UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1964

TC Publication 167

RECENT REPORTS OF THE UNITED STATES TARIFF COMMISSION ON SYNTHETIC ORGANIC CHEMICALS

*Synthetic Organic Chemicals, United States Production and Sales, 1959 (Rept. No. 206, 2d ser., 1960)

*Synthetic Organic Chemicals, United States Production and Sales, 1960 (TC Publication 34, 1961)

Synthetic Organic Chemicals, United States Production and Sales, 1961 (TC Publication 72, 1962), $1.25

Synthetic Organic Chemicals, United States Production and Sales, 1962 (TC Publication 114, 1963), $1.50

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UNITED STATES TARIFF COMMISSION

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United States Production and Sales, 1964

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

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Introduction

This is the forty-eighth 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. The report presents statistics for 1964 on production and sales of crude organic chemicals derived from coal, natural gas, and petroleum; of intermediates; and of finished synthetic organic chemical products. The finished products are grouped according to their principal use--dyes, synthetic organic pigments, medicinal chemicals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers, plasticizers, surface-active agents, pesticides and other organic agricultural chemicals, and miscellaneous chemicals. The use classifications of finished synthetic organic chemicals are based principally on the manufacturers' annual reports to the Tariff Commission; other sources include trade associations, the chemical literature, chemical dictionaries, encyclopedias, and consultants in the chemical industry. With a few exceptions, the report does not cover organic chemicals (such as wood-distillation products, essential oils, and naval stores) that are derived from natural (vegetable) sources by simple extraction or distillation. The Commission has compiled the statistics given in this report from information supplied by the 800 primary manufacturers listed in part III.

The first section of the report includes the statistics on all products and groups of products which conform to the general rules of publishability. The second section lists all the chemicals and chemical products on which data are reported and identifies the manufacturers of each. Each reporting company has been assigned an identification symbol consisting of a combination of not more than three capital letters, selected in most instances with the approval of the manufacturer, and usually bearing some relationship to the company name. The identification symbols are permanent and, except for such changes as may be necessary, will be used in all future reports in this series. Like the six immediately preceding reports, this report includes data on only those individual chemicals for which the volume of production or sales in the year covered exceeded 1,000 pounds or for which the value of sales exceeded $1,000.

The raw materials referred to in this report are obtained from coal, crude petroleum, natural gas, and certain other natural materials, such as vegetable oils, fats, rosin, and grains. Crude organic chemicals are derived from coal by thermal decomposition, from petroleum and natural gas by catalytic cracking and by distillation or absorption, and from other natural sources by fermentation. Production of these crude organic chemicals is the first step in the manufacture of synthetic organic chemicals. From these crudes, intermediates are obtained by synthesis or refining; most of the intermediates are then converted into finished chemical products, such as medicinal chemicals, plastics and resin materials, and dyes. More than half ot the total production of intermediates is not sold directly to the ultimate consumer, but is used by the producing companies themselves in their manufacturing processes. The statistics given in this report include data for all known domestic producers of the items covered and are therefore virtually complete.

In this report the statistics on production of the individual chemicals reported by manufacturers include the total output of the companies' plants, i.e., the quantities produced for consumption within the producing plants, 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 inventories. As specified in the reporting instructions that the Commission sends to manufacturers, and as used in this report, production and sales (unless otherwise specifically indicated) are defined as follows:

Production is the total quantity of a commodity made available by *original manufacture only*. It is the sum (expressed in terms of 100-percent active ingredient unless otherwise specified) of the quantities of a commodity--

(1) Produced, separated, and consumed in the same plant or establishment (a commodity is considered to be separated when it is isolated from the reaction system and/or when it is weighed, analyzed, or otherwise measured). Byproducts and coproducts not classified as waste materials are also included;
(2) Produced and transferred to other plants or establishments of the same firm;
(3) Produced and sold to other firms (including production for others under toll agreements[1]); and
(4) Produced and held in stock.

[1] A toll agreement is an agreement between two firms, 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.

Production excludes--

(1) Purification of a commodity unless specifically requested in the reporting instructions;
(2) Intermediate products that are formed in the manufacturing process but are not isolated from the reaction system--that is, not weighed, analyzed, or otherwise measured; and
(3) Materials that are used in the process but are recovered for reuse or sale; and waste products that have no economic significance.

