UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1971

TC Publication 614

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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

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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	(2)
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
				Percent	*Percent*
5. Flavor and Perfume Materials					
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
6. Plastics and Resin Materials					
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
7. Rubber-Processing Chemicals					
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
8. Elastomers (Synthetic Rubbers)					
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
9. Plasticizers					
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.

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
				Percent	*Percent*
10. Surface-Active Agents					
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
11. Pesticides and Related Products					
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
12. Miscellaneous Chemicals					
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:

Chemical group	*Number of companies*	*Chemical group*	*Number of companies*
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 1[1]). 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 operators[2] 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-

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

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

lion gallons, valued at $119 million, compared with 654 million gallons, valued at $143 million, in 1970. In 1971 the output of toluene[2] (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 xylene[2] 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	Unit value[1]
				1,000 dollars	
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	(7)
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 figure 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.

SYNTHETIC ORGANIC CHEMICALS, 1971

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.

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CRUDE PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION

Crude products that are derived from petroleum and natural gas[1] are related to the intermediates and finished products made from such crudes in much the same way that crude products derived from the distillation of coal tar are related to their intermediates and finished products. Many of the crude products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and xylene). Considerable duplication exists in the statistics on the production and sales of petroleum crudes because some of these crude chemicals are converted to other crude products derived from petroleum and because data on some production and sales are reported at successive stages in the conversion process. Notwithstanding these duplications, the statistics are sufficiently accurate to indicate trends in the industry and to serve as a basis for general comparison. Many of the crude products for which data are included in the statistics may be used either as fuel or as basic materials from which to derive other chemicals, depending on prevailing economic conditions; but in this report every effort has been made to exclude data on materials that are used as fuel; however, data are included on toluene and xylene which are used in blending aviation and motor fuel.

The output of crude products derived from petroleum and natural gas as a group amounted to 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 1^0 and 2^0 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.

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[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.

SYNTHETIC ORGANIC CHEMICALS, 1971

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.

Chemical group	*Number of companies*
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 and natural gas for chemical conversion for which data on production or sales were reported and identifies the manufacturers of each]

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	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° and 2°)	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°	4,443,540	2,411,205	56,244	.023
Pure commercial grade, 2°	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°	690,805	592,114	12,536	.021
Xylene, 5°	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
Pentenes, mixed	298,317	...	...	....
All other[9]	119,037	217,980	6,038	.028

See footnotes at end of table.

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 C_5 hydrocarbon mixtures.

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

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

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

[13] Includes data for 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, OMC, 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.

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

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.

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

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	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*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-Aminobenzamido)-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_3H=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'-Bianthra[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'-iminodianthraquinone	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	...	...	...
dl-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_3H=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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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.

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-Acetoacetanisidide	FMP, HST, UCC.
o-Acetoacetotoluidide	FMP, HST, UCC.
p-Acetoacetotoluidide	UCC.
2',4'-Acetoacetoxylidide	HST, UCC.
1'-Acetonaphthone	GIV.
Acetone phenylhydrazone	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-acetanisidide	SDC.
3'-Amino-o-acetophenetidide	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-anisanilide	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-naphthalenesulfonic 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_3H=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-methylanthraquinone	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_3H=1]	ACY, HSC.
6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=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.

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-nitrobenzoic acid.	TRC.
5-Aminoisophthalic acid	GAF.
*N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide.	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-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
3-[(4-Amino-5-methoxy-o-tolyl)azo]-1,5-naphthalenedisulfonic acid.	TRC.
7-[(4-Amino-5-methoxy-o-tolyl)azo]-1,3-naphthalenedisulfonic acid.	TRC.
4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stilbenedisulfonic 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_3H=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.

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-benzimidazolinyl)amino]benzenesulfonic 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_3H=1]	ACY, DUP.
6-Amino-m-toluenesulfonic acid [SO_3H=1]	DUP.
5-Amino-o-toluenesulfonic acid [SO_3H=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.

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-sulfoethyl)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 (Trimellitic anhydride).	ACC
Benzhydrol (Diphenylmethanol)	UOP.
Benzidine hydrochloride and sulfate	ACS, LAK.
Benzilic acid, methyl ester	LEM.
2-Benzofuranacetonitrile	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-tetrahydropyridine oxalate.	SDW.
Benzyl disulfide	CCW.

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)
5-(Benzylethylamino)-o-toluenesulfonic acid	ACS.
N-Benzyl-N-ethyl-m-toluidine	ACS, DUP.
3-Benzyl-1,2,3,4,5,6-hexahydro-8-hydroxy-cis-6,11-dimethyl-2,6-methano-3-benzazocine hydrobromide.	SDW.
4,4'-benzylidenedi-o-toluidine	ACY.
4,4'-Benzylidinedi-2,5-xylidine	ACS.
Benzylidene phthalide	LIL.
p-(Benzyloxy)phenol	EK.
1-Benzyl-4-phenylisonipecotic acid	SDW.
1-Benzyl-4-phenylisonipecotonitrile	SDW.
Benzyltrimethylammonium 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-naphthalenedisulfonate.	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,ij]isoquinoline-2,7-(3H)-dione.	AAP, ICI.

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 hydrochloride.	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	HSH.
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.

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-Clorosalicylic 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.

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-xylenol	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'ℓ]fluoranthene(Decacyclene)	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_3H=1]	DUP, TRC.
2,5-Diaminobenzenesulfonic acid [SO_3H=1]	TRC.
4,4'-Diamino-1,1'-bianthraquinone-3,3'-disulfonic acid.	TRC.
4,4'-Diamino-2,2'-biphenyldisulfonic acid	ACS, ACY.
1,3-Diaminocyclohexane	DUP.
3,7-Diamino-4,6-dibenzothiophenedisulfonic acid, 5,5-dioxide, disodium salt.	ACY.
1,5-Diamino-2,6-dibromo-4,8-di-p-toluidinoanthraquinone.	ICI.
1,4-Diamino-2,3-dichloroanthraquinone	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-anthracenedicarboximide.	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_3H=1]	GAF.
4,6-Diamino-m-toluenesulfonic acid [SO_3H=1]	ACS.
3,5-Diamino-2,4,6-triiodobenzoic acid	SDW.
1,4:3,6-Dianhydroglucitol	APD.
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.

