dimethyldithiocarbamic acid, zinc salt-----	1,607	1,494	686	.46
All other dithiocarbamic acid derivatives-----	1,571	1,049	1,430	1.36

See footnotes on following page.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--RUBBER-PROCESSING CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Accelerators, activators, and vulcanizing agents--Continued				
Thiurams, total ⁶ -----	14,133	9,670	4,353	\$0.45
Bis(dimethylthiocarbamoyl) disulfide-----	...	7,087	2,556	.36
Bis(dimethylthiocarbamoyl) sulfide-----	1,497	1,715	1,293	.75
All other thiurams-----	12,636	868	504	.58
All other accelerators, activators, and vulcanizing agents ⁷ ----	541	320	330	1.03
Polymerization regulators: Dodecyl mercaptans-----	15,789	12,640	4,429	.35
Shortstops: Dimethyldithiocarbamic acid, sodium salt-----	5,175	1,683	442	.26
All other acyclic rubber-processing chemicals ⁸ -----	3,537	3,132	1,408	.45

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 report "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.

RUBBER-PROCESSING CHEMICALS

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TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

[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-butyldeneaniline condensate-----	MON.
α-Ethyl-β-propylacrylanilide-----	CCO.
Heptaldehyde-aniline condensate-----	USR.
Triethyltrimethylenetriamine-----	USR.
*Dithiocarbamic acid derivatives:	
Dibenzylidithiocarbamic acid, sodium salt-----	USR.
Dibenzylidithiocarbamic acid, zinc salt-----	USR.
Dibutylidithiocarbamic acid, N,N-dimethylcyclohexyl-amine salt.	MON.
Dibutylidithiocarbamic acid, diphenylguanidine salt----	CCO.
2,4-Dinitrophenyl dimethylidithiocarbamate-----	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts, mixed.	DUP.
Guanidines:	
Dicatchol borate, di-o-tolylguanidine salt-----	DUP.
1,3-Diphenylguanidine-----	ACY.
1,3-Di-o-tolylguanidine-----	ACY.
Dodecyltetramethylguanidine-----	DUP.
1,2,3-Triphenylguanidine-----	ACS.
*Thiazole derivatives:	
2-Benzothiazyl N,N-diethylthiocarbamoyl sulfide-----	PAS.
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, DUP, GYR, MON, USR.
*2-Mercaptobenzothiazole-----	ACY, BFG, GYR, MON, USR.
2-Mercaptobenzothiazole, copper salt-----	ACY.
2-Mercaptobenzothiazole, zinc chloride-----	DUP.
2-Mercaptobenzothiazole, zinc salt-----	ACY, BFG, GYR, USR.
4-Morpholinyl-2-benzothiazyl disulfide-----	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide-----	ACY, BFG, 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, VNC.
2-Imidazoline-2-thiol-----	DUP, RBC.
m-Phenylenebismaleimide-----	DUP.
Poly-p-dinitrosobenzene-----	DUP.
All other-----	DUP.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers:	
*Amino compounds:	
Aldehyde- and acetone-amine reaction products:	
Acetaldehyde aniline hydrochloride condensate-----	USR.
Aldol- α -naphthylamine condensate-----	BFG.
Butyraldehyde-aniline condensate-----	DUP.
Diphenylamine-acetone condensate-----	ACY, BFG, USR.
Phenyl-2-naphthylamine-acetone condensate-----	USR.
*Substituted p-phenylenediamines:	
*N,N'-Bis(1,4-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.
Diarylarlylenediamines, mixed-----	BFG, GYR.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine--	GYR, 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.
N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine----	USR.
Nitroso-N-phenyl-p-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.
N,N'-Diphenylethylenediamine-----	CCO, DA.
N,N'-Diphenyl-1,3-propanediamine-----	CCO.
N,N'-Di-o-tolyethylenediamine-----	CCO.
p-Isopropoxydiphenylamine-----	BFG.
4,4'-Methylenedianiline-----	USR.
*Octyldiphenylamine-----	ACY, NPI, USR.
Octyldiphenylamine mixture (mono-, nonyl-, and di)-	BFG.
N-Phenyl-1-naphthylamine-----	DUP.
*N-Phenyl-2-naphthylamine-----	BFG, DUP, USR.
p-(p-Toluenesulfonamide)diphenylamine-----	USR.
*Phenolic and phosphite compounds:	
Phenolic compounds:	
*Polyphenolics (including bisphenols):	
Bisphenol, hindered-----	GYR, USR.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)-----	MON.
2,5-Di-sec-butyldecylhydroquinone-----	USR.
2,5-Di-(1,1-dimethylpropyl)hydroquinone-----	MON.
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-	ICI.
cresol].	
2,2'-Methylenebis(6-tert-octyl-p-cresol)-----	ACY.
4,4'-Thiobis(6-tert-butyl-m-cresol)-----	MON.
Thiobisphenol, alkylated-----	USR.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)-	ICI.
butane.	
Other phenolic compounds:	
p-Benzoyloxyphenol-----	BFG.
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.

RUBBER-PROCESSING CHEMICALS

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers--Continued	
*Phenolic and phosphite compounds--Continued	
*Phosphite compounds:	
Alkylaryl phosphites-----	WES.
Diphenyldecyl phosphite-----	HK.
Nonyl phenyl phosphites, mixed-----	NPI, USR.
Phenyldecyl phosphite-----	HK.
Polymeric phosphite-----	NPI.
Polyphenolic phosphite, alkylated-----	BFG.
Triaryl phosphites-----	WES.
Blowing agents:	
N,N'-Dimethyl-N,N'-dinitrosoterephthalamide-----	DUP.
Dinitrosopentamethylenetetramine-----	NPI.
p,p'-Oxybis(benzenesulfonylhydrazide)-----	USR.
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.
Dixyl disulfides, mixed-----	PIT.
2-Naphthalenethiol-----	DUP.
Pentachlorobenzenethiol-----	SDC.
Thiocresol-----	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:	
Dibutylthiocarbamic acid, potassium salt-----	VNC.
Dibutylthiocarbamic acid, sodium salt-----	ALC, DUP, USR, VNC.
*Dibutylthiocarbamic acid, zinc salt-----	ALC, DUP, PAS, USR, VNC.
Diethylthiocarbamic acid, selenium salt-----	VNC.
Diethylthiocarbamic acid, sodium salt-----	ALC, PAS.
Diethylthiocarbamic acid, tellurium salt-----	VNC.
*Diethylthiocarbamic acid, zinc salt-----	ALC, GYR, PAS, USR, VNC.
Dimethylthiocarbamic acid, bismuth salt-----	VNC.
Dimethylthiocarbamic acid, copper salt-----	VNC.
Dimethylthiocarbamic acid, lead salt-----	VNC.
Dimethylthiocarbamic acid, selenium salt-----	VNC.
Dimethylthiocarbamic acid, sodium salt and sodium polysulfide.	BFG.
*Dimethylthiocarbamic acid, zinc salt-----	ALC, DUP, FMN, GYR, PAS, RBC, USR, WRC.
All other-----	VNC.
*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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

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

RUBBER-PROCESSING CHEMICALS

TABLE 3.--RUBBER-PROCESSING CHEMICALS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of rubber-processing chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

Code	Name of Company	Code	Name of Company
ACS	Allied Chemical Corp., Specialty Chemicals Div.	MLS	Miles Laboratories, Inc., Marshall Div.
ACY	American Cyanamid Co.	MON	Monsanto Co.
ALC	Alco Chemical Corp.		
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	NEV	Neville Chemical Co.
		NPI	Stepan Chemical Co., National Polychemicals Div.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PAS	Pennwalt Chemicals Corp.
		PIT	Pitt-Consol Chemical Co.
		PLC	Phillips Petroleum Co.
CCO	Reichhold Chemicals, Inc.		
CTN	Chemetron Corp., Organic Chemical Div.	RBC	Fike Chemicals, Inc.
		RCD	Richardson Co.
DA	Diamond Shamrock Corp.		
DUP	E. I. duPont de Nemours & Co., Inc.	SAL	Salsbury Laboratories
		SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.		
		UPM	Universal Oil Products Co.
		USR	Uniroyal, Inc., Chemical Div.
FMN	FMC Corp., Niagara Chemical Div.		
		VNC	Vanderbilt Chemical Corp.
GYR	Goodyear Tire & Rubber Co.		
		WES	Weston Chemical Co., Inc.
HK	Hooker Chemical Corp.		
		WRC	Ventron Corp., Ventron Chemical
ICI	ICI America, Inc.		

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

ELASTOMERS

Elastomers (synthetic rubbers) are high polymeric materials with properties similar to those of natural rubber. The term "elastomers" as used in this report, means a substance, whether in bale, crumb, powder, latex, and other crude form, which can be vulcanized or similarly processed into a material that can be stretched to at least twice its original length and, after having been so stretched and the stress removed, will return with force to approximately its original length. U.S. production and sales of elastomers in 1971 are shown in table 1.¹

Total U.S. production of synthetic elastomers in 1971 was 4,616 million pounds, an increase of 4 percent from that produced in 1970. The sales of these elastomers amounted to 4,031 million pounds (valued at \$1,034 million) in 1971, an increase of more than 5 percent over 1970.

Styrene-butadiene rubber (SBR or S-type rubber) in 1971 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 36 million pounds of its vinylpyridine sub-type, amounted to 2,578 million pounds in 1971. Solution polymerized butadiene rubber, a stereo type elastomer, was produced domestically in 1971 in the next largest amount--667 million pounds; production of isoprene and ethylene-propylene rubbers, the other stereo types, amounted to 264 million and 140 million pounds, respectively. Total U.S. production of these stereo type elastomers amounted to 1,071 million pounds in 1971--an increase of 2 percent over 1970. Other principal types of synthetic elastomers for which U.S. production and sales data are reported separately are isobutylene-isoprene (butyl) rubber, production of which was 231 million pounds in 1971, and acrylonitrile-butadiene (N-type) rubber, production of which was 141 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 1971, U.S. production of cyclic elastomers amounted to 2,614 million pounds, an increase of nearly 7 percent over 1970; sales of cyclic elastomers amounted to 2,240 million pounds (valued at \$484 million²), an increase in volume of 12 percent over 1970. U.S. production of acyclic elastomers in 1971 amounted to 2,002 million pounds, an increase of 1 percent over 1970; sales of acyclic elastomers amounted to 1,791 million pounds (valued at \$550 million), a decrease in volume of nearly 2 percent from the previous year.

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

²The value of sales in 1971 for styrene-butadiene (S-type) rubber, which comprise about 90 percent of the sales value of cyclic elastomers, was calculated on a somewhat different basis than in previous years. The value of sales in 1971 for S-type elastomers is believed to have increased slightly over that in 1970, although the published figures show a decrease.

ELASTOMERS

TABLE 1.--ELASTOMERS (SYNTHETIC RUBBERS):¹ U.S. PRODUCTION AND SALES, 1971

[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
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	4,616,100	4,030,641	1,034,445	\$0.26
ELASTOMERS, CYCLIC				
Total-----	2,614,054	2,239,804	484,130	.22
Styrene-butadiene type (S-type) ³ -----	2,542,169	⁴ 2,186,627	⁵ 437,468	.20
Styrene-butadiene-vinylpyridine type-----	35,527	19,875	11,151	.56
Urethane type-----	36,358	33,302	35,511	1.07
ELASTOMERS, ACYCLIC				
Total-----	2,002,046	1,790,837	550,315	.31
Acrylonitrile-butadiene type (N-type)-----	141,370	128,012	58,630	.46
Isobutylene-isoprene type (Butyl)-----	231,261	...	...	...
Silicone type-----	16,635	16,673	45,427	2.72
Stereo elastomers, total-----	1,070,571	854,789	160,075	.19
Butadiene (solution polymerized) type-----	666,846	509,298	86,549	.17
Ethylene-propylene type-----	140,103	124,743	32,038	.26
Isoprene type-----	263,622	220,748	41,488	.19
All other acyclic elastomers ⁶ -----	542,209	791,363	286,183	.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 Partly estimated. Includes the value of additives.

⁶ Includes data for acrylic ester, polysulfide, chloroprene, and isobutylene type elastomers, miscellaneous elastomers, and for sales of isobutylene-isoprene type 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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--ELASTOMERS (SYNTHETIC RUBBERS) FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

[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	
*Styrene-butadiene type-----	APL, ASH, ASY, BFG, CPY, FIR, FRS, GNT, GYR, MCB, PLC, RUB, SBI, SHC, TUS, USR, WIC.
*Styrene-butadiene-vinylpyridine type-----	BFG, FIR, FRS, GNT, GYR, USR.
*Urethane type-----	ACY, BFG, DA, DNS, DUP, GNT, INP, MOB, PFP, PLN, PRC, RUB, TKL, USR, WTC.
ELASTOMERS, ACYCLIC	
Acrylic ester type-----	ACY, BFG, DA, TKL.
*Acrylonitrile-butadiene type (N-type)-----	BFG, CPY, FRS, GYR, SBI, USR.
Butadiene (emulsion polymerized) type-----	BFG, FRS, GYR, TKL, TUS.
Chloroprene type (Neoprene)-----	DUP, PTT.
*Isobutylene-isoprene type (Butyl)-----	CBN, ENJ.
Polysulfide type-----	PRC, TKL.
Reaction products of natural rubber-----	GYR, HPC, ICI.
*Silicone type-----	DCC, SFW, SPD, UCC.
*Stereo elastomers:	
*Butadiene (solution polymerized) type-----	APL, ASY, ATR, FRS, GNT, GYR, PLC, SHE, TUS,
*Ethylene-propylene type-----	BFG, CPY, DUP, ENJ, USR.
*Isoprene type-----	APL, GYR, SHC.
All other acyclic elastomers-----	ASY, BFG, DUP, ENJ, HDM, PLC, UCC, WAY, x.

ELASTOMERS

TABLE 3.--ELASTOMERS (SYNTHETIC RUBBERS): DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of elastomers manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
ACY	American Cyanamid Co.	ICI	ICI America, Inc.
APL	Ameripol, Inc., Subsidiary of B. F. Goodrich Co.	INP	INDPOL
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.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	PLC	Phillips Petroleum Co.
		PLN	Pellon Corp., Disogrin Industries, Div.
		PRC	Products Research & Chemical Corp.
		PTT	Petro-Tex Chemical Corp.
CBN	Cities Service Co., Petrochemical Group		
CPY	Copolymer Rubber & Chemical Corp.	RUB	Hooker Chemical Corp., Ruco Div.
DA	Diamond Shamrock Corp.	SBI	Standard Brands Chemical Industries, Inc.
DCC	Dow Corning Corp.	SFW	Stauffer Chemical Co., Stauffer-Wacker Silicone 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.
		TUS	Texas-U.S. Chemical Co.
	Firestone Tire & Rubber Co.:		
FIR	Firestone Plastics Co. Div.	UCC	Union Carbide Corp.
FRS	Firestone Synthetic Rubber & Latex Co. Div.	USR	Uniroyal, Inc., Chemical Div.
		WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
GNT	General Tire & Rubber Co., Chemical Div.	WIC	Wica Chemicals, Inc.
GYR	Goodyear Tire & Rubber Co.	WTC	Witco Chemical Co., Inc.
HDM	Hardman, Inc.		
HPC	Hercules, Inc.		

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

PLASTICIZERS

Plasticizers are organic chemicals that are added to synthetic plastics and resin materials to (1) improve workability during fabrication, (2) extend or modify the natural properties of these materials, or (3) develop new improved properties not present in the original material. Table 1 presents statistics on U.S. production and sales of plasticizers in as great detail as is possible without revealing the operations of individual producers.¹

U.S. production of plasticizers totaled 1,494 million pounds in 1971, an increase of 11.8 percent from the 1,336 million pounds reported for 1970. Sales of plasticizers totaled 1,404 million pounds, valued at \$258 million, in 1971, compared with 1,239 million pounds, valued at \$235 million, in 1970.

Production of cyclic plasticizers in 1971, which consisted chiefly of the esters of phthalic anhydride and phosphoric acid, amounted to 1,130 million pounds, an increase of 13.2 percent from the 998 million pounds reported for 1970. Sales of cyclic plasticizers in 1971 totaled 1,075 million pounds, valued at \$158 million, compared with 938 million pounds, valued at \$144 million, in 1970. The most important cyclic plasticizer was di(2-ethylhexyl) phthalate, with production of 386 million pounds, in 1971.

Production of acyclic plasticizers in 1971 totaled 364 million pounds, an increase of 7.7 percent from the 338 million pounds reported for 1970. Sales of acyclic plasticizers totaled 330 million pounds, valued at \$100 million, in 1971, compared with 302 million pounds, valued at \$91 million, in 1970. Epoxidized esters were the most important group in 1971 with production of 99 million pounds.

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

PLASTICIZERS

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TABLE 1--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1971

[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
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	1,494,038	1,404,096	257,765	\$0.18
Benzenoid ³ -----	1,221,969	1,158,657	180,809	.16
Nonbenzenoid-----	272,069	245,439	76,956	.31
PLASTICIZERS, CYCLIC				
Total-----	1,130,440	1,074,541	157,925	.15
Phosphoric acid esters, total-----	91,403	81,210	26,548	.33
Cresyl diphenyl phosphate-----	20,425	14,846	3,733	.25
Tricresyl phosphate-----	48,840	44,797	14,637	.33
All other phosphoric acid esters-----	22,138	21,567	8,178	.38
Phthalic anhydride esters, total-----	978,173	938,174	118,611	.13
Butyl octyl phthalates (including butyl 2-ethylhexyl phthalate and butyl n-octyl phthalate)-----	16,044	14,136	1,856	.13
Dibutyl phthalate-----	23,013	23,553	3,776	.16
Diethyl phthalate-----	16,850	13,103	2,393	.18
Diisodecyl phthalate-----	135,723	135,208	15,935	.12
Dimethyl phthalate-----	10,581	8,809	1,742	.20
Diocetyl phthalates:				
Di(2-ethylhexyl) phthalate-----	386,278	401,191	44,818	.11
Diiso-octyl phthalate-----	51,037	39,601	4,738	.12
Di-tridecyl phthalate-----	20,252	22,364	4,334	.19
n-Hexyl n-decyl phthalate-----	11,661	9,639	1,217	.13
n-Octyl n-decyl phthalate-----	134,347	107,425	12,132	.11
All other phthalic anhydride esters-----	172,387	163,145	25,670	.16
Trimellitic acid esters, total-----	11,340	8,200	2,245	.27
Triiso-octyl trimellitate-----	4,434	3,537	928	.26
Tri-n-octyl n-decyl trimellitate-----	2,164	1,002	294	.29
Triocetyl trimellitate-----	2,545	1,764	478	.27
All other trimellitic acid esters-----	2,197	1,897	545	.29
All other cyclic plasticizers ⁴ -----	49,524	46,957	10,521	.22
PLASTICIZERS, ACYCLIC				
Total-----	363,598	329,555	99,840	.30
Adipic acid esters, total-----	63,432	57,664	12,411	.22
Di[2-(2-butoxyethoxy)ethyl] adipate-----	1,875	1,309	596	.46
Di(2-ethylhexyl) adipate-----	35,084	32,733	6,314	.19
Diisodecyl adipate-----	4,050	3,847	895	.23
Diocetyl adipates (including diiso-octyl adipate)-----	9,152	...	...	...
n-Hexyl n-decyl adipate-----	2,898	3,078	618	.20
n-Octyl n-decyl adipate-----	8,159	7,085	1,555	.22
All other adipic acid esters-----	2,214	9,612	2,433	.25
Complex linear polyesters and polymeric plasticizers ⁵ -----	46,230	45,271	16,712	.37
Di(2-ethylhexyl) azelate-----	11,373	10,526	3,303	.31

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ²
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
PLASTICIZERS, ACYCLIC--Continued				
Epoxidized esters, total-----	98,962	90,122	22,120	\$0.25
Epoxidized soya oils-----	69,690	63,916	15,420	.24
Octyl epoxytallates (including 2-ethylhexyl epoxytallates)---	27,122	23,745	5,722	.24
All other epoxidized esters-----	2,150	2,461	978	.40
Glyceryl monoricinoleate-----	378	324	134	.41
Isopropyl myristate-----	5,011	5,480	2,777	.51
Isopropyl palmitate-----	3,188	...	...	...
Oleic acid esters, total-----	12,519	10,219	2,253	.22
Butyl oleate-----	2,410	1,794	405	.23
Methyl oleate-----	4,053	3,288	597	.18
All other oleic acid esters-----	6,056	5,137	1,251	.24
Phosphoric acid esters-----	22,716	17,475	8,172	.47
Sebacic acid esters:				
Dibutyl sebacate-----	4,370	3,587	2,246	.63
Di(2-ethylhexyl) sebacate-----	5,210	4,024	2,014	.50
Stearic acid esters, total-----	11,777	11,074	3,047	.28
n-Butyl stearate-----	6,111	5,419	1,325	.24
All other stearic acid esters-----	5,666	5,655	1,722	.30
Triethylene glycol di(caprylate-caprate)-----	2,083	2,108	710	.34
All other acyclic plasticizers ⁶ -----	76,349	71,681	23,941	.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, 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.

PLASTICIZERS

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TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

[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. Manufacturer's 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.
Dipropenediol dibenzoate-----	VEL.
N-Ethyl-p-toluenesulfonamide-----	MON.
Isopropylidenediphenoxypropanol-----	DOW.
Naphthalene, alkylated-----	ACC.
*Phosphoric acid esters:	
*Cresyl diphenyl phosphate-----	FMP, MON, MTR, SFS.
Dibutyl phenyl phosphate-----	MON, ORO.
Diphenyl octyl phosphate-----	MON.
Methyl diphenyl phosphate-----	FMP, MON.
Tributyl phosphate-----	SFS.
*Tricresyl phosphate-----	FMP, MON, MTR, SFS.
Triphenyl phosphate-----	EK, MON, SFS.
*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-----	GRH, MON, TEK, UCC.
Butyl n-octyl phthalate-----	PCC, RCI.
Di(2-butoxyethyl) phthalate-----	FMP.
*Dibutyl phthalate-----	ACP, COM, EKT, GRH, MON, PCC, PFZ, RCI, RUB, SW, UCC, WTC.
Dicyclohexyl isodecyl phthalate-----	GRH.
Dicyclohexyl phthalate-----	FMP, MON, PFZ.
Diethyl isophthalate-----	PFZ.
*Diethyl phthalate-----	EKT, KF, MON, PFZ.
Di-n-heptyl phthalate-----	GRH.
Dihexyl phthalate-----	CPL, ENJ, PCC.
*Diisodecyl phthalate-----	ACP, CGL, CPL, EKT, ENJ, GRH, MON, PCC, RCI, TEK, UCC, WTC.
Diisononyl phthalate-----	ENJ, PFZ.
Di(2-methoxyethyl) phthalate-----	EKT, FMP, SFS.
Dimethyl isophthalate-----	MTR, PFZ.
*Dimethyl phthalate-----	EKT, KF, MON, SW, TCC.
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, TEK, UCC, WTC.
*Diiso-octyl phthalate-----	ACP, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
Mixed dioctyl phthalates-----	TEK.
Diphenyl phthalate-----	MON.
*Di-tridecyl phthalate-----	ACP, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
2-(Ethylhexyl)isobutyl phthalate-----	GRH.
Glycol phthalate esters:	
Butyl phthalyl butyl glycolate-----	MON.
Ethyl (and methyl) phthalyl ethyl glycolate-----	MON.
Polypropylene glycol bis(amy) phthalate-----	UCC.
All other glycol phthalate esters-----	HPC, WTC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, CYCLIC--Continued	
*Phthalic anhydride esters--Continued	
*n-Hexyl n-decyl phthalate-----	ACP, GRH, TEK, UCC.
Hexyl isodecyl phthalate-----	GRH.
Isodecyl tridecyl phthalate-----	TEK.
Iso-octyl isodecyl phthalate-----	GRH.
*n-Octyl n-decyl phthalate-----	ACP, CPL, GRH, MON, PCC, RCI, RUB, TEK, UCC.
All other phthalic anhydride esters-----	EK, FMP, HAL, MON, PFZ, UCC.
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.
Tri-n-hexyl-n-decyl trimellitate-----	CPL.
Tri-n-hexyl-trimellitate-----	CPL.
Triisodecyl trimellitate-----	PFZ.
Triisononyl trimellitate-----	ENJ, RUB.
*Triiso-octyl trimellitate-----	ENJ, GRH, RCI, RUB, TEK.
*Tri-n-octyl n-decyl trimellitate-----	GRH, PFZ, RCI, RUB, TEK.
*Triooctyl trimellitate-----	CPL, PCC, RUB, TEK.
All other trimellitic acid esters-----	RUB, x.
Trimethylpentanediol dibenzoate-----	VEL.
Trimethylpentanediol monoisobutyrate monobenzoate-----	EKT.
All other cyclic plasticizers-----	CCW, 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, MON, PCC, PFZ, RCI, RH, TEK, UCC.
Di-n-heptyl adipate-----	GRH.
Diisobutyl adipate-----	FMP, GRH, HAL.
*Diisodecyl adipate-----	ACP, GRH, MON, PCC, PFZ, RCI, RH, RUB, UCC.
Diisononyl adipate-----	ENJ.
Diisopropyl adipate-----	SBC, VND.
*Diocetyl adipates:	
Diiso-octyl adipate-----	GRH, PCC, RCI, RH, RUB.
Di-n-octyl adipate-----	ACP, ENJ.
Di-tridecyl adipate-----	GRH.
*n-Hexyl n-decyl adipate-----	CPL, GRH, PCC, TEK.
Iso-octyl isodecyl adipate-----	GRH, PFZ.
*n-Octyl n-decyl adipate-----	ACP, GRH, MON, PCC, RCI, RH, RUB, TEK, TKL.
All other adipic acid esters-----	ARC, EK, GRH, UCC.
Azelaic acid esters:	
Dicyclohexyl azelate-----	PFZ.
*Di(2-ethylhexyl) azelate-----	EKT, EMR, PFZ, RCI, 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-----	GLY, 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.

PLASTICIZERS

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, ACYCLIC--Continued	
*Epoxidized esters:	
Butyl epoxytallate-----	ASH.
Epoxidized linseed oils-----	ASH, SWT.
*Epoxidized soya oils-----	ASH, FMP, NTL, RH, SWT, TEK, UCC, WTC.
Epoxidized tall oils-----	RH.
*2-Ethylhexyl epoxytallates-----	ASH, NTL, SWT, UCC.
Octyl epoxystearates-----	WTC.
*Octyl epoxytallates-----	RH, TEK, UCC, WTC.
All other epoxidized esters-----	RH.
Glyceryl triacetate (Triacetin)-----	PFZ.
Glyceryl tributyrate and tripropionate-----	EKT.
Glycol pelargonate-----	EMR.
Isodecyl nonanoate (Isodecyl pelargonate)-----	EMR.
Myristic acid esters: *Isopropyl myristate-----	ARC, PCS, SBC, WM.
*Oleic acid esters:	
2-Butoxyethyl oleate-----	ARC, HAL.
*Butyl oleate-----	ARC, HAL, ICI, SWT, WM, WTC, WTH.
Decyl oleate-----	VND.
Glyceryl trioleate (Triolein)-----	EMR, GLY, SWT, WM.
Isobutyl oleate-----	DA.
Isopropyl oleate-----	EMR, WM.
2-Methoxyethyl oleate-----	HAL.
*Methyl oleate-----	CHL, EMR, HUM, ICI, SWT.
Propyl oleate-----	CHL, EMR, WM.
Palmitic acid esters:	
Isobutyl palmitate-----	ARC, DA.
Iso-octyl palmitate-----	RUB.
*Isopropyl palmitate-----	ARC, PCS, SBC, WM.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate-----	FMP.
Tributyl phosphate-----	FMP.
Tri(2-chloroethyl) phosphate-----	SFS, UCC.
Tri-2(chloropropyl) phosphate-----	SFS.
Triethyl phosphate-----	EKT.
Trioctyl phosphate-----	UCC.
All other phosphoric acid esters-----	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, PCC, PFZ, RCI, RH, WTH.
*Di(2-ethylhexyl) sebacate-----	GRH, PFZ, RCI, RH, WTH.
Diiso-octyl sebacate-----	DA, RCI.
Diisopropyl sebacate-----	SBC.
*Stearic acid esters:	
Butoxyethyl stearate-----	ARC, WM.
*n-Butyl stearate-----	AAE, ARC, CHL, DA, EMR, ICI, PCS, SCP, SWT, 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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PLASTICIZERS, ACYCLIC--Continued	
*Stearic acid esters--Continued	
Methyl dichlorostearate-----	HK.
Methyl pentachlorostearate-----	HK.
Methyl stearate-----	CHL, SWT.
All other stearic acid esters-----	DA, WM, x.
Sucrose acetate isobutyrate-----	ARC, EKT.
Tetraethylene glycol di(2-ethylhexanoate)-----	UCC.
Triethylene glycol dicaprylate-----	RUB.
*Triethylene glycol di(caprylate-caprate)-----	ASH, HAL, PVO, 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, RH, RUB, SCP, TKL, WM.

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TABLE 3.--PLASTICIZERS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of plasticizers manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

SYNTHETIC ORGANIC CHEMICALS, 1971

SURFACE-ACTIVE AGENTS

The surface-active agents included in this report are organic chemicals that reduce the surface tension of water or other solvents and are used chiefly as detergents, dispersing agents, emulsifiers, foaming agents, or wetting agents in either aqueous or nonaqueous systems. Waxes and products used chiefly as plasticizers are excluded. Surface-active agents are produced from natural fats and oils; from silvichemicals such as lignin, rosin, and tall oil; and from chemical intermediates derived from coal tar and petroleum. A major part of the output of the bulk chemicals shown in this report is consumed in the form of packaged soaps and detergents for household and industrial use. The remainder is used in the processing of textiles and leather, in ore flotation and oil-drilling operations, and in the manufacture of agricultural sprays, cosmetics, elastomers, foods, lubricants, 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 1971 amounted to 3,828 million pounds, or 1.5 percent less than the 3,886 million pounds reported for 1970. Sales of bulk surface-active agents in 1971 amounted to 2,186 million pounds, valued at \$422 million, compared with sales in 1970 of 2,061 million pounds, valued at \$387 million. In terms of quantity, sales in 1971 were thus 6.0 percent larger than in 1970; in terms of value, sales in 1971 were 9.1 percent larger than in 1970.

Production of anionic surface-active agents in 1971 amounted to 2,595 million pounds, or 67.8 percent of the total output reported for 1971 and 4.9 percent less than the anionic output reported for 1970. Sales of anionics in 1971 amounted to 1,223 million pounds, valued at \$187 million. Of the total anionic output, 859 million pounds consisted of potassium and sodium salts of fatty, rosin, and tall oil acids, of which 465 million pounds was the sodium salt of tallow acids and 115 million pounds was the sodium salt of coconut oil acids; 646 million pounds consisted of alkyl-benzenesulfonates, of which 361 million pounds was sodium dodecylbenzenesulfonate, 115 million pounds was dodecylbenzenesulfonic acid, and 138 million pounds was sodium tridecylbenzenesulfonate; 508 million pounds consisted of ligninsulfonates, of which 328 million pounds was the calcium salt; and 167 million pounds consisted of sulfated ethers.

Production of nonionic surface-active agents in 1971 amounted to 1,021 million pounds, or 26.7 percent of the total output reported for 1971 and

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

SURFACE-ACTIVE AGENTS

10.6 percent more than the nonionic output reported for 1970. Sales of nonionics in 1971 amounted to 786 million pounds, valued at \$162 million. Of the total nonionic output, 273 million pounds consisted of alkylphenol ethoxylates and other benzenoid ethers, of which 148 million pounds was nonylphenol ethoxylate; 463 million pounds consisted of alcohol ethoxylates and other nonbenzenoid ethers, of which 368 million pounds was mixed linear alcohol ethoxylate; 104 million pounds consisted of glycerol esters; and 81 million pounds consisted of alkanolamides.

Production of cationic surface-active agents in 1971 amounted to 203 million pounds, or 5.3 percent of the total output reported for 1971 and 11.2 percent less than the cationic output reported for 1970. Sales of cationics in 1971 amounted to 167 million pounds, valued at \$67 million. Of the total cationic output, 52 million pounds consisted of quaternary ammonium salts not containing oxygen, and 58 million pounds consisted of amines not containing oxygen.

Production of amphoteric surface-active agents in 1971 amounted to 9.9 million pounds, or 0.3 percent of the total output reported for 1971 and 29.6 percent more than the amphoteric output reported for 1970. Sales of amphoterics in 1971 amounted to 9.7 million pounds, valued at \$6.6 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, 1971

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

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	3,828,260	2,185,690	422,480	\$0.19
Benzenoid ⁴ -----	1,035,194	510,489	103,123	.20
Nonbenzenoid ⁵ -----	2,793,066	1,675,201	319,357	.19
<i>Amphoteric Surface-Active Agents</i>				
Total-----	9,886	9,663	6,597	.68
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt-----	956	960	479	.50
All other amphoteric surface-active agents-----	8,930	8,703	6,118	.70
<i>Anionic Surface-Active Agents</i>				
Total-----	2,594,727	1,223,225	186,670	.15
Carboxylic acids (and salts thereof), total-----	872,058	...	...	...
Amine salts of fatty rosin, and tall oil acids-----	991	341	109	.32
Carboxylic acids having amide, ester, or ether linkages, total-----	12,011	9,451	6,002	.64
N-Lauroylsarcosine, sodium salt-----	5,042	2,245	1,181	.53
All other-----	6,969	7,206	4,821	.67
Potassium and sodium salts of fatty, rosin, and tall oil acids, total-----	859,056	...	...	...
Castor oil acids, potassium salt-----	78	61	13	.21
Coconut oil acids, potassium and sodium salts, total-----	124,856	2,890	1,031	.36
Potassium salt-----	10,293	...	...	...
Sodium salt-----	114,563	...	...	...
Corn oil acids, potassium and sodium salts-----	828	831	322	.39
Mixed vegetable oil acids, potassium salt-----	2,797	2,847	2,423	.85
Oleic acid, potassium salt-----	3,996	...	...	...
Oleic acid, sodium salt-----	1,406	...	...	...
Soybean oil acids, potassium and sodium salts-----	186	...	...	...
Tall oil acids, potassium salt-----	18,321	...	...	...
Tall oil acids, sodium salt-----	10,488	...	...	...
Tallow acids, sodium salt-----	465,187	...	...	...
All other-----	230,913	...	...	...
Phosphoric and polyphosphoric acid esters (and salts thereof), total-----	27,004	17,865	8,145	.46
Alcohols and phenols, ethoxylated and phosphated, total-----	19,407	12,738	5,072	.40
Dinonylphenol, ethoxylated and phosphated-----	832	699	276	.39
Mixed linear alcohols, ethoxylated and phosphated-----	3,551	2,948	1,193	.40
Nonylphenol, ethoxylated and phosphated-----	8,471	5,403	1,722	.32
All other-----	6,553	3,688	1,881	.51
Alcohols, phosphated or polyphosphated, total-----	7,597	5,127	3,073	.60
2-Ethylhexyl phosphate, sodium salt-----	82	100	39	.39
All other-----	7,515	5,027	3,034	.60

See footnotes at end of table.