Sales are defined as actual sales of commodities by *original manufacturers only*. Sales include--

(1) Shipments of commodities for domestic use and for export, or segregation in a warehouse when title has passed to the purchaser in a bonafide sale;
(2) Shipments of a commodity produced *by others* under toll agreements; and
(3) Shipments to subsidiary or affiliated companies.

Sales exclude--

(1) All intracompany transfers within a corporate entity;
(2) All sales of purchased commodities; and
(3) All shipments of a commodity produced *for others* under toll agreements.

The value of a sale is the net selling price, f.o.b. plant or warehouse, or delivered value, whichever represents the normal industry practice.

Data on the chemicals covered in this report are usually given in terms of undiluted materials. Products of 95 percent or more purity are considered to be 100 percent pure. The principal exceptions are the statistics on dyes and a few solvents, which are reported in terms of commercial concentrations; the statistics on certain plastics and resins, which are reported on a dry basis; and the data on sales of antibiotics, which are reported on the basis of specific conditions mentioned in the section on medicinal chemicals. The report specifically notes those products for which the statistics are reported in terms of commercial concentrations.

The average unit values of sales for groups of products shown in the tables accompanying this report are weighted averages for products which vary widely in unit values and in the quantities sold.

In this report, statistics are presented in as great detail as is possible without revealing the operations of individual producers. Statistics for an individual chemical or group of chemicals are not given unless 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.[2]

Statistics on tars and tar crudes include data furnished directly to the Tariff Commission by distillers of coal tar, water-gas tar, and oil-gas tar, and data furnished to the Division of Bituminous Coal, U.S. Bureau of Mines, by coke-oven operators.

Statistics on U.S. general imports in 1964 of benzenoid intermediates and finished benzenoid products that entered under schedule 4, parts 1B and 1C, of the Tariff Schedules of the United States are given in appendix A. Appendix B is a cross-reference list of the *Colour Index* and common names of synthetic organic pigments. Appendix C presents the results of a one-time survey on employment in the synthetic organic chemical industry made at the request of the Special Representative for Trade Negotiations. Statistics are given on total employment, employment by States, and by product groups, in 1964.

The Glossary of Synonymous Names of Cyclic Intermediates, which appeared as appendix B in previous reports, has been deleted from this report. Information formerly included in the glossary may now be found in the more comprehensive *SOCMA Handbook: Commercial Organic Chemical Names*, recently published by the Chemical Abstracts Service of the American Chemical Society, or in the *Colour Index* (2d edition), published in 1956 by the Society of Dyers and Colourists.

[2] Sec. 5, U.S.C. 139b and sec. 18, U.S.C. 1905.

Summary

Combined production of all synthetic organic chemicals, tars, tar crudes, and crude products from petroleum and natural gas in 1964 was 135,716 million pounds--an increase of 12.2 percent over the output in 1963 (see table 1). Sales of these materials in 1964, which totaled 72,668 million pounds, valued at $9,242 million, were 13.7 percent larger than in 1963 in terms of quantity and 8.5 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 contain some duplication.

In 1964, production of all synthetic organic chemicals, including cyclic intermediates and finished chemical products, totaled 78,678 million pounds, or 11.8 percent more than the output in 1963. Production of flavor and perfume materials (91 million pounds) was 22.8 percent larger in 1964 than in 1963; that of cyclic intermediates (14,896 million pounds) was 16.7 percent larger; that of plasticizers (951 million pounds) was 14.0 percent larger; and that of plastics and resin materials (10,103 million pounds) was 12.6 percent larger.

The output of most of the other groups of synthetic organic chemicals also increased in 1964 compared with 1963. Production of synthetic organic pigments (44 million pounds) was 11.8 percent greater; that of rubber-processing chemicals (261 million pounds) was 11.5 percent greater; that of miscellaneous organic chemicals (45,681 million pounds) was 11.0 percent greater; that of elastomers (3,421 million pounds) was 7.4 percent greater; that of surface-active agents (2,119 million pounds) was 7.0 percent greater; that of medicinal chemicals (144 million pounds) was 3.5 percent greater; and that of pesticides and other organic agricultural chemicals (783 million pounds) was 2.5 percent greater. The apparent decline of 9.6 percent in the production of dyes is the result of a change in the method of reporting data on certain dyes. Therefore, the figures on production (184 million pounds) and on the quantity of sales (178 million pounds) are not comparable with those for previous years. The value of sales of dyes ($264 million) in 1964 was 10.2 percent higher than in 1963.