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-pyranthrenedione	ICI.
3,5-Dibromo-3'-trifluoromethylsalicylanilide	PCW.
p-Dibutoxybenzene (DBB)	ALL.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate	ALL.
1,1'-Di-n-butyldicyclopentadienyliron	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-xylidine	DUP.
7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone	ICI.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbonitrile.	ARA.
Dichlorodiphenylsilane	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-Dichlorphenyl isocyanate	OTC.
3-(2',6'-Dichlorophenyl)-5-methyl-isoxazole-4-carbonyl chloride.	OTC.

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_3H=1]	DUP.
2,5-Dichloro-4-sulfobenzenediazonium sulfate	TRC.
p,α-Dichlorotoluene	HN.
α,α-Dichlorotoluene (Benzal chloride)	BPC.
2,4-Dichloro-3,5-xylenol	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)propiophenone	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^1,N^1-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]-aceanthrylen-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-anthroic acid----------	DUP.
1,2-Dihydrotriamcinolone----------	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.
17α,21-Dihydroxy-16β-methyl-4,9(11)-pregnadien-3,20-dione, 21-benzoate.	x.
17,21-Dihydroxy-16α-methylpregna-4,9(11)-diene-3,20-dione, 21-acetate.	x.
17,21-Dihydroxy-16α-methylpregna-1,4,9(11)-triene-3,20-dione.	x.
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromo-tropic 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'-biphenylylene)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, hydrochloride.	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.

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-2-hydroxphenylazo)-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.
Diphenylacetonitrile, 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-biphenylyl)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 (Dioxyline 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_3H=1]	DUP.
*N-Ethylaniline, refined	ACS, ACY, DUP, SDH.
2-(N-Ethyanilino)ethanol	DUP, EKT.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride	DUP.
α-(N-Ethylanilino)-m-toluenesulfonic acid	GAF, SDH, WJ.

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

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-acetophenetidide	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-(methylsulfamoylphenyl)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)carbamoyl]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.

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] (Tetrabromobisphenol A).	DOW.
4,4'-Isopropylidenebis[2,6-dichlorophenol] (Tetrachlorobisphenol 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-Anthratetrol)	AAP, ACS, ACY, EKT, HN, HSH, ICC, TRC.
2,4-Lutidine	KPT.
2,6-Lutidine	RIL.
3,4-Lutidine	UCC.
Malonanilide	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)
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'-Methoxypropiophenone	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-Methylanthranilic acid	GIV.
2-Methylanthraquinone	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_3H=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-(thiosulfophenyl)-2-pyrazolin-5-one, sodium salt.	SDC.
3-Methyl-6-p-toluidino-7H-dibenz[f,ij]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. (β-Naphthol)[1]----------	ACY.
p-Naphtholbenzein----------	EK.
1-Naphthol-3,6-disulfonic acid, monosodium salt----------	HN.
1,2-Naphthoquinone----------	EK.
Naphthostyril----------	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-Naphthyloxy)acetic acid----------	BKL.
(2-Naphthyloxy)acetic acid, sodium salt----------	BKL.
(2-Naphthylthio)acetic acid----------	ACY.
Nicotinonitrile (3-Cyanopyridine)----------	NEP, RIL.
3'-Nitroacetanilide----------	AAP.

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)
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 sulfate	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-anthrquinonyl)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.

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_3H=1]	ACS, ACY, DUP, GAF, SDH, TRC.
3-Nitro-p-toluenesulfonic acid [SO_3H=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-sulfophenyl)-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-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	AAP, STG.
5-Oxo-1-(p-sulfophenyl)-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-Perylenetetracarboxylic acid	ACS, GAF.
3,4,9,10-Perylenetetracarboxylic-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.
Phenylacetonitrile (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.

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-phenoxylene	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-Pyranthrenedione	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)propiophenone 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-Sulfophthalic 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'''-Tetraaminophtnalocyaninato(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-pyranthrenedione	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.

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 dihydrochloride.	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-Thiopheneacetonitrile	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-Toluenesulfinic 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.
α,2,4-Trichlorotoluene	HN.
α,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-(Trifluoromethyl)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'-Tetramethyldiphenoquinone	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.
α,α',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-Trinitrofluoren-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.

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.

CYCLIC INTERMEDIATES

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

ALPHABETICAL DIRECTORY BY CODE

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

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

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

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 producton 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 summariezes production and sales of dyes in 1971 by class of application. Five application classes of dyes accounted for approx-

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[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.

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.

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.

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]
AZOIC DYES AND COMPONENTS--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Azoic Diazo Components, Bases (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
Azoic Diazo Components, Salts (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
Azoic Coupling Components (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.

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.

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.

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.

DYES

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

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
FLUORESCENT BRIGHTENING AGENTS	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
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
Food, Drug, and Cosmetic Dyes				
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
Drug and Cosmetic and External Drug and Cosmetic Dyes				
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.

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.

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

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
VAT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
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.

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.

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.

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	
Azoic Compositions--Continued	
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.
Azoic Diazo Components, Bases (Fast Color Bases)	
Azoic Diazo Component 2, base	ATL, BUC.
Azoic Diazo Component 3, base	BUC.
*Azoic Diazo Component 4, base	ALL, BUC, GAF, SDH.
Azoic Diazo Component 5, base	GAF, 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.

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	
Azoic Diazo Components, Salts (Fast Color Salts)	
*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.
Azoic Coupling Components (Naphthol AS and Derivatives)	
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.

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.

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.

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)
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.

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.

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 Agenc 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	
Food, Drug, and Cosmetic Dyes	
*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	
Drug and Cosmetic Dyes	
D&C Blue No. 6	KON.
D&C Green No. 5	ACS, ALT, KON.
D&C Green No. 6	ACS, ALT, KON.
D&C Green No. 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.
Drug and Cosmetic Dyes, External	
Ext. D&C Green No. 1	ACS, KON.
Ext. D&C Yellow No. 1	ACS, KON.
Ext. D&C Yellow No. 7	KON.
INGRAIN DYES	
Ingrain blue dyes:	
Ingrain Blue 1	ICI.
Ingrain Blue 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.

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.

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)
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.

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.
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.

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.

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.

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.

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

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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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	179	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.

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, 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]
	1,000 pounds	*1,000 dollars*	*Per pound*
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.

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, LVY, 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.

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	APO, 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.

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.
*(Acid Red 26), C.I. 16 150	CPC, IMP, KCW.
All other	IMP.

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.

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

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

MEDICINAL CHEMICALS

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

Table 1 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class, while table 2 lists separately each product for which data were reported and identifies the manufacturers.[1] The statistics shown in table 1 are for bulk chemicals only; finished pharmaceutical preparations and products put up in pills, capsules, tablets, or other measured doses are excluded.[2] The difference between production and sales reflects inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the difference may also include quantities of medicinal grade products used as intermediates, e.g., penicillin G salts used as intermediates in the manufacture of 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 amd 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

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

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

use and 7.1 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.