SURFACE-ACTIVE AGENTS

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Anionic Surface-Active Agents--Continued</i>				
Sulfonic acids (and salts thereof), total-----	1,277,787	753,114	76,267	\$0.10
Alkylbenzenesulfonates, total-----	646,170	173,073	29,583	.17
Dodecylbenzenesulfonates, total-----	498,279	157,712	27,350	.17
Dodecylbenzenesulfonic acid-----	115,371	38,896	5,349	.14
Dodecylbenzenesulfonic acid, calcium salt-----	8,316	9,012	3,756	.42
Dodecylbenzenesulfonic acid, isopropanolamine salt-----	558	356	86	.24
Dodecylbenzenesulfonic acid, isopropylamine salt-----	2,718	3,320	983	.30
Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt-----	95	209	137	.66
Dodecylbenzenesulfonic acid, sodium salt-----	361,036	97,613	15,211	.16
Dodecylbenzenesulfonic acid, triethanolamine salt-----	6,109	6,817	1,452	.21
All other-----	4,076	1,489	376	.25
Other alkylbenzenesulfonates, total-----	147,891	15,361	2,233	.15
Tridecylbenzenesulfonic acid, sodium salt-----	138,256	...	...	...
All other-----	9,635	15,361	2,233	.15
Benzene-, cumene-, toluene-, and xylenesulfonates, total-----	61,175	52,553	4,926	.09
Cumenesulfonic acid, ammonium salt-----	4,546	4,275	503	.12
Xylenesulfonic acid, sodium salt-----	35,699	27,564	2,453	.09
All other-----	20,930	20,714	1,970	.10
Ligninsulfonates, total-----	507,687	485,091	17,672	.04
Ligninsulfonic acid, calcium salt-----	328,021	306,735	7,765	.03
Ligninsulfonic acid, chromium salt-----	7,799	8,109	680	.08
Ligninsulfonic acid, sodium salt-----	57,888	56,227	5,287	.09
All other-----	113,979	114,020	3,940	.03
Naphthalenesulfonates-----	8,738	7,581	2,805	.37
Sulfonic acids having amide linkages, total-----	4,619	3,123	2,453	.79
Sulfosuccinic acid derivatives-----	1,385	1,062	858	.81
Taurine derivatives-----	3,234	2,061	1,595	.77
Sulfonic acids having ester or ether linkages, total-----	43,790	26,123	16,941	.65
Sulfosuccinic acid esters, total-----	12,757	11,936	6,275	.53
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt-----	9,798	9,172	4,848	.53
All other-----	2,959	2,764	1,427	.52
Other sulfonic acids having ester or ether linkages-----	31,033	14,187	10,666	.75
All other sulfonic acids-----	5,608	5,570	1,887	.34
Sulfuric acid esters (and salts thereof), total-----	...	207,946	52,521	.25
Acids, amides, and esters, sulfated, total-----	...	16,902	3,960	.23
Coconut oil acids - ethanolamine condensate, sulfated, potassium salt-----	33	33	29	.88
Esters of sulfated oleic acid, total-----	4,471	4,451	1,295	.29
Butyl oleate, sulfated, sodium salt-----	1,475	1,540	405	.26
Isopropyl oleate, sulfated, sodium salt-----	351	400	120	.30
Propyl oleate, sulfated, sodium salt-----	312	311	69	.22
All other-----	2,333	2,200	701	.32
Tall oil, sulfated, sodium salt-----	2,625	2,674	306	.11
All other-----	...	9,744	2,330	.24

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Anionic Surface-Active Agents--Continued</i>				
Sulfuric acid esters (and salts thereof)--Continued				
Alcohols, sulfated, total-----	...	44,246	21,578	\$0.49
Decyl sulfate, sodium salt-----	134	136	35	.26
Dodecyl sulfate salts, total-----	63,922	...	...	...
Dodecyl sulfate, ammonium salt-----	3,309	2,886	1,415	.49
Dodecyl sulfate, diethanolamine salt-----	...	1,722	971	.56
Dodecyl sulfate, magnesium salt-----	514	476	297	.62
Dodecyl sulfate, sodium salt-----	23,558	17,501	7,549	.43
Dodecyl sulfate, triethanolamine salt-----	13,196	...	...	...
All other-----	23,345	...	...	...
2-Ethylhexyl sulfate, sodium salt-----	1,738	...	...	...
Mixed linear alcohol sulfate, ammonium salt-----	...	537	211	.39
Mixed linear alcohol sulfate, sodium salt-----	1,984	...	...	...
Octadecyl sulfate, sodium salt-----	...	121	68	.56
All other-----	...	20,867	11,032	.53
Ethers, sulfated, total-----	167,340	110,437	19,315	.17
Alkylphenols, ethoxylated and sulfated-----	4,683	4,473	1,538	.34
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt-----	...	1,991	573	.29
Dodecyl alcohol, ethoxylated and sulfated, sodium salt-----	6,082	4,870	1,921	.39
Mixed linear alcohols, ethoxylated and sulfated, sodium salt-----	15,829	17,211	3,031	.18
All other-----	140,746	81,892	12,252	.15
Natural fats and oils, sulfated, total-----	38,166	36,361	7,668	.21
Castor oil, sulfated, sodium salt-----	7,207	6,428	2,018	.31
Coconut oil, sulfated, sodium salt-----	1,296	1,182	308	.26
Cod oil, sulfated, sodium salt-----	1,394	1,413	190	.13
Herring oil, sulfated, sodium salt-----	1,011	960	134	.14
Neat's-foot oil, sulfated, sodium salt-----	2,790	2,244	437	.19
Peanut oil, sulfated, sodium salt-----	100	88	66	.75
Soybean oil, sulfated, sodium salt-----	84	81	33	.41
Sperm oil, sulfated, sodium salt-----	3,574	3,414	866	.25
Tallow, sulfated, sodium salt-----	9,837	10,113	1,421	.14
All other-----	10,873	10,438	2,195	.21
Other anionic surface-active agents ⁶ -----	137,465	227,879	39,837	.17
<i>Cationic Surface-Active Agents</i>				
Total-----	202,937	166,514	67,139	.40
Amine oxides and oxygen-containing amines (except those having amide linkages), total-----	47,105	...	...	...
Acyclic, total-----	40,279	...	...	...
(Coconut oil alkyl)amine, ethoxylated-----	3,783	4,206	1,442	.34
(Tallow alkyl)amine, ethoxylated-----	1,375	1,476	923	.63
All other-----	35,121	...	...	...
Cyclic (except imidazoline and oxazoline derivatives)-----	3,037	2,390	673	.28
Imidazoline and oxazoline derivatives, total-----	3,789	2,762	1,455	.53
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline-----	...	181	70	.39
All other-----	3,789	2,581	1,385	.54
Amines and amine oxides having amide linkages, total-----	21,308	20,093	6,149	.31
Carboxylic acid - diamine and polyamine condensates-----	16,470	15,753	3,795	.24
Oleic acid - ethylenediamine condensate, monoethoxylated-----	1,984	...	...	...
Stearic acid - ethylenediamine condensate, monoethoxylated-----	2,542	2,025	1,153	.57
Other amines and amine oxides having amide linkages-----	312	2,315	1,201	.52
Amines, not containing oxygen (and salts thereof), total-----	57,553	...	...	...
Amine salts-----	2,798	2,290	857	.37

See footnotes at end of table.

SURFACE-ACTIVE AGENTS

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Cationic Surface-Active Agents--Continued</i>				
Amines, not containing oxygen (and salts thereof)--Continued				
Diamines and polyamines, total-----	11,135	9,979	2,795	\$0.28
N-(Coconut oil alkyl)trimethylenediamine-----	659	551	271	.49
Imidazoline derivatives-----	1,646	1,485	166	.11
N-(9-Octadecenyl)trimethylenediamine-----	1,906	1,841	731	.40
N-(Tallow alkyl)trimethylenediamine-----	4,019	3,850	1,137	.30
All other-----	2,905	2,252	490	.22
Primary monoamines, total-----	24,858	22,748	7,995	.35
Dodecylamine-----	682	...	...	...
(Hydrogenated tallow alkyl)amine-----	2,743	2,836	892	.31
Octadecylamine-----	...	686	295	.43
(Tallow alkyl)amine-----	6,119	5,002	1,340	.27
All other-----	15,314	14,224	5,468	.38
Secondary and tertiary monoamines, total-----	18,762	...	...	...
N,N-Dimethyldodecylamine-----	...	306	204	.67
N,N-Dimethyloctadecylamine-----	1,108	1,244	638	.51
N-Methylbis(coconut oil alkyl)amine-----	498	409	177	.43
N-Methylbis(hydrogenated tallow alkyl)amine-----	4,562	...	...	...
All other-----	12,594	...	...	...
Oxygen-containing quaternary ammonium salts-----	25,272	...	...	...
Quaternary ammonium salts, not containing oxygen, total-----	51,699	47,664	21,313	.45
Acyclic, total-----	38,031	35,782	12,454	.35
Bis(coconut oil alkyl)dimethylammonium chloride-----	2,908	2,717	1,314	.48
Bis(hydrogenated tallow alkyl)dimethylammonium chloride-----	26,133	24,458	5,737	.23
Hexadecyltrimethylammonium salts-----	533	548	532	.97
Trimethyl(tallow alkyl)ammonium chloride-----	1,128	1,421	582	.41
All other-----	7,329	6,638	4,289	.65
Cyclic, total-----	13,668	11,882	8,859	.75
Benzyl (coconut oil alkyl)dimethylammonium chloride-----	504	493	357	.72
Benzyl dimethyl (mixed alkyl) ammonium chloride-----	6,700	6,343	4,719	.74
Benzyl dimethyloctadecylammonium chloride-----	1,355	...	...	...
Benzyltrimethylammonium chloride-----	...	148	57	.39
All other-----	5,109	4,898	3,726	.76
Groups listed above for which separate sales data may not be shown-----	...	50,947	22,518	.44
<i>Nonionic Surface-Active Agents</i>				
Total-----	1,020,710	786,288	162,074	.21
Carboxylic acid amides, total-----	81,101	52,213	15,699	.30
Diethanolamine condensates (amine/acid ratio=2/1), total-----	23,489	18,645	5,228	.28
Capric acid-----	165	123	52	.42
Coconut oil acids-----	11,508	10,109	2,867	.28
Coconut oil and tallow acids-----	3,382	2,656	548	.21
Lauric acid-----	2,251	...	...	...
Oleic acid-----	1,026	625	202	.32
Stearic acid-----	724	626	214	.34
Tall oil acids-----	323	...	...	...
All other-----	4,110	4,506	1,345	.30
Diethanolamine condensates (other amine/acid ratios), total-----	35,935	24,972	7,871	.32
Coconut oil acids (amine/acid ratio=1/1)-----	17,163	16,548	4,732	.29
Lauric acid (amine/acid ratio=1/1)-----	8,647	...	...	...
Oleic acid (amine/acid ratio=1/1)-----	329	330	107	.32
Stearic acid (amine/acid ratio=1/1)-----	290	411	165	.40
All other-----	9,506	7,683	2,867	.37

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nonionic Surface-Active Agents--Continued</i>				
Carboxylic acid amides--Continued				
Ethanolamine and isopropanolamine condensates, total-----	21,677	8,596	2,600	\$0.30
Coconut oil acids - ethanolamine condensate				
(amine/acid ratio=1/1)-----	11,736	...	...	...
Coconut oil acids - ethanolamine condensate				
(amine/acid ratio=2/1)-----	1,410	1,157	338	.29
Lauric acid - isopropanolamine condensate-----	...	107	70	.65
All other-----	8,531	7,332	2,192	.30
Carboxylic acid esters, total-----	203,775	181,872	53,939	.30
Anhydrosorbitol esters, total-----	19,673	13,513	4,826	.36
Anhydrosorbitol monoester of tall oil acids-----	261	75	24	.32
Anhydrosorbitol mono-oleate-----	4,919	4,612	1,686	.37
Anhydrosorbitol monostearate-----	7,226	3,988	1,272	.32
Anhydrosorbitol trioleate-----	...	483	192	.40
All other-----	7,267	4,355	1,652	.38
Diethylene glycol esters, total-----	1,694	1,750	601	.34
Diethylene glycol monolaurate-----	57	78	26	.33
Diethylene glycol monostearate-----	409	448	145	.32
All other-----	1,228	1,224	430	.35
Ethoxylated anhydrosorbitol esters, total-----	20,221	19,326	7,644	.40
Ethoxylated anhydrosorbitol monolaurate-----	5,169	5,519	2,125	.39
Ethoxylated anhydrosorbitol mono-oleate-----	7,324	7,045	2,745	.39
Ethoxylated anhydrosorbitol monostearate-----	4,753	4,357	1,767	.41
Ethoxylated anhydrosorbitol tristearate-----	1,082	...	...	...
All other-----	1,893	2,405	1,007	.42
Ethylene glycol esters-----	3,582	3,610	1,111	.31
Glycerol esters, total-----	103,955	99,152	25,868	.26
Complex glycerol esters-----	7,631	7,238	2,318	.32
Glycerol esters of chemically defined acids, total-----	28,689	31,350	6,442	.21
Glycerol monolaurate-----	52	50	20	.40
Glycerol mono-oleate-----	2,694	2,196	743	.34
Glycerol monostearate-----	24,739	27,856	4,988	.18
All other-----	1,204	1,248	691	.55
Glycerol esters of mixed acids, total-----	67,635	60,564	17,108	.28
Glycerol monoester of hydrogenated cottonseed oil acids-----	3,781	...	...	...
Glycerol monoester of hydrogenated soybean oil acids-----	15,412	14,931	4,156	.28
All other-----	48,442	45,633	12,952	.28
Natural fats and oils, ethoxylated, total-----	6,243	6,101	1,937	.32
Castor oil, ethoxylated-----	4,680	4,508	1,375	.31
Hydrogenated castor oil, ethoxylated-----	1,002	1,103	389	.35
All other-----	561	490	173	.35
Pentaerythritol distearate-----	315	176	59	.34
Polyethylene glycol esters, total-----	28,402	23,602	7,793	.33
Polyethylene glycol esters of chemically defined acids, total----	19,235	15,492	5,683	.37
Polyethylene glycol dilaurate-----	1,285	1,132	389	.34
Polyethylene glycol dioleate-----	3,269	1,078	400	.37
Polyethylene glycol monolaurate-----	4,252	4,098	1,427	.35
Polyethylene glycol mono-oleate-----	2,423	1,991	709	.36
Polyethylene glycol monostearate-----	5,685	5,101	1,969	.39
All other-----	2,321	2,092	789	.38
Polyethylene glycol esters of rosin and tall oil acids, total----	7,361	6,372	1,429	.22
Polyethylene glycol sesquiesther of tall oil acids-----	4,030	3,678	821	.22
All other-----	3,331	2,694	608	.23
Polyethylene glycol esters of other mixed acids, total-----	1,806	1,738	681	.39
Polyethylene glycol sesquiesther of coconut oil acids-----	272	268	157	.59
All other-----	1,534	1,470	524	.36
Polyglycerol esters-----	5,188	5,164	638	.12

See footnotes at end of table.

TABLE 1/--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production ¹	Sales ²		
		Quantity ¹	Value	Unit value ³
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nonionic Surface-Active Agents--Continued</i>				
Carboxylic acid esters--Continued				
Propanediol esters, total-----	4,517	1,939	664	\$0.34
1,2-Propanediol monolaurate-----	147	140	61	.44
1,2-Propanediol monostearate-----	2,803	1,629	558	.34
All other-----	1,567	170	45	.26
Other carboxylic acid esters ⁸ -----	9,985	7,539	2,798	.37
Ethers, total-----	735,834	552,203	92,436	.17
Benzenoid ethers, total-----	272,685	239,138	41,948	.18
Alkylphenol - formaldehyde condensates, alkoxyated-----	10,587	...	...	...
Dodecylphenol, ethoxylated-----	19,242	18,840	2,487	.13
Nonylphenol, ethoxylated-----	147,939	134,627	20,907	.16
Phenol, ethoxylated-----	...	7,416	1,204	.16
All other-----	94,917	78,255	17,350	.22
Nonbenzenoid ethers, total-----	463,149	313,065	50,488	.16
Linear alcohols, alkoxyated, total-----	405,374	272,664	39,089	.14
Decyl alcohol, ethoxylated-----	1,197	...	...	...
Dodecyl alcohol, ethoxylated-----	5,027	3,625	1,406	.39
Mixed linear alcohols, ethoxylated-----	368,318	239,939	31,179	.13
9-Octadecenyl alcohol, ethoxylated-----	2,156	2,008	910	.45
Octadecyl alcohol, ethoxylated-----	983	358	251	.70
All other-----	27,693	26,734	5,343	.20
Other ethers and thioethers, total-----	57,775	40,401	11,399	.28
Poly(ethylene and propylene) glycols-----	37,458	26,728	6,805	.25
Tridecyl alcohol, ethoxylated-----	6,073	4,764	1,199	.25
All other ⁹ -----	14,244	8,909	3,395	.38

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 "all other" acyclic amine oxides and oxygen-containing amines (except those having amide linkages), "all other" secondary and tertiary monoamines not containing oxygen (and salts thereof), and oxygen-containing quaternary ammonium salts.

⁸ Includes ethoxylated sorbitol esters and miscellaneous esters.

⁹ Includes "other" nonionic surface-active agents.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

[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)
<i>Amphoteric Surface-Active Agents</i>	
Acyclic:	
Alkylbetaine-----	DUP.
(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt.	DUP.
(Carboxymethyl)[3-(coconut oil amido)propyl] dimethyl- ammonium chloride, sodium salt.	JRG.
(Carboxymethyl)[3-(coconut oil amido)propyl]di- methylammonium hydroxide, inner salt.	UVC, VAC.
(Carboxymethyl)dodecyldimethylammonium hydroxide, inner salt.	UVC.
(1-Carboxyundecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-(Coconut oil alkyl)- β -alanine, sodium salt-----	GNM, UVC, VAC.
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.
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, UVC.
All other acyclic-----	x.
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-sulfo- propyl)-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-imid- azolinium hydroxide, sodium derivative, sodium salt.	MIR.
*1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2- imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, TCH, UVC, VAC.
Heptadecylmethylbenzimidazolesulfonic acid, sodium salt.	CGY.
1-(2-Hydroxyethyl)-1-(2-hydroxy-3-sulfopropyl)-2- undecyl-2-imidazolinium hydroxide, sodium salt.	UVC.
3-[2-(2-Undecyl-2-imidazolin-1-yl)ethoxy]propionic acid, sodium salt.	UVC.
All other cyclic-----	SEY.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents</i>	
*Carboxylic acids (and salts thereof):	
*Amine salts of fatty, rosin, and tall oil acids:	
Coconut oil acids, diethanolamine salt-----	SEY, SOP.
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-----	GLY.
Tall oil acids, diethanolamine salt-----	SOP.
Tallow acids, ethanolamine salt-----	SBP.
Tallow acids, triethanolamine salt-----	SBP.
*Carboxylic acids having amide, ester, or ether linkages:	
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-----	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.	SYL.
Unspecified sarcosine derivatives-----	HMP.
All other-----	x.
*Potassium and sodium salts of fatty, rosin, and tall oil acids:	
Animal grease, sodium salt-----	NMC.
*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, MCP, NMC, PCH, PEK, PG, SOP, SWT, VAL.
*Sodium salt-----	AGP, CON, CP, GRC, HEW, JRG, LEV, NMC, NPR, PG, SWT. BSW.
Coconut oil and tallow acids, sodium salt-----	
*Corn oil acids, potassium and sodium salts:	
Potassium salt-----	GRC, HNT, NMC.
Sodium salt-----	GRC, NMC.
Lauric acid, potassium salt-----	USR.
Mixed fish oil acids, sodium salt-----	DA.
*Mixed vegetable oil acids, potassium salt-----	AES, DYS, GRC, GRL, LUR, PCH, PEK, SWT.
Mixed vegetable oil acids, sodium salt-----	SWT.
*Oleic acid, potassium salt-----	AES, ARL, DA, DAN, DYS, GYR, HNT, SHP, SWT, USR, WBG.
*Oleic acid, sodium salt-----	BSW, DA, LEV, LUR, MRV, NMC, SWT, USR, WBG, WTC.
Olive oil acids, sodium salt-----	HEW, HNT, LUR.
Palm kernel acids, sodium salt-----	HEW, NMC.
Palm oil acids, sodium salt-----	HEW, LUR, PRX.
Peanut oil acids, potassium salt-----	KAL, SLC.
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.
Sodium salt-----	HEW.
Stearic acid, potassium salt-----	HEW, SCO, USR, WTC.
Stearic acid, sodium salt-----	DA, HEW, JRG, LEV, MAL, WTC.
*Tall oil acids, potassium salt-----	ACE, AES, ASY, CON, DYS, ESS, GAF, GRC, GYR, HNT, NMC, PEK, PNK, SOP, VAL, x.
*Tall oil acids, sodium salt-----	ASY, GRC, GYR, MRV, PRX, SOP, UNP, x.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Carboxylic acids (and salts thereof)--Continued	
*Potassium and sodium salts of fatty, rosin, and tall oil acids--Continued	
Tallow acids, potassium salt-----	AES, ASY, 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, GYR.
*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.
Hexylphenol, ethoxylated and phosphated-----	RTF.
Iso-pentyl alcohol, ethoxylated and phosphated-----	GAF.
*Mixed linear alcohols, ethoxylated and phosphated-----	CHP, CRT, CST, GAF, SEY, TCH, TXT, WAY, WTC, WYN.
*Nonylphenol, ethoxylated and phosphated-----	CRT, DEP, DEX, GAF, HDG, NLC, RTF, SCP, SEY, SOP, TCC, TCH, TCI, TXN, TXT, VAC, WAY.
Nonylphenol, ethoxylated and phosphated, barium salt.	GAF.
9-Octadecenyl alcohol, ethoxylated and phosphated-----	GAF.
9-Octadecyl alcohol, ethoxylated and phosphated-----	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, TCC, WAY, WTC.
All other-----	GAF, WTC.
*Alcohols, phosphated or polyphosphated:	
Decyl, dodecyl, and octyl phosphate, morpholine salt.	DUP.
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-----	MRA, SEY, UCC, UVC.
2-Ethylhexyl phosphate, triethanolamine salt-----	SYL.
2-Ethylhexyl polyphosphate-----	SFS, TCC, TCI.
2-Ethylhexyl polyphosphate, sodium salt-----	SFS, TCI.
Hexyl phosphate-----	APD.
Hexyl phosphate, potassium salt-----	APD.
Hexyl polyphosphate, potassium salt-----	DEX.
Isooctyl phosphate-----	GAF.
Mixed alkyl phosphate-----	CST, DUP, SFS, 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-----	SFS.
*Sulfonic acids (and salts thereof):	
*Alkylbenzenesulfonates:	
*Dodecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid-----	ACS, ATR, CO, CRT, CTL, EMK, HLI, ICI, LAK, LEV, PIL, PLX, PRX, RCD, RTF, STP, TCI, TEN, TXT.
Dodecylbenzenesulfonic acid, ammonium salt-----	ARL, RTF, TXN.
Dodecylbenzenesulfonic acid, butylamine salt-----	WTC.
*Dodecylbenzenesulfonic acid, calcium salt-----	APD, NLC, RCD, RH, STP, TMH, WTC.
Dodecylbenzenesulfonic acid, diethanolamine salt----	RTF, WTC.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfonic acids (and salts thereof)--Continued	
*Alkylbenzenesulfonates--Continued	
*Dodecylbenzenesulfonates--Continued	
Dodecylbenzenesulfonic acid, dimethylamine salt----	PIL.
Dodecylbenzenesulfonic acid, ethylenediamine salt.	APD, RTF.
*Dodecylbenzenesulfonic acid, isopropanolamine salt.	CTL, RCD, RTF. x.
*Dodecylbenzenesulfonic acid, isopropylamine salt----	AAC, APD, ARD, CTL, RCD, SNW, STP, TCH.
*Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt.	ECC, NLC, TCH, WTC.
Dodecylbenzenesulfonic acid, potassium salt-----	RCD, SOP, STP, VAL.
*Dodecylbenzenesulfonic acid, sodium salt-----	AAC, ACS, APX, ARD, ARL, ATR, BLA, CHP, CO, CP, CRT, CTL, DA, DEP, DSO, HLI, HRT, LEV, MON, PG, PIL, PLX, PRX, RCD, SOP, STP, TCI, TEN, TXT, UCC, WTC.
Dodecylbenzenesulfonic acid, triethanolamine salt.	AAC, ACS, ARD, ARL, ATR, CTL, ESS, HLI, PEK, PIL, RCD, SOP, SOS, STP, TXN, VAC, WTC.
*Other alkylbenzenesulfonates:	
Decylbenzenesulfonic acid, sodium salt-----	LAK.
Didodecylbenzenesulfonic acid-----	CO.
Didodecylbenzenesulfonic acid, sodium salt-----	ATR.
Pentadecylbenzenesulfonic acid, potassium salt----	STP.
Tridecylbenzenesulfonic acid-----	CO, PIL, RCD.
*Tridecylbenzenesulfonic acid, sodium salt-----	BLA, CO, CP, NPR, PG, PIL, RCD, WTC.
Undecylbenzenesulfonic acid-----	TXT.
Undecylbenzenesulfonic acid, ammonium salt-----	TXT.
Undecylbenzenesulfonic acid, sodium salt-----	TXT.
Undecylbenzenesulfonic acid, triethanolamine salt.	TXT.
All other-----	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.
Toluenesulfonic acid, potassium salt-----	NES, RCD, STP, TXN.
Toluenesulfonic acid, sodium salt-----	CO, NES, 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, CTN, HLI, NES, PIL, RCD, SDC, STP, TXN, WTC.
*Ligninsulfonates:	
Ligninsulfonic acid, aluminum salt-----	MAR.
Ligninsulfonic acid, ammonium salt-----	CPP, CRZ, SPA, WVA.
*Ligninsulfonic acid, calcium salt-----	CRZ, CWP, LKY, MAR, PSP, WVA.
*Ligninsulfonic acid, chromium salt-----	DCP, MAR, RAY.
Ligninsulfonic acid, copper salt-----	WVA.
Ligninsulfonic acid, iron salt-----	CRZ, WVA.
Ligninsulfonic acid, magnesium salt-----	WVA.
Ligninsulfonic acid, manganese salt-----	WVA.
*Ligninsulfonic acid, sodium salt-----	CRZ, MAR, RAY, SNC, WVA.
Ligninsulfonic acid, zinc salt-----	WVA.
All other-----	WVA.
*Naphthalenesulfonates:	
Alkyl naphthalenesulfonic acid, sodium salt-----	ASY.
Butyl naphthalenesulfonic acid, sodium salt-----	DA, ECC, PFZ.
Dibutyl naphthalenesulfonic acid-----	GAF, S.
Didodecyl naphthalenesulfonic acid, sodium salt-----	PFZ.
Diisopropyl naphthalenesulfonic acid, sodium salt-----	DA, GAF, PFZ.
Dipentyl naphthalenesulfonic acid, ammonium salt-----	NLC.
Dipentyl naphthalenesulfonic acid, (mixed alkyl)-amine salt.	NLC.
Dipentyl naphthalenesulfonic acid, sodium salt-----	CGY.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfonic acids (and salts thereof)--Continued	
*Naphthalenesulfonates--Continued	
Hydroxynaphthalenesulfonic acid - formaldehyde condensate.	TRC.
Isopropyl naphthalenesulfonic acid-----	DA, DUP, GRD.
Methylenebis(2-naphthalenesulfonic acid)-----	DUP.
Methylnaphthalenesulfonic acid, sodium salt-----	DA, UDI.
Methylnonylnaphthalenesulfonic acid, sodium salt-----	UDI.
Tetrahydronaphthalenesulfonic acid-----	DUP.
*Sulfonic acids having amide linkages:	
*Sulfosuccinic acid derivatives:	
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt.	ACY, MOA.
N-(2-Hydroxyethyl)-N-(tallow alkyl)sulfosuccinamic acid, disodium salt.	SCP.
N-Octadecylsulfosuccinamic acid, disodium salt-----	ACY.
Sulfosuccinic acid, alkanolamide ester, sodium salt.	HDG, SCP.
Sulfosuccinic acid, alkanolamide 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-Decanoyl-N-methyltaurine, sodium salt-----	GAF.
N-Methyl-N-myristoyltaurine, sodium salt-----	GAF.
N-Methyl-N-oleoyltaurine, sodium salt-----	DA, DEP, GAF, HRT, MCP, SNW.
N-Methyl-N-palmitoyltaurine, sodium salt-----	GAF.
N-Methyl-N-(tall oil acyl)taurine, sodium salt-----	CRT, GAF, MRA, WTC.
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.	DAN, GAF, MOA.
*Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt.	ACY, CGY, CHP, CRT, CST, DA, DAN, ECC, EMK, HDG, HRT, MCP, MOA, MRA, PC, SBC, SCO, UVC.
Sulfosuccinic acid, bis(tallow monoglyceride) ester, sodium salt.	ACY.
Sulfosuccinic acid, dihexyl ester, sodium salt-----	ACY, MOA.
Sulfosuccinic acid, diisodecyl ester, sodium salt.	MCP.
Sulfosuccinic acid, diisooctyl ester, sodium salt---	RH.
Sulfosuccinic acid, dipentyl ester, sodium salt-----	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt---	ACY, MOA.
*Other sulfonic acids having ester or ether linkages:	
Butoxypropanesulfonic acid, sodium salt-----	APX.
Coconut oil acids, 2-sulfoethyl ester, sodium salt.	GAF, LEV, x.
Dodecyl diphenyloxidedisulfonic acid, disodium salt.	DOW.
Dodecyl sulfoacetate-----	ACS.
Iso-octylphenol, ethoxylated and sulfonated, sodium salt.	CRT, RH.
Myristic acid, 2-sulfoethyl ester, sodium salt-----	GAF.
All other-----	PG, SIM.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfonic acids (and salts thereof)--Continued	
*All other sulfonic acids:	
Butylhydroxybiphenylsulfonic acid-----	RBC.
Mixed alkanesulfonic acid, sodium salt-----	DUP.
Mixed linear alpha olefins, sulfonated-----	CP.
Olefinsulfonic acid-----	STP.
Petroleum sulfonic acid, water soluble (acid layer), sodium salt.	VPC, 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.
*Esters of sulfated oleic acid:	
2-Butoxyethyl oleate, sulfated, sodium salt-----	S.
Butyl and propyl oleate, sulfated, sodium salt-----	MCP.
*Butyl oleate, sulfated, sodium salt-----	AKS, EFH, ICI, MCP, ONX, PC.
2-Ethylhexyl oleate, sulfated, sodium salt-----	CHP.
Ethyl oleate, sulfated, sodium salt-----	GAF.
Glycerol trioleate, sulfated, sodium salt-----	LEA, MRV.
Glycerol trioleate and butyl oleate, sulfated, sodium salt.	SEY.
Isobutyl oleate sulfated, sodium salt-----	DA.
*Isopropyl oleate, sulfated, sodium salt-----	CRT, DEX, ECC, HRT, LEA, SCP.
Methyl oleate, sulfated, sodium salt-----	ICI.
Mixed oleic acid esters, sulfated, sodium salt-----	EFH.
*Propyl oleate, sulfated, sodium salt-----	ACY, AKS, CHP, GAF, MRV.
*Tall oil, sulfated, sodium salt-----	APX, BAO, CHP, DA, HRT, ICI, MRV, RTF, SEA, WHI, WHW.
Other sulfated acids, amides, and esters:	
Castor oil and oleic acid, sulfated, ammonium salt--	SCO.
Coconut oil acids - isopropylamine condensate, sulfated, sodium salt.	APX.
Glycerol monoester of coconut oil acids, sulfated, sodium salt.	CP
Neat's-foot oil acids - ethanolamine condensate, sulfated, ammonium salt.	APX.
9-Octadecenyl acetate, sulfated, sodium salt-----	DUP.
Oleic acid and tall oil, sulfated, ammonium salt----	SCO.
Oleic acid, sulfated, disodium salt-----	ACT, ACY, CRT, DA, GAF, ICI, LEA, MRV, SCO, TEN.
Oleic acid, sulfated, triethanolamine salt-----	WAY.
All other-----	EMR.
*Alcohols, sulfated:	
Coconut and sperm oil alkyl sulfate, sodium salt-----	DA, DUP, HLI.
Decyl and octyl sulfate, sodium salt-----	RTF, TCH.
*Decyl sulfate, sodium salt-----	CTL, DUP, HLI.
Decyl sulfate, triethanolamine salt-----	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, RCD, SCP, STP, TCH, WTC.
*Diethanolamine salt-----	AAC, DUP, HLI, JRG, ONX, SCP, STP, TCH.
Diethylamine salt-----	AAC.
N,N-Diethylcyclohexylamine salt-----	DUP.
Isopropanolamine salt-----	JRG, TCH.
*Magnesium salt-----	AAC, HLI, ONX, STP.
Potassium salt-----	GYR, HLI, PG, RCD.
*Sodium salt-----	AAC, CTL, DUP, HLI, JRG, ONX, PG, RCD, RTF, SCP, SEY, STP, TCH.
*Triethanolamine salt-----	AAC, CTL, DUP, HLI, ONX, PG, RCD, SCP, SEY, STP, TCH, TXT.
*2-Ethylhexyl sulfate, sodium salt-----	AAC, TCH, UCC.
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt-----	UCC.
Hexadecyl and 9-octadecenyl sulfate, sodium salt-----	AAC, RCD.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfuric acid esters (and salts thereof)--Continued	
*Alcohols, sulfated--Continued	
Hexadecyl sulfate, sodium salt-----	AAC, APX, DUP, SCP.
Hexyl sulfate, potassium salt-----	DEX.
*Mixed linear alcohol sulfate, ammonium salt-----	CP, LAK, NTL, S, SCP, TXT.
*Mixed linear alcohol sulfate, sodium salt-----	LAK, SCP, TXT.
Mixed linear alcohol sulfate, triethanolamine salt.	LAK.
Nonyl sulfate, sodium salt-----	TEN.
9-Octadecenyl sulfate, 2-(diethylamino)ethanol salt.	AAC.
*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.
Naphthol, ethoxylated and sulfated-----	TCH.
Nonylphenol, ethoxylated and sulfated, ammonium salt.	GAF, RTF, STP, TXT, x.
Nonylphenol, ethoxylated and sulfated, sodium salt--	CRT, GAF.
Nonylphenol, ethoxylated and sulfated, triethanolamine salt.	ARL, CGY.
*Dodecyl alcohol, ethoxylated and sulfated, ammonium salt.	AAC, AKS, CTL, RTF, STP, TXT.
*Dodecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, CTL, DUP, HLI, ONX, RCD, RTF, SCP, STP, TCH.
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt.	LEV, TXN.
2-Ethylhexanol, ethoxylated and sulfated, sodium salt.	UCC.
2-Hexyloxypropyl sulfate, sodium salt-----	S.
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt.	CO, LAK, NLC, PIL, RCD, SCP, SHC, STP, TXT.
*Mixed linear alcohols, ethoxylated and sulfated, sodium salt.	AAC, CO, CRT, DA, GAF, LAK, PIL, RCD, SCP, SHC, STP, TCI, TXT.
Sperm oil alcohol, ethoxylated and sulfated, sodium salt.	DUP.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ARL, RCD.
All other-----	PG.
*Natural fats and oils, sulfated:	
*Castor oil, sulfated, sodium salt-----	ACT, ACY, AKS, APX, BAO, BSW, CRT, DA, DEX, EFH, GAF, HRT, ICI, KAL, KNG, LEA, LUR, MCP, MRD, MRV, ONX, S, SCO, SLC, SLM, SNW, WHI, WHW.
*Coconut oil, sulfated, sodium salt-----	ACY, BAO, DA, LUR, MRD, SEA, WHW.
*Cod oil, sulfated, sodium salt-----	ACT, BAO, SEA, WAW, WHI, WHW.
Grease, other than wool, sulfated, sodium salt-----	ICI, SEA, WHI.
*Herring oil, sulfated, sodium salt-----	ACT, DA, SLM, WHI, WHW.
Lard, sulfated, sodium salt-----	GRT, SLM, WAW.
Mixed alpha olefins and vegetable oils, sulfated, sodium salt.	SLM.
Mixed animal and vegetable oils, sulfated, sodium salt.	SLM.
Mixed fish oils, sulfated, sodium salt-----	ACT, DA, MRD, SLM.
Mixed vegetable oils, sulfated, sodium salt-----	CHP.
Mustard seed oil, sulfated, sodium salt-----	DA, HRT, 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.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Anionic Surface-Active Agents--Continued</i>	
*Sulfuric acid esters (and salts thereof)--Continued	
*Natural fats and oils, sulfated--Continued	
Ricebran oil, sulfated, sodium salt-----	DA, EFH, KNG, LUR.
*Soybean oil, sulfated, sodium salt-----	CRT, HRT, KAL, MRD, ONX.
*Sperm oil, sulfated, sodium salt-----	ACT, BOA, CRT, DA, DEP, KAL, KNG, LEA, MRD, ONX, RTC, SCO, SEA, WHI, WHW.
*Tallow, sulfated, sodium salt-----	ACT, ACY, BSW, DA, ECC, ICI, KAL, LUR, MCP, MRD, PC, QCP, SCP, SID, SLM, SOS, WHI. KNG.
Whale oil, sulfated, sodium salt-----	
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.
<i>Cationic Surface-Active Agents</i>	
*Amine oxides and oxygen-containing amines (except those having amide linkages):	
*Acyclic:	
N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine-----	ARC.
N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine oxide.	ARC.
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.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine oxide-----	ARC.
*(Coconut oil alkyl)amine, ethoxylated-----	AAC, APD, ARC, ASH, BRD, TCH, VAC, WYN.
(Coconut oil alkyl)amine, ethoxylated, acetate-----	RPC.
(Coconut oil alkyl)amine, ethoxylated, maleate-----	SDH.
N,N-Dimethyl(coconut oil alkyl)amine oxide-----	ARC.
N,N-Dimethyldodecylamine oxide-----	BRD.
N,N-Dimethyldodecylamine oxide-----	BRD, x.
N,N-Dimethylhexadecylamine oxide-----	ONX.
N,N-Dimethyl(hydrogenated tallow alkyl)amine oxide----	ARC.
Ethylenediamine, ethoxylated and propoxylated-----	APD.
(Hydrogenated tallow alkyl)amine, ethoxylated-----	CGY, TCH.
N-(2-Hydroxyethyl)-N,N,N'-tris(2-hydroxypropyl)- ethylenediamine.	NLC.
(Mixed alkyl)amine, ethoxylated-----	APD, CGY, GAF, RH, TCH.
(Mixed alkyl)poly(oxyethylene)amine-----	GAF.
Mixed substituted oximes-----	GNM.
(9-Octadecenyl)amine, ethoxylated-----	ARC, TCH.
Octadecylamine, ethoxylated-----	ARC, TCH.
Polyethylenepolyamine, alkoxyated-----	NLC.
(Soybean oil alkyl)amine, ethoxylated-----	AAC, ARC, TCH, VAC.
*(Tallow alkyl)amine, ethoxylated-----	AAC, ARC, CGY, DUP, TCH.
Tallow alkyl amine sulfate, ethoxylated-----	DUP.
N-(Tallow alkyl)trimethylenediamine, ethoxylated-----	ARC, RTF.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine-----	NLC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated.	ARC, RTF, WYN.
All other-----	ARC, GLY, ICI.
*Cyclic (except imidazoline and oxazoline derivatives:	
Aniline and m-toluidine, ethoxylated-----	TCH.
N-Hexadecylmorpholine-----	APD.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine-----	APX.
Lignin amine-----	WVA.
Rosin amine, ethoxylated-----	HPC, NLC, RTF, WTC.
N-(Soybean oil alkyl)morpholine-----	APD.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Amine oxides and oxygen-containing amines (except those having amide linkages)--Continued	
*Imidazoline and oxazoline derivatives:	
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline.	COM, SWT, UVC.
2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline.	DA, ONX, UVC.
2-(8-Heptadecenyl)-4-hydroxymethyl-4-methyl-2-oxazoline.	COM, UVC.
2-(Heptadecyl)-1-(2-hydroxyethyl)-2-imidazoline-----	CGY, MOA.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline.	CGY, MOA, TCH, UVC.
*1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline.	HDG, MOA, NLC.
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.
*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-----	APX, CST, HRT, ONX, S.
Stearic acid - N,N-diethylethylenediamine condensate.	CGY.
Stearic acid - tetraethylenepentamine condensate-----	ICI ONX.
Tall oil acids - diethylenetriamine condensate-----	AZ, NC, NLC, RTF.
Tall oil acids - polyalkylenepolyamine condensate-----	RTF.
All other-----	NLC, 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, monoethoxylated.	CLD, DA, DEX, SOC, TNA.
Palm oil acids - ethylenediamine condensate, monoethoxylated.	APX.
*Stearic acid - ethylenediamine condensate, monoethoxylated.	CLD, CST, DA, DEX, ECC, ICI, S, SNW.
Stearic acid - diethylenetriamine condensate, polyethoxylated.	TCC.
Stearic acid - ethylenediamine condensate, polyethoxylated.	APD.