TABLE 1.--*Synthetic organic chemicals and their raw materials: U.S. production and sales, 1963 and 1964*

Chemical	Production			Sales					
				Quantity			Value		
	1963	1964	Increase or decrease (-), 1964 over 1963[1]	1963	1964	Increase or decrease (-), 1964 over 1963[1]	1963	1964	Increase or decrease (-), 1964 over 1963[1]
	Million pounds	*Million pounds*	*Percent*	*Million pounds*	*Million pounds*	*Percent*	*Million dollars*	*Million dollars*	*Percent*
Grand total	120,928	135,716	12.2	63,898	72,668	13.7	8,517	9,242	8.5
Tar	6,719	7,629	13.6	2,907	3,361	15.6	32	34	10.8
Tar crudes	8,745	9,547	9.0	5,485	6,076	10.8	119	131	9.9
Crude products from petroleum and natural gas	35,121	39,862	13.5	18,460	20,465	10.9	573	619	8.0
Synthetic organic chemicals, total	70,343	78,678	11.8	37,046	42,766	15.4	7,793	8,458	8.5
Intermediates	12,768	14,896	16.7	5,429	6,470	19.2	643	711	10.6
Dyes	204	184	-9.6	187	178	-4.6	240	264	10.2
Synthetic organic pigments	39	44	11.8	34	35	4.6	80	84	5.7
Medicinal chemicals	139	144	3.5	114	119	4.2	639	646	1.0
Flavor and perfume materials	74	91	22.8	67	80	19.4	77	84	8.2
Plastics and resin materials	8,968	10,103	12.6	7,516	8,727	16.1	2,003	2,120	5.8
Rubber-processing chemicals	234	261	11.5	177	184	4.0	119	123	3.7
Elastomers (synthetic rubbers)	3,185	3,421	7.4	2,836	2,958	4.3	767	810	5.6
Plasticizers	835	951	14.0	750	905	20.7	168	188	11.5
Surface-active agents	1,981	2,119	7.0	1,790	1,900	6.2	325	350	7.7
Pesticides and other organic agricultural chemicals	763	783	2.5	651	692	6.3	369	427	44.2
Miscellaneous chemicals	41,153	45,681	11.0	17,495	20,518	17.3	2,363	2,651	12.2

[1] Percentages calculated from figures rounded to thousands.

PART I. PRODUCTION AND SALES OF TARS, TAR CRUDES, AND CRUDES DERIVED FROM PETROLEUM AND NATURAL GAS

Tars

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

The quantity of tar produced from coal in the United States in 1964 was 763 million gallons, or 13.6 percent more than the 672 million gallons produced in 1963. U.S. production of water-gas tar and oil-gas tar was not reported to the Commission for 1963 or 1964; production of these tars amounted to 19 million gallons in 1962, the last year for which production was reported to the Tariff Commission.

Total consumption of tar in 1964 amounted to 747 million gallons, of which 602 million gallons was consumed by distillation, 128 million gallons as fuel, and 17 million gallons in miscellaneous uses.

TABLE 2.--*Tar: U.S. production and consumption, 1963 and 1964*

[In thousands of gallons]

Product	1963	1964
PRODUCTION		
Coal tar from coke-oven byproduct plants[1]	671,876	762,918
CONSUMPTION		
Total	691,509	746,900
Tar consumed by distillation, total	573,096	601,753
Coal tar distilled or topped by coke-oven operators[1]	289,569	293,957
Coal tar, water-gas tar, and oil-gas tar distilled by producers and tar distillers[2]	283,527	307,796
Tar consumed chiefly as fuel[1]	91,313	127,872
Tar consumed otherwise than by distillation or as fuel, total	27,100	17,275
Coal tar consumed at coke-oven plants for roads and upkeep[1]	558	371
Coal tar, water-gas tar, and oil-gas tar processed at tar refineries, crude tar consumed for upkeep at such refineries, and tar consumed in making gas and in special-purpose tar blends	26,542	16,904

[1] Reported to the 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.

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, and creosote oil. Some of the products produced from coal tar are identical with those produced from petroleum and natural gas. Data for materials derived from these latter sources are included, for the most part, in or with the statistics for materials derived from coal tar, which are shown in tables 3 and 4A.[1]

[1] See also table 4B, pt. III, which lists these products alphabetically and identifies the manufacturers.