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

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 carbocylic ring with conjugated double bonds (e.g., the benzene ring or the quinone ring) or a six-membered heterocyclic ring with 1 or 2 hetero atoms and conjugated double bonds, except the pyrimidine ring (e.g., the pyridine ring or the pyrazine ring.)

[4] Includes antibiotics of unknown structure.

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

Antibiotic	Unit of quantity	Production	Sales		
			Quantity	Value	Unit Value
				1,000 dollars	
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.

Footnotes for table 1--Continued

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

Vitamin	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Vitamin A, total	----BU---	1,053,034	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.

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.
Candicidin	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.

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.
Tripelennamine	CGY.
Tripelennamine citrate	CGY.
Tripelennamine 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.

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.
Nitarsone	SAL.
Roxarsone	SAL.
Roxarsone sodium	SAL.
Sodium arsanilate	SAL.
Chloroquine phosphate	SDW.
Dimetridazole	RDA.
*Diiodohydroxyquin	CGY, RSA, SRL.
3,5-Dinitro-o-toluamide	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.

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:	
Aminosalicylic 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.

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.
Diphemanil 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.
Oxyphencyclimine hydrochloride	PFZ.
Piperidolate hydrochloride	LKL.
Thiphenamil hydrochloride	BJL, CTN.
Trihexyphenidyl hydrochloride	ACY, SDW.
*Sympathomimetic (adrenergic) agents:	
Cinnamedrine hydrochloride	SDW.
Cyclopentamine hydrochloride	LIL.
Epinephrine bitartrate (levo)	SDW.
*Epinephrine hydrochloride (racemic)	ECL, VB, x.
L-Isoproterenol bitartrate	SDW.
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	ARS, BKL, HEX, NEP, ORT, PD.
Propylhexedrine	HEX, SK.
Protokylol hydrochloride	LKL.
Pseudoephedrine hydrochloride	BUR, GAN.
Pseudoephedrine sulfate	GAN.
Tetrahydrozoline hydrochloride	PFZ.

See footnotes at end of table.

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.

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.

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.
Methyprylon	HOF.
*Skeletal muscle relaxants:	
Carisoprodol	BKL.
Chlorphenesin carbamate	UPJ.
Mephenesin	BLK, HEX.
Phenaglycodol	LIL.
Succinylcholine chloride	ABB, BUR.
Tubocurarine	ABB, OMS.
*Tranquilizers:	
Buclizine 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 depressents 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 [3]	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.

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)
*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.
9α-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.

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.

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, VTM.
Ergocalciferol (Vitamin D_2)	PHF, SCR, VTM.
*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."

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

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

TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	96,426	84,765	83,968	$0.99
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total	49,682	42,180	52,884	1.25
Benzenoid and Naphthalenoid				
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
Terpenoid, Heterocyclic, and Alicyclic				
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.

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				
Terpenoid, Heterocyclic, and Alicyclic--Continued				
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

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

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 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	
Benzenoid and Naphthalenoid	
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-(Benzyloxy)-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.
Cuminyl alcohol	GIV.

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	
Benzenoid and Naphthalenoid--Continued	
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 cylopenta-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 (Acetanisole)	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-Methylanisole	CI, GIV, UOP.

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	
Benzenoid and Naphthalenoid--Continued	
*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 (Jessemal).	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.
Terpenoid, Heterocyclic, and Alicyclic	
Allyl cyclohexyl propionate	GIV.
p-tert-Amyl cyclohexanone	IFF.
2-sec-Butylcyclohexanone	GIV.
p-tert-Butylcyclohexyl acetate	CI, IFF.
Cadinene	FB.

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	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
β-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, o-lactone (Hexadecanolide)	IFF.
4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-10-carboxaldehyde (Lyral).	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.

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	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*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-al	GIV.
3,6-Dimethyl-5-hepten-2-ol and 7-Methyl-6-octen-3-ol (Brazinol).	RDA.
3,7-Dimethyl-1,6-nonadien-3-ol	HOF.
3,7-Dimethyl-1,6-nonadien-3-ol, acetate	HOF.
3,7-Dimethyl-2,6-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.

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-nonenoate	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.
Rhodinyl 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.

FLAVOR AND PERFUME MATERIALS

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 Camp Corp., Chemical Division
		NEO	Norda Essential Oil & Chemical Co., Inc.
		NTL	NL Industries, Inc.
CI	Chem-Fleur, Inc.	NW	Northwestern Chemical Co.
COM	Commercial Solvents Corp.		
		OPC	Orbis Products Corp.
DOW	Dow Chemical Co.		
		PD	Parke, Davis & Co.
ELN	Elan Chemical Co.	PEN	CPC International, Inc., Penick Division
		PFW	Polak's Frutal Works, Inc.
FB	Fritzsche, Dodge & Olcott, Inc.	PFZ	Pfizer, Inc.
FEL	Felton International, Inc.		
FLO	Florasynth, Inc.	RDA	Rhodia, Inc.
FMT	Fairmount Chemical Co., Inc.	RT	F. Ritter & Co.
FRM	Farmers' Chemical Co.		
		SHL	Nitini, Inc.
GAF	GAF Corp., Chemical Division	SKG	Sunkist Growers, Inc.
GIV	Givaudan Corp.	SLV	Sterwin Chemicals, Inc.
GLD	SCM Corp., Glidden-Durkee Division	SW	Sherwin-Williams Co.
GRW	Great Western Sugar Co.		
		TCC	Tanatex Chemical Corp.
HN	Tenneco Chemicals, Inc.		
HOF	Hoffman-LaRoche, Inc.	UCC	Union Carbide Corp.
HPC	Hercules, Inc.	UNG	Ungerer & Co.
		UOP	Universal Oil Products Co. UOP Chemical Division
IFF	International Flavor & Fragrances, Inc.		
IMC	International Minerals & Chemical Corp.		
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.

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).

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

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 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]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
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.

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]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
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.

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]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
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	...	3,394,185	...	...
Calendering:				
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.

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]
	1,000 pounds dry basis[3]	*1,000 pounds dry basis*[3]	*1,000 dollars*	*Per pound*
THERMOPLASTIC RESINS--Continued				
Vinyl and vinylidene resins--Continued				
Polyvinyl acetate[15]--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.

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, FG, 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.