SURFACE-ACTIVE AGENTS

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Amines and amine oxides having amide linkages--Continued	
Other amines and amine oxides having amide linkages:	
3-Lauramido-N,N-dimethylpropylamine oxide-----	SNW.
Rosinpolyamidoimidazoline-----	UVC.
1-Stearamidoethyl-2-heptadecyl-2-imidazoline-----	APD.
Stearic acid-N-(2-cyanoethyl)diethylenetriamine-	CHP.
condensate (amine/acid ratio = 1/2).	
All other-----	DA.
*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.
(9-Octadecenyl)amine oleate-----	ARC.
Octadecylamine acetate-----	ACY, ARC.
Octylamine acetate-----	ARC.
(Tallow alkyl)amine acetate-----	ARC, GNM.
N-(Tallow alkyl)trimethylenediamine acetate-----	ARC, ASH.
N-(Tallow alkyl)trimethylenediamine naphthenate-----	APD.
N-(Tallow alkyl)trimethylenediamine oleate-----	ARC, ASH.
N-(Tallow alkyl)trimethylenediamine tallate-----	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-hepta-	NLC.
decenyl)-2-imidazoline.	
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-	
imidazoline.	RTF, TCH, UVC.
2-(8-Heptadecenyl)-2-imidazoline-----	TCH.
2-Heptadecyl-2-imidazoline-----	EMR, SCO.
Tall oil imidazoline-----	AZS.
N-(Mixed.alkyl)polyethylenepolyamine-----	CCW.
*N-(9-Octadecenyl)trimethylenediamine-----	ARC, ASH, GNM.
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.
*Dodecylamine-----	ARC, ASH, GNM.
Docosyl- and eicosylamine-----	ENO.
Hexadecylamine-----	ARC, ENO.
*(Hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO, GNM.
(Mixed alkyl)amine-----	ARC.
(Mixed tert-alkyl)amine-----	RH.
9-Octadecenylamine-----	ARC, ASH, ENO, GNM, x.
*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.
Tetradecylamine-----	GNM.
*Secondary and tertiary monoamines:	
Bis(coconut oil alkyl)amine-----	ARC.
Bis(hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO.
Bis(9-octadecenyl)amine-----	ARC.
Bis(soybean oil alkyl)amine-----	ARC.
N,N-Dimethyl(coconut oil alkyl)amine-----	ARC, ASH, BRD, ENO, PG.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Amines, not containing oxygen (and salts thereof)-- Continued	
*Secondary and tertiary monoamines--Continued	
N,N-Dimethyldodecylamine-----	BRD.
N,N-Dimethyl (docosyl- and eicosyl)amine-----	ENO.
*N,N-Dimethyldodecylamine-----	ARC, BRD, ENO.
N,N-Dimethylhexadecylamine-----	ARC, BRD.
N,N-Dimethyl(hydrogenated tallow alkyl)amine-----	ARC, ASH, ENO.
N,N-Dimethyl(mixed alkyl)amine-----	ARC, BRD, ENO.
*N,N-Dimethyloctadecylamine-----	ARC, ASH, BRD, ENO.
N,N-Dimethyloctyl amine-----	BRD.
N,N-Dimethyl(soybean oil alkyl)amine-----	ARC, ENO.
N,N-Dimethyltetradecylamine-----	ARC, BRD.
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:	
Ethyl dimethyl(mixed acylamidopropyl)ammonium ethyl sulfate.	TCH.
(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.
Tall oil acid - polyalkylenepolyamine condensate, quaternary sulfate.	NLC.
Trimethyl(3-oleamidopropyl)ammonium methyl sulfate.	CGY.
All other-----	ARC, DUP, 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.
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-imadazolinium chloride.	NLC, UVC.
Bis(2-hydroxyethyl, ethoxylated)ethyl(hydrogenated tallow alkyl)ammonium ethyl sulfate.	APD.
Bis(2-hydroxyethyl, ethoxylated)methyl(9-octa- decenyl)ammonium chloride.	ARC.
Bis(2-hydroxyethyl, ethoxylated)methyloctadecyl- ammonium chloride.	ARC.
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxy- lated)methylammonium chloride.	ARC, VAC.
(Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride.	RH.
(Ethoxybenzyl)dimethyl(octyltolylloxy)ammonium chloride.	RH.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2- imidazolinium ethyl sulfate.	APD, UVC.

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TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Oxygen-containing quaternary ammonium salts--Continued	
Other oxygen-containing quaternary ammonium salts--Continued	
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.
2-Hydroxytrimethylenebis[(coconut oil alkyl)dimethylammonium chloride].	CGY.
Quaternarized propoxylated stearyl amine-----	ARC, TCC.
(Tridecylbenzyl)diethyl(2-hydroxyethyl)ammonium chloride.	SNW.
All other-----	DUP.
*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.
Didecyltrimethylammonium chloride-----	BRD.
Dimethylbis(mixed alkyl)- and trimethyl(mixed alkyl)ammonium chloride.	GNM.
Dimethylbis(9-octadecenyl)ammonium chloride-----	GNM.
Dimethylbis(soybean oil alkyl)ammonium chloride----	ARC.
Dimethyldioctadecylammonium chloride-----	ASH, ONX, PG.
Dimethyldioctadecylammonium methyl sulfate-----	ONX.
Diocetyltrimethylammonium chloride-----	BRD.
(Docosyl- and eicosyl)trimethylammonium chloride----	ENO.
Dodecyltrimethylammonium bromide-----	DUP.
Dodecyltrimethylammonium chloride-----	ARC, GNM, WTC.
Ethyltrimethyl(mixed alkyl)ammonium ethyl sulfate----	JOR, TCC.
Ethyltrimethyl(9-octadecenyl)ammonium bromide-----	ONX.
Ethylhexadecyltrimethylammonium bromide-----	FIN.
*Hexadecyltrimethylammonium salts:	
Hexadecyltrimethylammonium bromide-----	DUP, FIN, ICI.
Hexadecyltrimethylammonium chloride-----	ARC, BRD, VAC.
Hexadecyltrimethylammonium p-toluenesulfonate----	FIN.
(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.
*Trimethyl(tallow alkyl)ammonium chloride-----	ARC, ASH, GNM, VAC.
Trimethyltetradecylammonium bromide-----	FIN.
All other-----	GNM, STC.
*Cyclic:	
1-(2-Aminoethyl)-1-ethyl-2-(8-heptadecenyl)-2-imidazolinium bromide.	EFH.
*Benzyl(coconut oil alkyl)dimethylammonium chloride.	ARC, CRT, DEP, ENO, LUR, RTF, TXT.
*Benzyltrimethyl(mixed alkyl)ammonium chloride-----	AAC, ASY, BRD, FIN, ONX, RH, TXT, VAC.
Benzyltrimethyloctadecylammonium chloride-----	APX, BRD, FIN, ONX, RH, TNI, VAC, WSN.
Benzyltrimethyl(tallow alkyl)ammonium chloride-----	ENO.
Benzyltrimethyltetradecylammonium chloride-----	FIN, SNW.
Benzyltridecyltrimethylammonium chloride-----	FIN, ONX, SDH.
Benzylhexadecyltrimethylammonium chloride-----	ONX.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ENO, FIN.
Benzyl(mixed alkyl)pyridinium chloride-----	RTF.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Cationic Surface-Active Agents--Continued</i>	
*Quaternary ammonium salts, not containing oxygen-- Continued	
*Cyclic--Continued	
1-Benzyl-2-picolinium bromide-----	FIN.
1-Benzylpyridinium chloride-----	DEP.
*Benzyltrimethylammonium chloride-----	CHP, COM, CRT, TCC, VAC.
(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride.	ONX, VAC.
(Dodecylbenzyl)triethylammonium chloride-----	PC.
(Dodecylbenzyl)trimethylammonium chloride-----	NLC, VAC, WTC.
2-Dodecylisoquinolinium bromide-----	ONX.
(Dodecylmethylbenzyl)trimethylammonium chloride-----	RH.
1-Dodecylpyridinium chloride-----	HK.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride.	ONX.
1-Phenethyl-2-picolinium bromide-----	FIN.
<i>Nonionic Surface-Active Agents</i>	
*Carboxylic acid amides:	
*Diethanolamine condensates (amine/acid ratio=2/1):	
*Capric acid-----	CGY, SCP, TCH, UVC.
Castor oil acids-----	CLI, DSO, NTL.
*Coconut oil acids-----	ACT, AKS, ARD, BSW, CGY, CLI, CTL, DA, DEP, EFH, ESS, HLI, HRT, JOR, KNP, LUR, MCP, MOA, MRV, ONX, PC, PG, PNX, PVO, SBC, SCP, SEY, SOS, STP, SWT, TCH, TXC, TXN, UNN, UVC, VAC, VAL, VND, WTC, x.
*Coconut oil and tallow acids-----	ACT, AZS, CLI, CRT, ECC, MOA, PG, PVO.
*Lauric acid-----	ARD, CLI, DA, ECC, HLI, ONX, PG, WON.
Lauric and myristic acids-----	HLI, MOA, PVO, STP.
Linoleic acid-----	VND.
Mixed vegetable oil acids-----	HLI.
*Oleic acid-----	CCW, CLI, EMR, PVO, STP, UVC.
Pelargonic acid-----	EMR, TCH.
*Stearic acid-----	CLI, DA, EMR, JOR, ONX, TXC, VAL, VND.
*Tall oil acids-----	EFH, MCP, MOA, MRV, SOS.
Tallow acids-----	SOS, WTC.
All other-----	ROB.
*Diethanolamine condensates (other amine/acid ratios):	
*Coconut oil acids (amine/acid ratio=1/1)-----	APX, ARD, CCL, CGY, CLI, CTL, HLI, MOA, ONX, PIL, RTF, SBC, SCP, SEY, STP, TCC, TCH, TXN, TXT, VAC.
Coconut oil acids (amine acid ratio unspecified)-----	JRG.
*Lauric acid (amine/acid ratio=1/1)-----	CLI, CTL, EMK, HLI, LEV, MOA, ONX, PG, RTF, SBC, TCH, TXN, VAC.
Lauric and myristic acids (amine/acid ratio=1/1)-----	CLI, PG, TXT.
Linoleic acid (amine/acid ratio=1/1)-----	MOA.
*Oleic acid (amine/acid ratio=1/1)-----	CGY, ECC, HLI, SBC, SWT, TCC, TXT.
Palmitic and stearic acid (amine/acid ratio=1/1)-----	MCP.
Rapeseed oil acids (amine/acid ratio=2.6/1)-----	EFH.
*Stearic acid (amine/acid ratio=1/1)-----	CGY, EMR, GAF, MRV, 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.
All other-----	GLY, STP.
*Ethanolamine and isopropanolamine condensates:	
*Coconut oil acids - ethanolamine condensate (amine/acid ratio=1/1).	ARD, HLI, HUM, MOA, PG, STP, UVC.
*Coconut oil acids - ethanolamine condensate (amine/acid ratio=2/1).	CTL, PEK, RTF, STP, TCH, VND, WTC.

SURFACE-ACTIVE AGENTS

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED.
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid amides--Continued	
*Ethanolamine and isopropanolamine condensates-- Continued	
Coconut oil acids - ethanolamine condensate, ethoxylated.	STP.
Coconut oil acids - isopropanolamine condensate-----	STP, TCH.
Hydrogenated castor oil acids - ethanolamine condensate (amine/acid ratio=2/1).	GLY, NTL.
Hydrogenated tallow acids - ethanolamine condensate (amine/acid ratio=2/1).	CRT, GLY.
Lauric acid - ethanolamine condensate (amine/acid ratio=2/1).	ARC, CTL.
Lauric acid - ethanolamine condensate (amine/acid ratio=1/1).	ARD.
*Lauric acid - isopropanolamine condensate-----	CLI, MOA, SNW.
Lauric and myristic acids - ethanolamine condensate (amine/acid ratio=1/1).	MOA, TXN.
Lauric and myristic acids - isopropanolamine condensate.	LEV, TXT.
Myristic acid - ethanolamine condensate (amine/acid ratio=2/1).	ECC.
Oleic acid - ethanolamine condensate (amine/acid ratio=1/1).	VPC.
Oleic acid - ethanolamine condensate, ethoxylated----	GAF.
Stearic acid - ethanolamine condensate (amine/acid ratio=2/1).	CLI.
Stearic acid - ethanolamine condensate (amine/acid ratio=1/1).	MOA, VND.
Stearic acid - ethanolamine condensate (amine/acid ratio=1/2).	HAL.
*Carboxylic acid esters:	
*Anhydrosorbitol esters:	
Anhydrosorbitol dioleate-----	APD.
*Anhydrosorbitol monoester of tall oil acids-----	APD, GLY, HDG, TCH.
Anhydrosorbitol monolaurate-----	APD, GLY, HDG, SYL, TCH.
*Anhydrosorbitol mono-oleate-----	APD, ARC, GLY, HAL, HDG, PVO, SYL, TCH.
Anhydrosorbitol monopalmitate-----	APD, GLY, HDG, TCH.
*Anhydrosorbitol monostearate-----	APD, GLY, HDG, PVO, TCH.
Anhydrosorbitol sesquileate-----	AAC, GLY, HDG.
Anhydrosorbitol triester of tall oil acids-----	GLY, TCH.
*Anhydrosorbitol trioleate-----	AAC, APD, GLY, TCH.
Anhydrosorbitol tristearate-----	APD, GLY, PVO, TCH.
All other-----	GLY.
*Diethylene glycol esters:	
Diethylene glycol diolate-----	GLY.
Diethylene glycol distearate-----	ARC, GLY, VAL.
Diethylene glycol monoester of coconut oil acids----	AAC, DA.
Diethylene glycol monoester of tallow acids-----	ARC.
*Diethylene glycol monolaurate-----	CCW, GLY, HAL, HDG.
Diethylene glycol mono-oleate-----	ARC, HAL.
*Diethylene glycol monostearate-----	ARC, CLI, DA, HAL, HDG, MCP, TCH, VND, WM, WTC.
Diethylene glycol sesquiester of tall oil acids----	ECC, WTC.
Diethylene glycol sesquilaurate-----	ARC, GLY.
Diethylene glycol sesquisteate-----	WM.
*Ethoxylated anhydrosorbitol esters:	
Ethoxylated anhydrosorbitol monoester of tall oil acids.	RTF.
*Ethoxylated anhydrosorbitol monolaurate-----	AAC, APD, ARC, GLY, HDG, SYL, TCH.
*Ethoxylated anhydrosorbitol mono-oleate-----	AAC, APD, ARC, GLY, HDG, PVO, SYL, TCH.
Ethoxylated anhydrosorbitol monopalmitate-----	AAC, APD, TCH.
*Ethoxylated anhydrosorbitol monostearate-----	AAC, APD, ARC, GLY, HDG, PVO, TCH.
Ethoxylated anhydrosorbitol triester of tall oil acids.	APD, GLY, TCH.
Ethoxylated anhydrosorbitol trioleate-----	AAC, APD, GLY, TCH.
*Ethoxylated anhydrosorbitol tristearate-----	AAC, APD, GLY, HDG, PVO, TCH.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
<i>*Carboxylic acid esters--Continued</i>	
Ethoxylated sorbitol esters:	
Ethoxylated sorbitol beeswax ester-----	APD.
Ethoxylated sorbitol distearate-----	APD.
Ethoxylated sorbitol hexaester of tall oil acids----	APD, TCH.
Ethoxylated sorbitol hexaoleate-----	APD, GLY, TCH.
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----	RTF.
Ethoxylated sorbitol pentalaurate-----	APD.
Ethoxylated sorbitol tetraester of lauric and oleic acids.	APD.
Ethoxylated sorbitol tetraester of tall oil acids----	APD.
Ethoxylated sorbitol tetraoleate-----	APD.
<i>*Ethylene glycol esters:</i>	
Ethylene glycol distearate-----	ARC, EMR, GLY, HUM.
Ethylene glycol mono-oleate-----	EFH.
Ethylene glycol monostearate-----	ARC, CLI, GLY, HAL, KNP, TCH, VND, WM.
Ethylene glycol sesquisteate-----	WM.
<i>*Glycerol esters:</i>	
<i>*Complex glycerol esters:</i>	
Glycerol ester, ethoxylated-----	GLY.
Glycerol lactate esters of fatty acids-----	GLD.
Glycerol mannitan laurate-----	GLY.
Glycerol monoester of mixed fatty acids, acetylated.	EKT.
Glycerol mono-oleate, acetylated-----	x.
Glycerol monostearate, ethoxylated-----	TCH.
Glycerol monostearate, succinylated-----	EKT.
Glycerol sesquiesteate of mixed fatty acids, ethoxylated.	APD.
All other-----	GLY.
<i>*Glycerol esters of chemically defined acids:</i>	
Glycerol dioleate-----	ARC.
Glycerol distearate-----	APD, APX, ARC, WTC.
Glycerol monocaprylate-----	PVO.
*Glycerol monolaurate-----	ARC, GLY, HAL.
*Glycerol mono-oleate-----	ARC, CCW, DA, EFH, EKT, EMR, GLY, HAL, HDG, PVO, SWT, TCH, WM, WTC.
Glycerol monoricinoleate-----	CCW, HDG.
*Glycerol monostearate-----	ARC, ASH, BIS, CHL, CRT, EFH, EMR, GLY, GRO, HAL, HDG, HRT, LUR, PG, PVO, SOS, SWT, TCC, TCH, VND, WM, WTC.
Glycerol trioleate-----	HAL.
<i>*Glycerol esters of mixed acids:</i>	
Glycerol diester of lard acids-----	WM.
Glycerol mono and diester of tallow acids-----	BDF.
Glycerol monoester of coconut oil acids-----	PVO, SWT.
Glycerol monoester of corn oil acids-----	GLD.
Glycerol monoester of cottonseed oil acids-----	EKT.
Glycerol monoester of hydrogenated animal fatty acids.	GLD.
*Glycerol monoester of hydrogenated cottonseed oil acids.	GLD, LEV, WM.
*Glycerol monoester of hydrogenated soybean oil acids.	ASH, EKT, GLD, NW, PVO, TCH.
Glycerol monoester of hydrogenated tallow acids----	TCH.
Glycerol monoester of lard acids-----	EKT, GLD.
Glycerol monoester of peanut oil acids-----	PVO.
Glycerol monoester of tall oil acids-----	EFH.
Glycerol sesquiesteate of hydrogenated tallow acids--	JRG.
Glycerol sesquiesteate of tall oil acids-----	SLM.
All other-----	APD, EKT, LEV.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid esters--Continued	
*Natural fats and oils, ethoxylated:	
*Castor oil, ethoxylated-----	AAC, APD, DA, GAF, NTL, PVO, RTF, SYL, TCH, TMH.
Corn oil, ethoxylated-----	TCH.
*Hydrogenated castor oil, ethoxylated-----	APD, DA, SYL, TCH.
Lanolin, ethoxylated-----	AAC, APD, CRD, CRN, SM, TCH.
*Pentaerythritol distearate-----	EMR, GLY, QCP, VAL.
*Polyethylene glycol esters:	
*Polyethylene glycol esters of chemically defined acids:	
*Polyethylene glycol dilaurate-----	ARC, DA, DEX, EFH, GLY, HAL, HDG, JOR, TCH, WM.
*Polyethylene glycol dioleate-----	ARC, CGY, CLD, DA, EFH, GLY, HAL, HDG, NLC, SM, TCH, UVC, VND, WM.
Polyethylene glycol distearate-----	ARC, EFH, GLY, HAL, HDG, QCP, TCH.
Polyethylene glycol methylcarbitol maleate-----	CCA.
Polyethylene glycol monocaprylate-----	ECC.
*Polyethylene glycol monolaurate-----	AAC, ARC, CCA, CGY, DA, GLY, HAL, HDG, ICI, JOR, KNP, MCP, TCH, UVC.
*Polyethylene glycol mono-oleate-----	AAC, APD, ARC, CCA, CGY, CLD, CRT, DA, DEX, EFH, GAF, GLY, HAL, HDG, HRT, ICI, MRT, ONX, PVO, SM, TCH, UVC, VAC, WTC.
Polyethylene glycol mono-oleate, ethoxylated-----	APD.
Polyethylene glycol monopalmitate-----	APD.
Polyethylene glycol monopelargonate-----	TCH.
Polyethylene glycol monoricinoleate-----	HAL, TCH, UVC.
*Polyethylene glycol monostearate-----	AAC, AKS, APD, ARC, CGY, CRT, DA, DEP, DEX, EFH, EMR, GAF, GLY, HAL, HDG, HRT, ICI, KNP, ONX, PC, PVO, TCC, TCH, VND, WM, WTC.
Polyethylene glycol sesquioleate-----	EMR, TCH.
All other-----	GAF, TCH
*Polyethylene glycol esters of rosin and tall oil acids:	
Polyethylene glycol diester of tall oil acids-----	EFH, GLY.
Polyethylene glycol ester of tall oil acids-----	ACT.
Polyethylene glycol monoester of tall oil acids-----	EFH, GLY, RTF.
Polyethylene glycol monoester of tall oil acids, ethoxylated.	DA, TCH.
Polyethylene glycol sesquiester of rosin acids-----	HPC, QCP.
*Polyethylene glycol sesquiester of tall oil acids.	APD, APX, ARC, MON, PVO, SLM, WTC.
*Polyethylene glycol esters of other mixed acids:	
Polyethylene glycol diester of trimerized castor oil acids.	GLY.
Polyethylene glycol ester of palmitic, stearic, and coconut oil acids.	MCP.
Polyethylene glycol monoester of coconut oil acids.	GLY.
Polyethylene glycol monoester of coconut oil acids, ethoxylated.	AAC, APD.
Polyethylene glycol monopelargonate-----	EMR.
Polyethylene glycol sesquiester of castor oil acids.	CGY, VAC.
*Polyethylene glycol sesquiester of coconut oil acids.	ARL, MRT, PG, SCP, UVC, VND.
Polyethylene glycol sesquiester of tallow acids-----	SOS.
All other-----	ARC.
*Polyglycerol esters:	
Polyglycerol distearate-----	CHP.
Polyglycerol ester of tall oil acids-----	AZS.
Polyglycerol lactate oleate-----	PVO.
Polyglycerol mono-oleate-----	HDG, VND.
Polyglycerol monostearate-----	ASH, TCH.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Carboxylic acid esters--Continued	
*Propanediol esters:	
1,2-Propanediol dioleate-----	x.
1,2-Propanediol distearate-----	ARC.
1,3-Propanediol monoester of coconut oil acids-----	WM.
*1,2-Propanediol monolaurate-----	ARC, HAL, PVO, SBC, WM.
1,2-Propanediol mono-oleate-----	EFH, HAL.
*1,2-Propanediol monostearate-----	APD, ARC, CCW, EKT, GLD, GLY, HAL, PVO.
1,2-Propanediol sesquiesther of hydrogenated tallow acids.	JRG.
All other-----	GLD.
Miscellaneous carboxylic acid esters:	
Ethoxylated mixed polyhydric alcohols, triester of tall oil acids.	APD.
Ethoxylated 1,2-propanediol monostearate-----	APD.
2-Hydroxymethyl-2-butene-1,4-diol monopelargonate---	APD.
Lactylated acid esters of glycerol and propylene glycol vegetable oil.	GLD.
Lauric acid esters of glycerol and ethoxylated nonylphenol.	TCC.
Methylglucoside laurate-----	HDG.
Miscellaneous esters of stearic acid-----	EMR.
Mixed polyhydric alcohols triester of tall oil acids.	APD.
Oleic acid esters of ethoxylated nonylphenol-----	EFH.
Polyalkylene glycol adipate-----	NLC.
Polyalkylene glycol dioleate-----	HAL.
Polyalkylene glycol ester-----	CCW.
Polypropylene glycol monoester-----	SOS.
Polypropylene glycol mono-oleate-----	HDG.
Polypropylene glycol monostearate-----	HDG.
Sucrose esters of fatty acids-----	SUG.
All other-----	RTF, STC, WM.
*Ethers:	
*Benzenoid ethers:	
*Alkylphenol - formaldehyde condensates, alkoxyated:	
p-tert-Butylphenol - formaldehyde, alkoxyated----	RTF.
(Mixed alkyl)phenol - formaldehyde, alkoxyated----	NLC.
Nonylphenol - formaldehyde, alkoxyated-----	NLC, RTF.
tert-Octylphenol - formaldehyde, ethoxylated-----	DA, SDW.
All other-----	STP.
p-tert-Butylphenol, ethoxylated-----	RTF.
Derivatives of ethoxylated alkylphenols-----	RH.
Diisobutylphenol, ethoxylated-----	GAF.
Dinonylphenol, ethoxylated-----	GAF, STP, TCH.
*Dodecylphenol, ethoxylated-----	GAF, MON, TCH, TMH, UCC.
Iso-octylphenol, ethoxylated-----	APX, DA, OMC, RH.
(Mixed alkyl)phenol, ethoxylated-----	GAF, NTL.
(Mixed alkyl)phenoxyethyl (ethyleneoxy)ethyl chloride.	GAF.
*Nonylphenol, ethoxylated-----	APD, CGY, DA, GAF, HDG, ICI, JCC, MON, NLC, OMC, RH, RTF, STP, TCH, TMH, UCC.
Nonylphenoxyethyl (ethyleneoxy)ethyl iodide-----	GAF.
n-Octylphenol, ethoxylated-----	TCH.
*Phenol, ethoxylated-----	APD, CLY, DA, GAF, JCC, TCH, UCC.
Styrenated phenol, ethoxylated-----	DA.
Tetradecylphenol, ethoxylated-----	ORO.
Tridecylphenol, ethoxylated-----	TCH.
Xylenol, ethoxylated-----	NLC.
All other-----	SYL, VPC.
*Nonbenzenoid ethers:	
*Linear alcohols, alkoxyated:	
Coconut oil alcohol, ethoxylated-----	GLY.
*Decyl alcohol, ethoxylated-----	GAF, ICI, TCH.
Decyl alcohol, ethoxylated and propoxylated-----	TCH.
Decyl and octyl alcohols, ethoxylated-----	GAF, TCH.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
<i>Nonionic Surface-Active Agents--Continued</i>	
*Ethers--Continued	
*Nonbenzenoid ethers--Continued	
*Linear alcohols, alkoxyated--Continued	
Decyl and octyl alcohols, ethoxylated and propoxylated.	GAF.
Decyloxypoly(ethyleneoxy)ethyl chloride-----	GAF.
Derivative of ethoxylated primary alcohol-----	RH.
*Dodecyl alcohol, ethoxylated-----	AAC, APD, GAF, HDG, PVO, RTF, SNW, UCC.
Dodecyl alcohol, ethoxylated and propoxylated-----	DUP.
Hexadecyl alcohol, ethoxylated-----	AAC, APD, CGY, ICI, VAC.
*Mixed linear alcohols, ethoxylated-----	AAC, CO, GAF, HDG, JCC, MON, RH, SEY, SHC, SNW, STP, SYL, TCH, UCC, WTC.
Mixed linear alcohols, ethoxylated and propoxylated.	JCC, STP, UCC, WYN.
*9-Octadecenyl alcohol, ethoxylated-----	AAC, APD, CGY, CRN, DA, DUP, GAF, GLY, TCH, VPC.
*Octadecyl alcohol, ethoxylated-----	APD, CGY, DA, DUP, GAF, HDG.
Sperm oil alcohol, ethoxylated-----	CRD, DUP.
Tallow alcohol, ethoxylated-----	AAC, OMC.
Tridecyl alcohol, ethoxylated-----	AAC, DUP.
*Other ethers and thioethers:	
*Poly(ethylene and propylene)glycols:	
Poly(mixed ethylene, propylene)glycol-----	NLC, UCC.
Polypropylene glycol, ethoxylated-----	NLC, RTF, VAL, WYN.
tert-Dodecyl mercaptan, ethoxylated-----	AAC, RTF, UCC.
tert-Dodecyl mercaptan, ethoxylated and propoxylated.	AAC.
Glucose, ethoxylated-----	AIP, RH.
Glycerol, alkoxyated-----	NLC.
Glycidyl ether surfactant-----	AAC.
Iso-octyl alcohol, ethoxylated-----	GAF.
Methylglucoside, propoxylated-----	STP.
Mixed alcohols, ethoxylated-----	CRN, PVO.
Polyoxyalkylene glycol-----	NLC.
Rosin, ethoxylated-----	NLC.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated.	AIP.
*Tridecyl alcohol, ethoxylated-----	AAC, APD, GAF, ICI, JCC, MON, NLC, OMC, PVO, RTF, TCH, UCC.
Tridecyl alcohol, propoxylated and ethoxylated----	JCC.
Trimethylheptanol, ethoxylated-----	TCH.
Trimethylnonyl alcohol, ethoxylated-----	HDG, UCC.
Trimethylolpropane, alkoxyated-----	HDG, JCC, RTF, WYN.
All other-----	SNW.
*Other nonionic surface-active agents:	
Dodecylbenzenesulfonic acid - diethanolamine condensate, fatty acid monoester,	ACT.
Octyl phosphate, ethoxylated-----	DUP.
Polyethylene - vinyl alcohol copolymer, potassium salt.	NLC.
Tri(castor oil alkyl)phosphate-----	GLY.
Tris(nonylphenyl)phosphite-----	GAF.
All other-----	AIP.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1971

[Names of manufacturers that reported production or sales of surface-active agents to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

Code	Name of company	Code	Name of company
AAC	Alcolac Chemical Corp.	DA	Diamond Shamrock Corp.
ACE	Acme Chemical Co.	DAN	Dan River, Inc.
ACS	Allied Chemical Corp., Specialty Chemicals Div.	DCP	Dixie Chemical Products, Inc.
ACT	Arthur C. Trask Co.	DEP	DePaul Chemical Co., Inc.
ACY	American Cyanamid Co.	DEX	Dexter Chemical Corp.
AES	Amerace-Esna Corp., Chemical Specialties Div.	DOW	Dow Chemical Co.
AGP	Armour-Dial, Inc.	DSO	DeSoto, Inc.
AIP	Air Products & Chemicals, Inc.	DUP	E. I. duPont de Nemours & Co., Inc.
AKS	Arkansas Co., Inc.	DYS	Davies-Young Co.
APD	ICI America, Inc., Atlas Chemical Div.	ECC	Eastern Color & Chemical Co.
APX	Apex Chemical Co., Inc.	EFH	E. F. Houghton & Co.
ARC	Armak Co.	EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.
ARD	Ardmore Chemical Co.	EMK	Emkay Chemical Co.
ARL	Arol Chemical Products Co.	EMR	Emery Industries, Inc.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.	ENO	Enenco, Inc.
ASY	American Synthetic Rubber Corp.	ESS	Essential Chemicals Corp.
ATR	Atlantic Richfield Co., ARCO Chemical Co.	FIN	Fine Organics, Inc.
AZS	AZS Corp.: AZ Products Co. Div. Lancaster Chemical Co. Div.	GAF	GAF Corp.: Chemical Div. Textile Chemical Div.
BAO	Bayoil Co., Inc.	GLD	SCM Corp., Durkee Famous Foods Div.
BFP	Breddo Food Products Corp.	GLY	Glyco Chemicals, Inc.
BLA	Astor Products, Inc., Blue Arrow Div.	GNM	General Mills Chemicals, Inc.
BLS	Beech-nut, Inc.		W. R. Grace & Co.:
BRD	Lonza, Inc.	GRC	Dubois Chemicals Div.
BSW	Original Bradford Soap Works, Inc.	GRD	Polymer & Chemicals Div.
CCA & CCW	Cincinnati Milacron Chemicals, Inc.	GRL	Chemed Corp., Vestal Laboratories, Inc.
CCL	A. E. Staley Manufacturing Co., Textile Div.	GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
CGY	Ciba-Geigy Corp.: Ciba Agrochemical Co. Ciba Pharmaceutical Co.	GYR	Goodyear Tire & Rubber Co.
CHL	Chemol, Inc.	HAL	C. P. Hall Co. of Illinois
CHP	C. H. Patrick & Co., Inc.	HDG	Hodag Chemical Corp.
CLD	Colloids, Inc.	HEW	Hewitt Soap Co., Inc.
CLI	Clintwood Chemical Co.	HK	Hooker Chemical Corp.
CLY	W. A. Cleary Corp.	HLI	Haag Laboratories, Inc.
CMG	Nyanza, Inc.	HMP	W. R. Grace & Co., Hampshire Chemical Div.
CO	Continental Oil Co.	HNT	Huntington Laboratories, Inc.
COM	Commercial Solvents Corp.	HPC	Hercules, Inc.
CON	Concord Chemical Co., Inc.	HRT	Hart Products Corp.
CP	Colgate-Palmolive Co.	HUM	Kraftco Corp., Humko Products Div.
CPP	Charmin Paper Products Co.	ICI	ICI America, Inc.
CRD	Croda, Inc.	JCC	Jefferson Chemical Co., Inc.
CRN	CPC International, Inc.	JOR	Jordan Chemical Co.
CRT	Crest Chemical Corp.	JRG	Andrew Jergens Co.
CRZ	Crown Zellerbach Corp., Chemical Products Div.	KAL	Kali Manufacturing Co.
CST	Charles S. Tanner Co.	KNG	Far-Best Corp., O. L. King Div.
CTL	Continental Chemical Co.	KNP	Knapp Products, Inc.
CTN	Chemetron Corp., Organic Chemical Div.	LAK	Lakeway Chemical Co.
CWP	Consolidated Papers, Inc.	LEA	Leatex Chemical Co.