Domestic production of industrial and specification grades of benzene reported by coke-oven operators and petroleum operators[2] in 1964 amounted to 730 million gallons--12.8 percent more than the 647 million gallons reported for 1963. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum operators in 1964 amounted to 464 million gallons, valued at $104 million, compared with 421 million gallons, valued at $96 million, in 1963. In 1964 the output of toluene[2] (including material produced for use in blending in aviation fuel) amounted to 495 million gallons--21.9 percent more than the 406 million gallons reported for 1963. Sales of toluene in 1964 were 261 million gallons, valued at $44 million, compared with 207 million gallons, valued at $35 million, in 1963. The output of xylene[2] in 1964 (including that produced for blending in motor fuels) was 343 million gallons, compared with 335 million gallons in 1963. About 98 percent of the 343 million gallons of xylene produced in 1964 was obtained from petroleum sources.

Production of crude naphthalene in 1964 (including 315 million pounds of petroleum-derived naphthalene) amounted to 740 million pounds, compared with 627 million pounds in 1963. Sales of coal-tar-derived naphthalene[3] in 1964 were 234 million pounds, valued at $6 million, compared with 209 million pounds, valued at $7 million, in 1963. In 1964 the output of creosote oil for wood preservation was 113 million gallons (100-percent creosote basis), compared with 98 million gallons in 1963. Production of road tar in 1964 was 56 million gallons, compared with 58 million gallons in 1963.

TABLE 3.--*Tar and tar crudes: Summary of U.S. production of specified products, average 1950-54, annual 1963 and 1964*

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

Chemical	Unit of quantity	Average 1950-54	1963	1964	Increase, or decrease (-)	
					1964 over 1950-54	1964 over 1963
					Percent	*Percent*
Tar[1]	1,000 gal--	876,070	671,876	762,918	-12.9	13.6
Benzene:[2]						
Tar distillers[3]	1,000 gal--	41,389	9,098	...	...	...
Coke-oven operators	1,000 gal--	163,356	112,427	118,944	-27.2	5.8
Petroleum operators	1,000 gal--	46,635	525,889	611,294	1,210.8	16.2
Total	1,000 gal--	251,380	647,414	730,238	190.5	12.8
Toluene:						
Tar distillers	1,000 gal--	7,497	3,204	...	...	...
Coke-oven operators	1,000 gal--	32,981	25,794	25,521	-22.6	-1.1
Petroleum operators	1,000 gal--	80,725	377,205	469,519	481.6	24.5
Total	1,000 gal--	121,203	406,203	495,040	308.4	21.9
Xylene:						
Tar distillers	1,000 gal--	1,373	509	...	...	...
Coke-oven operators	1,000 gal--	9,028	6,888	7,119	-21.2	3.4
Petroleum operators	1,000 gal--	78,188	[4] 327,460	[4] 336,079	329.8	2.6
Total	1,000 gal--	88,589	334,857	343,198	287.4	2.5
Naphthalene, crude:						
Solidifying at less than 79° C.[5]	1,000 lb---	307,537	338,715	425,690	38.4	25.7
Petroleum naphthalene, all grades	1,000 lb---	...	288,240	314,664	...	9.2
Total	1,000 lb---	307,537	626,955	740,354	140.7	18.1
Creosote oil (Dead oil)[6]	1,000 gal--	109,946	87,894	102,114	-7.1	16.2

[1] Includes data for oil-gas, water-gas, and gas-retort tar reported to the American Gas Association for 1950-54 only, and for coal tar reported to the Division of Bituminous Coal, U.S. Bureau of Mines.

[2] Includes data for motor-grade benzene in 1950-54. Production in 1964 by coke-oven operators was 864 thousand gallons, with sales of 864 thousand gallons, valued at 197 thousand dollars.

[3] Includes data for benzene produced from imported crude light oil.

[4] Includes data for material produced for use in blending motor fuels. Statistics are not comparable with monthly figures, which included some o-xylene now shown in table 7A.

[5] Figures include production by tar distillers and coke-oven operators and represent combined data for the commercial grades of naphthalene to avoid disclosure of the operations of individual companies. Because of conversion between grades, the figures may include some duplication.

[6] Includes data for creosote oil produced by tar distillers and coke-oven operators and used only in wood preserving. Data for production of creosote oil in coal-tar solution have been excluded because the figures for 1950-54 are not comparable with the figures for 1963 and 1964. Production figures for 1950-54 are for the distillate sold or consumed as such; and, for 1963 and 1964, the production of the distillate is on a 100-percent-creosote basis.