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

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

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

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		
USI	National Distillers & Chemical Corp., U.S. Industrial Chemicals Co. Div.	WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Division
USI	National Petro Chemical Corp.	WCA	West Coast Adhesives Co.
USO	U.S. Oil Co.	WCL	Wright Chemical Co.
USR	Uniroyal, Inc., Chemical Division	WIC	Wica Chemical Inc.
		WRD	Weyerhaeuser Co., Wood Products Division
VAL	Valchem	WTC	Witco Chemical Co., Inc.
VEL	Veliscol Chemical Corp.		
VPC	Verona Corp.	ZGL	Ziegler Chemical & Mineral Corp.

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

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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.

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[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

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.

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.

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-butylideneaniline consensate	MON.
α-Ethyl-β-propylacrylanilide	CCO.
Heptaldehyde-aniline condensate	USR.
Triethyltrimethylenetriamine	USR.
*Dithiocarbamic acid derivatives:	
Dibenzyldithiocarbamic acid, sodium salt	USR.
Dibenzyldithiocarbamic acid, zinc salt	USR.
Dibutyldithiocarbamic acid, N,N-dimethylcyclohexylamine salt.	MON.
Dibutyldithiocarbamic acid, diphenylguanidine salt	CCO.
2,4-Dinitrophenyl dimethyldithiocarbamate	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts, mixed.	DUP.
Guanidines:	
Dicatechol borate, di-o-tolylguanidine salt	DUP.
1,3-Diphenylguanidine	ACY.
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.
Diarylarylenediamines, 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-tolylethylenediamine	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-cresol].	ICI.
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)-butane.	ICI.
Other phenolic compounds:	
p-Benzyloxyphenol	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.

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.
Phenyldidecyl 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(benzenesulfonhydrazide)	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.
Dixylyl 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:	
Dibutyldithiocarbamic acid, potassium salt	VNC.
Dibutyldithiocarbamic acid, sodium salt	ALC, DUP, USR, VNC.
*Dibutyldithiocarbamic acid, zinc salt	ALC, DUP, PAS, USR, VNC.
Diethyldithiocarbamic acid, selenium salt	VNC.
Diethyldithiocarbamic acid, sodium salt	ALC, PAS.
Diethyldithiocarbamic acid, tellurium salt	VNC.
*Diethyldithiocarbamic acid, zinc salt	ALC, GYR, PAS, USR, VNC.
Dimethyldithiocarbamic acid, bismuth salt	VNC.
Dimethyldithiocarbamic acid, copper salt	VNC.
Dimethyldithiocarbamic acid, lead salt	VNC.
Dimethyldithiocarbamic acid, selenium salt	VNC.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide.	BFG.
*Dimethyldithiocarbamic acid, zinc salt	ALC, DUP, FMN, GYR, PAS, 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.

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	USR.
Diisopropylxantho disulfide	BFG.
Zinc diisopropyl xanthate	VNC.
All other acyclic accelerators, activators, and vulcanizing agents:	
n-Butyraldehyde-butylamine condensate	DUP.
Di-n-butylammonium oleate	DUP.
3-Ethyl-1,1-dimethyl-2-thiourea	VNC.
Tetramethylthiourea	DUP.
1,1,3-Trimethyl-2-thiourea	VNC.
Blowing agents: Modified urea	DUP.
Conditioning and lubricating agents:	
Methyl stearyl-1-sulfonic acid, sodium salt	DUP.
Mono- and dialkyl acid phosphates, mixed	DUP.
Mono- and dialkyl phosphate ammonium salts, mixed	DUP.
Other	DUP.
Polymerization regulators:	
Alkyl mercaptans, mixed	PLC.
*Dodecyl mercaptans	HK, PAS, PLC.
n-Octyl mercaptan	PAS.
tert-Octyl mercaptan	PAS.
Tridecyl mercaptan	PAS.
Shortstops:	
Dimethyldithiocarbamic acid, potassium salt	GYR, USR.
*Dimethyldithiocarbamic acid, sodium salt	ALC, BFG, DUP, GYR, PAS, USR, WRC.
Other acyclic rubber-processing chemicals: Zinc laurate (activator, physical-property improver).	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
ACS	Allied Chemical Corp., Specialty Chemicals Div.
ACY	American Cyanamid Co.
ALC	Alco Chemical Corp.
ASH	Ashland Oil, Inc., Ashland Chemical Co. Div.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
CCO	Reichhold Chemicals, Inc.
CTN	Chemetron Corp., Organic Chemical Div.
DA	Diamond Shamrock Corp.
DUP	E. I. duPont de Nemours & Co., Inc.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.
FMN	FMC Corp., Niagara Chemical Div.
GYR	Goodyear Tire & Rubber Co.
HK	Hooker Chemical Corp.
ICI	ICI America, Inc.
MLS	Miles Laboratories, Inc., Marshall Div.
MON	Monsanto Co.
NEV	Neville Chemical Co.
NPI	Stepan Chemical Co., National Polychemicals Div.
PAS	Pennwalt Chemicals Corp.
PIT	Pitt-Consol Chemical Co.
PLC	Phillips Petroleum Co.
RBC	Fike Chemicals, Inc.
RCD	Richardson Co.
SAL	Salsbury Laboratories
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
UPM	Universal Oil Products Co.
USR	Uniroyal, Inc., Chemical Div.
VNC	Vanderbilt Chemical Corp.
WES	Weston Chemical Co., Inc.
WRC	Ventron Corp., Ventron Chemical

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 million[2]), 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.

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

[2]The 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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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.

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

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

PLASTICIZERS

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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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
Dioctyl 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
Trioctyl 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
Dioctyl 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.

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

Chemical	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
PLASTICIZERS, ACYCLIC--Continued				
Epoxidized esters, total	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.

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.
Dipropanediol 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(amyl) phthalate	UCC.
All other glycol phthalate esters	HPC, WTC.

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.
*Trioctyl 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.
*Dioctyl 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.

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 tri-acetate (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.

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.

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

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

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 alkylbenzenesulfonates, 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

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

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]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
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
Amphoteric Surface-Active Agents				
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
Anionic Surface-Active Agents				
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*
Anionic Surface-Active Agents--Continued				
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.