SURFACE-ACTIVE AGENTS

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TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

Code	Name of company	Code	Name of company
LEV	Lever Brothers Co.	SEA	Seaboard Chemicals, Inc.
LIL	Eli Lilly & Co.	SEY	Seydel-Woolley & Co.
LKY	Lake States Div. of St. Regis Paper Co.	SFS	Stauffer Chemical Co., Specialty Chemical Div.
LMI	North American Chemical Co.	SHC	Shell Oil Co., Shell Chemical Co. Div.
LUR	Laurel Products Corp.	SHP	Shepherd Chemical Co.
MAL	Mallinckrodt Chemical Works	SID	George F. Siddall Co., Inc.
MAR	American Can Co.	SLC	Soluol Chemical Co., Inc.
MCP	Moretex Chemical Products, Inc.	SLM	Salem Oil & Grease Co.
MIR	Miranol Chemical Co., Inc.	SM	Mobil Chemical Co.
MOA	Mona Industries, Inc.	SNC	Sonoco Products Co.
MON	Monsanto Co.	SNW	Sun Chemical Corp., Chemicals Div.
MRA	Crown-Metro, Inc.	SOC	Standard Oil Co. of California, Chevron Chemical Co.
MRD	Marden-Wild Corp.	SOP	Southern Chemical Products Co.
MRT	Morton Chemical Co.	SOS	Southern Sizing Co.
MRV	Marlowe-Van Loan Corp.	SPA	Scott Paper Co.
MYW	Stepan Chemical Co., Maywood Div.	STC	Sou-Tex Chemical Co., Inc.
NCW	Nostrip Chemical Works, Inc.	STP	Stepan Chemical Co.
NES	Nease Chemical Co., Inc.	SUG	Colonial Sugars Co., Sucro Chemical Div.
NLC	Nalco Chemical Co.	SWT	Swift & Co., Swift Chemical Co. Div.
NMC	National Milling & Chemical Co., Inc.	SYL	Sylvan Chemical Co.
NPR	Safeway Stores, Inc., Brookside Div.	TCC	Tanatex Chemical Corp.
NTL	NL Industries, Inc.	TCH	Trylon Chemical Corp.
NW	Northwestern Chemical Co.		Div. of Emery Industries, Inc.
OMC	Olin Corp.	TCI	Texize Chemicals, Inc.
ONX	Millmaster Onyx Corp., Onyx Chemical Co.	TEN	Cities Service Co., Copperhill Operations
ORO	Chevron Chemical Co.	TMH	Thompson-Hayward Chemical Co.
PC	Procter Chemical Co., Inc.	TNA	Ethyl Corp.
PCH	Peerless Chemical Co.	TNI	Gillette Chemical Co. Div. of Gillette Co.
PEK	Peck's Products Co.	TRC	Toms River Chemical Corp.
PFZ	Pfizer, Inc.	TXC	Tex Chem Co.
PG	Procter & Gamble Co.	TXN	Textilana-Nease, Inc.
PIL	Pilot Chemical Co.	TXT	Textilana Corp.
PLX	Plex Chemical Corp.	UCC	Union Carbide Corp.
PNX	Murphy-Phoenix Co.	UDI	Petrochemicals Co., Inc.
PRX	Purex Corp., Ltd.	UNN	United Chemical Corp. of Norwood
PSP	Georgia-Pacific Corp., Bellingham Div.	UNP	United Chemical Products Corp.
PVO	PVO International, Inc.	USR	Uniroyal, Inc., Chemical Div.
QCP	Quaker Chemical Corp.	UVC	Universal Chemicals Corp.
RAY	ITT Rayonier, Inc.	VAC	Northern Petrochemical Co.
RBC	Fike Chemicals, Inc.	VAL	Valchem
RCD	Richardson Co.	VND	Van Dyk & Co., Inc.
RH	Rohm & Haas Co.	VPC	Baychem Corp., Verona Div.
ROB	Robeco Chemicals, Inc.	WAW	W. A. Wood Co.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
RTC	Ritter Chemical Co., Inc.	WBG	White & Bagley Co.
RTF	Retzlöff Chemical Co.	WHI	White & Hodges, Inc.
S	Sandoz, Inc., Sandoz Colors & Chemical Div.	WHW	Whittemore-Wright Co., Inc.
SBC	Scher Bros., Inc.	WIC	Wica Chemicals, Inc.
SBP	Sugar Beet Products Co.	WM	Wilson Pharmaceutical & Chemical Corp., Wilson-Martin Div.
SCO	Scholler Bros., Inc.	WON	Woonsocket Color & Chemical Co.
SCP	Henkel, Inc.	WSN	Mallinckrodt Chemical Works, Washine Div.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.	WTC	Witco Chemical Co., Inc.
SDH	Sterling Drug, Inc.	WVA	Westvaco Corp., Chemicals Div.
SDW	Hilton-Davis Chemical Co. Div.	WYN	Polychemicals Dept.
	Winthrop Laboratories Div.		BASF-Wyandotte Chemicals Corp.

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

SYNTHETIC ORGANIC CHEMICALS, 1971

PESTICIDES AND RELATED PRODUCTS

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

U.S. production of pesticides and related products in 1971 amounted to 1,136 million pounds--9.8 percent greater than the 1,034 million pounds reported for 1970 (table 1) ^{1/}. Sales in 1971 were 946 million pounds, valued at \$979 million, compared with 881 million pounds, valued at \$870 million in 1970.

The output of cyclic pesticides and related products amounted to 828 million pounds in 1971--about 13.8 percent greater than the 727 million pounds produced in 1970. Sales in 1971 were 669 million pounds, valued at \$819 million, compared with 602 million pounds, valued at \$702 million in 1970. Production of acyclic pesticides and related products, increased slightly in 1971, amounting to 308 million pounds, compared with the 307 million pounds reported for 1970. Sales in 1971 were 277 million pounds, a decrease of about 0.7 percent as compared to 279 million pounds in 1970; the value of sales was \$160 million in 1971, compared with \$169 million in 1970--a decrease of 5 percent.

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

PESTICIDES AND RELATED PRODUCTS

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TABLE 1.--PESTICIDES AND RELATED PRODUCTS: U.S. PRODUCTION AND SALES, 1971

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

Product	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
Grand total-----	1,135,717	946,337	979,083	\$1.03
Benzenoid-----	648,521	544,829	606,132	1.11
Nonbenzenoid-----	487,196	401,508	372,951	.93
PESTICIDES AND RELATED PRODUCTS, CYCLIC				
Total-----	827,590	669,143	819,028	1.22
Fungicides, total-----	110,038	92,749	49,538	.53
Mercury fungicides, total-----	938	880	3,460	3.93
Phenylmercuric acetate (PMA)-----	337	256	1,242	4.85
Phenylmercuric oleate-----	259	254	714	2.81
Other mercury fungicides-----	342	370	1,504	4.06
Naphthenic acid, copper salt-----	1,695	1,849	560	.30
Pentachlorophenol (PCP)-----	50,877	48,140	6,898	.14
All other cyclic fungicides ² -----	56,528	41,880	38,620	.92
Herbicides and plant hormones, total-----	378,256	266,843	525,892	1.97
1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH)-----	...	3,960	5,903	1.49
Phenoxyacetic acid derivatives:				
2,4-Dichlorophenoxyacetic acid (2,4-D)-----	...	12,387	3,326	.27
2,4-Dichlorophenoxyacetic acid esters and salts, total-----	...	41,125	14,311	.35
2,4-Dichlorophenoxyacetic acid, dimethylamine salt-----	19,823	22,278	7,628	.34
2,4-Dichlorophenoxyacetic acid, iso-octyl ester-----	...	6,508	2,717	.42
All other (2,4-D) esters and salts-----	...	12,339	3,966	.32
2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester-----	...	3,692	2,492	.67
All other cyclic herbicides and plant hormones ³ -----	358,433	205,679	499,860	2.43
Insecticides and rodenticides, total-----	339,296	309,551	243,598	.79
Aldrin-toxaphene group ⁴ -----	116,264	112,708	55,726	.49
Organophosphorus insecticides, total-----	73,966	84,661	79,182	.94
O,O-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion)-----	37,226	46,354	18,806	.41
All other organophosphorus insecticides ⁵ -----	36,740	38,307	60,376	1.58
All other insecticides and rodenticides ⁶ -----	149,066	112,182	108,690	.97
PESTICIDES AND RELATED PRODUCTS, ACYCLIC				
Total-----	308,127	277,194	160,055	.58
Fungicides, total-----	39,457	39,578	24,038	.61
Dithiocarbamic acid salts ⁷ -----	35,110	34,335	17,168	.50
All other acyclic fungicides ⁸ -----	4,347	5,243	6,870	1.31
Herbicides and plant hormones, total-----	50,256	49,819	36,610	.73
Methanearsonic acid salts ⁹ -----	24,476	18,777	6,547	.35
All other acyclic herbicides ¹⁰ -----	25,780	31,042	30,063	.97

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--PESTICIDES AND RELATED PRODUCTS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Product	Production	Sales		
		Quantity	Value	Unit value ¹
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Insecticides, rodenticides, and soil conditioners and fumigants, total-----	218,414	187,797	99,407	\$0.53
Methyl bromide (Bromoethane)-----	...	24,100	9,634	.40
Organophosphorus insecticides ¹¹ -----	64,219	...	...	...
All other acyclic insecticides (including sales of acyclic organophosphorus insecticides), rodenticides, and soil conditioners and fumigants ^{12 13} -----	154,195	163,697	89,773	.55

¹ Calculated from rounded figures.

² Includes benomyl, captafol, captan, dinocap, DMTT, folpet, pentachloronitrobenzene, 8-quinolinol, 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, 2,4-D (production only), other 2,4-D esters and salts (production only), dicamba, dimethylurea compounds, dinitrophenol compounds, endothall, isopropyl phenylcarbamates (IPC and CIPC), MCPA, MH (production only), mollinate, NPA picloram, propanil, silvex and its esters, 2,4,5-T acid, esters and salts (iso-octyl ester, production only) triazines, trifluralin, uracils, and others.

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

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

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

⁷ Includes ferbam, maneb, nabam, 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.

¹² Includes DBCP, soil conditioners and fumigants, metaldehyde (which is a molluscicide), methyl bromide (production only), 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.--Does not include data for the insect fumigant, p-dichlorobenzene nor the fungicide, o-phenylphenol. These data are included in cyclic intermediates.

PESTICIDES AND RELATED PRODUCTS

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971

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

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC	
*Fungicides:	
2-Benzothiazolethiol, zinc salt-----	VNC.
Benzylbromo acetate-----	MRK.
2,6-Bis(dimethylaminomethyl)cyclohexanone-----	MRK.
2'-Bromo-4'-hydroxyacetophenone-----	BKM.
5-Chloro-2-benzothiazolethiol, laurylpyridinium salt----	VNC.
Cyanomethylthiobenzothiazole-----	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).	BKM, MRK, OTC, WRC.
Diphenylammonium propionate-----	MRK.
5-Ethoxy-3-trichloromethyl-1,2,4-thiadiazole-----	OMC.
Hexahydro-1,3,5-tris(2-hydroxyethyl)-S-triazine-----	EFH.
2-Mercaptobenzothiazole, monoethanolamine salt-----	VNC.
*Mercury fungicides:	
Methylmercury quinolinolate-----	MRK.
*Phenylmercuric acetate (PMA)-----	CLY, MRK, TRO, WRC.
Phenylmercuric ammonium acetate-----	MAL, TRO.
Phenylmercuric dimethyldithiocarbamate-----	WRC.
Phenylmercuric hydroxide-----	MRK.
Phenylmercuric lactate-----	WRC.
*Phenylmercuric oleate-----	CLY, HN, TRO, WRC.
Phenylmercuric propionate-----	MRK.
All other mercury fungicides-----	MAL.
Methyl-N-benzimidazol-2-yl-N-(butylcarbomoyl) car- bamate (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, HN, MCI, SHP, VAL, WTC.
Pentachloronitrobenzene (PCNB)-----	OMC.
*Pentachlorophenol (PCP)-----	DOW, FRO, MON, RCI, SFD.
Pentachlorophenol, sodium salt-----	DOW, MON, RCI.
8-Quinololinol (8-Hydroxyquinoline), copper salt-----	FIS, HN, MRK.
Tetrachloro-p-benzoquinone (Chloranil)-----	GAF.
N-(1,1,2,1-Tetrachloro-ethylsulfenyl)-cis-Δ-4-cyclo- hexene-1,2-dicarboximide (Captafol).	ORO.
2,4,5,6-Tetrachloroisophthalonitrile-----	DA.
2,3,4,6-Tetrachlorophenol-----	DOW.
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan).	SFA, SFC.
N-Trichloromethylthiophthalimide (Folpet)-----	SFC.
2,4,5-Trichlorophenol acid and salts:	
2,4,5-Trichlorophenol-----	DOW, HK.
2,4,5-Trichlorophenol, ethanolamine salt-----	GAF.
2,4,5-Trichlorophenol, sodium salt-----	DOW.
2,4,6-Trichlorophenol-----	DOW, GAF.
*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 (Terbacil)-----	DUP.
N-Butyl-N-ethyl-α,α,α-trifluoro-2,6-dinitro-p-toluidine (Benefin).	LIL.
2-Butynyl-4-chloro-m-chlorocarbaniolate (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, 1971--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-(n-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.
2,5-Dichloro-3-aminobenzoic acid, ammonium salt-----	AMC, GAF.
2,5-Dichloro-3-aminobenzoic acid, methyl ester-----	GAF.
2,5-Dichloro-3-aminobenzoic acid, sodium salt-----	GAF.
3,6-Dichloro-2-anisic acid (Dicamba)-----	VEL.
2,4-Dichlorobenzyltributylphosphonium chloride-----	SM.
2,5-Dichloro-6-nitrobenzoic acid, sodium 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 (Nitrofen)-----	RH.
3',4'-Dichloropropionanilide (Propanil)-----	MON, RH.
*1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH)--	ACY, ASL, CHF, FMT, USR.
N-(beta-0,0-Diisopropyl-dithiophosphorylethyl)benzene sulfonamide (Bensulide).	SFA.
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)-----	CWN, UPJ.
1,1-Dimethyl-3-phenylurea (Fenuron)-----	DUP.
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)-----	DA.
Dinitrobutylphenol (DNBP)-----	DOW, EGR, FMN.
Dinitrobutylphenol, ammonium salt-----	DOW, FMN.
Dinitrobutylphenol, 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 hexahydro-1H-azepine-1-carbothioate (Molinate)---	SFA.
Gibberellic acid-----	ABB, MRK.
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 (Nitratin).	SHC.
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetamide-----	AMC.
1-Naphthaleneacetic acid (NAA)-----	AMC.
1-Naphthaleneacetic acid, sodium salt-----	AMC, BKL.
N-1-Naphthylphthalamic acid (NPA)-----	USR.
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, di- sodium salt (Endothall).	PAS.
Phenoxyacetic acid derivatives:	
4-Chloro-2-methylphenoxyacetic acid (MCPA)-----	CLY, RDA.
3,5-Dibromo-4-hydroxybenzonitrile (Bromoxynil)-----	SDC.
*2,4-Dichlorophenoxyacetic acid (2,4-D)-----	DOW, MON, RDA.
*2,4-Dichlorophenoxyacetic acid esters and salts:	
2,4-Dichlorophenoxyacetic acid, 2-butoxyethyl ester--	DOW, RIV.
2,4-Dichlorophenoxyacetic acid, butoxypolypropylene- glycol ester.	DOW.
2,4-Dichlorophenoxyacetic acid, n-butyl ester-----	MON, PBI, RIV.
2,4-Dichlorophenoxyacetic acid, sec-butyl ester-----	DOW, MON, RDA.
*2,4-Dichlorophenoxyacetic acid, dimethylamine salt---	DOW, PBI, RDA, RIV, TMH.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--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--Continued	
2,4-Dichlorophenoxyacetic acid, ethanolamine and isopropanolamine salt.	DOW.
*2,4-Dichlorophenoxyacetic acid, iso-octyl ester-----	DOW, MON, PBI, RDA, RIV, TMH.
2,4-Dichlorophenoxyacetic acid, isopropyl ester-----	DOW, MON.
2,4-Dichlorophenoxyacetic acid, lithium salt-----	GTH.
2,4-Dichlorophenoxyacetic acid, sodium salt-----	DOW, RIV.
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)-----	DOW, MON.
2,4,5-Trichlorophenoxyacetic acid esters and salts:	
2,4,5-Trichlorophenoxyacetic acid, 2-butoxyethyl ester.	DOW.
2,4,5-Trichlorophenoxyacetic acid, butoxypolypropyleneglycol ester.	DOW.
2,4,5-Trichlorophenoxyacetic acid, n-butyl ester----	MON, PBI.
2,4,5-Trichlorophenoxyacetic acid, sec-butyl ester--	DOW.
*2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester--	DOW, MON, RIV, TMH.
2,4,5-Trichlorophenoxyacetic acid, triethylamine salt.	DOW, RIV.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclopentadiene) isomers.	VEL.
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)-----	DOW, TMH.
2-(2,4,5-Trichlorophenoxy)propionic acid esters and salts:	
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-butoxyethyl ester.	RIV.
2-(2,4,5-Trichlorophenoxy)propionic acid iso-octyl ester.	RIV.
α,α,α -Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin).	LIL.
3-(m-Trifluoromethylphenyl)-1,1-dimethylurea (Fluometuron).	CGY.
All other cyclic herbicides-----	CWN.
Insect attractants and repellents:	
tert-Butyl 4(or 5)-chloro-2-methylcyclohexanecarboxylate (Trimedlure).	UOP.
N,N-Diethyltoluamide (DEET)-----	HPC, PFZ.
Di-n-propylisocinchomeronate-----	MGK.
*Insecticides:	
3-sec-Amylphenyl-N-methylcarbamate-----	x.
Bacillus thuringiensis-----	ABB, IMC.
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-dimethanonaphthalene (Endrin).	VEL.
Hexachloro-epoxy-octahydro-endo-exo-dimethanonaphthalene (Dieldrin).	SHC.
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.
α -Bis(p-chlorophenyl) β,β,β -trichloroethane (DDT)-----	LEB, MTO.
Chlorobenzilate-----	CGY.
o-Chlorophenyl-N-methylcarbamate-----	OTC.
p-Chlorophenyl 2,4,5-trichlorophenyl sulfone (Tetradifon).	FMN.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Insecticides--Continued	
Chlorinated insecticides--Continued	
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta-[cd] pentalen-2-one (Kepone).	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.
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 methyl- carbamate (Carbofuran).	FMN.
m-(1-Ethylpropyl)phenyl methylcarbamate-----	ORO.
O-Isopropylphenyl N-methylcarbamate-----	OTC.
m-(1-Methylbutyl)phenyl methylcarbamate-----	ORO.
1-Naphthyl N-methylcarbamate (Carbaryl)-----	UCC.
*Organophosphorus insecticides:	
4-tert-Butyl-2-chlorophenylmethyl methylphos- phoramidite.	DOW.
S-[[p-(Chlorophenyl)thio]methyl] O,O-diethyl phos- phorodithioate (Carbophenothion).	SFA.
O,O-Diethyl O-3-chloro-4-methyl-1-oxo-2H-1-benzo- pyran-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] phosphoro- thioate (Fensulfothion).	CHG.
O,O-Diethyl O-p-nitrophenyl phosphorothioate (Parathion).	AMP, MON, SFA, SHC.
O,O-Diethyl O-3,5,6-trichloro-2 pyridyl phosphoro- thioate.	DOW.
O,O-Dimethyl O-[4-(methylthio)-m-tolyl]phosphoro- thioate (Fenthion).	CHG.
*O,O-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion).	AMP, MON, SFA, VEL.
O,O-Dimethyl S-[4-oxo-1,2,3-benzotriazin-3(4H)- ylmethyl] phosphorodithioate (Azinphosmethyl).	CHG.
O,O-Dimethyl S-phthalimidomethyl phosphorodithioate--	SFA.
Dimethyl 2,4,5-trichlorophenyl phosphorothionate (Ronnell).	DOW.
2,3-p-Dioxane S,S-bis(O,O-diethylphosphorodithioate) (Dioxathion).	HPC.
O-Ethyl-S-phenyl-ethylphosphonodithioate (Dyphonate).	SFA.
α -Methylbenzyl 3-(dimethoxyphosphinyloxy)-cis- crotonate.	SHC.
All other organophosphorus insecticides-----	ACY, SHC, VEL.
N-(Phenyl-2-nitropropyl)piperidine-----	MRK.
m-Tolyl-N-methylcarbamate-----	OTC.
All other cyclic insecticides-----	OTC, PM.
Nematocides:	
O,O-Diethyl O-(2,4-dichlorophenyl) phosphorothioate (Dichlofenthion).	SM.
O,O-Diethyl O-2-pyrazinyl phosphorothioate (Thionazin)-	ACY.

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TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Rodenticides:	
3-(α -Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)-----	MOT, PEN.
2-Diphenylacetyl-1,3-indandione and sodium salt (Diphacinone).	NES.
2-Pivaloyl-1,3-indandione (Pindone)-----	MOT, PIC.
Synergists and adjuvants:	
α -[2-(2-m-Butoxyethoxy)-ethoxy]-4,5-methylenedioxy-2- propyltoluene (Piperonyl butoxide).	ALP, BKL, FMN, FMP.
N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3-di- carboximide.	MGK.
1,2-Methylenedioxy-4-[2-(octylsulfinyl)propyl]benzene--	PEN.
Piperonal bis[2-(2'-n-butoxyethoxy)ethyl]acetal (Heliotropin acetal).	MGK.
All other cyclic pesticides and related products-----	CHG.
PESTICIDES AND RELATED PRODUCTS, ACYCLIC	
*Fungicides:	
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)---	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)-	FMN, RH.
n-Dodecylguanidine acetate (Dodine)-----	ACY.
Dodecylguanidine hydrochloride-----	MRK.
2-Hydroxypropylmethanethio sulfonate-----	BKM.
Mercury fungicides:	
Chloromethoxypropylmercuric acetate-----	TRO.
Methylmercuric hydroxide-----	MRT.
Methylene bis(thiocyanate)-----	MRK.
Polyethylenethiuram disulfide (PETD)-----	FMN.
*Herbicides and plant hormones:	
2-Chloroallyl diethyldithiocarbamate (CDEC)-----	MON.
2-Chloro-N,N-diallylacetamide (CDAA)-----	MON.
(2-Chloroethyl)phosphonic acid-----	GAF.
S-2,3-Dichloroallyl diisopropylthiolcarbamate (Diallate).	MON.
2,2-Dichloropropionic acid, sodium salt (Dalapon)-----	DOW.
N-Dimethylamino succinamic acid (DMSA)-----	USR.
Dimethylarsinic acid (Cacodylic acid)-----	ASL.
S-Ethyl N,N-dipropylthiolcarbamate (EPTC)-----	SFA.
Ethyl xanthogen disulfide (EXD)-----	RBC.
*Methanearsonic acid, disodium salt (DSMA)-----	ASL, CLY, DA, VIN.
*Methanearsonic acid, dodecyl- and octylammonium salts--	CLY, VIN.
*Methanearsonic acid, monosodium salt (MSMA)-----	ASL, DA.
S-Propyl dipropylthiocarbamate (Vernolate)-----	SFA.
S,S,S-Tributyl phosphorotrithioate-----	CHG.
Tributyl phosphorotrithioate-----	SM.
Trichloroacetic acid, sodium salt (TCA)-----	DOW.
S-2,2,3-Trichloroallyl diisopropylthiolcarbamate (Triallate).	MON.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Insecticides:	
2-(2-Butoxyethoxy)ethyl thiocyanate-----	RH.
Metalddehyde-----	COM.
S-Methyl N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl).	DUP.
*Organophosphorus insecticides:	
S-[1,2-Bis(ethoxycarbonyl)ethyl] O,O-dimethyl phos- phorodithioate (Malathion).	ACY.
2-Carbomethoxy-1-propen-2yl dimethyl phosphate (Mevinphos).	SHC.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled).	SHC.
O,O-Diethyl S-2-(ethylthio)ethyl phosphorodithioate (Disulfoton).	CHG.
O,O-Diethyl O-2-(ethylthio)ethyl phosphorothioate (Demeton O).	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 (Di- chlorvos).	SHC.
O,O-Dimethyl S-[2-(ethylsulfinyl)ethyl]phosphoro- thioate (Oxydemetonmethyl).	CHG.
O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphoro- dithioate (Dimethoate).	ACY.
Dimethyl phosphate of 3-hydroxy-N-methyl-cis- crotonamide (Monocrotophos).	SHC.
O,S-Dimethyl phosphoramidothioate-----	CHG.
O,O,O',O'-Tetraethyl S,S'-methylene bisphosphoro- dithioate (Ethion).	FMN, FMP.
Tetraethyl pyrophosphate (TEPP)-----	AMP.
O,O,O,O-Tetra-n-propyl dithiopyrophosphate-----	SFA.
2-Thiocyanoethyl dodecanoate-----	RH.
All other-----	BFG.
Nematocides:	
O-Ethyl S,S-dipropyl phosphorodithioate-----	SM.
2-Methyl-2(methylthio)propionaldehyde O-(methylcarba- moyl)oxime (Aldicarb).	UCC.
Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium salt-----	ACY.
Soil fumigants:	
1,2-Dibromo-3-chloropropane (DBCP)-----	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.
All other acyclic pesticides and related products-----	GAF, TRO.

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TABLE 3.--PESTICIDES AND RELATED PRODUCTS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers of pesticides and related products that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

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

MISCELLANEOUS CHEMICALS

The term miscellaneous chemicals comprises those synthetic organic products that are not included in the use groups covered by the other preliminary reports in the 1971 series. They include products that are employed in a great variety of uses. The number of chemicals used exclusively for only one purpose is not large. Among the products covered are those used for gasoline and lubricating oil additives, paint driers, photographic chemicals, tanning materials, flotation reagents, refrigerants, textile polymers, sequestering agents, organic fertilizers, anti-freeze chemicals, solvents, and acyclic intermediates. 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 1971 totaled 79.5 billion pounds, or 0.3 percent more than the output of 79.3 billion pounds reported for 1970. Sales of miscellaneous chemicals in 1971 amounted to 38.4 billion pounds, valued at \$4.1 billion, compared with 36.0 billion pounds, also valued at \$4.1 billion, in 1970.

The total output of miscellaneous cyclic chemicals in 1971 was 2.2 billion pounds, or 27.8 percent more than the output of 1.7 billion pounds reported for 1970. Sales in 1971 totaled 1.0 billion pounds, valued at \$379 million, compared with 749 million pounds, valued at \$310 million, in 1970. In 1971 the most important groups of cyclic compounds were the lubricating oil additives, the output of which was 370 million pounds, and synthetic tanning materials, the output of which was 50 million pounds.

Total production of miscellaneous acyclic chemicals in 1971 was 77.3 billion pounds, or 0.3 percent less than the output of 77.6 billion pounds reported for 1970. Sales in 1971 totaled 37.3 billion pounds, valued at \$3.8 billion, compared with 35.2 billion pounds, also valued at \$3.8 billion, in 1970. 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 1971, 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 18.9 billion pounds. The most important chemicals in this group were dichloroethane (production of 7.6 billion pounds in 1971 compared with

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

7.5 billion pounds in 1970) and vinyl chloride (4.3 billion pounds compared with 4.0 billion pounds). Output of nitrogenous compounds totaled 13.5 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 both 1971 and 1970.

Monohydric alcohols, which are used largely as solvents and intermediates, were the third largest group in 1971, with production of 10.7 billion pounds. The most important items in the group in terms of production were synthetic methanol (4.9 billion pounds in both 1971 and 1970), synthetic ethyl alcohol (1.6 billion pounds in 1971, compared with 2.0 billion pounds in 1970) and isopropyl alcohol (1.7 billion pounds in 1971, compared with 1.9 billion pounds in 1970). Aldehydes and ketones, which are also used largely as solvents and intermediates, were the next largest group with production of 9.6 billion pounds. The most important items in this group in 1971 were formaldehyde (4.5 billion pounds), acetaldehyde (1.5 billion pounds), and acetone (1.5 billion pounds).

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971

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

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total-----	79,459,602	38,366,727	4,147,680	\$0.11
MISCELLANEOUS CHEMICALS, CYCLIC				
Total-----	2,178,332	1,032,535	379,093	.37
Benzoic acid, sodium salt-----	11,324	10,768	3,319	.31
Benzoyl peroxide-----	6,752	6,374	5,985	.94
Butyl benzoate-----	3,554	2,241	406	.18
tert-Butyl peroxybenzoate-----	1,219	1,272	1,563	1.23
2,6-Di-tert-butyl-p-cresol:				
Food grade-----	6,907	6,239	3,304	.53
Tech-----	16,858	15,832	7,817	.49
Dioxane (1,4-Diethylene oxide)-----	...	6,099	2,144	.35
Enzymes-----	(2)	(2)	22,466	...
4-Ethylmorpholine-----	1,160	1,357	1,043	.77
Flotation reagents-----	15,063	13,536	1,917	.14
Gasoline additives ³ -----	41,533	35,196	20,533	.58
Hexamethylenetetramine, tech-----	47,411	21,474	2,827	.13
p-Hydroxybenzoic acid esters:				
Methyl p-hydroxybenzoate (Methylparaben)-----	763	808	1,246	1.54
Propyl p-hydroxybenzoate (Propylparaben)-----	245	297	557	1.88
Lubricating oil and grease additives, total-----	369,721	230,446	52,139	.23
Oil-soluble petroleum sulfonates, total-----	257,749	...	...	...
Oil-soluble petroleum sulfonates, calcium salt-----	155,850	...	...	...
Oil-soluble petroleum sulfonates, sodium salt-----	64,844	65,327	9,819	.15
All other-----	37,055	...	...	...
Phenol salts-----	95,210	...	...	...
All other lubricating oil and grease additives-----	16,762	165,119	42,320	.26
Morpholine-----	...	19,761	6,629	.34
Naphthenic acid salts, total ^{4 5} -----	21,762	20,837	5,505	.26
Calcium naphthenate-----	1,610	1,588	445	.28
Cobalt naphthenate-----	2,609	2,883	1,508	.52
Lead naphthenate-----	12,082	11,227	2,042	.18
Manganese naphthenate-----	1,649	1,568	418	.27
Zinc naphthenate-----	1,247	...	...	...
All other-----	2,565	3,571	1,092	.31
Photographic chemicals:				
2,5-Diethoxy-4-morpholinobenzenediazonium chloride-----	128	109	568	5.21
p-Diethylaminobenzenediazonium chloride-----	85	85	169	1.99
N,N-Diethyltoluene-2,5-diamine, monohydrochloride-----	390	441	1,422	3.22
p-Dimethylaminobenzenediazonium chloride-----	55	55	123	2.24
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride-----	18	18	53	2.94
p-[(2-Hydroxyethyl)methylamino]benzenediazonium chloride-----	8	8	30	3.75
Pinene, (α- and β-)-----	83,969	51,258	7,477	.15
Polyethylene terephthalate-----	918,607	...	...	...

See footnotes at end of table.