[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.

[3] For sales of petroleum-derived naphthalene, see table 5A.

TABLE 4A.-- *Tar crudes: U.S. production and sales, 1964*

[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 4B in pt. III 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	
Crude light oil: Coke-oven operators	1,000 gal--	248,669	53,702	6,709	$0.12
Intermediate light oil: Coke-oven operators	1,000 gal--	5,392	2,185	224	.10
Light-oil distillates:					
Benzene, specification and industrial grades, total[2]	1,000 gal--	730,238	464,032	104,182	.22
Coke-oven operators	1,000 gal--	118,944	119,070	25,263	.21
Petroleum operators	1,000 gal--	611,294	344,962	78,919	.23
Toluene, all grades, total[2] [3]	1,000 gal--	495,040	260,796	43,524	.17
Coke-oven operators	1,000 gal--	25,521	25,530	4,729	.19
Petroleum operators	1,000 gal--	469,519	235,266	38,795	.16
Xylene, total[2] [3]	1,000 gal--	343,198	153,927	28,455	.18
Coke-oven operators	1,000 gal--	7,119	7,135	1,617	.23
Petroleum operators	1,000 gal--	336,079	146,792	26,838	.18
Solvent naphtha: Coke-oven operators[2]	1,000 gal--	4,484	4,193	839	.20
Other light-oil distillates, total	1,000 gal--	...	8,721	1,002	.11
Tar distillers	1,000 gal--	...	3,004	378	.13
Coke-oven operators[4]	1,000 gal--	9,101	5,717	624	.11
Pyridine crude bases (dry basis)	1,000 gal--	464	...	...	...
Naphthalene, crude (tar distillers and coke-oven operators), total[5]	1,000 lb---	425,690	234,362	6,237	.03
Solidifying at--					
Less than 74° C	1,000 lb---	78,179	70,804	1,350	.02
74° C. to less than 79° C	1,000 lb---	347,511	163,558	4,887	.03
Crude tar-acid oils:					
Tar distillers	1,000 gal--	328	317	139	.44
Coke-oven operators	1,000 gal--	24,893	24,145	3,749	.16
Creosote oil (Dead oil) (tar distillers and coke-oven operators) (100% creosote basis), total[6]	1,000 gal--	113,272	98,007	[7] 21,014	[7] .21
Distillate as such (100% creosote basis)	1,000 gal--	102,114	87,310	17,701	.20
Creosote content of coal-tar solution (100% creosote basis)	1,000 gal--	11,158	10,697	[7] 3,313	[7] .31
All other distillate products[8]	1,000 gal--	...	14,617	2,550	.17
Tar, road	1,000 gal--	55,696	54,879	7,549	.14
Tar (crude and refined) for other uses[9]	1,000 gal--	19,968	18,950	3,743	.20
Pitch of tar:					
Hard (water softening point above 160° F.)	1,000 tons-	991	701	27,600	39.37
Other[10]	1,000 tons-	886	418	16,085	38.48

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

[2] Data reported by tar distillers are not included because publication would disclose the operations of individual companies. Production of benzene, toluene, and solvent naphtha by tar distillers decreased in 1964, compared with 1963; production of xylene increased. The annual production statistics for petroleum operators on benzene, toluene, and xylene are not comparable with the combined monthly production figures, due to fiscal year revisions.

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

[4] Production reported by coke-oven operators includes 864 thousand gallons of motor-grade benzene, sales of which were 864 thousand gallons, valued at 197 thousand dollars.

[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 only data for creosote oil sold for, or used in, wood preserving. In 1964, production of creosote in coal-tar solution (100% solution basis) amounted to 19,291 thousand gallons; sales were 17,444 thousand gallons, valued at 3,313 thousand dollars, with a unit value of $0.19 per gallon.

[7] Includes value of coal tar used in preparing creosote in coal-tar solution.

[8] Includes data for crude cresylic acid, dry distilled tar acid, and neutral oils produced by tar distillers, and for crude sodium phenolate produced by coke-oven operators.

[9] Includes data for tar used for paint, pipe covering, saturating, and other uses.

[10] Includes soft and medium pitch of tar (water softening points less than 110° F., and 110° F. to 160° F. ASTM D61-24), pitch of tar coke, and pitch emulsion.

Note.--Statistics for materials produced in coke and gas-retort ovens are compiled by the Division of Bituminous Coal, 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.