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

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Anionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Sulfuric acid esters (and salts thereof)--Continued				
Alcohols, sulfated, total	...	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
Cationic Surface-Active Agents				
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]
Cationic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
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
Benzyldimethyl(mixed alkyl)ammonium chloride	6,700	6,343	4,719	.74
Benzyldimethyloctadecylammonium 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[7]	...	50,947	22,518	.44
Nonionic Surface-Active Agents				
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*
Nonionic Surface-Active Agents--Continued				
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 sesquiester 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 sesquiester 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 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.
Metaldehyde	COM.
S-Methyl N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl).	DUP.
*Organophosphorus insecticides:	
S-[1,2-Bis(ethoxycarbonyl)ethyl] O,O-dimethyl phosphorodithioate (Malathion).	ACY.
2-Carbomethoxy-1-propen-2yl dimethyl phosphate (Mevinphos).	SHC.
1,2-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 (Dichlorvos).	SHC.
O,O-Dimethyl S-[2-(ethylsulfinyl)ethyl]phosphorothioate (Oxydemetonmethyl).	CHG.
O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate (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 bisphosphorodithioate (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-(methylcarbamoyl)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.

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
ABB	Abbott Laboratories
ACN	Allied Chemical Corp., Agricultural Div.
ACY	American Cyanamid Co.
ALC	Alco Chemical Corp.
ALP	Alpha Laboratories, Inc.
AMC	Amchem Products, Inc. Div. of Rorer-Amchem, Inc.
AMP	Kerr-McGee Corp.
ARA	Arapahoe Chemical Div. of Syntex Corp.
ASL	Ansul Chemical Co.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
BKL	Millmaster Onyx Corp., Millmaster Chemical Co. Div., Berkeley Chemical Dept.
BKM	Buckman Labs., Inc.
BST	Occidental Chemical Co.
CCA	Cincinnati Milacron Chemicals, Inc.
CGY	Ciba-Geigy Corp. and Ciba Agricultural Co.
CHF	Chemical Formulators, Inc.
CHG	Baychem Corp., Chemagro Div.
CLY	W. A. Cleary Corp.
COM	Commercial Solvents Corp.
CWN	Upjohn Co., Fine Chemical Div.
DA	Diamond Shamrock Corp.
DOW	Dow Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc.
EFH	E. F. Houghton & Co.
EGR	Eagle River Chemical Corp.
FER	Ferro Corp., Ferro Chemical Div.
FIS	Fisher Chemical Co., Inc.
	FMC Corp.:
FMN	Niagara Chemical Div.
FMP	Organic Chemicals Div.
FMT	Fairmont Chemical Co.
FRO	Vulcan Materials Co., Chemical Div.
GAF	GAF Corp., Chemical Div.
GOC	Gulf Oil Corp., Gulf Oil Chemical Co.-United States
GTH	Guth Corporation
GTL	Great Lakes Chemical Corp.
HK	Hooker Chemical Corp.
HN	Tenneco Chemicals, Inc.
HPC	Hercules, Inc.
IMC	International Minerals & Chemical Corp.
LEB	Lebanon Chemical Corp.
LIL	Eli Lilly & Co.
MAL	Mallinckrodt Chemical Works
MCH	Michigan Chemical Corp.
MCI	Mooney Chemical Corp.
MGK	McLaughlin, Gormley & King Co.
MON	Monsanto Co.
MOT	Motomco, Inc.
MRK	Merck & Co., Inc.
MRT	Morton Chemical Co.
MTO	Montrose Chemical Corp. of Calif.
NES	Nease Chemical Co., Inc.
OMC	Olin Mathieson Chemical Corp., Agricultural Div.
ORO	Chevron Chemical Co.
OTC	Ott Chemical Co.
PAS	Pennwalt Chemicals Corp.
PBI	Gordon Corp.
PEN	CPC International, Inc., Penick Div.
PFZ	Pfizer, Inc.
PIC	Pierce Organics, Inc.
PM	Pitman-Moore, Inc.
PPG	PPG Industries, Inc.
RBC	Fike Chemicals, Inc.
RCI	Reichhold Chemicals, Inc.
RDA	Rhodia, Inc.
RH	Rohm & Haas Co.
RIV	Riverdale Chemical Co.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
	Stauffer Chemical Co.:
SFA	Agricultural Div.
SFC	Calhio Chemicals, Inc. Div.
SFD	Sonford Chemical Co.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHP	Shepherd Chemical Co.
SM	Mobil Oil Corp., Mobil Chemical Co. Div., Industrial Chemical Div.
TMH	Thompson-Hayward Chemical Co.
TRO	Troy Chemical Co.
UCC	Union Carbide Corp.
UOP	Universal Oil Products Co., UOP Chemical Div.
UPJ	Upjohn Co.
USR	Uniroyal, Inc., Chemical Div.
VAL	Valchem
VEL	Velsicol Chemical Corp.
VIN	Vineland Chemical 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, antifreeze chemicals, solvents, and acyclic intermediates. Table 1 presents statistics on U.S. production and sales of miscellaneous chemicals in as great detail as is possible without revealing the operations of individual producers.[1]

Production of miscellaneous cyclic and acyclic chemicals in 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

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

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 (Propylbaraben)	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.

TABLE 1.--MISCELLANEOUS CHEMICALS: 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*
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
MISCELLANSOUS CHEMICALS, ACYCLIC				
Total	77,281,270	37,334,192	3,768,587	.10
Cellulose Esters and Ethers				
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	...	...	...
Lubricating Oil Additives				
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
Nitrogenous Compounds				
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.

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*
Nitrogenous Compounds--Continued				
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)pentaacetic 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, trisodium 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
Acids, Acyl Halides and Anhydrides				
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
Salts of Organic Acids				
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*
Salts of Organic Acids--Continued				
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
Ammomium 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
Aldehydes and Ketones				
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.

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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	[12]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 monoisobutyl 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*
Esters of Monohydric Alcohols				
Total	2,555,657	1,342,858	203,630	$0.15
n-Butyl acetate, unmixed	65,584	70,869	7,329	.10
Butyl acyrylate	95,345	54,392	9,447	.17
tert-Butyl peroxypivalate	789	789	1,744	2.21
Dioctyl maleate	4,856	3,942	745	.19
Distearyl 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
Halogenated Hydrocarbons				
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	...	15 79,506	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
All Other Miscellaneous Acyclic Chemicals				
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.

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*
All Other Miscellaneous Acyclic Chemicals--Continued				
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 C_{10} and about 45% consisted of alcohols C_{10} 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[α]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-butylanilino)-1,3,5-triazine.	CGY.
Boron fluoride-phenol complex	ACS.
*Butyl benzoate	PFZ, TCC, VAL, VEL.
p-tert-Butylbenzoic acid, barium bis-salt	CCA.
2(and 3)-tert-Butyl-4-methoxyphenol	EKT.
*tert-Butyl peroxybenzoate	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-Chlorobenzamalononitrile	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-Methoxybenzylidenemalonic 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.