MISCELLANEOUS CHEMICALS

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 dollars</i>	<i>Per pound</i>
MISCELLANEOUS CHEMICALS, CYCLIC--Continued				
Tall oil salts, total ⁴ -----	9,793	9,874	2,252	\$0.23
Cobalt tallate-----	1,541	1,550	687	.44
Lead tallate-----	2,603	2,765	529	.19
All other-----	5,649	5,559	1,036	.19
Tanning materials, synthetic-----	50,259	47,017	9,993	.21
Textile chemicals-----	2,643	1,559	1,288	.83
All other miscellaneous cyclic chemicals-----	568,105	529,574	216,318	.41
MISCELLANEOUS CHEMICALS, ACYCLIC				
Total-----	77,281,270	37,334,192	3,768,587	.10
<i>Cellulose Esters and Ethers</i>				
Total-----	997,291	193,265	78,306	.41
Cellulose esters-----	877,407	...	...	...
Cellulose ethers, total-----	119,884	...	...	...
Sodium carboxymethylcellulose, 100%-----	65,637	66,622	29,261	.44
All other ⁶ -----	54,247	...	...	...
<i>Lubricating Oil Additives</i>				
Total-----	472,512	156,462	30,812	.20
Phosphorothioates (Thiophosphates)-----	104,332	25,288	8,432	.33
Sulfur compounds, total-----	59,403	11,290	1,853	.16
Sulfurized lard oil-----	7,905	7,547	615	.08
All other-----	51,498	3,743	1,238	.33
All other-----	308,707	120,740	20,854	.17
<i>Nitrogenous Compounds</i>				
Total ⁷ -----	13,485,241	7,929,415	708,386	.09
Acrylonitrile-----	978,897	429,153	44,364	.10
Amines, total-----	1,101,729	317,167	66,217	.21
Butylamines, total-----	15,916	11,056	3,796	.34
Di-n-butylamine-----	...	2,705	755	.28
All other-----	15,916	8,351	3,041	.36
Diethylenetriamine-----	26,235	23,680	7,622	.32
Ethylamines:				
Diethylamine-----	10,491	6,183	1,119	.18
Ethylamine, mono- -----	43,687	...	...	...
Triethylamine-----	9,629	7,258	2,061	.28
Ethylenediamine-----	56,565	44,365	8,693	.20
1,6-Hexanediamine (Hexamethylenediamine)-----	709,484	...	...	...
Methylamines:				
Dimethylamine-----	82,720	40,965	4,051	.10
Methylamine, mono- -----	35,463	25,410	2,149	.08
Trimethylamine-----	26,224	20,638	1,999	.10
Propylamines:				
Diisopropylamine-----	...	638	140	.22
Di-n-propylamine-----	...	7,814	1,873	.24
Propylamine, mono- -----	...	257	171	.67
Tetraethylenepentamine-----	13,295	13,514	6,443	.48
Triethylenetetramine-----	13,150	11,196	3,952	.35
All other-----	58,870	104,193	22,148	.21

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Nitrogenous Compounds--Continued</i>				
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)----	8,804	6,424	2,369	\$0.37
1,1'-Azobisformamide-----	...	4,535	4,509	.99
Caprolactam-----	574,652	523,786	92,000	.18
2-Dimethylaminoethanol-----	2,735	2,227	1,027	.46
Erucamide-----	2,844	2,722	2,668	.98
Ethanolamines, total-----	259,216	227,339	26,037	.11
2-Aminoethanol (Monoethanolamine)-----	83,262	74,855	8,028	.11
2,2'-Iminodiethanol (Diethanolamine)-----	89,648	72,432	7,373	.10
2,2',2''-Nitrilotriethanol (Triethanolamine)-----	86,306	80,052	10,636	.13
Hexamethylenediammonium adipate (Nylon salt)-----	570,594	...	...	...
Nitriloacids and salts, total-----	92,365	62,819	18,927	.30
(Diethylenetrinitrilo)pentaaacetic acid, pentasodium salt-----	3,471	3,155	911	.29
(Ethylenedinitrilo)tetraacetic acid-----	7,597	2,174	1,227	.56
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate-----	2,395	2,019	749	.37
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt--	44,727	31,518	8,632	.27
(N-Hydroxyethylethylenedinitrilo)triacetic acid, tri-sodium salt-----	6,383	...	...	...
All other-----	27,792	23,953	7,408	.31
Pentaerythritol tetranitrate-----	4,610	3,617	3,060	.85
Polyacrylamide-----	8,391	3,385	3,369	1.00
Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2)-----	17,840	17,666	5,020	.28
Urea in compounds or mixtures (100% basis), total -----	⁸ 6,249,727	5,839,523	⁹ 165,844	.03
In feed compounds-----	546,502	594,175	15,591	.03
In liquid fertilizer-----	2,605,899	2,439,567	69,033	.03
In solid fertilizer-----	2,100,346	2,282,109	60,033	.03
All other-----	996,980	523,672	21,187	.04
All other nitrogenous compounds-----	3,612,837	489,052	272,975	.56
<i>Acids, Acyl Halides and Anhydrides</i>				
Total-----	5,891,971	1,257,751	188,561	.14
Acetic acid, synthetic, 100%-----	1,956,085	367,620	20,988	.06
Acetic anhydride, 100%-----	1,512,929	150,460	14,081	.09
Acrylic acid-----	102,495	27,609	5,830	.21
Adipic acid-----	1,306,050	133,991	19,707	.15
Fumaric acid-----	43,741	36,423	7,272	.20
Gluconic acid, technical-----	3,217	2,973	722	.24
Lauroyl chloride-----	4,311	464	234	.50
Maleic anhydride-----	228,712	151,742	22,356	.15
Palmitoyl chloride-----	185	94	82	.87
Polyacrylic acid-----	1,047	999	615	.62
Propionic acid-----	48,551	27,924	2,440	.09
All other acids, acyl halides and anhydrides-----	684,648	357,452	94,234	.26
<i>Salts of Organic Acids</i>				
Total-----	305,360	262,464	91,912	.35
Acetic acid salts, total-----	30,245	27,917	6,574	.24
Barium acetate-----	...	12	9	1.33
Copper acetate-----	147	193	188	.97
Potassium acetate-----	6,939	...	...	...

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Salts of Organic Acids--Continued</i>				
Acetic acid salts--Continued				
Sodium acetate-----	18,087	16,400	2,940	\$0.18
Zinc acetate-----	333	437	162	.37
Zirconium acetate-----	188	190	74	.39
All other-----	4,433	10,620	3,201	.30
2-Ethylhexanoic acid (α -Ethylcaproic acid) salts, total--	18,099	16,783	5,413	.32
Calcium 2-ethylhexanoate-----	1,013	478	208	.44
Cobalt 2-ethylhexanoate-----	1,490	915	738	.81
Lead 2-ethylhexanoate-----	454	344	109	.32
Manganese 2-ethylhexanoate-----	223	234	80	.34
Zinc 2-ethylhexanoate-----	859	788	408	.52
All other-----	14,060	14,024	3,870	.28
Gluconic acid, sodium salt-----	11,829	11,273	3,219	.29
Lactic acid salts-----	1,482	1,239	536	.43
Mercaptoacetic (Thioglycolic) acid salts-----	2,315	2,255	3,120	1.38
Octanoic (Caprylic) acid salts-----	1,535	1,131	1,258	1.11
Oleic acid salts-----	933	763	450	.60
Polyacrylic acid salts-----	5,042	6,191	7,402	1.20
Propionic acid salts:				
Calcium propionate-----	18,885	14,264	3,155	.22
Sodium propionate-----	4,404	3,647	805	.22
Stearic acid salts, total ¹⁰ -----	54,566	48,053	18,656	.39
Aluminum stearates, total-----	3,068	3,307	1,400	.42
Aluminum distearate-----	2,023	2,214	910	.41
Aluminum monostearate and tristearate-----	1,045	1,093	490	.45
Ammonium stearate-----	459	472	83	.18
Barium stearate-----	300	316	125	.40
Cadmium stearate-----	55	57	61	1.07
Calcium stearate-----	26,879	24,926	9,114	.37
Lithium stearate-----	745	750	397	.53
Magnesium stearate-----	3,848	3,708	1,603	.43
Zinc stearate-----	13,596	13,528	5,362	.40
All other-----	5,616	989	511	.52
Xanthic acid salts-----	39,776	38,033	8,011	.21
All other salts of organic acids-----	116,249	90,915	33,313	.37
<i>Aldehydes and Ketones</i>				
Total-----	9,608,425	3,903,776	198,010	.05
Acetaldehyde-----	1,490,279	...	...	...
Acetone, total-----	1,538,322	1,098,983	43,346	.04
From cumene-----	806,714	632,496	23,120	.04
All other-----	731,608	466,487	20,226	.04
2-Butanone (Methyl ethyl ketone)-----	483,790	471,760	39,928	.08
Butyraldehyde-----	277,384	...	...	...
Formaldehyde (37% by weight)-----	4,521,577	1,366,661	30,477	.02
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)-----	...	37,678	4,586	.12
4-Methyl-2-pentanone (Methyl isobutyl ketone)-----	191,813	157,341	17,716	.11
All other aldehydes and ketones-----	1,105,260	771,353	61,957	.08

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

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TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Alcohols, Monohydric, Unsubstituted				
Total-----	10,717,647	5,907,477	304,286	\$0.05
Alcohols, C ₉ or lower, unmixed, total-----	9,935,483	5,345,024	229,612	.04
Butyl alcohols:				
n-Butyl alcohol (n-Propylcarbinol)-----	465,874	304,091	22,443	.07
Isobutyl alcohol (Isopropylcarbinol)-----	105,857	111,754	6,089	.05
Ethyl alcohol, synthetic ¹¹ -----	1,629,886	1,017,802	60,559	.06
2-Ethyl-1-hexanol-----	286,966	161,711	13,119	.08
Hexyl alcohol-----	12,593	8,224	712	.09
Iso-octyl alcohols-----	82,498	55,385	4,886	.09
Isopropyl alcohol-----	1,673,885	844,118	48,633	.06
Methanol, synthetic-----	4,949,904	2,538,725	50,201	.02
1-(and 2-)Octanol-----	16,053	7,325	1,319	.18
Propyl alcohol (Propanol)-----	64,633	82,538	7,729	.09
All other-----	647,334	213,351	13,922	.07
Alcohols, C ₁₀ and higher, unmixed, total-----	169,494	91,820	14,885	.16
1-Hexadecanol and other hexadecyl alcohols-----	5,965	7,349	2,034	.28
Isodecyl alcohol-----	106,881	35,218	3,026	.09
Stearyl and other octadecyl alcohols-----	13,921	10,208	3,211	.31
All other-----	42,727	39,045	6,614	.17
Mixtures of alcohols, total-----	612,670	470,633	59,789	.13
C ₉ and lower, only-----	51,053	42,666	5,514	.13
C ₁₀ and higher, only-----	484,430	346,768	46,530	.13
C ₆ to C ₁₂ and others ¹³ -----	77,187	81,199	7,745	.10
Polyhydric Alcohols and Their Esters and Ethers				
Total ¹⁴ -----	6,362,906	5,134,469	536,319	.10
Polyhydric alcohols, total-----	4,290,063	3,513,559	299,433	.09
Ethylene glycol-----	3,070,007	2,630,826	168,240	.06
Glycerol, synthetic only-----	191,968	178,907	34,435	.19
Pentaerythritol-----	88,057	66,359	13,942	.21
Propylene glycol (1,2-Propanediol)-----	421,446	427,311	36,857	.09
Sorbitol-----	112,067	88,202	17,838	.20
All other-----	406,518	121,954	28,121	.23
Polyhydric alcohol esters-----	219,291	212,093	41,604	.20
Polyhydric alcohol ethers, total-----	1,853,552	1,408,817	195,282	.14
2-Butoxyethanol (Ethylene glycol monobutyl ether)-----	115,185	98,494	14,045	.14
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monoiso-butyl ether)-----	18,362	13,471	2,199	.16
Diethylene glycol-----	287,002	204,300	12,632	.06
Dipropylene glycol-----	47,058	40,097	3,733	.09
2-Ethoxyethanol (Ethylene glycol monoethyl ether)-----	156,373	67,083	8,602	.13
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)-----	42,798	35,139	4,802	.14
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)-----	22,957	...	...	...
2-Methoxyethanol (Ethylene glycol monomethyl ether)-----	94,425	84,831	8,655	.10
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)-----	10,131	7,590	862	.11
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)-----	20,591	...	...	...
Polyethylene glycol-----	43,884	41,027	9,213	.22
Polypropoxy ethers-----	482,519	367,953	60,039	.16
Polypropylene glycol-----	279,820	...	...	...
Tetraethylene glycol-----	8,396	4,946	691	.14
Triethylene glycol-----	91,303	81,684	9,463	.12
All other ethers of polyhydric alcohols-----	132,748	362,202	60,346	.17

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
<i>Esters of Monohydric Alcohols</i>				
Total-----	2,555,657	1,342,858	203,630	\$0.15
n-Butyl acetate, unmixed-----	65,584	70,869	7,329	.10
Butyl acrylate-----	95,345	54,392	9,447	.17
tert-Butyl peroxyphthalate-----	789	789	1,744	2.21
Diethyl maleate-----	4,856	3,942	745	.19
Diethyl 3,3'-thiodipropionate-----	1,115	1,233	1,051	.85
Ethyl acetate-----	159,315	157,859	12,871	.08
Ethyl acrylate-----	210,722	57,025	10,210	.18
Ethyl chloroacetate-----	...	177	84	.47
2-Ethyl-1-hexyl acrylate-----	33,109	35,585	7,779	.22
Isopropyl acetate-----	...	43,788	4,631	.11
Methyl esters of tallow-----	867	...	...	...
Methyl methacrylate, monomer-----	463,335	...	...	...
Phosphorus acid esters, not elsewhere specified-----	40,326	32,417	14,266	.44
Propyl acetate-----	23,982	28,199	3,273	.12
Vinyl acetate-----	930,743	479,326	37,363	.08
All other-----	525,569	377,257	92,837	.25
<i>Halogenated Hydrocarbons</i>				
Total-----	18,895,545	8,736,266	685,497	.07
Carbon tetrachloride-----	1,009,163	796,979	43,718	.05
Chlorinated paraffins, total-----	57,696	60,150	7,659	.13
35-64% chlorine-----	43,644	46,019	5,016	.11
Other-----	14,052	14,131	2,643	.19
1-Chlorobutane (n-Butyl chloride)-----	3,864	3,911	1,016	.26
Chlorodifluoromethane-----	...	187,506	40,931	.51
1-Chloro-1,1-difluoroethane-----	...	223	177	.79
Chloroethane (Ethyl chloride)-----	620,326	244,864	15,495	.06
Chloroform-----	230,766	183,154	11,426	.06
Chloromethane (Methyl chloride)-----	437,453	193,123	11,165	.06
1,2-Dibromoethane (Ethylene dibromide)-----	280,011	173,740	28,121	.16
Dichlorodifluoromethane-----	389,580	372,479	94,624	.25
1,2-Dichloroethane (Ethylene dichloride)-----	7,558,437	1,312,798	36,556	.03
Dichloromethane (Methylene chloride)-----	401,212	366,005	26,675	.07
1,2-Dichloropropane (Propylene dichloride)-----	...	24,639	487	.02
Iodomethane (Methyl iodide)-----	...	9	39	4.33
Tetrachloroethylene (Perchloroethylene)-----	704,747	653,947	45,435	.07
1,1,1-Trichloroethane (Methylchloroform)-----	374,597	341,319	32,335	.09
Trichloroethylene-----	514,837	532,444	36,248	.07
Trichlorofluoromethane-----	257,899	236,842	45,034	.19
Vinyl chloride, monomer (Chloroethylene)-----	4,335,782	3,003,645	125,254	.04
All other halogenated hydrocarbons-----	1,719,175	156,489	83,102	.53
<i>All Other Miscellaneous Acyclic Chemicals</i>				
Total-----	7,988,715	2,509,989	742,868	.30
2-Butanone peroxide-----	3,991	3,884	3,960	1.02
tert-Butyl hydroperoxide-----	3,218	1,924	986	.51
tert-Butyl peroxide (Di-tert-butyl peroxide)-----	1,467	1,574	1,367	.87
Carbon disulfide-----	753,334	487,717	19,479	.04
Epoxides, ethers, and acetals:				
Ethylene oxide-----	3,597,556	390,695	27,829	.07
Ethyl ether, tech.-----	75,088	...	...	...
Isopropyl ether-----	13,350	7,748	832	.11
Propylene oxide-----	1,194,032	37,710	19,382	.08

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--MISCELLANEOUS CHEMICALS: U.S. PRODUCTION AND SALES, 1971--CONTINUED

Chemical	Production	Sales		
		Quantity	Value	Unit value ¹
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per. pound
<i>All Other Miscellaneous Acyclic Chemicals--Continued¹</i>				
Hydrocarbons, not elsewhere specified -----	7,741	...	...	
Organo-silicon polymers-----	95,046	78,070	101,450	\$1.30
Phosgene (Carbonyl chloride)-----	530,686	11,215	1,362	.12
Sodium methoxide (Sodium methylate)-----	8,414	...	...	...
Tetraethyllead-----	281,108	301,090	165,109	.55
All other-----	1,423,684	988,362	401,112	.41

¹ Calculated from rounded figures.² Not available.³ Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given with "Plasticizers."⁴ Quantities are given on the basis of solid naphthenate, tallate, or linoleate content.⁵ Statistics exclude production and sales of copper naphthenate. Statistics on copper naphthenate are given with "Pesticides and Related Products."⁶ Ethylcellulose which was formerly included with cellulose ethers is now included with cellulosic plastics materials.⁷ Statistics exclude production and sales of fatty amines. Statistics on fatty amines are given with "Surface-Active Agents."⁸ Production of urea in primary solution totaled 6,362,205 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 Compared to revised sales for 1970 of 2,384,950,000 pounds valued at \$61,800,000.¹³ Of the total production, about 55% consisted of alcohols lower than C₁₀ and about 45% consisted of alcohols C₁₀ and higher.¹⁴ Some polyols which are used as intermediates for urethanes have been included with "Plastics and Resin Materials."¹⁵ Compared with revised sales for 1969 of 70,500,000 pounds, valued at \$39,000,000.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971