Some of the products included in the statistics in table 4A 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. After duplication has been eliminated insofar as possible, it is estimated that the net value of the output of these products and of tar burned as fuel was $460 million in 1964, compared with $406 million in 1963 and $423 million in 1962.

Crude Products from Petroleum and Natural Gas for Chemical Conversion

Crude products that are derived from petroleum and natural gas 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 processes (see table 5A[4]). 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. 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 not used directly as fuel but in blending aviation and motor-grade gasolines.

TABLE 5A.-- *Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1964*

[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 5B in pt. III lists separately all products from petroleum and natural gas for chemical conversion for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	39,862,500	20,465,279	618,971	$0.030
AROMATICS AND NAPHTHENES[2]				
Total	12,574,423	7,578,662	180,150	.024
Alkyl aromatics, distillates, and solvents	1,658,622	1,935,826	22,155	.011
Benzene (1° and 2°), total	4,511,350	2,545,820	78,919	.031
Benzene, 1°	3,616,761	...	...	...
Benzene, 2°	894,589	...	...	...
Cresylic acid, crude	37,655	...	...	...
Naphthalene, all grades	314,664	235,419	9,961	.042
Naphthenic acids, total	30,482	14,625	1,412	.097
Acid No. 150-199	5,399	4,122	415	.101
All other	25,083	10,503	997	.095
Toluene, all grades, total	3,413,404	1,710,383	38,795	.023
Nitration grade, 1°	2,290,312	1,377,294	31,976	.023
Pure commercial grade, 2°	163,401	...	...	...
All other[3]	959,691	333,089	6,819	.020
Xylenes, mixed, total	2,423,129	1,058,371	26,838	.025
3°	364,797	237,310	6,617	.028
All other[3]	2,058,332	821,061	20,221	.025
All other aromatics and naphthenes[4]	185,117	78,218	2,070	.026

See footnotes at end of table.

[4] See also table 5B, p. III, which lists these products alphabetically and identifies the manufacturers.

TABLE 5A.--*Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1964*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
ALIPHATIC HYDROCARBONS	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	27,288,077	12,886,617	438,821	$0.034
C_2 hydrocarbons, total	10,248,954	2,795,106	117,439	.042
Acetylene[5]	437,190	34,198	3,475	.102
Ethane	1,170,562	383,540	3,172	.008
Ethylene	8,641,202	2,377,368	110,792	.047
C_3 hydrocarbons, total	7,227,166	4,085,337	56,548	.014
Propane	3,656,661	2,624,874	24,548	.009
Propylene	3,570,505	1,460,463	32,000	.022
C_4 hydrocarbons, total	6,671,545	4,164,309	214,454	.051
1,3-Butadiene, grade for rubbers (elastomers)	2,491,086	1,508,684	157,260	.104
Butadiene and butylene fractions	305,092	68,961	1,571	.023
n-Butane	1,700,843	927,488	10,737	.012
1-Butene and 2-butene mixture[6]	1,175,713	1,039,428	31,140	.030
Isobutane	552,766	328,306	4,204	.013
Isobutylene	220,467	130,134	5,898	.045
All other[7]	225,578	161,308	3,644	.022
C_5 hydrocarbons, total	477,941	79,847	3,360	.042
Isoprene (2-Methyl-3-butadiene)	81,423	...	...	...
All other[8]	396,518	...	...	...
All other aliphatic hydrocarbons and derivatives, total	2,662,471	1,762,018	47,020	.027
Diisobutylene (Diisobutene)	21,474	22,113	1,386	.063
n-Heptane	66,395	...	...	...
Heptenes, mixed	254,143	140,561	5,328	.038
Hexane	130,192	...	...	...
Nonene (Tripropylene)	161,544	143,166	4,292	.030
Polybutene[9]	124,954	...	...	...
Tetrapropylene	432,839	343,891	9,479	.028
Hydrocarbon derivatives[10]	29,262	17,109	5,821	.340
All other[11]	1,441,668	1,095,178	20,714	.019

[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 aromatic chemicals from all sources are given in table 4A, "Tar Crudes."
[3] Includes toluene and xylene used as solvents, as well as that which is blended in aviation and motor gasolines.
[4] Includes data for 90-percent benzene, sodium cresylate, sodium carbolate and phenate, 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] The statistics represent principally the butene content of crude refinery gases from which butadiene is manufactured.
[7] Includes data for 1-butene, 2-butene, mixed butylenes, and mixed olefins.
[8] Includes data for pentanes, pentenes, and C_5 hydrocarbon mixtures.
[9] Includes compounds having a molecular weight of 3,000 or less.
[10] Includes data for di-tert-butyldisulfide and miscellaneous mercaptans.
[11] Includes data for alpha olefins, methane, propane-propylene mixture, octanes, 1-dodecene, eicosane, and hydrocarbon mixtures.