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]methanesulfonamide.	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-Ethylbenzimido)benzenediazonium 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'-Hexadecenylmonoamidosuccinic 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.

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'-hydroxyphenol)propionate]methane.	CGY.
1,3,6,8-Tetranitrocarbazole	SDC.
Tetraphenyltin	x.
*Textile chemicals, other than surface-active agents:	
Dimethyloldihydroxy ethylene urea	x.
N^1,N^1-Diphenyl-1,2-propanediamine	SNW.
1-((Octadecyloxy)methyl)pyridinium chloride	DUP.
Phenol, sulfurated	GAF.
Tetrahydro-3,5-bis(methoxymethyl)-4H-1,3,5-oxadiazin-4-one (1,3-Bis(methoxymethyl)uron).	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-Dibromosalicylanilide mixtures.	FIN.
3,4,4'-Trichlorocarbanilide	MON.
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric 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	
Cellulose Esters and Ethers	
*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.
Lubricating Oil Additives	
*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.
Nitrogenous Compounds	
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-Butylmethylamine	UCC.
Diethylaminoethylamine	PD.

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	
Nitrogenous Compounds--Continued	
*Amines--Continued	
*Diethylenetriamine	DOW, JCC, UCC.
N,N-Diethylethylenediamine	ALB.
N^1,N^1-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.
Pentaethylenehexamine	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 thioglycolate).	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] (Azobisisobutyronitrile).	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.
Butryaldehyde 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.
β-Chloroallyl-N-methylamine	LIL.
Chloro-N-(2-hydroxyethyl)acetamide	KF.
N-Chlorosuccinimide (Succinichlorimide)	ARA.
2-Chloro-N,N-diethylethylamine hydrochloride	HEX, MCH.
Choline base	RH.
Choline bisulfite	WAY.
Coco nitrile	ARC, ASH.
Coconut oil acids - ammonium condensate	PG.
Coconut oil amide	ARC.
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	OMC.

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	
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.
Dimethylammoniumdimethyldithiocarbamate	PAS.
Dimethylcarbamoyl chloride	CTN, OTC.
N,N-Dimethylformamide	AIP, DUP.
1,1-Dimethylhydrazine	FMP.
Dimethylthiocarbamoyl chloride	ALD.
Dithiooxamide	MAL.
2,5-Dithiobiurea	ACY.
tert-Dodecyldisuccinamide	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-Hexamethyldisilazane	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	
Nitrogenous Compounds--Continued	
Lactonitrile	MON.
Lauronitrile (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-Methyllactonitrile (Acetone cyanohydrin)	RH, x.
2-Methyl-2-nitro-1,3-propanediol	COM.
2-Methyl-2-nitro-1-propanol	COM.
Methylpolyethanolamine	GAF.
N-Methyltaurine	GAF.
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.
Ethanoldiglycine, disodium salt	HMP.
Ethylenebis(dimethylenenitrilo)tetraphosphonic 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.

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	
Nitrogenous Compounds--Continued	
*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, trisodium 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.
Stearylerucamide	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	
Nitrogenous Compounds--Continued	
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.
Vinylacetonitrile	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.
Acids, Acid Anhydrides, and Acyl Halides	
*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.

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	
Acids, Acid Anhydrides, and Acyl Halides--Continued	
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.
Neoheptanoic 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	
Acids, Acid Anhydrides, and Acyl Halides--Continued	
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.
Salts of Organic Acids	
*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.

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	
Salts of Organic Acids--Continued	
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-ethylhexenoate	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.
Glucoheptonic acid salts:	
Calcium glucoheptonate	PFN.
Sodium glucoheptonate	PFN.
Zinc glucoheptonate	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	
Salts of Organic Acids--Continued	
*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	
Salts of Organic Acids--Continued	
*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	
Salts of Organic Acids--Continued	
All other salts of organic acids	CCA, CCW, CRN, DA, EK, EVN, FIN, KCH, MCI, NTL, PD, RSA, SYP, UCC, x.
Aldehydes and Ketones	
*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.

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	
Aldehydes and Ketones--Continued	
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.
Pyruvaldehyde	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.
Alcohols, Monohydric, Unsubstituted	
*Alcohols C_3 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	
Alcohols, Monohydric, Unsubstituted--Continued	
*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.
Polyhydric Alcohols and Their Esters and Ethers	
*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 (Trimethylol propane).	AAC, CEL.
*Glyercol, synthetic	APD, DOW, FMP, SHC.
1,6-Hexanediol	CEL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolethane).	COM.
Mannitol	APD.
3-Mercapto-1,2-propanediol (Thioglycerol)	EVN.
2-Methyl-2,4-pentanediol (Hexylene glycol)	CEL, SHC, UCC.
2-Methyl-2-propyl-1,3-propanediol	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.

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	
Polyhydric Alcohols and Their Esters and Ethers--Continued	
*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 trimethacrylate.	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 capyrlate	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 monoisobutyl 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	
Polyhydric Alcohols and Their Esters and Ethers--Continued	
*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 monoether).	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 (Tri ethylene 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 monmethyl 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.

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	
Esters of Monohydric Alcohols	
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 peroxypivalate	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	
Esters of Monohydric Alcohols--Continued	
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.
*Dioctyl 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.

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	
Esters of Monohydric Alcohols--Continued	
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.
Oleyl 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, ACYCYLIC--Continued	
Esters of Monohydric Alcohols--Continued	
*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, EKX, EMR, EVN, FMP, GAF, HUM, LIL, PCC, PD, PIC, PUB, RH, RUB, SFS. TNI, UCC, VND, WTL.
Halogenated Hydrocarbons	
1-Bromobutane (n-Butyl bromide)	BPC, MCH.
2-Bromobutane (sec-Butyl bromide)	ABB, EK.
Bromochloromethane	DOW.
1-Bromo-3-chloropropane (Trimethylenechlorobromide)	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.

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	
Halogenated Hydrocarbons--Continued	
*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	
Halogenated Hydrocarbons--Continued	
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.
All Other Miscellaneous Acyclic Chemicals	
Acetyl peroxide	AZT, WTL.
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.

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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	
All Other Miscellaneous Acyclic Chemicals--Continued	
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	
All Other Miscellaneous Acyclic Chemicals--Continued	
Organo-tin compounds:	
Bis(tributyltin) oxide	CCW, x.
Dibutyltin dichloride	CCW, x.
Dibutyltin dilaurate	CCA.
Dibutyltin maleate	CCA.
Dibutyltin oxide	x.
Dioctyltin 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.