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

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC	
6-Acetoxy-2,4-dimethyl-1,3-dioxane-----	GIV.
Acetylcyclohexanesulfonyl peroxide-----	WTL.
1-Adamantanamine-----	ALD.
Adenosine and derivatives-----	PLB.
2-Aminobenzothiazole-----	FMT.
1-(2-Aminoethyl)piperazine-----	UCC.
1-(3-Aminopropyl)morpholine-----	JCC.
Amyl p-dimethylaminobenzoate-----	VND.
Anisaldehyde bisulfite-----	SHL.
*Benzoic acid, sodium salt-----	HK, HN, MON, PFZ, VEL, WSN.
Benzo[a]pyrene-----	EK.
p-Benzoquinone (p-Quinone)-----	EKT.
Benzothiazole-----	ACY.
*Benzoyl peroxide-----	AZT, CAD, NOC, RCI, WTC, WTL.
Biological stains-----	ACS.
Bis(2,4-dichlorobenzoyl) peroxide-----	CAD, WTL.
1,8-Bis-[dimethylamino]naphthalene-----	ALD.
2,4-Bis(4-hydroxy-3,5-di-tert-butylphenoxy)-6-(n-octylthio)-1,3,5-triazine.	CGY.
2,4-Bis(n-octylthio)-6-(4'-hydroxy-3',5'-di-tert-butyl-anilino)-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-----	AZT, NOC, WTC, WTL.
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, HEX, LAM, NEP, PIC.
Chloramine B (Sodium derivative of N-chlorobenzenesulfonamide).	NES.
1-(3-Chlorallyl)-3,5,7-triaza-1-azoniaadamantane chloride.	DOW.
o-Chlorobenzamalonitrile-----	FIS.
p-Chlorophenylalanine-----	ALD.
Chlorophyllin, sodium-potassium-copper-----	KCH.
Cholesterol-----	PFN.
Cholesteryl chloride-----	ALD.
Cobalt phthalocyaninedisulfonate-----	ACS.
Coenzyme A and derivatives-----	PLB.
Cumene hydroperoxide-----	HPC, RCI, x.
Cyanuric and isocyanuric acid-----	FMB, MON.
1,3-Cyclohexadiene-----	ALD.
Cyclohexanone peroxide-----	AZT, NOC, WTL.
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid) disubstituted, polyester salts: Barium and cadmium salts.	RCI.
Cyclopentenone-----	ALD.
Cyclohexyl chloride-----	x.
1,4-Cyclohexylenedimethanol-----	EKT.
Cyclohexyl p-toluenesulfonate-----	ARS.
Cyclopropane-----	OH, TAE.
Cytidine and derivatives-----	PLB.
Decahydronaphthalene (Decalin)-----	DUP, HPC.
Dehydroacetic acid or sodium salt-----	GAN, UCC.
2,5-Di-tert-amylhydroquinone-----	CTN, EKT.
1,4-Diazobicyclo(2.2.2)octane-----	AIP.
2,5-Di(benzoylperoxy)-2,5-dimethylhexane-----	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.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
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-(trifluoromethyl)carbanilide-----	CGY.
2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)-----	PLC.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone-----	GAF.
3,5-Dihydroxy-3,5-dimethyl-1,2-peroxycyclopentane-----	WTL.
2,6-Dihydroxyisonicotinic acid (2,6-Dihydroxy-4-carboxypyridine).	EK.
2,2'-Dihydroxy-4-methoxybenzophenone-----	ACY.
Diisopropylbenzene hydroperoxide-----	HPC.
Diisopropyl cresols-----	GIV.
Diketene-----	ALD, EKT, FMP, UCC.
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)-----	ASL, EKT, GAF.
2,6-Dimethylnorpholine-----	DOW, UCC
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)---	x.
*Dioxane (1,4-Diethylene oxide)-----	DOW, FER, UCC.
Dipropylene glycol salicylate-----	SBC.
4-(Dodecyloxy)-2-hydroxybenzophenone-----	DUP, EKT.
*Enzymes:	
Hydrolytic:	
Amylases-----	BAX, CRN, GPR, MLS, PFZ , PMP, RH.
Proteases-----	BAX, CHH, DOL, GPR, MLS , PEN , PFZ, PMP, SPR.
Other-----	BAX, JFR, MLS, OMS, PFZ, RH, WBC.
Nonhydrolytic-----	MLS, OMS, PLB, SPR, WBC.
Ethyl cellulose phthalate-----	EK.
2-Ethylhexyl benzoate-----	x.
2-Ethylhexyl p-dimethylaminobenzoate-----	VND.
Ethylidene norbornene-----	UCC.
*4-Ethylmorpholine-----	BRD, JCC, UCC.
*Flotation reagents:	
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt-----	ACY.
Dicresylphosphorodithioic acid, sodium salt-----	KCU.
2,2'-Dimethylthiocarbanilide (Di-o-tolylthiourea)-----	DUP, RBC.
Rosin amines-----	HPC.
Tall oil derived-----	HN.
Thiocarbanilide (Diphenylthiourea)-----	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.
N-sec-Butyl-N-phenylphenylenediamine-----	x.
4,4'-Di-sec-butylaminodiphenylmethane-----	x.
2,6-Di-tert-butylphenol-----	TNA.
N,N'-Di-sec-butyl-p-phenylenediamine-----	DUP, EKT, USR, x.
2,6-Di-tert-butyl-β-dimethylamino-p-cresol-----	TNA.
N,N'-Dicyclohexyl-p-phenylenediamine-----	x.
2,6-Diethylaniline-----	TNA.
N,N'-Disalicylidene-1,2-propanediamine-----	DUP, SM, TX.
Methylcyclopentadienylmanganese tricarbonyl-----	TNA.
4,4'-Methylenebis(2,6-di-tert-butylphenol)-----	TNA.
4,4'-Thiobis(6-tert-butyl-o-cresol)-----	TNA.
2,2'-Thiobis(6-tert-butyl-p-cresol)-----	ASH.
1,3,5-Tris(3,5-di-tert-butyl-4-hydroxybenzyl)-mesitylene.	TNA.
Other-----	DOW, DUP, EKT, SM, TNA, UPM, USR, x.
Glyceryl p-aminobenzoate-----	BOR, VND.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC-Continued	
Guanosine and derivatives-----	PLB.
*Hexamethylenetetramine, tech-----	DUP, HKD, HMP, PLS, UCC.
Homomenthyl salicylate-----	ARS.
Hydrabamine hydrobromide-----	ABB.
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, WSN.
Ethyl p-hydroxybenzoate (Ethylparaben)-----	HN, 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.
N-(Hydroxyethyl)piperazine-----	UCC.
2-Hydroxy-4-methoxybenzophenone-----	ACY, GAF.
2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate-----	ACY.
2-Hydroxymethyl-5-norbornene acrylate-----	ARS.
2-(2-Hydroxy-5-tert-octylphenyl)benzotriazole-----	ACY.
2-Hydroxypropyl-p-(N,N-bis-2-hydroxypropylamino)-benzoate.	SHL.
1-Hydroxy-2-pyridine (Omadine)-----	OMC.
1,2,3-Indantrione monohydrate (Ninhydrin)-----	HEX, PIC.
Inosine and derivatives-----	PLB.
2-(p-Iodophenyl)-3-(p-nitrophenyl)-5-phenyl-2H-tetrazolium chloride.	EK.
Isopropyl-o-cresols-----	CP.
*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, NTL.
Oil-soluble petroleum sulfonate, barium salt-----	CO, LUB, TX.
*Oil-soluble petroleum sulfonate, calcium salt-----	CO, ENJ, LUB, SHO, WTC, x.
Oil-soluble petroleum sulfonate, magnesium salt-----	CO, LUB.
*Oil-soluble petroleum sulfonate, sodium salt-----	CO, ENJ, MOR, PAR, SHC, SHO, SOC, SOI, WTC.
Other-----	CO, LUB, TX.
*Phenol salts:	
Barium alkylphenolates-----	CCA, ENJ, TX, x.
Calcium alkylphenolates-----	ORO, TX.
Calcium salt of octylphenol-formaldehyde-----	SHC.
Other-----	ENJ, GOC, ORO, x.
All other-----	ATR, ENJ, GOC, LUB, ORO, PLC, SM, TX, x.
p-Menthane-----	HPC.
8-p-Menthyl hydroperoxide-----	HN, HPC.
p-Methoxybenzylidenemalononic acid, diethyl and dimethyl esters.	ACY.
4-Methoxyphenol-----	ASL, EKT.
Methylaziridine-----	ARS.
Methyl o-cresotinate-----	x.
2,2'-Methylenebis(4-chlorophenol) (Dichlorophene)-----	GIV.
Methylenebis(phenoxypropanol)-----	JCC.
2,2'-Methylenebis(3,4,6-trichlorophenol) (Hexachlorophene).	GIV.
Methyl gallate-----	HSH.
Methylglucoside-----	CRN.
4-Methylmorpholine-----	JCC, UCC.
Methyl phenyl phosphates-----	TNA.
4-Methylpiperazine-----	UCC.
1-Methyl-2-pyrrolidone, monomer-----	GAF.
*Morpholine-----	DOW, JCC, UCC.
Morpholine salt of p-toluenesulfonic acid-----	AMB.
*Naphthenic acid salts:	
Aluminum naphthenate-----	HSH, WTC.
Barium naphthenate-----	CCA.
Cadmium naphthenate-----	CCA.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Naphthenic acid salts--Continued	
*Calcium naphthenate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, SW, TRO, WTC, x.
Cobalt lead manganese naphthenate-----	HN.
*Cobalt naphthenate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, TRO, WTC, x.
Iron naphthenate-----	CCA, CCC, HN, HSH, MCI, WTC.
Lead manganese naphthenate-----	CCA.
*Lead naphthenate-----	CCA, CCC, FER, HSH, MCI, SHP, SW, TRO, TX, WTC, x.
Lithium naphthenate-----	CCA, MCI.
*Manganese naphthenate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, SW, TRO, WTC, x.
Rare earths naphthenate-----	CCA, SHP.
Sodium naphthenate-----	CCA.
Strontium naphthenate-----	CCA.
*Zinc naphthenate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, SW, WTC.
Norcamphor-----	ALD.
1-Octadecenyl-2-naphthenyltetrahydropyrimidine-----	SM.
Octadecyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)- propionate.	CGY.
Organic mercury compounds: Phenylmercuric borate-----	TRO.
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.
Phenylmercaptoacetic acid-----	EVN.
N-Phenyl-1-naphthylamine-----	UCC.
5-Phosphorylribose-1-pyrophosphate-----	PLB.
Photographic chemicals:	
N-(o-Acetamidophenethyl)-1-hydroxy-2-naphthamide-----	EKT.
N-[2-(4-Amino-N-ethyl-m-toluidino)ethyl]methane- sulfonamide.	EKT.
2-(4-Amino-N-ethyl-m-toluidino)ethyl sulfate-----	EKT.
3-Amino-1,2,4-triazole-----	FMT.
Benzotriazole-----	EK, FMT, MRT, SW.
α-Benzoyl-o-methoxyacetanilide-----	EKT.
p-Benzylaminophenol hydrochloride-----	EK.
2-Chloro-N,N-diethyl-p-phenylenediamine hydrochloride---	IDC.
3-Chloro-4-diethylaminobenzenediazonium salts (p- Diazo-2-chloro-N,N-diethylaniline salts).	ESA, FMT.
Chlorohydroquinone-----	EK.
2,4-Diaminophenol dihydrochloride (Amidol)-----	VPC.
2N-(2,4-Di-tert-amylphenoxyacetamido)-4,6-dichloro- m-cresol.	x.
4-Diazo-2,5-diethoxymorpholinobenzene-----	FMT.
4-Diazo-3,5-diethoxythiocresol salts-----	FMT.
*2,5-Diethoxy-4-morpholinobenzenediazonium chloride-----	ALL, ESA, HST.
*p-Diethylaminobenzenediazonium chloride-----	ESA, FMT, IDC, MRT.
p-Diethylaminobenzenediazonium fluoborate-----	IDC.
p-Diethylaminobenzenediazonium fluophosphate-----	IDC.
N,N-Diethyl-p-phenylenediamine hydrochloride-----	EKT.
*N,N-Diethyltoluene-2,5-diamine, monohydrochloride-----	EKT, FMT, IDC.
2,5-Dihydroxy-p-benzenedisulfonic acid dipotassium salt.	EK.
2,5-Dihydroxybenzenesulfonic acid-----	EK.
2,5-Diisopropoxy-4-morpholinylbenzenediazonium fluophosphate.	IDC.
*p-Dimethylaminobenzenediazonium chloride-----	ESA, FMT, IDC.
2(p-Dimethylaminostyryl)-5-methylthiadiazole-3- β-hydroxyethochloride.	x.
4N-(2',6'-Dimethylmorpholinyl)benzenediazonium chloride--	IDC.
p-Diphenylaminediazonium sulfate-----	FMT.
p-(N-Ethylbenzimidobenzenediazonium chloride)-----	FMT.
*p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride.	ESA, FMT, IDC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Photographic chemicals--Continued	
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate-----	IDC.
3-(4'-Hexadecenylmonoamidossuccinic acid)-1-hydroxy- 4-sulfo-2-N-n-octadecyl)naphthamide.	x.
Hydroquinone (Hydroquinol)-----	EKT.
*p-[(2-Hydroxyethyl)methylamino]benzenediazonium chloride.	ESA, FMT, IDC.
1-(3-Hydroxyphenyl)urea-----	FMT.
4-Methoxy-1-naphthol-----	x.
p-Methylaminophenol sulfate-----	EK.
5-Methylbenzotriazole-----	EK.
4-Methyl-2(p-bis-hydroxyethylaminostyryl)thiazole-3- β-hydroxyethochloride.	x
4-Methyl-1-phenyl-3-pyrazolidinone-----	WAY.
2-Methylthiazoline-----	FMT.
4-Morpholinylbenzenediazonium salts-----	IDC.
p-Morpholinyl-2,5-dibutoxybenzenediazonium chloride-----	IDC.
6-Nitrobenzimidazole-----	EK, FMT.
Octylphenyl salicylate-----	EKT.
Phenyl-5-mercaptotetrazole-----	FMT.
4-Phenylpyrocatechol-----	x.
Polyvinyl cinnamate-----	WAY.
4N-(1-Pyrrolidyl)-m-toluenediazonium chloride-----	IDC.
2-Resorcylic monoethanolamide-----	FMT.
2,2',4,4'-Tetrahydroxydiphenyl sulfide-----	FMT.
4,4'-Thiodiresorcinol-----	BKC.
1-(2,4,6-Trichlorophenyl)-3-(4-nitroanilino)-2- pyrazolin-5-one.	EKT.
All other-----	EK, ESA, FMT, IDC, NES, x, 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.
Polydodecylbenzenesulfonic acid, calcium salt-----	CO.
*Polyethylene terephthalate-----	DUP, EK, EKT, GYR.
Polyvinyl phthalate-----	EK.
Propyl gallate-----	EKT, HSH.
Pyrogallol (Pyrogallic acid)-----	HSH, MAL.
Resorcinol monobenzoate-----	EKT.
Rosin acid salts:	
Aluminum resinate-----	JMS.
Calcium resinate-----	CBY, HN, JMS, SW.
Calcium zinc resinate-----	CBY.
Copper resinate-----	JMS.
Iron resinate-----	JMS.
Lead resinate-----	JMS.
Manganese resinate-----	JMS.
Zinc resinate-----	HN, JMS.
Salicylanilide-----	DUP, FIN, PCW.
Salicylic acid, lead salt-----	NTL.
Sodium cresoxide (Cresylic acid, sodium salt)-----	DEX, GOC.
Styrene oxide-----	UCC.
Sucrose benzoate-----	VEL.
Sulfosalicylic acid-----	MON, MRK.
*Tall oil salts (Linoleic-rosin acid salts):	
Barium zinc tallate-----	HSH.
Calcium manganese tallate-----	MCI.
Calcium tallate-----	CCA, CCC, HN, HSH, MCI, TRO, WTC. x.
*Cobalt tallate-----	CCA, CCC, FER, HN, MCI, SHP, TRO, WTC, x.
Copper tallate-----	CCA, MCI, SHP.
Iron tallate-----	CCA, MCI, SHP, x.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Tall oil salts (Linoleic-rosin acid salts)--Continued	
Lead manganese tallate-----	HSH, MCI.
*Lead tallate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, TRO, WTC, x.
Manganese tallate-----	CCA, CCC, FER, HN, HSH, MCI, SHP, WTC.
Zinc tallate-----	HSH, MCI.
All other-----	WTC.
Tannic acid-----	HSH, MAL.
*Tanning materials, synthetic:	
Cresol phenol formaldehyde condensate-----	DA.
Hydroxytoluenesulfonic acid, formaldehyde condensate (Cresol-formaldehyde sulfonate), sodium salt.	CGY, DA.
1-Naphthalenesulfonic acid, formaldehyde condensate and salt.	DA.
2-Naphthalenesulfonic acid, formaldehyde condensate and salt.	AKS, GRD, HN, RH.
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated).	RH.
Styrene-maleic anhydride interpolymer, partial sodium salt.	DUP.
Sulfonyldiphenolsulfonic acid, formaldehyde condensate---	GAF.
All other-----	CGY, EK.
Tetrabromobisphenol A-----	GTL.
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine-----	DOW.
1,2,3,4-Tetrahydronaphthalene (Tetralin)-----	DUP, UCC.
Tetrahydrothiophene-----	PAS.
Tetrahydrothiophene-1,1-dioxide (Sulfolane)-----	PLC.
Tetrakis[methylene-3-(3',5'-di-tert-butyl-4'-hydroxy- phenyl)propionate]methane.	CGY.
1,3,6,8-Tetranitrocarbazole-----	SDC.
Tetraphenyltin-----	x.
*Textile chemicals, other than surface-active agents:	
Dimethyloldihydroxy ethylene urea-----	x.
N,N'-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).	DEX.
2,2',4,4'-Tetrahydroxybenzophenone-----	GAF.
Tri(behenoyloxymethyl)trimethyloxymethylmelamine-----	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.
Thymidine and derivatives-----	PLB.
o-Toluidine formaldehyde hydrochloride-----	RBC.
o-Tolylbiguanide-----	MON.
Triallyl cyanurate-----	ACY.
3,4',5-Tribromosalicylanilide-----	FIN.
3,4',5-Tribromosalicylanilide and 4,5-Dibromo- salicylanilide mixtures.	FIN.
3,4,4'-Trichlorocarbaniide-----	MON.
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Tri- chloroisocyanuric acid).	MON.
Tri-(m,p) cresyl borate-----	USB.
Tricyclohexyltin hydroxide-----	x.
Trimethylaminoethylpiperazine-----	JCC.
3,5,5-Trimethyl-2-cyclohexen-2-one (Isophorone)-----	ENJ, UCC.
2,4,6-Trinitroresorcinol and lead derivative-----	EK, REM.
s-Trioxane-----	CEL.
Triphenyltinphosphine-----	x.
Triphenyl phosphite-----	HK, MON.
Triphenyl sulfonium chloride-----	FIS.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Triphenyltin-----	x.
Uridine derivatives-----	PLB.
Vinyl norbornene-----	UCC.
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.
MISCELLANEOUS CHEMICALS, ACYCLIC	
<i>Cellulose Esters and Ethers</i>	
*Cellulose esters:	
Cellulose acetate-----	AV, CEL, DUP, EKT.
Cellulose acetate butyrate-----	EKT.
Cellulose acetate propionate-----	EKT.
Cellulose propionate-----	CEL.
*Cellulose ethers:	
Ethylcellulose-----	DOW.
Hydroxyethylcellulose-----	UCC, x.
Hydroxypropylcellulose-----	HPC.
Methylcellulose-----	DOW.
*Sodium carboxymethylcellulose, 100%-----	BUK, DUP, HPC, KON, WMP, WYN.
All other-----	EK, UCC.
<i>Lubricating Oil Additives</i>	
*Phosphorothioates (Thiophosphates):	
Zinc di(butylhexyl) phosphorodithioate-----	ORO.
Zinc dihexyl phosphorodithioate-----	ATR, MON.
All other-----	ATR, ENJ, LUB, x.
*Sulfur compounds:	
Chlorosulfurized sperm oil-----	CCW.
*Sulfurized lard oil-----	CCW, GOC, QCP, WBG.
Sulfurized sperm oil and substitutes-----	ATR, CCW, QCP.
Other sulfur compounds-----	ATR, CCW, ENJ, HK, LUB, SM, TX.
All other-----	ALX, ATR, BKL, ENJ, GOC, LUB, MON, NLC, ORO, SM, SOI.
<i>Nitrogenous Compounds</i>	
Acetamide-----	ACS.
Acetamidine hydrochloride-----	KF, MRK.
Acetamidoethanol (N-Acetyl-ethanolamine)-----	RBC.
Acetonitrile-----	EKX, MON, SOH, UCC.
*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.
Allyltrimethylammonium chloride-----	NWP.
*Amines;	
2-Amino-octane-----	PAS.
*Butylamines:	
n-Butylamine, mono-----	PAS, UCC, VGC.
*Di-n-butylamine-----	PAS, UCC, VGC.
Diisobutylamine-----	PAS, UCC, VGC.
tert-Butylamine, mono-----	MON, RH.
Tri-n-butylamine-----	PAS, VGC.
n-Butylethylamine-----	PAS.
n-Butylmethylethylamine-----	UCC.
Diethylaminoethylamine-----	PD.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
<i>*Amines--Continued</i>	
*Diethylenetriamine-----	DOW, JCC, UCC.
N,N-Diethylethylenediamine-----	ALB.
N,N'-Diethyl-1,4-pentanediamine (Novoldiamine)-----	SDH.
Diethylaminopropylamine-----	UCC.
Dimethylaminopropylamine-----	JCC, UCC.
1,3-Dimethylbutylamine-----	PAS.
Dipropylenetriamine-----	UCC.
Ethylamines:	
*Diethylamine-----	AIP, PAS, UCC, VGC.
Diethylamine hydrochloride-----	BKL, EK.
*Ethylamine, mono- -----	AIP, PAS, UCC, VGC.
*Triethylamine-----	AIP, PAS, UCC.
*Ethylenediamine-----	DOW, JCC, UCC.
Ethylenediamine salts-----	EK, NES.
(2-Ethylhexyl)amine, mono- -----	VGC.
*1,6-Hexanediamine (Hexamethylenediamine)-----	CEL, DUP, ELP, MON.
n-Hexylamine-----	VGC.
3,3'-Iminobispropylamine-----	JCC.
Isopropylamines:	
*Diisopropylamine-----	AIP, PAS, UCC.
Isopropylamine, mono- -----	AIP, UCC.
Methylamines:	
*Dimethylamine-----	AIP, COM, DUP, GAF, PAS.
Dimethylamine hydrochloride-----	EK.
Dimethylamine sulfate-----	RH.
*Methylamine, mono- -----	AIP, COM, DUP, GAF.
Methylamine hydrochloride-----	EK, RBC.
*Trimethylamine-----	AIP, COM, DUP, GAF.
n-Octylamine, mono- -----	VGC.
Pentaethylenhexamine-----	DOW, JCC, UCC.
Pentylamines (Amylamines):	
Dipentylamine-----	PAS, VGC.
Pentylamine, mono- -----	ALB, PAS.
Tripentylamine-----	PAS.
Polyalkylene polyamines-----	NLC.
Polyethyleneimine-----	SNW.
1,2-Propanediamine (Propylenediamine)-----	UCC.
1,3-Propanediamine (1,3-Diaminopropane)-----	JCC, x.
Propylamines:	
*Di-n-propylamine-----	AIP, 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, DUP, EK, GAF, NTL, ONX, PIC, UCC, x.
2-Amino-1-butanol-----	COM.
1-Aminoethanol (Acetaldehyde ammonia)-----	HEX.
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 thio- glycolate).-----	EVN, x.
2-Amino-2-ethyl-1,3-propanediol-----	COM.
Aminoguanidine bicarbonate-----	COM.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris- (hydroxymethyl)aminomethane).-----	COM.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification code (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
2-Amino-2-methyl-1,3-propanediol-----	COM.
2-Amino-2-methyl-1-propanol-----	COM.
2-Amino-2-methyl-1-propanol hydrochloride-----	VAL.
2-Amino-1-propanol-----	ALB.
3-Amino-1-propanol-----	UCC.
2-(1-Aziridinyl)ethyl methacrylate-----	AAC.
*1,1'-Azobisformamide-----	FMT, NPI, USR.
2,2'-Azobis[2-methylpropionamidine] dihydrochloride-----	x.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyro- nitrile).	DUP.
Bilirubin-----	PFN.
1,3-Bis(hydroxymethyl)urea (Dimethylolurea)-----	GLY, x.
Bis(trimethylsilyl)acetamide-----	PIC.
N-Bromoacetamide-----	ARA.
N-Bromosuccinimide (Succinibromimide)-----	ARA.
2,3-Butanedione monoxime-----	EK.
2-Butanone oxime-----	ACP.
Butyldiethanolamine-----	PAS.
1-Butyl-3-ethyl-2-thiourea-----	PAS.
Butyl isocyanate-----	CWN, OTC, UPJ.
Butyraldehyde oxime-----	ACP.
n-Butyronitrile-----	EKX.
*Caprolactam (2-Oxohexamethylenimine)-----	ACP, CNP, DBC, UCC.
Chlorocholine chloride-----	ACY.
2-Chloro-N,N-dimethylethylamine (Dimethylaminoethyl chloride) hydrochloride.	HEX, MCH, 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-Chloroethylamine hydrochloride-----	NES.
g-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.
Creatine and creatinine-----	PFN.
Crotononitrile-----	KF.
2-Cyanoacetamide-----	KF.
Cyanoacetic acid-----	KF.
Cyanoacetic acid, 2-ethylhexyl ester-----	GAF.
1-(2-Cyanoethyl)ethylurea-----	PD.
Cyanogen bromide-----	EK.
2-Dibutylaminoethanol-----	AAC, PAS.
1,3-Dibutyl-2-thiourea-----	PAS, RBC.
1,4-Dicyanobutene-----	x.
Diethanolamine polyoxypropylene ether-----	JCC.
2-Diethylaminoethanol-----	AAC, DUP, PAS, UCC.
2-(2-Diethylaminoethoxy)ethanol-----	PAS.
2-Diethylaminoethyl acrylate-----	UCC.
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-----	QMC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification code (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
Di(methoxyethyl)hydroxylamine-----	x.
N,N-Dimethylacetamide-----	DUP.
2-Dimethylaminoethanol-----	AAC, JCC, PAS, RH, UCC.
3-Dimethylaminopropionitrile-----	ACY.
N-[3-(Dimethylamino)propyl]formamide-----	x.
Dimethylaminoethyl methacrylate-----	AAC.
Dimethylamino-2-propanol-----	COM, PAS.
Dimethylammoniumdimethylthiocarbamate-----	PAS.
Dimethylcarbamoyl chloride-----	CTN, OTC.
N,N-Dimethylformamide-----	AIP, DUP.
1,1-Dimethylhydrazine-----	FMP.
Dimethylthiocarbamoyl chloride-----	ALD.
Dithiooxamide-----	MAL.
2,5-Dithiobiurea-----	ACY.
tert-Dodecylsuccinamide-----	SM.
*Erucamide-----	ASH, FIN, HUM.
*Ethanolamines:	
*2-Aminoethanol (Monoethanolamine)-----	DOW, GLY, 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.
2-Ethylaminoethanol (Ethylmonoethanolamine)-----	PAS.
Ethyl carbamate-----	FMP.
Ethyl carbodiimide hydrochloride-----	OTC.
Ethyl cyanoacetate-----	KF.
Ethyl diazoacetate-----	ALD.
Ethyleneimine, monomer-----	DOW.
Ethyleneimine, polymer-----	AAC, DOW.
Ethylenethiourea-----	PAS.
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine-----	SDW.
5-(N-Ethyl-N-hydroxyethylamino)-2-pentanone-----	SDW.
Ethyl isocyanate-----	OTC.
Fish oil fatty acid amide-----	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-----	DUP.
1,1,1,3,3,3-Hexamethyltrisilazane-----	EK.
*Hexamethylenediammonium adipate (Nylon salt)-----	CEL, DUP, MON.
Hexyl nitrate-----	TNA.
Hydracrylonitrile (Ethylene cyanohydrin)-----	AAE.
Hydroxyethyl carbamate-----	JCC.
Hydroxyethylethyleneimine-----	UCC.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris- (hydroxymethyl)nitromethane).-----	COM.
N-Hydroxymethylstearamide-----	ICI.
12-Hydroxystearamide-----	HUM.
3,3'-Iminodi-1,2-propanediol-----	DUP.
Isobutyl cyanoacetate-----	KF.
Isobutyronitrile-----	AIP.
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.
Isopropyl isocyanate-----	OTC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
Lactonitrile-----	MON.
Lauroitrile (Dodecyl nitrile)-----	ASH.
Malononitrile-----	FIS, KF.
Mechlorethamine [N-Methylbis(2-chloroethyl)amine] hydrochloride.	ALD.
Methacrylamide-----	x.
Methacrylonitrile-----	SOH.
Methoxyamine hydrochloride-----	EK.
N-Methylacetamide-----	EK.
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.
Methyl isocyanate-----	UCC.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)-----	PAS, UCC.
2-Methylactonitrile (Acetone cyanohydrin)-----	RH, x.
2-Methyl-2-nitro-1,3-propanediol-----	COM.
2-Methyl-2-nitro-1-propanol-----	COM.
Methylpolyethanolamine-----	GAF.
N-Methylaurine-----	GAF.
N-Methylurea-----	EK, RSA.
Nitrated lard oil-----	SM.
*Nitriloacids and salts:	
(Diethylenetrinitrilo)pentaacetic acid-----	DAN, HMP.
(Diethylenetrinitrilo)pentaacetic acid, monosodium hydrogen ferric salt.	CGY.
*(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt.	CGY, DOW, HMP.
(Diethylenetrinitrilo)pentaacetic, sodium salt-----	CGY, RPC.
(Diethylenetrinitrilo)pentamethylenephosphonic acid, potassium salt.	WAY.
N,N-Dihydroxyethylglycine, sodium salt-----	DOW, HMP.
Ethanol diglycine, disodium salt-----	HMP.
Ethylenebis(dimethylenetrinitrilo)tetrakisphosphonic acid, tetrasodium salt.	WAY.
*(Ethylenedinitrilo)tetraacetic acid (Ethylenediamine- tetraacetic acid).	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt.	CGY, DOW.
(Ethylenedinitrilo)tetraacetic acid, diammonium salt----	DOW.
(Ethylenedinitrilo)tetraacetic acid, disodium salt-----	CGY, DOW, EK, HMP.
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate.	CGY, HMP.
*(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate.	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, manganese salt-----	CGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt.	CGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, tetraammonium salt.	DOW.
(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt.	CGY, HMP.
*(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt -	CGY, CRT, DAN, DOW, HMP, HRT, RPC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
*Nitriloacids and salts--Continued	
(Ethylenedinitrilo tetraacetic acid, trisodium salt-----	CGY, HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid-----	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, copper salt.	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, iron salt.	HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, manganese salt.	HMP.
* (N-Hydroxyethylethylenedinitrilo)triacetic acid, tri- sodium salt.	CGY, CRT, DAN, DOW, HMP, RPC.
Nitrilotriacetic acid-----	HMP.
Nitrilotriacetic acid, disodium salt-----	HMP.
Nitrilotriacetic acid, trisodium salt-----	DOW, HMP.
Nitrilotriacetic acid, zinc salt-----	HMP.
Other-----	EK, WAY.
2-Nitro-1-butanol-----	COM.
Nitroethane-----	COM.
Nitromethane-----	COM.
1-Nitropropane-----	COM.
2-Nitropropane-----	COM.
Nylon, 6 and 6/6 polymer for fiber-----	ALF, DBC, DUP, MON.
Octadecyl isocyanate-----	CWN, MOB, UPJ.
N-Octylethanolamine-----	UPM.
Oleamide (Octadecene amide)-----	ARC, ASH, FIN, HUM.
Oleic acid - ethylenediamine condensate (amine/acid ratio=1/2).	CCW, GLY.
Oleic acid - methanolamine condensate, ethoxylated-----	GAF.
Oleonitrile (Octadecene nitrile)-----	ARC, ASH.
Oleoylhydroxamic acid-----	CTN.
Oleoylpalmitamide-----	FIN.
*Pentaerythritol tetranitrate-----	COM, DUP, HPC.
Pentyl nitrate (Amyl nitrate)-----	TNA.
*Polyacrylamide-----	ACY, HPC, NLC.
Polyacrylonitrile-----	DUP.
Polyacrylonitrile, hydrolyzed-----	NLC.
Polyglycolamine-----	UCC.
Polyoxypropylenediamine-----	JCC.
n-Propyl carbamate-----	BKL.
Propyl isocyanate-----	OTC.
Propyl nitrate-----	TNA.
Quaternary ammonium compounds-----	EK, RSA, WAY.
Ricinolamide-----	TKL.
Sarcosine (N-Methylaminoacetic acid)-----	GAF, HMP.
Semicarbazide base-----	FMT.
Semicarbazide hydrochloride-----	FMT.
Stearamide (Octadecane amide)-----	ARC, FIN, HUM.
*Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2).	CCW, CTN, DA, GLY, HUM, ICI.
Stearonitrile (Octadecanenitrile)-----	ARC, ASH.
Stearylceramide-----	FIN.
Succinimide-----	ASH.
Tall oil nitrile-----	ASH.
Tallow amide, hydrogenated-----	ARC.
Tallow nitrile-----	ARC, ASH.
Tallow nitrile, hydrogenated-----	ARC, ASH.
Tetracyanoethylene-----	KF.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Nitrogenous Compounds--Continued</i>	
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine-----	WYN.
Tetramethylguanidine-----	ACY.
Tetramethylurea-----	OTC, RSA.
3,3'-Thiodipropionitrile-----	x.
Thiosemicarbazide-----	ACY, FMT.
Triethanolamine hydrochloride-----	HEX.
*Urea in compounds or mixtures, 100% basis:	
*In feed compounds-----	ACN, ACY, AGY, AKL, APD, FTX, GCC, JDC, MSC, PPC, SHC, SOH, TER, TRI, VLN, WYC.
*In liquid fertilizer-----	ACN, AGY, AIP, AKL, APD, CFA, CHN, CNC, FCA, FTX, GCC, GOC, HKY, HPC, JDC, MSC, OMC, PLC, PPC, SHC, SM, SNI, SOH, TER, TRI, VLN, WLC, WYC.
*In solid fertilizer-----	ACN, ACY, AGY, AKL, APD, ARM, COL, DUP, GCC, HPC, JDC, MSC, OMC, PPC, SHC, SNO, SOH, TER, TRI, VLN, WYC.
In plastics-----	ACN, BOR, DUP, TRI.
All other-----	ACN, AIP, CNC, DUP, HPC, MSC, SHC, SNO, TER.
Urea - urethane copolymer-----	DUP.
Vinylacetone nitrile-----	KF.
All other nitrogenous compounds-----	AAC, ACY, ALB, ALD, ARC, DUP, EK, EVN, FIN, GAF, GNM, IDC, JCC, KF, MOB, MON, MRK, NLC, NOR, OTC, PAS, PD, PFN, PFZ, PIC, RSA, S, SM, SNW, UCC, WAY, x.
<i>Acids, Acid Anhydrides, and Acyl Halides</i>	
*Acetic acid, synthetic, 100%-----	ATR, BOR, CEL, EKT, FMP, MON, PUB, UCC.
*Acetic anhydride, 100%:	
From acetic acid-----	CEL, EKT, FMP.
From ethylene-----	UCC.
*Acrylic acid-----	BFG, CEL, DBC, UCC.
*Adipic acid-----	ACP, CEL, DBC, DUP, ELP, MON, RH.
Arachidic acid (Eicosanoic acid)-----	EK.
Azelaic acid-----	EMR.
Behenic acid-----	ASH.
Bromoacetic acid-----	MCH.
Bromobutyric acid-----	GTL.
2-Bromododecanoic acid-----	DUP.
tert-Butylacetyl chloride-----	ALD.
tert-Butylperoxymaleic acid-----	WTL.
Butyric acid-----	CEL, EKT, UCC.
Butyric anhydride-----	EKT, UCC.
Butyryl chloride-----	HK, OTC.
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 anhydride-----	ACS, HMY.
Dodecylsuccinic anhydride-----	HN.
Erucic acid-----	ASH.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Acids, Acid Anhydrides, and Acyl Halides--Continued</i>	
2-Ethylbutyric acid (Diethylacetic acid)-----	UCC.
2-Ethylhexanoic acid (α -Ethylcaproic acid)-----	EKT, UCC.
2-Ethylhexanoyl chloride-----	WTC, WTL.
Formic acid, 90%-----	CEL, DUP, UCC.
*Fumaric acid-----	ACS, HN, MON, NTL, PCC, PFZ.
*Gluconic acid, tech-----	DLI, PFZ, PMP.
Glutaric anhydride-----	UCC.
Glycolic acid (Hydroxyacetic acid)-----	DUP, SNW.
n-Hexadecenylsuccinic anhydride-----	HMY.
n-Hexanoic acid-----	UCC.
1-Hydroxyethylidene-1,1-diphosphonic acid-----	WAY.
Isethionic acid (2-Hydroxyethanesulfonic acid)-----	GAF.
Isoascorbic acid-----	MRK, PFZ.
Isobutyric acid-----	EKT.
Isobutyric anhydride-----	EKT.
Isobutyryl chloride-----	WTC, WTL.
Iso-octadecenylsuccinic anhydride-----	HMY.
Iso-octanoic acid-----	UCC.
Itaconic acid (Methylenesuccinic acid)-----	PFZ.
2-Keto-D-gluconic acid-----	MRK.
Lactic acid-----	CLN, MON.
*Lauroyl chloride-----	CAD, GAF, HK, ONX, TEK, UOP, WTC, WTL.
Levulinic acid-----	QKO.
*Maleic acid-----	ACS, PFN, PFZ.
*Maleic anhydride-----	ACS, HN, KPT, MON, PCC, PTT, RCI.
Malic acid-----	ACS, EK.
Malonic acid-----	KF.
Mercaptoacetic acid (Thioglycolic acid)-----	EVN, x.
3-Mercaptopropionic acid-----	EVN.
Mercaptosuccinic acid (Thiomalic acid)-----	EVN.
Methacrylic acid-----	DUP, RH.
Methanesulfonic acid-----	ALD, EK, PAS.
2-Methylvaleric acid (2-Methylpentanoic acid)-----	UCC.
Neodecanoic acid-----	ENJ.
Neodecanoyl chloride-----	WTC, WTL.
Neooheptanoic acid-----	ENJ.
Neopentanoic acid-----	ENJ.
Nonanoic acid (Pelargonic acid)-----	EMR, GIV.
Nonenylsuccinic anhydride-----	HMY.
Octadecenylsuccinic anhydride-----	HMY.
Octanoyl chloride-----	HK.
Octenylsuccinic anhydride-----	HMY.
Oleoyl chloride-----	GAF, HRT, UOP.
Oxalic acid-----	ACS, MAL, PFZ.
*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.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Acids, Acid Anhydrides, and Acyl Halides--Continued</i>	
d-Tartaric acid-----	BKC.
Tetrahydroxysuccinic acid (Dioxytartaric acid)-----	ACY.
Thioacetic acid-----	EVN.
Thiolactic acid-----	EVN.
3,3'-Thiodipropionic acid-----	CCW, EVN, x.
Trichloroacetic acid-----	DOW.
Valeric acid-----	UCC.
All other-----	ALD, AZS, DUP, EK, ENJ, FMP, GAF, LIL, PAS, RH, SHA, TX.
<i>Salts of Organic Acids</i>	
*Acetic acid salts:	
Aluminum acetate-----	ACY, UCC.
Ammonium acetate-----	ACS, BKC, MAL.
Ammonium titanyl acetate-----	DUP.
*Barium acetate-----	ACS, BKC, MAL.
Butyltin acetates and diacetates-----	CCW, x.
Cadmium acetate-----	MAL, SHP.
Calcium acetate-----	ACS, MAL.
Chromium acetate-----	VAL.
Cobalt acetate-----	HSH, SHP.
*Copper acetate-----	ACS, BKC, SHP, UCC.
Lead acetate-----	BKC.
Lead subacetate-----	ACS, BKC, MAL.
Lead tetraacetate-----	ARA.
Magnesium acetate-----	ACS, BKC.
Manganese acetate-----	HSH, NES, SHP.
Mercuric acetate-----	MAL.
Nickel acetate-----	BKC, HSH, SHP.
*Potassium acetate-----	ACS, BKC, MAL, SFI, 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.
Acrylic acid, sodium salt-----	AAE.
Adipic acid, ammonium salt-----	FIS.
Allylsulfonic acid, sodium salt-----	NES, x.
2-Bromoethanesulfonic acid, sodium salt-----	FIN.
Chloroacetic acid, sodium salt-----	DOW.
Citric acid salts:	
Ammonium citrate-----	MAL, PFZ.
Calcium citrate-----	PFZ.
Ferric ammonium citrate-----	MAL, PFZ.
Ferric citrate-----	MAL.
Potassium citrate-----	MLS, PFZ.
Sodium citrate-----	MLS, NES, PFZ, SNW.
Diglycolic acid, monosodium salt-----	NES.
Di-n-propylacetic acid, sodium salt-----	CTN.
*2-Ethylhexanoic acid (α -Ethylcaproic acid) salts:	
Aluminum 2-ethylhexanoate-----	PFZ, WTC.
Barium 2-ethylhexanoate-----	CCA, PFZ.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
2-Ethylhexanoic acid (α -Ethylcaproic acid) salts-- Continued	
Cadmium 2-ethylhexanoate-----	CCA, PFZ.
*Calcium 2-ethylhexanoate-----	CCA, CCC, FER, HN, HSH, MCI, PFZ, SW, TRO.
*Cobalt 2-ethylhexanoate-----	CCA, CCC, FER, HN, HSH, MCI, SW, TRO, WTC. x.
Copper 2-ethylhexanoate-----	CCA, x.
Iron 2-ethylhexanoate-----	CCA, MCI.
*Lead 2-ethylhexanoate-----	CCA, CCC, HN, HSH, MCI, NTL, TRO, WTC, x.
*Manganese 2-ethylhexanoate-----	CCA, HN, MCI, TRO, WTC.
Nickel 2-ethylhexanoate-----	MCI, SW.
Rare earths 2-ethylhexanoate-----	CCA.
*Zinc 2-ethylhexanoate-----	CCA, HN, HSH, MCI, WTC, x.
Zirconium 2-ethylhexanoate-----	CCA, CCC, HN, TRO.
Other-----	WTC, x.
Formic acid salts:	
Aluminum formate-----	WSN.
Ammonium formate-----	ACS, RSA.
Calcium formate-----	COM.
Chromic formate-----	GAF.
Lead formate-----	NTL.
Sodium formate, refined-----	ACS, BKC.
Sodium formate, tech-----	COM, HPC.
Thallous formate-----	EK.
Glucosheptonic acid salts:	
Calcium glucosheptonate-----	PFN.
Sodium glucosheptonate-----	PFN.
Zinc glucosheptonate-----	PFN.
Gluconic acid salts:	
Ammonium gluconate-----	PFZ.
*Sodium gluconate-----	DLI, PFZ, PMP, SFI.
Glycolic acid, sodium salt-----	SAL.
9H-Hexadecafluorononanoic acid, ammonium salt-----	DUP.
Humic acids, sodium salt-----	NLC.
Isoascorbic acid, sodium salt-----	MRK.
*Lactic acid salts:	
Ammonium lactate-----	TCC.
Calcium lactate-----	SHF.
Sodium lactate-----	REH, PFN.
Other-----	EK, REH, WTC.
Lauric acid salts:	
Barium cadmium laurate-----	CCA.
Dibutyltin dilaurate-----	CCW, x.
Zinc laurate-----	SNW.
Linoleic acid salts:	
Calcium linoleate-----	CCA, SHP.
Cobalt linoleate-----	SHP.
Copper linoleate-----	SHP.
Lead linoleate-----	SHP.
Manganese linoleate-----	SHP.
Maleic acid salts:	
Dibutyltin maleate-----	x.
Lead (tribasic) maleate-----	NTL.
*Mercaptoacetic acid (Thioglycolic acid) salts:	
Ammonium mercaptoacetate-----	EVN, TNI, x.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
*Mercaptoacetic acid (Thioglycolic acid) salts--Continued	
Antimony mercaptoacetate-----	CCA.
Calcium mercaptoacetate-----	EVN.
Dibutyltin mercaptoacetate-----	CCA.
Potassium mercaptoacetate-----	EVN.
Sodium mercaptoacetate-----	EVN.
Mercaptopropionic acid, dibutyltin salt-----	CCA.
Methacrylic acid, sodium salt-----	AAE.
Methylsuccinic acid, disodium salt-----	SDW.
Neodecanoic acid salts:	
Cadmium neodecanoate-----	CCA, MCI.
Calcium neodecanoate-----	CCA, MCI.
Cobalt neodecanoate-----	MCI.
Copper neodecanoate-----	MCI.
Lead cobalt neodecanoate-----	MCI.
Lead neodecanoate-----	CCA, MCI.
Lithium neodecanoate-----	MCI.
Manganese neodecanoate-----	MCI.
Stannous 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, VAL.
*Oleic acid salts:	
Aluminum oleate-----	WTC.
Ammonium oleate-----	MCI.
Barium zinc oleate-----	WTC.
Chromium oleate-----	SHP.
Copper oleate-----	SHP, WTC.
Lead oleate-----	NOC, SHP.
Stannous oleate-----	CCW, x.
Tributyltin oleate-----	TRO.
Oxalic acid salts:	
Ferric ammonium oxalate-----	PFZ.
Ferric oxalate-----	PFZ.
Ferrous oxalate-----	BKL.
Potassium oxalate-----	BKC, PFZ.
Sodium oxalate-----	MAL.
Palmitic acid salts:	
Aluminum palmitate-----	DA, WTC.
Zinc palmitate-----	ACY, DA, WTC.
Other-----	DA.
Phosphorodithioic acid salts (Dithiophosphates):	
Potassium dihexyl phosphorodithioate-----	ACY.
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.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
*Polyacrylic acid salts:	
Potassium polyacrylate-----	BFG.
Sodium polyacrylate-----	ALC, BFG, DA, JOR, RH.
Polymethacrylic acid, sodium salt-----	GRD.
Propionic acid salts:	
*Calcium propionate-----	HFT, PFZ, UCC, WSN.
*Sodium propionate-----	HFT, PFZ, UCC, WSN.
Zinc propionate-----	BKC.
Ricinoleic acid salts:	
Calcium ricinoleate-----	NTL.
Lithium ricinoleate-----	NTL.
Sebacic acid, aluminum salt-----	DA.
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, PEN, SYP, WTC.
*Aluminum monostearate-----	DA, MAL, SYP, WTC.
*Aluminum tristearate-----	DA, JTC, MAL, NOC, PEN, SYP.
Ammonium stearate-----	DA, MCI, NOC, WTC.
*Barium stearate-----	DA, JTC, NOC, PEN, SYP.
*Cadmium stearate-----	DA, NOC, SYP, WTC.
*Calcium stearate-----	ACY, DA, HN, JTC, MAL, NOC, PEN, SYP, WTC.
Copper stearate-----	NOC.
Ferric stearate-----	MCI.
Ferrous stearate-----	NOC, WTC.
Lead stearate-----	DA, NOC, WTC.
Lead stearate, dibasic-----	NTL.
*Lithium stearate-----	DA, NOC, PEN, SYP, WTC.
*Magnesium stearate-----	ACY, DA, JTC, MAL, NOC, PEN, SYP, WTC.
Manganese stearate-----	NOC.
Nickel stearate-----	WTC.
Silver stearate-----	PEN.
*Zinc stearate-----	ACY, CCA, DA, HN, JTC, MAL, NOC, PEN, SYP, WTC.
All other-----	APD, DA, SYP, VAL.
Succinic acid, sodium salt-----	MAL.
Tartaric acid salts:	
Antimony potassium tartrate-----	PFZ.
Potassium sodium tartrate-----	PFZ.
Sodium bitartrate-----	PFZ.
Valeric acid, ammonium salt-----	RSA.
*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-----	CEL, DOW.
Sodium isopropylxanthate-----	ACY, DOW.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Salts of Organic Acids--Continued</i>	
All other salts of organic acids-----	CCA, CCW, CRN, DA, EK, EVN, FIN, KCH, MCI, NTL, PD, RSA, SYP, UCC, x.
<i>Aldehydes and Ketones</i>	
*Acetaldehyde-----	CEL, DUP, EKT, EKX, PUB, SHC, UCC.
*Acetone:	
*From cumene-----	ACP, CLK, MON, PCC, SHC, SKO, SOC, UCC.
From isopropyl alcohol-----	EKT, ENJ, HPC, SHC, UCC.
Other-----	CEL, DIX.
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.
Chloral (Trichloroacetaldehyde)-----	DA, FMB, MTO.
5-Chloro-2-pentanone-----	SDW.
1-Chloro-1-penten-3-one (β -Chlorovinyl ethyl ketone)-----	ABB.
Chloro-2-propanone (Chloroacetone)-----	EK, MRK.
Crotonaldehyde-----	CEL, EKT, UCC.
Di-n-heptyl ketone-----	ARC.
1,3-Dihydroxy-2-propanone (Dihydroxyacetone)-----	BAX.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)-----	EKX.
Di-n-nonyl ketone-----	ARC.
2-Ethylbutyraldehyde-----	UCC.
Ethyl crotonaldehyde-----	UCC.
2-Ethylhexanal (α -Ethylcaproaldehyde)-----	EKX, UCC.
2-Ethyl-2-hexen-1-al (2-Ethyl-3-propylacrolein)-----	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)-----	UCC.
3-Heptanone (Ethyl butyl ketone)-----	UCC.
2,5-Hexanedione (Acetonylacetone)-----	RBC, UCC.
2-Hydroxyadipaldehyde-----	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.
Lactide (3,6-Dimethyl-2,5,p-dioxanedione)-----	CLN.
Methacrylaldehyde (Methacrolein)-----	ALD.
4-Methoxy-4-methyl-2-pentanone-----	SHC.
2-Methylbutyraldehyde-----	UCC.
2-Methyl-3-heptanone (Isopropyl propyl ketone)-----	UCC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)-----	EKT, UCC.
*4-Methyl-2-pentanone (Methyl isobutyl ketone)-----	EKT, ENJ, SHC, UCC.
Methylpentenal-----	UCC.
4-Methyl-3-penten-2-one (Mesityl oxide)-----	SHC, UCC.
2-Methylvaleraldehyde (2-Methylpentaldehyde)-----	UCC.
3-Octanone (Ethyl amyl ketone)-----	SHC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Aldehydes and Ketones--Continued</i>	
Paraformaldehyde-----	CEL, HN.
Paraldehyde (Paracetaldehyde)-----	UCC.
2,4-Pentanedione (Acetylacetone)-----	UCC.
2-Pentanone (Methyl propyl ketone)-----	UCC.
3-Pentanone (Diethyl ketone)-----	HEX, ORT.
Propionaldehyde-----	EKX, UCC.
Pyrvaldehyde-----	UCC.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)-----	UCC.
2-Undecanone (Methyl nonyl ketone)-----	ORT.
Valeraldehyde-----	UCC.
All other-----	ALD, ARC, CEL, EK, UCC.
<i>Alcohols, Monohydric, Unsubstituted</i>	
*Alcohols C ₉ or lower, unmixed:	
Allyl alcohol-----	FMP, SHC.
Amyl alcohols:	
2-Methyl-1-butanol-----	UCC.
2-Methyl-2-butanol (tert-Amyl alcohol)-----	ENJ, SHC.
1-Pentanol-----	UCC.
2-Pentanol-----	UCC.
Butyl alcohols:	
Primary:	
*Iso (Isopropylcarbinol)-----	CEL, DBC, EKX, SHC, UCC.
*Normal (n-Propylcarbinol)-----	CEL, CO, DBC, EKX, SHC, TNA, UCC.
Secondary (Methylethylcarbinol)-----	ENJ, SHC.
Tertiary (Trimethylcarbinol)-----	SHC, x.
2,6-Dimethyl-4-heptanol (Diisobutylcarbinol)-----	UCC.
*Ethyl alcohol, synthetic-----	EKX, ENJ, HPC, PUB, SHC, UCC, USI.
2-Ethyl-1-butanol-----	UCC.
*2-Ethyl-1-hexanol-----	CEL, DBC, EKX, SHC, UCC.
7-Ethyl-2-methyl-4-hendecanol-----	UCC.
2-Ethyl-4-methyl-1-pentanol-----	EKX.
Heptyl alcohol-----	EKX.
*Hexyl alcohol-----	CO, EKX, ENJ, PG, SHC, TNA, UCC.
Hexynol-----	AIP.
Isononyl alcohol-----	ENJ.
*Iso-octyl alcohols-----	AIP, ENJ, PCC, TID.
*Isopropyl alcohol-----	ENJ, SHC, UCC.
*Methanol, synthetic-----	ACN, AIP, BOR, CEL, COM, DUP, HN, HPC, MON, RH, UCC.
3-Methyl-1-butanol-----	UCC.
2-Methyl-3-butyn-2-ol-----	AIP.
2-Methyl-1-pentanol-----	UCC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)-----	SHC.
3-Methyl-1-pentyn-3-ol (Methylparafynol)-----	AIP.
*1-Octanol-----	CO, WTH.
*2-Octanol (sec-Capryl alcohol)-----	RH.
3-Pentanol-----	EK.
*Propyl alcohol (Propanol)-----	CEL, EKX, UCC.
2-Propyn-1-ol-----	GAF.
1-Tetradecanol (Myristyl alcohol)-----	CO, PG.
All other-----	AIP, CUC, EK, GYR, LIL, TCC, UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Alcohols, Monohydric, Unsubstituted--Continued</i>	
*Alcohols, C ₁₀ or higher, unmixed:	
1-Decanol-----	CO, ENJ, PCC.
Dodecyl alcohol (Lauryl alcohol) (95%)-----	CO.
4-Ethyl-1-octyn-3-ol-----	AIP.
*1-Hexadecanol (Cetyl alcohol) (95%)-----	ASH, CO, GIV, PG.
*Hexadecyl alcohols, other-----	ENJ.
*Isodecyl alcohol-----	AIP, ENJ, PCC, UCC.
*1-Octadecanol (Stearyl alcohol) (95%)-----	ASH, CO, PG.
cis-9-Octadecen-1-ol (Oleyl alcohol)-----	ASH, DUP.
1-Tridecanol-----	ENJ, GOC.
2,6,8-Trimethyl-4-nonanol-----	UCC.
All other-----	AIP, GOC.
*Mixtures of alcohols:	
*C ₉ and lower only:	
Amyl alcohols-----	ENJ, PUB, UCC.
Other-----	AIP, CEL, EKX, GOC, PG.
*C ₁₀ and higher only-----	ASH, CO, ENJ, GOC, PG, SHC, TNA, UCC.
*C ₆ to C ₁₂ and others-----	CO, EKX, GOC, PG, SHC, TNA.
<i>Polyhydric Alcohols and Their Esters and Ethers</i>	
*Polyhydric alcohols:	
1,2(and 1,3)-Butanediol-----	CEL.
1,4-Butanediol-----	DUP, GAF.
2-Butene-1,4-diol-----	GAF.
2-Butyne-1,4-diol-----	DUP, GAF.
3-Chloro-1,2-propanediol (Glycerol α -chlorohydrin)-----	EVN.
1,10-Decanediol-----	FIS.
Dextran-----	PHR.
2,5-Dimethyl-2,5-hexanediol-----	AIP.
2,5-Dimethyl-3-hexyne-2,5-diol-----	AIP.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)-----	EKX.
*Ethylene glycol-----	CAU, CEL, DOW, DUP, EKX, GAF, JCC, MAT, NWP, OMC, PPG, SHC, UCC, WYN.
2-Ethyl-1,3-hexandiol-----	UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Tri- methylol propane).	AAC, CEL.
*Glycerol, synthetic-----	APD, DOW, FMP, SHC.
1,6-Hexanediol-----	CEL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Tri- methylolthane).	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-----	COM.
*Pentaerythritol-----	CEL, COM, HN, HPC, RCI.
1,5-Pentanediol-----	UCC.
*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, PHR, RSA, UCC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Polyhydric Alcohols and Their Esters and Ethers--Continued</i>	
*Polyhydric alcohol esters:	
1,3-Butanediol dimethacrylate-----	SAR.
2-(2-Butoxyethoxy)ethyl acetate-----	EKT, UCC.
2-Butoxyethyl acetate-----	UCC.
Diethylene glycol, borated-----	GLY.
Diethylene glycol chloroformate-----	CTN, PPG.
2-(2-Ethoxyethoxy)ethyl acetate-----	EKT, UCC.
2-Ethoxyethyl acetate-----	DOW, EKT, ENJ, UCC.
Ethylene glycol diacetate-----	EKT, UCC.
Ethylene glycol dimercaptoacetate-----	EVN.
Ethylene glycol dimethacrylate-----	SAR.
Ethylene glycol hydroxyacetate-----	CCA.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol tri- methacrylate.	SAR.
Glyceryl diacetate (Diacetin)-----	ARC, HAL.
Glyceryl monoacetate (Monoacetin)-----	ARC, HAL.
Glyceryl triacetate (Triacetin)-----	ARC, EKT, UCC.
Glyceryl trioleate-----	GRO.
Glycol adipate-----	x.
Hexylene glycol diacetate-----	UCC.
Hydroxypropyl methacrylate-----	JCC.
Lanolin acetate-----	CRN.
2-Methoxyethyl acetate-----	UCC.
2-Methoxyethyl acrylate-----	UCC.
2-Methoxyethyl carbonate-----	VAL.
Methoxytriethyleneglycol acetate-----	RBC.
Pentaerythritol caprylate-----	PVO.
Pentaerythritol pelargonate-----	PVO.
Pentaerythritol stearate-----	GLY.
Pentaerythritol tetrakis(3-mercaptopropionate)-----	EVN.
Polyethylene glycol dimethacrylate-----	SAR.
Sucrose octa-acetate-----	HFT, PD.
Tetraethylene glycol diacrylate-----	AAE.
Tetraethylene glycol dimethacrylate-----	SAR.
Triethylene glycol diacetate-----	AAE, UCC.
Triethylene glycol dimethacrylate-----	SAR.
Tri(hexylene glycol) biborate-----	USB.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate-----	EKX.
Trimethylolpropane triacrylate-----	AAE.
Trioctanoin-----	EK.
All other-----	CCW, EKX, SAR, SHC, UCC.
*Polyhydric alcohol ethers:	
Allyloxypolyethylene glycol-----	UCC.
Bis(2-butoxyethyl) ether (Diethylene glycol di-n- butyl ether).	UCC.
Bis(2-ethoxyethyl) ether (Diethylene glycol diethyl ether).	UCC.
Bis(hydroxyethyl) ether butynediol-----	GAF.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether).	ASL.
Bis(2-methoxyethyl) ether (Diethylene glycol dimethyl ether).	ASL, OMC.
*2-Butoxyethanol (Ethylene glycol monobutyl ether)-----	DOW, EKX, OMC, SHC, UCC.
*2-(2-Butoxyethoxy)ethanol (Diethylene glycol monoiso- butyl ether).	DOW, EKX, JCC, OMC, SHC, UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Polyhydric Alcohols and Their Esters and Ethers--Continued</i>	
*Polyhydric alcohol ethers--Continued	
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether).	DOW, OMC, UCC.
1-butoxyethoxy-2-propanol-----	UCC.
*Diethylene glycol-----	CAU, CEL, DOW, EKX, GAF, JCC, MAT, NWP, OMC, PPG, SHC, UCC, WYN.
Diethoxytetraglycol-----	UCC.
Dimethoxyethane (Ethylene glycol dimethyl ether)-----	ASL, WYN.
*Dipropylene glycol-----	CEL, DOW, JCC, OCC, OMC, UCC.
*2-Ethoxyethanol (Ethylene glycol monoethyl ether)-----	DOW, EKX, JCC, OMC, SHC, UCC.
*2-(2-Ethoxyethoxy)ethanol (Diethylene glycol mono-ether).	DOW, EKX, JCC, OMC, SHC, UCC.
*2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether).	DOW, OMC, UCC.
2-(Hexyloxy)ethanol-----	UCC.
2-[2-(Hexyloxy)ethoxy]ethanol-----	UCC.
2-Isobutoxyethanol-----	EKX, UCC.
2-(2-Isobutoxyethoxy)ethanol (Diethylene glycol monoisobutyl ether).	EKX.
1-Isobutoxy-2-propanol (Propylene glycol isobutyl ether).	DOW.
*2-Methoxyethanol (Ethylene glycol monomethyl ether)----	CBN, DOW, EKX, JCC, OMC, PPG, SHC, UCC.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether).	DOW, EKX, JCC, OMC, PPG, SHC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether).	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl 2-methoxyethyl ether (Triethylene glycol dimethyl ether).	ASL, NWP.
Methoxypolyethylene glycol-----	JCC, UCC.
1-Methoxy-2-propanol-----	DOW, UCC.
3-(3-Methoxypropoxy)propanol-----	DOW, UCC.
3-[3-(3-Methoxypropoxy)propoxyl]propanol-----	DOW.
1-Methoxy-2-vinyloxyethane (Ethylene glycol monomethyl monovinyl ether).	GAF.
Polybutylene glycol-----	NLC.
Polyethoxyethyl glycerol-----	GLY.
Polyethoxyethylsorbitol-----	TCH.
*Polyethylene glycol-----	DA, DOW, DUP, GAF, HDG, JCC, MAT, NLC, NWP, OMC, TCH, UCC, WYN.
*Polypropoxy ethers:	
Glycerol tri(polyoxypropylene) ether-----	JCC, UCC, WYN.
Other-----	APD, DA, JCC, NWP, UCC, VAL, WYN.
*Polypropylene glycol-----	DOW, JCC, HDG, NLC, OMC, UCC, WYN.
Polytetramethylene ether glycol-----	DUP, QKO, x.
*Tetraethylene glycol-----	DOW, EKX, JCC, OMC, UCC.
1,1,3,3-Tetramethoxypropane-----	KF.
2,2'-Thiodiethanol (Thiodiglycol)-----	UCC, x.
*Triethylene glycol-----	CAU, CEL, DOW, EKX, GAF, JCC, MAT, OMC, PPG, SHC, UCC.
Tripropylene glycol-----	DOW, HDG, OMC, UCC.
All other-----	APD, DOW, EKX, GAF, GLY, JCC, NLC, TCH, UCC, UPJ.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols</i>	
Allyl methacrylate-----	JCC, SAR.
Amyl acetates, 90%:	
Isopentyl acetate (Isoamyl acetate)-----	NW, UCC.
n-Pentyl acetate-----	PFW.
Mixed-----	PUB.
Butyl acetates:	
Iso-----	EKX, ENJ, UCC.
*Normal-----	CEL, EKT, PUB, SHC, UCC.
Secondary-----	EKT, ENJ, PUB, SHC.
*Butyl acrylate-----	CEL, DBC, RH, UCC.
n-Butyl-4,4-bis(tert-butylperoxy)valerate-----	WTL.
Butyl butyryl lactate-----	RT.
Butyl chloroacetate-----	MON.
n-Butyl chloroformate-----	CTN.
sec-Butyl chloroformate-----	CTN.
Butyl lactate-----	COM.
Butyl maleate, mono- -----	PCC, TCH.
Butyl methacrylate-----	x.
tert-Butyl peroxyacetate-----	AZT, WTL.
tert-Butyl peroxy-2-ethylhexanoate-----	AZT, WTC, WTL.
tert-Butyl peroxyisobutyrate-----	AZT, WTC, WTL.
tert-Butyl peroxyisononanoate-----	WTL.
tert-Butyl peroxyisopropylcarbonate-----	PPG, WTL.
tert-Butyl peroxyneodecanoate-----	WTC.
*tert-Butyl peroxy-pivalate-----	AZT, WTC, WTL.
Cetyl lactate-----	VND.
Diallyl maleate-----	FMP.
Di(sec-butyl) chloroformate-----	WTL.
Dibutyl fumarate-----	MON, PCC, PFZ, RCI.
Dibutyl maleate-----	AIP, MON, PCC, RCI, RUB.
Di(sec-butyl) peroxydicarbonate-----	WTL.
Diethyl sec-butylethylmalonate-----	ABB.
Diethyl butylmalonate-----	BPC.
Diethyl sec-butylmalonate-----	ABB, FMP.
Diethyl carbonate (Ethyl carbonate)-----	CTN, OTC.
Diethyl diallylmalonate-----	CTN.
Diethyl diethylmalonate (Diethyl malonic ester)-----	LIL.
Diethyl dipropylmalonate-----	CTN.
Diethyl (ethoxymethylene)malonate-----	KF.
Diethyl ethylisopentylmalonate-----	LIL.
Diethyl ethylmalonate (Ethyl malonic ester)-----	LIL.
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-----	LIL.
Diethyl oxalate (Ethyl oxalate)-----	FMP.
Diisobutyl maleate-----	RUB.
Di-iso-nonyl maleate-----	RUB.
Diiso-octyl fumarate-----	RUB.
Diisopropyl peroxydicarbonate (Isopropyl percarbonate)---	PPG, WTL.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols--Continued</i>	
Dilauryl maleate-----	EFH.
Dilauryl 3,3'-thiodipropionate-----	ACY, CCW, EVN, x.
Dimethyl carbonate-----	CTN.
2,5-Dimethylhexane-2,5-diperoctoate-----	WTX.
Dimethyl maleate-----	AAC.
Dimethyl malonate-----	KF.
Dimethyl sulfite-----	EK.
Dimyristyl 3,3'-thiodipropionate-----	CCW, EVN.
*Diocetyl maleate-----	MON, PCC, RCI.
*Distearyl 3,3'-thiodipropionate-----	ACY, CCW, EVN, x.
Dithiobis(stearyl propionate)-----	EVN.
Ditridecyl maleate-----	RUB.
Di(tridecyl) 3,3'-thiodipropionate-----	EVN, x.
2-Ethoxyethyl acrylate-----	UCC.
*Ethyl acetate-----	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.
Ethyl 3-(chloroformyl)propionate-----	ABB.
Ethylenebis(chloroformate)-----	OTC.
Ethylene carbonate-----	JCC.
Ethyl formate-----	UCC.
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)-----	UCC.
Ethyl sulfate (Diethyl sulfate)-----	UCC.
Ethyl thioglycolate-----	EVN.
Fatty acid esters, not included with plasticizers or surface-active agents:	
Butyl palmitate-----	AAE, CBY.
Dimethyl brassylate-----	EMR.
Ethyl stearate-----	ARS.
Hexadecyl stearate-----	ICI.
Isopropyl linoleate-----	VND.
Methyl esters of coconut oil-----	PG.
Methyl esters of cottonseed oil-----	BFR.
*Methyl esters of tallow-----	BFR, CHL, HUM, PG.
Methyl 12-hydroxystearate-----	HUM, NTL.
Methyl myristate-----	PG.
Methyl stearate-----	DA.
Myristyl myristate-----	VND.
Tridecyl stearate-----	TCH.
All other-----	CRN, VND.
Glycidyl acrylate-----	AAE.
Glycidyl methacrylate-----	AAE.
Hexyl acetate-----	EKT, ENJ.
Hexyl acrylate-----	UCC.
Isobutyl acrylate-----	DBC, RH, UCC.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols--Continued</i>	
Isobutyl chloroformate-----	CTN, OTC.
Isobutyl isobutyrate-----	EKX.
Isodecyl acrylate-----	UCC.
Iso-octyl mercaptoacetate-----	CCW, EVN, x.
Iso-octyl 3-mercaptopropionate-----	EVN.
*Isopropyl acetate-----	EKT, ENJ, UCC.
Isopropyl chloroformate-----	CTN, PPG.
Lauryl lactate-----	VND.
Lauryl methacrylate-----	x.
Lauryl stearyl thiodipropionate-----	EVN.
Maleic esters and copolymers-----	GAF.
Methallylidene diacetate-----	UCC.
Methyl acetate-----	EK, MON, UCC.
Methyl acetoacetate-----	EKT, UCC.
Methyl acrylate, monomer-----	DBC, RH.
Methyl amyl acetate-----	PUB.
Methyl borate-----	MHI, SFA.
Methyl chloroacetate-----	DOW, KF.
Methyl chloroformate-----	CTN, FMP.
Methyl dichloroacetate-----	PD.
Methyl formate-----	CEL, DUP.
*Methyl methacrylate, monomer-----	ACY, CEL, 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:	
Amyl 2-ethylhexyl hydrogen phosphate-----	SM.
Bis(2-chloroethyl) 2-chloroethylphosphonate-----	GAF.
Bis(2-ethylhexyl) hydrogen phosphate-----	SM, UCC.
Bis(2-ethylhexyl) hydrogen phosphite-----	SM.
Butyl hydrogen phosphates-----	SM.
Dibutyl butylphosphonate-----	SM.
Dibutyl hydrogen phosphite-----	SM.
Didodecyl hydrogen phosphate-----	DUP.
Diethyl ethylphosphonate-----	SM.
Diethyl hydrogen phosphite-----	SM.
Diethyl phosphorochloridothionate-----	SFA.
Dimethyl hydrogen phosphite-----	SM.
Dimethyl methylphosphonate-----	SM.
Dimethyl phosphorochloridothionate-----	SFA.
Dioleyl hydrogen phosphite-----	SM.
2-Ethylhexyl hydrogen phosphate-----	SM.
Iso-octyl hydrogen phosphate-----	SM.
Olel hydrogen phosphate-----	SM.
Triamyl phosphite-----	SM.
Tributyl phosphate-----	COM.
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.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Esters of Monohydric Alcohols--Continued</i>	
*Phosphorus acid esters--Continued	
Tris(2,3-dibromopropyl) phosphate-----	MCH.
Tris(1,3-dichloro-2-propyl) phosphorothioate-----	SM.
All other-----	ACY, ALD, DUP, MON, PIC, SM, WES.
*Propyl acetate-----	CEL, EKT, PUB, UCC.
Propylene carbonate-----	DOW, JCC.
Stearyl methacrylate-----	x.
Tetraethyl orthosilicate-----	SFS, UCC.
1,1,3,3-Tetramethylbutyl peroxy-2-ethylhexanoate-----	WTL.
Tetraoctyl orthosilicate-----	MON.
Titanic acid esters:	
Bis(2-[bis(2-hydroxyethyl)amino]ethyl) diisopropyl titanate.	DUP.
Bis(1-methyl-3-oxo-1-butenyl) diisopropyl titanate-----	DUP.
Tetrabutyl titanate-----	DUP.
Tetraisopropyl titanate-----	DUP.
Tetrakis(2-ethylhexyl) titanate-----	DUP.
Other-----	DUP.
Triethyl orthoacetate-----	KF.
Triethyl orthoformate-----	KF.
Triethyl orthopropionate-----	KF.
Triisodecyl orthoformate-----	KF.
Trimethyl orthoformate-----	KF.
*Vinyl acetate, monomer-----	AIP, BOR, CEL, NSC, UCC, USI.
All other-----	ALD, CCA, CEL, CTN, DUP, EFH, EK, EXX, EMR, EVN, FMP, GAF, HUM, LIL, PCC, PD, PIC, PUB, RH, RUB, SFS, TNI, UCC, VND, WTL.
<i>Halogenated Hydrocarbons</i>	
1-Bromobutane (n-Butyl bromide)-----	BPC, MCH.
2-Bromobutane (sec-Butyl bromide)-----	ABB, EK.
Bromochloromethane-----	DOW.
1-Bromo-3-chloropropane (Trimethylenchlorobromide)-----	MCH.
2-Bromo-2-chloro-1,1,1-trifluoroethane-----	ICI.
Bromoethane (Ethyl bromide)-----	DOW, GTL, MCH.
1-Bromohexane (n-Hexyl bromide)-----	HMY, MCH.
1-Bromo-3-methyl-2-butene-----	SDW.
1-Bromo-octadecane-----	DUP, GAF.
1-Bromo-octane (n-Octyl bromide)-----	MCH.
2-Bromopentane (1-Methylbutyl bromide)-----	LIL, PD.
1-Bromopropane (n-Propyl bromide)-----	EK.
Bromotrichloromethane-----	MCH.
Bromotrifluoromethane-----	DUP.
*Carbon tetrachloride-----	ACS, DA, DOW, FMB, FRO, PPG, SFI.
*Chlorinated paraffins:	
Less than 35% chlorine-----	DA, HK.
*35%-64% chlorine-----	CCH, DA, DVC, HK, HPC, ICI, NEV.
65% or more chlorine-----	DA, DVC, NEV.
2-Chloro-1,3-butadiene-----	DUP.
*1-Chlorobutane (n-Butyl chloride)-----	PUB, UCC, WES.
2-Chlorobutane (sec-Butyl chloride)-----	EK, PLC.
*1-Chloro-1,1-difluoroethane-----	ACS, DUP, PAS.
*Chlorodifluoromethane-----	ACS, DUP, KAI, PAS, RCN.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Halogenated Hydrocarbons--Continued</i>	
*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.
Dibromodifluoromethane-----	DOW.
*1,2-Dibromoethane (Ethylene dibromide)-----	DOW, GTL, MCH, PPG, TNA.
Dibromomethane (Methylene bromide)-----	DOW.
1,3-Dibromopropane-----	ALD, EK, MCH.
Dichlorobutadiene-----	DUP.
1,3-Dichloro-2-butene-----	DUP.
1,4-Dichlorobutene-----	DUP.
*Dichlorodifluoromethane-----	ACS, DUP, KAI, PAS, RCN, UCC.
*1,2-Dichloroethane (Ethylene dichloride)-----	ACS, AME, BFG, CO, DA, DOW, FRO, JCC, PPG, SHC, TNA, UCC, WYN.
*Dichloromethane (Methylene chloride)-----	ACS, DA, DOW, DUP, FRO, SFI.
*1,2-Dichloropropane (Propylene dichloride)-----	DOW, JCC, UCC.
2,3-Dichloropropene-----	DOW, UCC.
Dichlorotetrafluoroethane-----	ACS, DUP.
1,1-Difluoroethane-----	ACS, DUP.
Diiodomethane (Methylene iodide)-----	NTB, SDW.
Dodecyl chloride-----	BRD.
Hexadecyl chloride-----	BRD.
Hexafluoropropylene, monomer-----	DUP.
Iodoethane (Ethyl iodide), tech-----	EK, FMT, RSA.
Iodoform (Triiodomethane)-----	NTB.
*Iodomethane (Methyl iodide)-----	EK, FMT, RSA.
1-Iodoperfluorohexane-----	TKL, x.
Octadecyl chloride-----	BRD.
Octafluorocyclobutane-----	DUP.
Octyl chloride-----	BRD, WES.
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.
n-Tetradecyl bromide-----	HMY.
n-Tetradecyl chloride-----	BRD.
Tetrafluoroethylene, monomer-----	DUP, PAS, TKL.
Tetrafluoroethylene, polymer-----	ACP, DUP, PAS.
Tetrafluoromethane-----	DUP.
*1,1,1-Trichloroethane (Methyl chloroform)-----	DOW, FRO, PPG, TNA.
1,1,2-Trichloroethane (Vinyl trichloride)-----	DOW, UCC.
*Trichloroethylene-----	DOW, DUP, HK, PPG, TNA, TTX.
*Trichlorofluoromethane-----	ACS, DUP, KAI, PAS, RCN, UCC.
1,2,3-Trichloropropane-----	DOW, SHC, UCC.
1,2,3-Trichloropropene-----	DOW.
Trichlorotrifluoroethane-----	ACS, DUP, UCC.
Vinyl bromide (Bromoethylene)-----	DOW, TNA.
Vinyl chloride, monomer (Chloroethylene)-----	ACS, AME, BFG, CO, DOW, HN, MNO, PPG, SHC, TNA.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>Halogenated Hydrocarbons--Continued</i>	
Vinyl fluoride-----	DUP.
Vinylidene chloride, monomer (1,1-Dichloroethylene)---	DOW, FRO.
Vinylidene fluoride-----	DUP.
All other-----	ALD, DUP, EK, GAF, HMY, KF, MCH, RSA, TKL.
<i>All Other Miscellaneous Acyclic Chemicals</i>	
Acetyl peroxide-----	AZI, WIL.
Aluminum isopropoxide (Aluminum isopropylate)-----	CHT, KCH.
*2-Butanone peroxide-----	AZT, CAD, NOC, RCI, WTC, WTL.
*tert-Butyl hydroperoxide-----	AZT, CAD, OCC, WTC, WTL.
*tert-Butyl peroxide (Di-tert-butyl peroxide)-----	AZT, CAD, NOC, SHC, WTC, WTL.
Butyrolactone-----	GAF.
Caprolactone-----	UCC.
*Carbon disulfide-----	ACS, FMB, PAS, PPG, SFI.
2-Chloroethanol (Ethylene chlorohydrin)-----	UCC.
Decanoyl peroxide-----	WTC, WTL.
Dialdehyde starch-----	MLS.
2,3-Dibromo-2-butene-1,4-diol-----	GAF.
2,3-Dibromopropanol-----	GTL, MCH.
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-butylhydroperoxy)hexane-----	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3-----	WTL.
1,3-Dioxolane-----	UCC.
Epoxides, ethers, and acetals:	
Acetone dimethylacetal (2,2-Dimethoxypropane)-----	DOW.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)---	AAC, SHC.
1,2-Bis(2-chloroethoxy)ethane (Triglycol dichloride)---	RH.
Bis(2-chloroethoxy)methane (Dichloroethylformal)-----	TKL.
Bis(2-chloroethyl) ether (Dichlorodiethyl ether)-----	DOW.
Bis(2-chloro-1-methylethyl) ether (Dichloroisopropyl ether).	DOW.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)-----	DOW.
Butylene oxide-----	DOW.
Butyl ether (Di-n-butyl ether)-----	PUB, UCC.
Butyl vinyl ether-----	UCC.
2-Chloroethyl vinyl ether-----	AAC, UCC.
Chloromethyl methyl ether-----	HK, RH.
Decyl vinyl ether-----	GAF.
2,2-Dichloro-1,1-difluoroethyl methyl ether-----	DOW.
Dimercaptodiethyl ether-----	EVN, USR.
Epichlorohydrin-----	DOW, SHC, x.
*Ethylene oxide-----	CAU, CEL, DOW, EKX, GAF, JCC, MAT, NWP, OMC, PPG, 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.
*Propylene oxide-----	CEL, DOW, JCC, OCC, OMC, UCC, WYN.
Other-----	EK, GAF, ICI, SHC, UCC, x.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>All Other Miscellaneous Acyclic Chemicals--Continued</i>	
Ethanedithiol-----	RBC.
Ethanethiol-----	EK, PLC.
2-(Ethylmercapto)ethanol-----	PLC.
Ethyl phosphorus thiodichloride-----	TNA.
Fats and oils, chemically modified-----	ABB, CHL, DOM, SDW.
Glucono-delta-lactone-----	DLI, PFZ.
Glutaraldehyde bis(sodium bisulfite)-----	IDC.
Hexachlorodimethyl sulfone-----	SFS.
n-Hexadecyl disulfide-----	PAS.
*Hydrocarbons:	
1-Butyne (Ethylacetylene)-----	AIP.
n-Decane-----	HMY, PLC.
2,5-Dimethyl-2,4-hexadiene-----	BPC.
n-Docosane-----	HMY.
n-Dodecane-----	HMY, PLC.
1-Dodecene-----	HMY.
n-Eicosane-----	HMY.
Hexadecane-----	HMY.
n-Hexane-----	HMY.
Myrcene-----	IFF, NCI.
1-Octadecene-----	HMY.
n-Octane-----	HMY.
1(and 2)-Octene-----	HMY, PLC.
Propyne (Methylacetylene)-----	AIP.
Other-----	CBY, HMY.
Lauroyl peroxide-----	AZT, TEK, WTL.
Magnesium methylate-----	MRT.
Methylal (Dimethoxymethane)-----	CEL.
Methyl sulfide (Dimethyl sulfide)-----	CRZ.
Methyl sulfoxide-----	CRZ.
Organo-aluminum compounds:	
Diethylaluminum chloride-----	TNA, TSA.
Diethylaluminum iodide-----	TSA.
Diisobutylaluminum chloride-----	TNA, TSA.
Diisobutylaluminum hydride-----	TSA.
Ethylaluminum chlorides-----	TNA, TSA.
Isopropenylaluminum-----	TSA.
Methylaluminum sesquichloride-----	TNA.
Triethylaluminum-----	TNA, TSA.
Triisobutylaluminum-----	TNA, TSA.
Trimethylaluminum-----	TNA.
Organo-boron compounds:	
Boron fluoride - ethyl ether complex-----	ACS.
Triethylborane-----	TSA.
Trimethoxyboroxine-----	SFS.
Organo-lead compounds:	
*Tetraethyllead-----	DUP, NLC, PPG, TNA.
Tetramethyllead-----	DUP, NLC, TNA.
Tetra(methyl-ethyl)lead-----	DUP, PPG.
Other-----	TNA.
Organo-lithium compounds-----	x.
Organo-magnesium halides-----	ARA.
Organo-mercury compounds-----	EK, NTB.
Organo-silicon compounds:	
Monomers-----	DCC, UCC.
*Polymers-----	DCC, ORO, SFS, SPD, UCC.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURER, 1971--CONTINUED