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

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

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

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

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

Note.--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	2525 Combee Rd., Eaton Park, FL 33840.
	Lancaster Chemical Co. Div	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	33 Avenue P, Newark, NJ 07105.
	Allied Chemical Corp.:	
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.
APO	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.

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.:	
CHG	Chemagro Div	P. O. Box 4913, Station "F", Kansas City, MO 64120.
VPC	Verona Div	Union Metropolitan Port, P. O. Box 385, Union, NJ 07083.
BAO	Bayoil Co., Inc	2 Union St., Peabody, MA 01960.
BEE	Beecham, Inc	65 Industrial S., Clifton, NJ 07012.
BLS	Beech-Nut, Inc	Church St., Canajorharie, NY 13317.
BCM	Belding Chemical Industries	1430 Broadway, New York, NY 10018.
BME	Bendix Corp., Friction Materials Div	P. O. Box 238, Troy, NY 12180.
BEN	Bennett's	65 W. 1st S. St., Salt Lake City, UT 84110.
BDO	Benzenoid Organics, Inc	P. O. Box 157, Bellingham, MA 02019.
PDC	Berncolors-Poughkeepsie, Inc	75 N. Water St., Poughkeepsie, NY 12602.
BID	Bio-Derivatives Corp	174 E. Industry Ct., Deer Park, NY 11729.
BUC	Blackman Uhler Chemical Co	P. O. Box 5627, Spartanburg, SC 29301.
BOR	Borden, Inc., Borden Chemical Div	50 W. Broad St., Columbus, OH 43215.
MCB	Borg-Warner Corp., Marbon Chemical Div	P. O. Box 68, Washington, WV 26181.
BFP	Breddo Food Products Corp	18th and Kansas, Kansas City, KS 66105.
BRS	Bristol-Meyers Co., Bristol Laboratories Div	P. O. Box 657, Syracuse, NY 13201.
BRU	M. A. Bruder & Sons, Inc	52d St. and Grays Ave., Philadelphia, PA 19143.
BUK	Buckeye Cellulose Corp	2899 Jackson Ave., Memphis, TN 38108.
BKM	Buckman Laboratories, Inc	1256 N. McLean Blvd., Memphis, TN 38108.
CD	Budd Co., Polychem Div	70 S. Chapel St., Newark, DE 19711.
BJL	Burdick & Jackson Laboratories, Inc	1953 S. Harvey St., Muskegon, MI 49442.
BUR	Burroughs & Wellcome Co	3030 Cornwallis Rd., Research Triangle Park, NC 27709.
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

Identification 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 Sve., 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. Wolcoth 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, Lasrence, 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.

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

Identification 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.
EKX	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.
KNG	Far-Best Corp., O. L. King Div	640 Gilman St., Berkeley, CA 94710.
FCA	Farmers Chemical Association, Inc	P. O. Box 87, Harrison, TN 37341.
FRM	Farmer's Chemical Co	P. O. Box 591, 3713 W. Main St., Kalamazoo, MI 49005.
FAR	Farnow, Inc	77 Jacobus Ave., S. Kearny, NJ 07032.

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

Identification code	Name of company	Office address
FEL	Felton International, Inc	599 Johnson Ave., Brooklyn, NY 11237.
	Ferro Chemical Corp.:	
FER	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.
	Firestone Tire & Rubber Co.:	
FRL	Firestone Foam Products Co	P. O. Box 2290, Fall River, MA 02777.
FIR	Firestone Plastics Co. Div	P. O. Box 699, Pottstown, PA 19464.
FRS	Firestone Synthetic Rubber & Latex Co. Div	381 W. Wilbeth Rd., Akron, OH 44301.
FST	First Chemical Corp	P. O. Box 1427, Pascagoula, MS 39567
FIS	Fisher Chemical Co., Inc	5200 Paul G. Blazer Memorial Pkwy., Columbus, OH 43216.
FLM	Fleming Laboratories, Inc	P. O. Box 10373, Charlotte, NC 28201.
FLO	Florasynth Laboratories, Inc	900 Van Nest Ave., Bronx, NY 10462.
FTE	Foote Mineral Co	Route 100, Exton, PA 19341.
FOM	Formica Corp	Formica Bldg., 120 E. 4th St., Cincinnati, OH 45202.
FG	Foster Grant Co., Inc	289 N. Main St., Leominster, MA 01453.
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.:	
PSP	Bellingham Div	P. O. Box 1236, Bellingham, WA 98225.
CBC	Coos Bay Div	P. O. Box 869, Coos Bay, OR 97420.
TID	Getty Oil Co	Delaware, DE 19706.
TNI	Gillette Chemical Co. Div. of Gillette Co	P. O. Box 362, N. Chicago, IL 60064.
GIL	Gilman Paint & Varnish Co	W. 8th and Pine Sts., Chattanooga, TN 37401.
GIV	Givaudan Corp	100 Delawanna Ave., Clifton, NJ 07014.
GLY	Glyco Chemicals, Inc	51 Weaver St., Greenwich, CT 06830.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	6100 Oak Tree Blvd., Cleveland, OH 44131.
GYR	Goodyear Tire & Rubber Co	1144 E. Market St., Akron, OH 44313.
PBI	Gordon Corp	300 S. 3d St., Kansas City, KS 66118.
GOR	Gordon Chemical Co., Inc	88 Webster St., Worcester, MA 01603.
	W. R. Grace & Co.:	
GCC	Agricultural Chemical Group	P. O. Box 277, Memphis, TN 38101.
GRC	Dubois Chemicals Div	Dubois Tower, Cincinnati, OH 45202.
HMP	Hampshire Chemical Div	Poisson Ave., Nashua, NH 03060.
GRH	Hatco Chemical Div	629 Amboy St., Edison, NJ 08817
MRO	Marco Chemical Div	1711 W. Elizabeth Ave., Linden, NJ 07036.
GRD	Polymers & Chemicals Div	62 Whittemore Ave., Cambridge, MA 02140.
GPR	Grain Processing Corp	1600 Oregon St., Muscatine, LA 52761.
GRA	Great American Chemical Corp	650 Water St., Fitchburg, MA 01420.
GTL	Great Lakes Chemical Corp	P. O. Box 2200, West Lafayette, IN 47906.
GRW	Great Western Sugar Co	P. O. Box 5308, Terminal Annex, Denver, CO 80217.