Chemical	Manufacturers' identification codes (according to list in table 3)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
<i>All Other Miscellaneous Acyclic Chemicals--Continued</i>	
Organo-tin compounds:	
Bis(tributyltin) oxide-----	CCW, x.
Dibutyltin dichloride-----	CCW, x.
Dibutyltin dilaurate-----	CCA.
Dibutyltin maleate-----	CCA.
Dibutyltin oxide-----	x.
Diocetyl tin oxide-----	x.
Dibutylmethoxytin (Dibutyl tin methoxide)-----	CCA.
Tributyltin chloride-----	PCW, x.
Tributyltin fluoride-----	x.
Other-----	CCA, CCW.
Organo-zinc compounds-----	TSA.
Perchloromethanethiol (Perchloromethyl mercaptan)-----	SFC.
*Phosgene (Carbonyl chloride)-----	CTN, DUP, MOB, OMC, OTC, PPG, RUC, UCC, UPJ, VDM.
Pine oil, synthetic-----	CBY, NCI.
1,2-Propanedithiol-----	ALD.
β -Propiolactone-----	CEL.
Rare sugars-----	PFN.
Sodium ethoxide-----	FMP.
Sodium formaldehyde bisulfite-----	EK, IDC.
Sodium formaldehyde sulfoxylate-----	DA, RH.
*Sodium methoxide (Sodium methylate)-----	DA, DUP, OMC, RBC.
Sodium succinaldehyde bisulfite-----	HEX.
Succinyl peroxide-----	WTL.
Tetrakis(hydroxymethyl)phosphonium chloride-----	HK.
2,4,8,10-Tetraoxaspiro[5,5]undecane-----	EK.
Thallous ethoxide-----	ALD.
Tributylphosphine-----	CCW.
Trimethylene oxide (Oxetane)-----	ALD.
Trimethylsulfoxonium iodide-----	ALD.
Trioctylphosphine oxide-----	EK.
Zinc formaldehyde sulfoxylate-----	DA, RH.
Other-----	ALD, ALX, DA, EK, GAF, GNM, NES, PD, PIC, RSA, SDW, SFA, SFS, SHC, SM, TNA, UCC, USB, WTL, x, x.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1971

ALPHABETICAL DIRECTORY BY CODE

[Names of miscellaneous chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 are listed below in the order of their identification codes as used in table 2]

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

TABLE 3--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

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

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 3--MISCELLANEOUS CHEMICALS: DIRECTORY OF MANUFACTURERS, 1971--CONTINUED

Code	Name of company	Code	Name of company
RUC	Rubicon Chemicals, Inc.	TCC	Tanatex Chemical Corp
S	Sandoz, Inc., Sandoz Colors & Chemical Div.	TCH	Trylon Chemicals, Inc, Sub. of Emery Industries, Inc.
SAL	Salsbury Laboratories	TEK	Teknor Apex Co.
SAR	Sartomer Industries, Inc.	TER	Terra Chemicals International, Inc.
SBC	Scher Bros.	TID	Getty Oil Co.
SCH	Schering Corp.	TKL	Thiokol Chemical Corp.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.	TNA	Ethyl Corp.
	Sterling Drug, Inc.:	TNI	Gillette Chemical Co., Div. of Gillette Co.
SDH	Hilton-Davis Chemical Co. Div.	TRI	Triad Chemicals
SDW	Winthrop Laboratories Div.	TRC	Troy Chemical Co.
	Stauffer Chemical Co.:	TSA	Texas Alkyls, Inc.
SFA	Agricultural Div.	TTX	Detrex Chemical Industries, Inc.
SFC	Calhio Chemicals, Inc. Div.	TX	Texaco, Inc.
SFI	Industrial Div.	TZC	Tizon Chemical Corp
SFS	Specialty Chemical Div.	UCC	Union Carbide Corp.
SHA	Shanco Plastics & Chemical Co.	UOP	Universal Oil Products Co., UOP Chemical Div.
SHC	Shell Oil Co., Shell Chemical Co. Div.	UPJ	Upjohn Co.
SHF	Kraftco Corp., Sheffield Chemical Div.	UPM	Universal Oil Products Co.
SHL	Nitine, Inc.	USB	U.S. Borax Research Corp.
SHO	Shell Oil Co.	UST	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.
SHP	Shepherd Chemical Co.	USR	Uniroyal, Inc., Chemical Div.
SK	Smith, Kline & French Laboratories	VAL	Valchem
SKG	Sunkist Growers, Inc..	VDM	Van De Mark Chemical Co.
SKO	Skelly Oil Co.	VEL	Velsicol Chemical Corp., Inc.
SM	Mobil Chemical Co.	VGC	Virginia Chemicals, Inc.
SM	Mobil Oil Corp., Mobil Chemical Co. Div.	VLN	Valley Nitrogen Producers, Inc.
	Industrial Chemical Div.	VND	Van Dyk & Co., Inc.
SNI	Kaiser Aluminum & Chemical Corp., Kaiser Agricultural Chemicals Div.	VPC	Verona Corp.
SNO	SunOlin Chemical Co.	WAY	Phillip A. Hunt Chemical Corp., Wayland Chemical Div.
SNW	Sun Chemical Corp., Chemical Div.	WBC	Worthington Biochemical Corp.
SOC	Standard Oil Co. of California, Chevron Chemical Co.	WBG	White & Bagley Co.
SOH	Vistron Corp.	WCL	Wright Chemical Co.
SOI	American Oil Co. (Maryland)	WES	Weston Chemical Corp.
SPD	General Electric Co., Silicone Products Dept.	WM	Wilson Pharmaceutical & Chemical Corp., Wilson-Martin Div.
SPR	Scientific Protein Laboratories	WMP	Essex International, Inc., Electro-Mechanical Div.
SRR	Stresen-Reuter International, International Minerals & Chemical Corp.	WSN	Mallinckrodt Chemical Works, Washine Div.
SW	Sherwin-Williams Co.	WTC	Witco Chemical Co., Inc.
SYP	Synthetic Products Co.	WTH	Union Camp Corp., Harchem Div.
		WTL	Pennwalt Corp., Lucidal Div.
TAE	Chemetron Corp., Medical Products Div.	WYC	Wycon Chemical Co.
		WYN	Wyandotte Chemicals Corp.

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

APPENDIX

DIRECTORY OF MANUFACTURERS

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1971

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1971 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 Plastic Pak Co., Inc-----	14505 Proctor, Industry, CA 91747.
AZS	AZS Corp.: AZ Products Co. Div----- Lancaster Chemical Co. Div-----	2525 Combee Rd., Eaton Park, FL 33840. Broad & 13th St., Carlstadt, NJ 07072.
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 14760.
OH	Airco, Inc., Ohio Medical Products Div-----	3030 Airco Dr., P.O. Box 1319, Madison, WI 53701.
AIR	Air Products & Chemicals, Inc., Chemicals Group	5 Executive Mall, Swedesford Rd., Wayne, PA 19087.
ALC	Alco Chemical Corp.-----	Trenton Ave. and Williams St., Philadelphia, PA 19134.
AAC	Alcolac, Inc-----	3440 Fairfield Rd., Baltimore, MD 21226.
ALD	Aldrich Chemical Co., Inc-----	940 W. St. Paul Ave., Milwaukee, WI 53233.
ALL	Alliance Chemical Co., Inc----- Allied Chemical Corp.:	33 Avenue P, Newark, NJ 07105.
ALF	Fibers Div-----	1 Times Square, New York, NY 10036.
ACP	Plastics Div-----	P. O. Box 2365R, Morristown, NJ 07960.
ASC	Semet-Solvay Div-----	Columbia Rd., 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.
ACN	Agricultural Dept-----	P. O. Box 2120, Houston, TX 77001.
ALX	Alox Corp-----	3943 Buffalo Ave., Niagara Falls, NY 14302.
ALP	Alpha Laboratories, Inc-----	1685 S. Fairfax St., Denver, CO 80222.
AMC	Amchem Products, Inc., Div. of Rorer-Amchem, Inc.	Brookside Ave., Ambler, PA 19002.
AES	Amerace-Esna Corp., Chemical Specialties Div-----	74 Hudson Ave., Tenafly, NJ 07670.
DLH	Amerada Hess Corp-----	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., P. O. Box 9247, 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., Sub. of B. F. Goodrich Co-----	6100 Oak Tree Blvd., Cleveland, OH 44131.
ALB	Ames Laboratories, Inc-----	200 Rock Lane, Milford, CT 06460.
ACC	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.
APD	Apollo Colors, Inc-----	899 Skokie Blvd., Northbrook, IL 60062.
HAP	Applied Plastics Co., Inc-----	612 E. Franklin Ave., 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, NY 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.
ARC	Armak Co-----	300 E. Wacker Dr., Chicago, IL 60601.
AGP	Armour-Dial, Inc-----	111 E. Wacker Dr., Chicago, IL 60601.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1971--CONTINUED

Identification code	Name of company	Office address
ARP	Armour Pharmaceutical Co-----	P. O. Box 511, Kankakee, IL 60901.
ARK	Armstrong Cork Co-----	Liberty and Charlotte Sts., Lancaster, PA 17604.
ARL	Arol Chemical Products Co-----	649 Ferry St., Newark, NJ 07105.
ARS	Arsynco, Inc-----	P. O. Box 8, Carlstadt, NJ 07072.
ASH	Ashland Oil, Inc-----	1401 Winchester Ave., Ashland, KY 41101.
	Ashland Chemical Co. Div-----	5200 Blazer Blvd., Dublin, 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 Pharmaceutical 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-----	P. O. Box 87, Joplin, MO 64801.
APR	Atlas Processing Co-----	P. O. Box 9389, 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-----	398 Midland Bldg., Cleveland, OH 44115.
BKC	J. T. Baker Chemical Co-----	222 Red School Lane, Philipsburg, 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.
	Baychem Corp.: Chemagro Div-----	P. O. Box 4913, Station "F", Kansas City, MO 64120.
CHG	Verona Div-----	Union Metropolitan Port, P. O. Box 385, Union, NJ 07083.
VPC	Bayoil Co., Inc-----	2 Union St., Peabody, MA 01960.
BAO	Beecham, Inc-----	65 Industrial S., Clifton, NJ 07012.
BEE	Beech-Nut, Inc-----	Church St., Canajoharie, NY 13317.
BLS	Belding Chemical Industries-----	1430 Broadway, New York, NY 10018.
BCM	Bendix Corp., Friction Materials Div-----	P. O. Box 238, Troy, NY 12180.
BME	Bennett's-----	65 W. 1st S. St., Salt Lake City, UT 84110.
BEN	Benzenoid Organics, Inc-----	P. O. Box 157, Bellingham, MA 02019.
BDO	Berncolors-Poughkeepsie, Inc-----	75 N. Water St., Poughkeepsie, NY 12602.
PDC	Bio-Derivatives Corp-----	174 E. Industry Ct., Deer Park, NY 11729.
BID	Blackman Uhler Chemical Co-----	P. O. Box 5627, Spartanburg, SC 29301.
BUC	Borden, Inc., Borden Chemical Div-----	50 W. Broad St., Columbus, OH 43215.
BOR	Borg-Warner Corp., Marbon Chemical Div-----	P. O. Box 68, Washington, WV 26181.
MCB	Breddo Food Products Corp-----	18th and Kansas, Kansas City, KS 66105.
BFP	Bristol-Meyers Co., Bristol Laboratories Div-----	P. O. Box 657, Syracuse, NY 13201.
BRS	M. A. Bruder & Sons, Inc-----	52d St. and Grays Ave., Philadelphia, PA 19143.
BRU	Buckeye Cellulose Corp-----	2899 Jackson Ave., Memphis, TN 38108.
BUK	Buckman Laboratories, Inc-----	1256 N. McLean Blvd., Memphis, TN 38108.
BKM	Budd Co., Polychem Div-----	70 S. Chapel St., Newark, DE 19711.
CD	Burdick & Jackson Laboratories, Inc-----	1953 S. Harvey St., Muskegon, MI 49442.
BJL	Burrhoughs & Wellcome Co-----	3030 Cornwallis Rd., Research Triangle Park, NC 27709.
BUR		
FTX	CF Industries, Inc., Fremont Nitrogen Complex	P. O. Box 68, R.F.D. #3, 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	S. B. Penick Co-----	100 Church St., New York, NY 10007
CBT	Samuel Cabot, Inc-----	One Union St., Boston, MA 02108
CAU	Calcasieu Chemical Corp-----	P. O. Box 1522, Lake Charles, LA 70601.
OBM	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 Corp., Carus Chemical Co-----	1500 8th St., LaSalle, IL 61301.
CEL	Celanese Corp-----	522 5th Ave., New York, NY 10036.
	Celanese Coatings Co-----	1495 S. 11th St., Louisville, KY 40208.
	Celanese Fibers Co-----	522 5th Ave., New York, NY 10036.
	Celanese Plastics Co-----	522 5th Ave., New York, NY 10036.
GRS	Champlin Petroleum Co-----	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., Chattam Chemicals Div.	1715 W. 38th St., Chattanooga, TN 37409.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
GBD	Chembond Corp-----	P. O. Box 270, Springfield, OR 97477.
FRL	Chemed Corp., Vestal Laboratories Div-----	4963 Manchester Ave., St. Louis, MO 63110.
	Chemetron Corp.:	
TAE	Medical Products 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.
CI	Chem-Fleur, Inc-----	200 Pulaski St., Newark, NJ 07105.
CHF	Chemical Formulators, Inc-----	P. O. Box 26, Nitro, WV 25143.
CKL	Chemlek Laboratories, Inc-----	4040 W. 123d St., Alsip, IL 60658.
CHL	Chemol, Inc-----	P. O. Box 20687, Greensboro, NC 27420.
CPX	Chemplex Co-----	3100 Golf Rd., Rolling Meadows, IL 60008.
CHN	Cherokee Nitrogen Co-----	P. O. Box 429, Pryor, OK 74361.
ORO	Chevron Chemical Co-----	200 Bush St., San Francisco, CA 94120.
CPC	Childs Pulp Colors, Inc-----	5 Albany St., Springfield, MA 01101.
CHH	CHR-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.
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-----	P. O. Box 1522, Lake Charles, LA 70601.
CBN	Petrochemicals Group-----	60 Wall St., New York, NY 10005.
CSO	Cities Service Oil Co-----	P. O. Box 300, Tulsa, OK 74102.
CLK	Clark Oil & Refining Corp., Clark Chemical Corp.	131st St. & Kedzie Ave., Blue Island, IL 60406.
CLY	W. A. Cleary Corp-----	P. O. Box 749, New Brunswick, NJ 08903.
CLI	Clintwood Chemical Co-----	4342 S. Wolcott Ave., Chicago, IL 60609.
CSP	Coastal States Petrochemical Co-----	P. O. Drawer 521, Corpus Christi, TX 78403.
CP	Colgate-Palmolive Co-----	300 Park Ave., New York, NY 10022.
COL	Collier Carbon & Chemical Corp-----	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.
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-----	P. O. Box 3623, Ponce, PR 00731.
SFD	Conchemco, Inc., Kansas City Div-----	18th & Garfield Sts., Kansas City, MO 64127.
CON	Concord Chemical Co., Inc-----	17th & Federal Sts., Camden, NJ 08105.
CPL	Conoco Chemicals-----	Park Eighty Plaza East, Saddle Brook, NJ 07662.
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.
COO	Cooper Polymers, Inc-----	820 Woburn St., Wilmington, MA 01887.
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-----	P. O. Box 638, Providence, RI 02901.
CRZ	Crown Zellerbach Corp., Chemical Products Div.	Camas, WA 98607.
DAN	Dan River, Inc-----	Danville, VA 24541.
	Dart Industries, Inc.:	
AZT	Azetec Chemicals Div-----	P. O. Box 249, Elyria, OH 44035.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
DYS	Davies-Young Co-----	2700 Wagner Place, Maryland Heights, MO 63043.
DLI	Dawe's Laboratories, Inc-----	450 State St., Chicago, IL 60411.
DEG	Degen Oil & Chemical Co-----	200 Kellogg St., Jersey City, NJ 07305.
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.
DUN	Frank W. Dunne Co-----	1007 41st., Oakland, CA 94608.
DUP	E. I. duPont de Nemours & Co., Inc-----	DuPont Bldg., Wilmington, DE 19898.
DSC	Dye Specialties, Inc-----	26 Journal Sq., Jersey City, NJ 07306.
EGR	Eagle River Chemical Corp-----	P. O. Box 665, Marinette, WI 54143.
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.
EXX	Texas Eastman Co. Div-----	P. O. Box 7444, Longview, TX 75601.
ESA	East Shore Chemical Co., Inc-----	1221 E. 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-----	Stirling, NJ 07980.
ELP	El Paso Products Co-----	P. O. Box 3986, Odessa, TX 79760.
EMR	Emery Industries, Inc-----	4300 Carew Tower, Cincinnati, OH 45202
TCH	Trylon Chemicals Div-----	P. O. Box 628, Mauldin, SC 29662
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 3272, Houston, TX 77001.
NPP	Enjay Fibers & Laminates Co. Div-----	Odenton, MD 21113.
EPC	Epoxylite Corp-----	1428 Santa Anita Ave., S. El Monte, CA 91733.
ESS	Essential Chemicals Group-----	28391 Essential Rd., Merton, WI 53056.
WMP	Essex International, Inc., Electro- Mechanical Div.	1200 Rochester Ave., P. O. Box 2423, 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., P. O. Box 2398, 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.
XNG	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, 1971--CONTINUED

Identi- fication code	Name of company	Office address
FEL	Felton International, Inc-----	599 Johnson Ave., Brooklyn, NY 11237.
FER	Ferro Chemical Corp.: Ferro Chemical Div-----	P. O. Box 349, 7050 Krick Rd., Bedford, OH 44146.
FER	Grant Chemical Div-----	P. O. Box 263, Baton Rouge, LA 70821.
OTA	Ottawa Chemical Div-----	700 N. Wheeling St., Toledo, OH 43605.
RBC	Fike Chemicals, Inc-----	P. O. Box 546, Nitro, WV 25143.
FIN	Fine Organics, Inc-----	205 Main St., Lodi, NJ 07644.
FRL	Firestone Tire & Rubber Co.: 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.
FCD	France, Campbell & Darling, Inc-----	209 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-----	1228 Chestnut St., Chattanooga, TN 37402.
	Chemical Div-----	P. O. Box 12, Linden, NJ 07036.
GAN	Gane's Chemical Works, Inc-----	535 5th Ave., New York, NY 10017.
GE	General Electric Co-----	1 Plastics Ave., Pittsfield, MA 01201 and South Second St., Coshocton, OH 43812.
GEI	Insulating Materials Dept-----	1 Campbell Rd., Schenectady, NY 12306.
SPD	Silicone Products Dept-----	Hudson River Rd., 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.: Bellingham Div-----	P. O. Box 1236, Bellingham, WA 98225.
PSP	Coos Bay Div-----	P. O. Box 869, Coos Bay, OR 97420.
CBC	Getty Oil Co-----	Delaware, DE 19706.
TID	Gillette Chemical Co. Div. of Gillette Co-----	P. O. Box 362, N. Chicago, IL 60064.
TNI	Gilman Paint & Varnish Co-----	W. 8th and Pine Sts., Chattanooga, TN 37401.
GIL	Givaudan Corp-----	100 Delawanna Ave., Clifton, NJ 07014.
GIV	Glyco Chemicals, Inc-----	51 Weaver St., Greenwich, CT 06830.
GLY	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	6100 Oak Tree Blvd., Cleveland, OH 44131.
BFG	Goodyear Tire & Rubber Co-----	1144 E. Market St., Akron, OH 44313.
GYR	Gordon Corp-----	300 S. 3d St., Kansas City, KS 66118.
PBI	Gordon Chemical Co., Inc-----	88 Webster St., Worcester, MA 01603.
GOR	W. R. Grace & Co.: Agricultural Chemical Group-----	P. O. Box 277, Memphis, TN 38101.
GCC	Dubois Chemicals Div-----	Dubois Tower, Cincinnati, OH 45202.
GRC	Hampshire Chemical Div-----	Poisson Ave., Nashua, NH 03060.
HMP	Hatco Chemical Div-----	629 Amboy St., Edison, NJ 08817.
GRH	Marco Chemical Div-----	1711 W. Elizabeth Ave., Linden, NJ 07036.
MRO	Polymers & Chemicals Div-----	62 Whittemore Ave., Cambridge, MA 02140.
GRD	Grain Processing Corp-----	1600 Oregon St., Muscatine, IA 52761.
GRP	Great American Chemical Corp-----	650 Water St., Fitchburg, MA 01420.
GRA	Great Lakes Chemical Corp-----	P. O. Box 2200, West Lafayette, IN 47906.
GTL	Great Western Sugar Co-----	P. O. Box 5308, Terminal Annex, Denver, CO 80217.
GRW		

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
GRV	Guardsman Chemical Coatings, Inc-----	1350 Steele Ave., S.W., Grand Rapids, MI 49502.
SC	Louisville Div-----	1350 S. 15th St.; Louisville, KY 40210.
	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.
HAL	C. P. Hall Co. of Illinois-----	7300 S. Central Ave., Chicago, IL 60638.
HAN	Hanna Chemical Coatings Corp-----	P. O. Box 147, Columbus, OH 43216.
HDM	Hardman, Inc-----	600 Cortlandt St., Belleville, NJ 07109.
HSH	Harshaw Chemical Co. Div. of Kewanee Oil Co--	1945 E. 97th St., Cleveland, OH 44106.
HRT	Hart Products Corp-----	173 Sussex St., Jersey City, NJ 07302.
HVG	Haveg Industries, Inc-----	900 Greenbank Rd.; Wilmington, DE 19808.
HKY	Hawkeye Chemical Co-----	P. O. Box 899, Clinton, LA 52733.
SCP	Henkel, Inc-----	1301 Jefferson St., Hoboken, NJ 07030.
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., Manitowoc, 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.
REZ	Hexcel Corp., Rezolin Div-----	20701 Nordhoff St., Chatsworth, CA 91311.
HDG	Hodag Chemical Corp-----	7247 N. Central Park Ave., Skokie, IL 60076.
HOF	Hoffmann-LaRoche, Inc-----	324-424 Kingsland St., Nutley, NJ 07110.
HFT	Hoffman-Taff, Inc-----	P. O. Box 1246 S.S.S., Springfield, MO 65805.
HK	Hooker Chemical Corp-----	MPO Box 8, Niagara Falls, NY 14302.
HKD	Durex Div-----	Walck Rd., N. Tonawanda, NY 14121.
RUB	Ruco Div-----	P. O. Box 456, Burlington, NJ 08016.
EFH	E. F. Houghton & Co-----	303 W. Lehigh Ave., Philadelphia, PA 19133.
HMV	Humphrey Chemical Co-----	Devine St., North Haven, CT 06473.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	P. Q. Box 0, Lincoln, RI 02865.
HNT	Huntington Laboratories, Inc-----	P. O. Box 710, Huntington, IN 46750.
HUS	Husky Industries, 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.
APD	Atlas Chemical Div-----	Wilmington, DE 19899.
RAY	ITT Rayonier, Inc-----	161 E. 42d St., New York, NY 10017.
INP	INDPOL-----	8434 Rochester Ave., Cucamonga, CA 91730.
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-----	609 Lafayette Ave., Hawthorne, NJ 07506 and 5935 Milford Ave., Detroit, MI 48210.
IFF	International Flavors & Fragrances, Inc-----	521 W. 57th St., New York, NY 10019.
IMC	International Minerals & Chemical Corp-----	IMC Plaza, Libertyville, IL 60948.
IPC	Interplastic Corp., Commercial Resins Div----	2015 NE. Broadway St., Minneapolis, MN 55413.
IOC	Ionac Chemical Co. Div. of Sybron Corp-----	Birmingham, NJ 08011.
IRI	The Ironsides Co., 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 43694.
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.
JNS	S. C. Johnson & Son, Inc-----	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Paint Co-----	2728 Proctor, Dallas, TX 75235.
JOR	Jordan Chemical Co-----	1830 Columbia Ave., Folcroft, PA 19032.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY BY MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
	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.
KLM	Kalama Chemical Co-----	P. O. Box 427, Kalama, WA 98625.
KAL	Kali Manufacturing Co-----	427 Moyer St., Philadelphia, PA 19125
KF	Kay-Fries Chemicals, Inc-----	360 Lexington Ave., New York, NY 10017.
KMP	Kelly-Moore Paint Co-----	1015 Commercial St., San Carlos, CA 94070.
	Kennecott Copper Corp.:	
KCC	Chino Mines Div-----	Hurley, MN 38043.
KCU	Utah Copper Div-----	P. O. Box 11299, Salt Lake City, UT 84111.
AMP	Kerr-McGee Corp-----	Kerr-McGee Bldg., Oklahoma City, OK 73159.
KYS	Keysor Chemical Corp-----	P. O. Box 308, 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-----	187 Garibaldi 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.
	Kraft 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.
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.
LEV	Lever Brothers Co-----	390 Park Ave., New York, NY 10022.
LVR	C. Lever Co., Inc-----	736 Dunks Ferry Rd., Cornwells Hgts, PA 19020.
LIL	Eli Lilly & Co-----	307 E. McCarty St., Indianapolis, IN 46206 and G.P.O. Box 4388, San Juan, PR 00936.
BRD	Lonza, Inc-----	22-10 Route 208, Fair Lawn, NJ 07410.
LUB	Lubrizol Corp-----	29400 Lakeland Blvd., Wickliffe, OH 44092.
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
MOR	Marathon Morco Co-----	P. O. Drawer C, Dickinson, TX 77539.
MOC	Marathon Oil Co., Texas Refining Div-----	P. O. Box 1191, Texas City, TX 77590.
MRB	Marblette Co. 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 27261.
	Martin-Marietta Corp.:	
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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971-- CONTINUED

Identi- fication code	Name of company	Office address
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.
	Millmaster Onyx Corp.:	
GRO	A. Gross & Co. Div-----	652 Doremus Ave., Newark, NJ 07105.
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.
MMM	Minnesota Mining & Manufacturing 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.
	Chemical Coatings Div-----	150 E. 42d St., New York, NY 10017.
	Edison Plant-----	P. O. Box 250, Edison, NJ 08817.
SM	Mobil Oil Corp-----	P. O. Box 900, Dallas, TX 75221.
	Mobil Chemical Co., Industrial Chemical Div.	P. O. Box 677, Richmond, VA 23206.
MOA	Mona Industries, Inc-----	65 E. 23d St., Paterson, NJ 07524.
MNO	Monochem, Inc-----	P. O. Box 488, Geismar, LA 70734.
MNR	Monroe Chemical Co-----	Saville Ave. at 4th St., Eddystone, PA 19013.
MON	Monsanto Co-----	P. O. Box 120, Santa Clara, CA 95052 and 800 N. Lindbergh 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. Lindbergh Blvd., St. Louis, MO 63166.
LUE	Monsanto Flavor/Essence, Inc-----	427 Washington St., New York, NY 10013.
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. 1799, Spartanbury, SC 29301.
MRT	Morton Chemical Co-----	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.
NTL	NL Industries, Inc-----	111 Broadway, New York, NY 10006.
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.
NMC	National Milling & Chemical Co-----	4601 Flat Rock Rd., Philadelphia, PA 19127.
USI	National Petro Chemical Corp-----	99 Park Ave., New York, NY 10016.
NSC	National Starch & Chemical Corp-----	750 3d Ave., New York, NY 10017.
NES	Nease Chemical Co., Inc-----	P. O. Box 221, State College, PA 16801.
NEP	Nepera Chemical Co., Inc-----	Route 32, Harriman, NY 10926.
NEV	Neville Chemical Co-----	Neville Island, P. O., Pittsburgh, PA 15225.
NIL	Nilok Chemicals, Inc-----	2235 Langdon Farm Rd., Cincinnati, OH 45230.
JDC	Nipak, Inc-----	301 S. Harwood St., Dallas, TX 75221.
CNP	Nipro, Inc-----	P. O. Box 1483, Augusta, GA 30903.
SHL	Nitini, Inc-----	697 Rt. 46, Clifton, NJ 07015.
NOC	Norac Co., Inc-----	405 S. Motor Ave., Azusa, CA 91703.
NEO	Norda, Inc-----	475 10th Ave., New York, NY 10001.
NPV	Norris Paint & Varnish Co-----	P. O. Box 2023, Salem, OR 97308.
LMI	North American Chemical Co-----	19 Chestnut St., Cambridge, MA 02139

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
MFG	North American Rockwell Corp., Re- inforced Plastics Operations, Automotive Products Div.	4501 Benefit Ave., Ashtabula, OH 44004.
NWP & VAC	Northern Petrochemical Co-----	2350 E. Devon Ave., Des Plaines, IL 60018.
NW	Northwestern Chemical Co-----	120 N. Aurora St., W. Chicago, IL 60185.
NPC	Northwest Petrochemical Corp-----	P. O. Box 99, Anacortes, WA 98221.
NOR	Norwich Pharmacal Co-----	17 Eaton Ave., Norwich, NY 13815.
NCW	Nostrup 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 46627.
BST	Occidental Chemical Co-----	P. O. Box 198, Lathrop, CA 95330.
OMC	Olin Corp-----	120 Long Ridge Rd., Stamford, CT 06904.
THC	Agricultural Chemicals Div-----	1120 Marshall St., P. O. Box 991, Little Rock, AR 72203.
OPC	Thompson Plastics-----	238 S. Main St., Assonet, MA 02702.
ORG	Orbis Products Corp-----	475 10th Ave., New York, NY 10008.
BSW	Organics, Inc-----	1724 W. Greenleaf Ave., Chicago, IL 60628.
OTC	Original Bradford Soap Works, Inc-----	200 Providence St., W. Warwick, RI 02893.
OCF	Ott Chemical Co-----	500 Agard Rd., Muskegon, MI 49945.
OCC	Owens-Corning Fiberglas Corp-----	P. O. Box 901, Toledo, OH 33659.
	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.
PVO	PVO International, Inc-----	416 Division St., Boonton, NJ 07005.
BFR	Pace National Corp-----	500 7th Ave., S., Kirland, WA 98033.
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, Greenville, SC 29602.
CCH	Pearsall Corp-----	4635 Southwest Freeway, Suite 610W, Houston, TX 77025.
PEK	Peck's Products Co-----	610 E. Clarence Ave., St. Louis, MO 63147.
PCH	Peerless Chemical Co-----	12416 Cloverdale Ave., Detroit, MI 48204.
PLN	Pellon Corp., Disogrin Industries Div-----	Perimeter Rd., Grinier Field, Manchester, NH 07103.
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.
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-----	719 Stefkco Blvd., 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.
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.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1971--CONTINUED

Identification code	Name of company	Office address
PLS	Plastics Engineering Co-----	P. O. Box 758, 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.
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.
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	Proctor & 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-----	5454 San Fernando Rd., Glendale, CA 91203.
PUB	Publicker Industries, Inc-----	1429 Walnut St., Philadelphia, PA 19102.
PTO	Puerto Rico Chemical Co., Inc-----	P. O. Box 496, Arecibo, PR 00613.
PUE	Puerto Rico Olefins-----	P. O. Box 4197, Ponce, PR 00731.
PRX	Purex Corp., Ltd-----	5101 Clark Ave., Lakewood, CA 90712.
	Washburn-Lanson Co. Div-----	2258 Elston Ave., Chicago, IL 60614.
QCP	Quaker Chemical Corp-----	Lime & Elm Sts., Conshohocken, PA 19428.
QKO	Quaker Oats Co-----	345 Merchandise Mart Plaza, Chicago, IL 60654.
QUN	K. J. Quinn & Co., Inc-----	195 Canal St., Malden, MA 02148.
RSA	R.S.A. Corp-----	690 Sawmill River Rd., Ardsley, NY 10502.
RLS	Rachelle Laboratories, Inc-----	700 Henry Ford Ave., Long Beach, CA 90801.
RCN	Racon, Inc-----	P. O. Box 198, 6040 S. Ridge Rd., Wichita, KS 67201.
RAB	Raybestos-Manhattan, Inc., 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 Resin Div.	6901 Cavalcade St., Houston, TX 77001.
REM	Remington Arms Co., Inc-----	4730 Crittenden Dr., Louisville, KY 40221.
RSY	Resyn Corp-----	939 Barnum Ave., Bridgeport, CT 06602.
RTF	Retzlaff Chemical Co-----	1401 W. Blancke St., Linden, NJ 07036.
RCC	Rexene Polymers Co-----	3230 Brookfield, Houston, TX 77045.
RDA	Rhodia, Inc-----	P. O. Box 37, Paramus, NJ 07652.
RCD	Richardson Co-----	600 Madison Ave., New York, NY 10022.
PLA	Polymeric Div-----	2708 Lake St., Melrose Park, IL 60160.
AMS	Ridgway Color & Chemical-----	425 Morgan Lane, West Haven, CT 06516.
RIK	Riker Laboratories, Inc., Sub. of 3M Co-----	75 Front St., Ridgway, PA 15853.
RSN	Rilsan Corp-----	19901 Nordhoff St., Northridge, CA 91324.
RT	F. Ritter & Co-----	139 Harristown Rd., Glen Roc, NJ 07452.
RTC	Ritter Chemical Co., Inc-----	4001 Goodwin Ave., Los Angeles, CA 90039.
RIV	Riverdale Chemical Co-----	403 W. Main St., Amsterdam, NY 12010.
ROB	Robeco Chemicals, Inc-----	220 E. 17th St., Chicago Heights, IL 60411.
ORT	Roehr Chemicals, Inc-----	51 Madison Ave., New York, NY 10010.
RGC	Rogers Corp-----	52-20 37th St., Long Island City, NY 11101.
RH	Rohm & Haas Co-----	Main St., Rogers, CT 06263.
		Independence Mall West, Philadelphia, PA 19105.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
RUC	Rubicon Chemicals, Inc-----	P. O. Box 517, Geismar, LA 70734.
GLD	SCM Corp.: Durkee Famous Foods Div-----	2333 Logan Blvd., Chicago, IL 60647.
NPR	Glidden-Durkee Div-----	900 Union Commerce Bldg., Cleveland, OH 44115.
SLM	Safeway Stores, Inc., Brookside Div-----	8390 Capwell Dr., Oakland, CA 94604.
SAL	Salem Oil & Grease Co-----	60 Grove St., Salem, MA 01970.
S	Salsbury Laboratories-----	2000 Rockford Rd., Charles City, IA 50616.
	Sandoz, Inc., Sandoz Color & Chemical Div----	P. O. Box 357, Fair Lawn, NJ 07410 and Route No. 10, Hanover, NJ 07936.
SAR	Sartomer Industries, Inc-----	P. O. Box 56, Essington, PA 19029.
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.
SPA	Scott Paper Co-----	Oconto Falls, WI 54154.
SEA	Seaboard Chemicals, Inc-----	30 Foster St., Salem, MA 01970.
SRL	G. D. Searle & Co-----	P. O. Box 5110, Chicago, IL 60680.
SEY	Seydel Woolley & Co., Inc-----	762 Marietta Blvd., NW., Atlanta, GA 30318.
SKP	Shakespeare Co., Industrial Products Div----	P. O. Box 246, Columbia, SC 29202.
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-----	One Shell Plaza, Houston, TX 77001.
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., Div. of Insilco Corp-----	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-----	1617 Fannin, Houston, TX 77002.
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-----	P. O. Box 791, Lenoir, NC 28645.
SOP	Southern Chemical Products Co-----	P.O. Box 205, Macon, GA 31202
SOS	Southern Sizing Co-----	P. O. Box 90987, East Point, GA 30344.
SPL	Spaulding Fibre Co., Inc-----	310 Wheeler St., Tonawanda, NY 14150.
OMS	E. R. Squibb & Sons, Inc-----	Georges Rd., Brunswick, NJ 08903.
STA	A. E. Staley Manufacturing Co-----	22nd & Elorado Sts., Decatur, IL 62525.
UBS	Staley Chemicals Div-----	320 Schuyler Ave., Kearny, NJ 07032.
CCL	Textile Div-----	P. O. Box 948, Charlotte, NC 28201.
SMC	Stamford Chemical Industries-----	45 Jefferson, 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.
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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
	Stauffer Chemical Co.:	
SFA	Agricultural Div-----	636 California St., San Francisco, CA 94119.
SFC	Calhio Chemicals, Inc. Div-----	636 California St., San Francisco, CA 94119.
SFI	Industrial Div-----	636 California St., San Francisco, CA 94119.
SFS	Specialty Chemical Div-----	636 California St., San Francisco, CA 94119.
BPC	Specialty Chemical Div., Benzol Products Dept.	Meadow Rd., Edison, NJ 08817.
SFW	Stauffer-Wacker Silicone Corp. Div-----	636 California St., San Francisco, CA 94119.
STP & MYW	Stepan Chemical Co-----	RR #1, Elwood, IL 60421 and 100 West Hunter Ave., Maywood, NJ 07607.
NPI	National Polychemicals Div-----	51 Eames St., Wilmington, MA 01887.
	Sterling Drug, Inc.:	
SDG	Glenbrook Laboratories Div-----	90 Park Ave., New York, NY 10016.
SDH	Hilton-Davis Chemical Co. Div-----	2235 Langdon Farm Rd., Cincinnati, OH 45237.
TMS	Thomasset Colors Div-----	120 Lister Ave., Newark, NJ 07105.
SDW	Winthrop Laboratories Div-----	90 Park Ave., New York, NY 10016.
SLV	Sterwin Chemicals, Inc-----	Military Rd., Rothschild, WI 54474.
SRR	Stresen-Reuter International, International Minerals & Chemical Corp.	400 W. Roosevelt Ave., Bensenville, IL 60106.
STY	Styrochem Corp-----	P. O. Box 3623, Ponce, PR 00731.
SBP	Sugar Beet Products Co-----	P. O. Box 1387, Saginaw, MI 48605.
SNA & SNW	Sun Chemical Corp-----	441 Tompkins Ave., Staten Island, NY 10305 and P. O. Box 70, Chester, SC 29706.
SKG	Sunkist Growers, Inc-----	720 E. Sunkist St., Ontario, CA 91764.
SUN	Sun Oil Co-----	240 Radnor-Chester Rd., St. Davids, PA 19087
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.
SYL	Sylvan Chemical Co-----	P. O. Box 817, Inman, SC 29349.
SYP	Synthetic Products Co-----	1636 Wayside Rd., Cleveland, OH 44112.
TCC	Tanatex Chemical Corp-----	P. O. Box 388, Lyndhurst, NJ 07071.
CST	Charles S. Tanner Co-----	305 Barcelona Dr., Greenville, SC 29606.
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.
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.
TXT	Textilana Corp-----	12607 Cerise Ave., Hawthorne, CA 90250.
TXN	Textilana Nease, Inc-----	12607 Cerise Ave., Hawthorne, CA 90250.
SKT	Textron, Inc., Spencer Kellogg Div-----	120 Delaware Ave., Buffalo, NY 14240.
TKL	Thiokol Chemical Corp-----	P. O. Box 27, Bristol, PA 19007.
SOR	Thomason Industries, Inc., Southern Resin Div.	P. O. Drawer 1600, Fayetteville, NC 29302.
TMH	Thompson-Hayward Chemical Co-----	5200 Speaker Rd., Kansas City, MO 66110.
PHF	Peter Hand Div-----	2 E. Madison St., Waukegan, IL 60085.
TZC	Tizon Chemical Corp-----	Flemington, NJ 08822.
TRC	Toms River Chemical Corp-----	P. O. Box 71, Toms River, NJ 08753.
LEN	Total Leonard, Inc-----	East Superior St., Alma MI 48801.
TRD	Trade Enterprises, Inc-----	P. O. Box 296, Humacao, PR 00661
ACT	Arthur C. Trask Co-----	P. O. Box 134, Argo, IL 60501.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Idendi- fication code	Name of company	Office address
TRI	Triad Chemical-----	P. O. Box 310, Donaldsonville, LA 70346.
TRO	Troy Chemical Co-----	One Avenue L, Newark, NJ 07105.
JTC	Joseph Turner & Co-----	P. O. Box 88, Ridgefield, NJ 07657.
ARM	USS Agri-Chemicals Div of U.S. Steel Corp----	P. O. Box 1684, Atlanta, GA 30301.
PCC	USS Chemicals Div. of U.S. Steel Corp-----	600 Grant St., Rm. 2880, Pittsburgh, PA 15219.
UHL	Paul Uhlich & Co., Inc-----	90 West St., New York, NY 10006.
UNG	Ungerer & Co-----	161 Avenue of the Americas, New York, NY 10013.
NCI	Union-Camp Corp-----	P. O. Box 6170, Jacksonville, FL 32205.
WTH	Harchem Div-----	P. O. Box 220, Dover, NJ 44622.
UCC	Union Carbide Corp-----	270 Park Ave., New York, NY 10017.
UOC	Union Oil Co. of California-----	461 S. Boylston St., 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 WCM Operations, Shasta Area-----	P. O. Box 2713, Redding, CA 96001.
UVC	Universal Chemicals Corp-----	1224 Mendon Rd., Ashton, RI 02864.
UMP	Universal Oil Products Co-----	70 UOP Plaza, Algonquin & Mt. Prospect, Des Plaines, IL 60018.
UOP	UOP Chemical Div-----	State Highway 17, E. Rutherford, NJ 07073.
UPJ	Upjohn Co-----	7171 Portage Rd., Kalamazoo, MI 49001.
CWN	Fine Chemical Div-----	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 Taylor Ave., Bethel, CT 06801.
VND	Van Dyk & Co., Inc-----	Main & Williams Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp-----	341 E. Ohio St., Chicago, IL 60611.
	Ventron Corp.:	
WRC	Ventron Chemical-----	Park Place East, Wood Ridge, NJ 07075.
MHI	Chemicals Div-----	12-24 Congress St., Beverly, MA 01915.
VB	Vermilye-Bell-----	21707 Bothell Way, Bothell, WA 98011.
VIN	Vineland Chemical Co-----	W. Wheat Rd., Vineland, NJ 08360.
VGC	Virginia Chemicals, Inc-----	3340 W. Norfolk Rd., Portsmouth, VA 23703.
SOH	Vistron Corp-----	Midland Bldg., Cleveland, OH 44115.
SIC	Silmar Div-----	12333 S. Van Ness Ave., Hawthorne, CA 90250.
VTM	Vitamins, Inc-----	401 N. Michigan Ave., Suite 2730, Chicago, IL 60611.
FRO	Vulcan Materials Co., Chemicals Div-----	P. O. Box 545, Wichita, KS 67201.
WJ	Warner-Jenkinson Manufacturing Co-----	2526 Baldwin St., St. Louis, MO 63106.
WAG	West Agro-Chemicals, Inc-----	501 Santa Fe, 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., 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.

SYNTHETIC ORGANIC CHEMICALS, 1971

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS,
BY COMPANY, 1971--CONTINUED

Identi- fication code	Name of company	Office address
WHI	White & Hodges, Inc-----	576 Lawrence St., Lowell, MA 01852
WHL	Whitmoyer Laboratories, Inc----- Whittaker Corp.:	19 N. Railroad St., Myerstown, PA 17067.
APT	Mol Rez Div-----	3134 California St., NE., Minneapolis, MN 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----- Wilson Pharmaceutical & Chemical Corp.:	P. O. Box 506, Charlotte, NC 28201.
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.
WCL	Wright Chemical Co-----	Acme Station, Riegelwood, NC 28456.
WYC	Wycon Chemical Co-----	P. O. Box 1087, Colorado Springs, CO 80901.
WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.	P. O. Box 8299, Paoli, PA 19101.
YAW	J. S. Young Co., Young Aniline Works Div----	2731 Boston St., Baltimore, MD 21224.
ZGL	Ziegler Chemical & Mineral Corp-----	170 Great Neck Rd., Great Neck, NY 11021.

U.S. IMPORTS OF BENZENOID CHEMICALS AND PRODUCTS

U.S. general imports of benzenoid chemicals and products entered under the Tariff Schedules of the United States (TSUS), schedule 4, part 1, subparts B and C are analyzed by the Tariff Commission annually and published in detail in a separate report.¹ General imports of benzenoid items entered in parts 1B and 1C totaled 219.5 million pounds with a foreign invoice value of \$185.0 million in 1971 compared with 193.7 million pounds with a foreign invoice value of \$135.2 million in 1970.

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 1971 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, 42.6 percent of all the benzenoid imports under part 1B in 1971 came from West Germany; 25.6 percent, from Japan; 8.4 percent, from Italy; and 8.3 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, 39.3 percent of all finished benzenoid imports under part 1C in 1971 came from West Germany; 21.2 percent, from Switzerland; 13.9 percent, from the United Kingdom; and 8.5 percent from Japan.

¹ *Imports of Benzenoid Chemicals and Products, 1971*, TC Publication 496, 1972 [processed].

SYNTHETIC ORGANIC CHEMICALS, 1971

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, 1971

Part and competitive status	Number of items	Quantity 1,000 pounds	Percent of total quantity	Foreign invoice value 1,000 dollars	Percent of foreign value	Unit foreign value Per pound
<u>Schedule 4, Part 1B</u>						
Total ¹ -----	746	125,089	100.0	65,335	100.0	\$0.52
Competitive:						
Duty based on ASP ² -----	398	107,991	86.4	45,965	70.4	.43
Noncompetitive:						
Duty based on U.S. value-----	222	13,013	10.4	14,049	21.5	1.08
Duty based on export value-----	94	3,166	2.5	4,399	6.7	1.39
Competitive status not available-----	32	918	.7	921	1.4	1.00
<u>Schedule 4, Part 1C</u>						
Total ¹ -----	2,187	94,365	100.0	119,688	100.0	1.27
Competitive:						
Duty based on ASP ² -----	703	46,605	49.4	44,574	37.2	.96
Noncompetitive:						
Duty based on U.S. value-----	1,260	27,644	29.3	57,103	47.8	2.07
Duty based on export value-----	120	11,440	12.1	12,582	10.5	1.10
Competitive status not available-----	104	8,676	9.2	5,429	4.5	.63
<u>Summary (Schedule 4, Parts 1B and 1C)</u>						
Total ¹ -----	2,933	219,454	100.0	185,023	100.0	.84
Competitive:						
Duty based on ASP ² -----	1,101	154,596	70.4	90,539	48.9	.59
Noncompetitive:						
Duty based on U.S. value-----	1,482	40,657	18.5	71,152	38.5	1.75
Duty based on export value-----	214	14,606	6.7	16,981	9.2	1.16
Competitive status not available-----	136	9,594	4.4	6,350	3.4	.66

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 1971 varies from a low of 75 percent for drugs to almost complete coverage for intermediates, dyes, and pigments.