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

Identification 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.
HMY	Humphrey Chemical Co	Devine St., North Haven, CT 06473.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	P. O. Box 0, Lincoln, RI 02865.
HNT	Huntington Laboratories, Inc	P. O. Box 710, Huntington, IN 46750.
HUS	Husky Industries, Inc	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., Folcraft, PA 19032.

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

Identification 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 88043.
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.
	Krafto 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-Palmove 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.

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

Identification 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

Identification code	Name of company	Office address
MFG	North American Rockwell Corp., Reinforced 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	Nostrip Chemical Works, Inc	P. O. Box 160, Pedrichtown, NJ 08067.
CAD	Noury Chemical Corp	2153 Lockport-Olcott Rd., Burt, NY 14028.
NVT	Novamont Corp., Neal Works	P. O. Box 189, Kenova, WV 25530.
CMG	Nyanza, Inc	Maguno Rd., Ashland, MA 01721
OBC	O'Brien Corp	2001 W. Washington Ave., South Bend, IN 46627.
BST	Occidental Chemical Co	P. O. Box 198, Lathrop, CA 95330.
OMC	Olin Corp	120 Long Ridge Rd., Stamford, CT 06904.
	Agricultural Chemicals Div	1120 Marshall St., P. O. Box 991, Little Rock, AR 72203.
THC	Thompson Plastics	238 S. Main St., Assonet, MA 02702.
OPC	Orbis Products Corp	475 10th Ave., New York, NY 10008.
ORG	Organics, Inc	1724 W. Greenleaf Ave., Chicago, IL 60628.
BSW	Original Bradford Soap Works, Inc	200 Providence St., W. Warwick, RI 02893.
OTC	Ott Chemical Co	500 Agard Rd., Muskegon, MI 49945.
OCF	Owens-Corning Fiberglas Corp	P. O. Box 901, Toledo, OH 33659.
OCC	Oxirane Chemical Co	10801 Choate Rd., Houston, TX 77062.
PLB	P-L Biochemicals, Inc	1037 W. McKinley Ave., Milwaukee, WI 53205.
PPG	PPG Industries, Inc	1 Gateway Center, Pittsburgh, PA 15222.
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, Greensville, 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, Manchaster, 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 Stefko 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., Witchita, 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. 4730 Crittenden Dr., Louisville, KY 40221.
REM	Remington Arms Co., Inc	939 Barnum Ave., Bridgeport, CT 06602.
RSY	Resyn Corp	1401 W. Blancke St., Linden, NJ 07036.
RTF	Retzloff Chemical Co	3230 Brookfield, Houston, TX 77045.
RCC	Rexene Polymers Co	P. O. Box 37, Paramus, NJ 07652.
RDA	Rhodia, Inc	600 Madison Ave., New York, NY 10022.
RCD	Richardson Co	2708 Lake St., Melrose Park, IL 60160.
PLA	Polymeric Div	425 Morgan Lane, West Haven, CT 06516.
AMS	Ridgway Color & Chemical	75 Front St., Ridgway, PA 15853.
RIK	Riker Laboratories, Inc., Sub. of 3M Co	19901 Nordhoff St., Northridge, CA 91324.
RSN	Rilsan Corp	139 Harristown Rd., Glen Roc, NJ 07452.
RT	F. Ritter & Co	4001 Goodwin Ave., Los Angeles, CA 90039.
RTC	Ritter Chemical Co., Inc	403 W. Main St., Amsterdam, NY 12010.
RIV	Riverdale Chemical Co	220 E. 17th St., Chicago Heights, IL 60411.
ROB	Robeco Chemicals, Inc	51 Madison Ave., New York, NY 10010.
ORT	Roehr Chemicals, Inc	52-20 37th St., Long Island City, NY 11101.
RGC	Rogers Corp	Main St., Rogers, CT 06263.
RH	Rohm & Haas Co	Independence Mall West, Philadelphia, PA 19105.

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

Identification 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.
	Glidden-Durkee Div	900 Union Commerce Bldg., Cleveland, OH 44115.
NPR	Safeway Stores, Inc., Brookside Div	8390 Capwell Dr., Oakland, CA 94604.
SLM	Salem Oil & Grease Co	60 Grove St., Salem, MA 01970.
SAL	Salsbury Laboratories	2000 Rockford Rd., Charles City, IA 50616.
S	Sandoz, Inc., Sandoz Color & Chemical Div	P. O. Box 357, Fair Lawn, NJ 07410 and Route No. 10, 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	Shakespeake 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.

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

Identification 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., Greensville, 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 Plains, 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 Orleand, 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.

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

Identification code	Name of company	Office address
WHI	White & Hodges, Inc	576 Lawrence St., Lowell, MA 01852
WHL	Whitmoyer Laboratories, Inc	19 N . Railroad St., Myerstown, PA 17067.
	Whittaker Corp.:	
APT	Mol Rez Div	3134 California St., NE., Minneapolis, MN 55426.
WHC	Research & Development	3540 Aero Ct., San Diego. CA 92123.
WHW	Whittemore-Wright Co., Inc	62 Alford St., Boston, MA 02129,
WIC	Wica Chemicals, Inc	P. O. Box 506, Charlotte, NC 28201.
	Wilson Pharmaceutical & Chemical Corp.:	
WIL	Wilson Laboratories Div	4221 S. Western Blvd., Chicago, IL 60609.
WM	Wilson-Martin Div	Jackson and Swanson Sts., Philadelphia, PA 19148.
WTC	Witco Chemical Co., Inc	P. O. Box 305, Paramus, NJ 07652.
WCC	Witfield Chemical Div	P. O. Box 1243, Wilmington, CA 90744.
WAW	W. A. Wood Co	108 Spring St., Everett, MA 02149.
WON	Woonsocket Color & Chemical Co	176 Sunnyside Ave., Woonsocket, RI 02895.
WBC	Worthington Biochemical Corp	Halls Mills Rd., Freehold, NJ 07728.
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.

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

TABLE 2.--BENZENOID CHEMICALS AND PRODUCTS: SUMMARY OF U.S. GENERAL IMPORTS ENTERED UNDER SCHEDULE 4, PARTS 1B AND 1C OF THE TSUS, AND ANALYSIS BY COMPETITIVE STATUS, 1971

Part and competitive status	Number of items	Quantity	Percent of total quantity	Foreign invoice value	Percent of foreign value	Unit foreign value
		1,000 pounds		*1,000 dollars*		*Per pound*
Schedule 4, Part 1B						
Total[1]	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
Schedule 4, Part 1C						
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
Summary (Schedule 4, Parts 1B and 1C)						
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.

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