The output of crude products derived from petroleum and natural gas as a group amounted to 39,862 million pounds in 1964, or 13.5 percent more than the 35,121 million pounds reported for 1963. The larger output in 1964 is accounted for chiefly by increased production of benzene, toluene, ethylene, and propylene. Sales of crude chemicals from petroleum in 1964 were 20,465 million pounds, valued at $619 million, compared with 18,460 million pounds, valued at $573 million, in 1963.

The output of all aromatic and naphthenic products amounted to 12,574 million pounds in 1964, compared with 11,292 million pounds in 1963. Sales in 1964, which amounted to 7,579 million pounds, valued at $180 million, were 733 million pounds larger, and valued at $16 million more, than those in 1963. Naphthalene was produced from petroleum sources in substantially greater quantities in 1964 than in 1963. The output of 1° and 2° benzene from petroleum amounted to 4,511 million pounds in 1964--16.2 percent more than the 3,881 million pounds produced in 1963. The output of toluene in 1964 was 3,413 million pounds--24.5 percent more

than the 2,742 million pounds produced in 1963. Production of xylene was 2,423 million pounds in 1964, compared with 2,361 million pounds in 1963. These figures include toluene and xylene used in blends in aviation and motor-grade gasolines. The output of naphthenic acids amounted to 30 million pounds in 1964, compared with 25 million pounds produced in 1963. Production of cresylic acid in 1964--38 million pounds--was 19.8 percent more than in 1963.

Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 27,288 million pounds in 1964, compared with 23,829 million pounds in 1963. Sales of these products were 12,887 million pounds, valued at $439 million, in 1964, compared with 11,614 million pounds, valued at $410 million, in 1963. The statistics on production of acetylene (table 5A) include only acetylene produced from natural gas and used as a raw material in the production of other chemical. Total production of acetylene for chemical synthesis is reported to the U.S. Bureau of the Census. In 1964, production of acetylene from all sources except that produced by railroad shops, shipyards, and small establishments using portable generators, amounted to 1,051 million pounds. Production of ethylene was 8,641 million pounds in 1964, or 14.9 percent more than the 7,518 million pounds produced in 1963. The output of propane and propylene was 7,227 million pounds in 1964-- 25.6 percent more than the 5,756 million pounds produced in 1963. Production of 1,3-butadiene, one of the principal ingredients of S-type synthetic rubber, was 2,491 million pounds in 1964, compared with 2,324 million pounds in 1963. The output of 1,3-butadiene in 1964--7.2 percent more than that in 1963--was the largest on record.

The following tabulation shows the number of companies that reported production of organic chemical crudes in 1964:

Chemical group	*Number of companies*
Tar crudes	14
Petroleum crudes	74

PART II. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED SYNTHETIC ORGANIC CHEMICALS, BY GROUPS

General

On the basis of their principal uses, the synthetic organic chemicals covered in this report are classified either as intermediates or as finished products. Finished products, in turn, are grouped as follows: Dyes, synthetic organic pigments, medicinal chemicals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers (synthetic rubbers), plasticizers, surface-active agents, pesticides and other organic agricultural chemicals, and miscellaneous synthetic organic chemicals. Most of these groups are further subdivided, according to chemical classes, into cyclic and acyclic compounds. As most of the intermediates 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 1964 was 78,678 million pounds, or 11.8 percent more than the output of 70,343 million pounds reported for 1963 (see table 6). Sales of synthetic organic chemicals in 1964 amounted to 42,766 million pounds, valued at $8,458 million, compared with 37,046 million pounds, valued at $7,793 million, in 1963. Production of all cyclic products (intermediates and finished products combined) in 1964 totaled 25,506 million pounds, or 13.4 percent more than the 22,490 million pounds produced in 1963. The output of acyclic organic chemicals in 1964 amounted to 53,172 million pounds--11.1 percent more than the 47,853 million pounds reported for 1963.

TABLE 6.--*Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1963 and 1964*

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

Chemical	Average 1957-59	1963	1964	Increase, or decrease (-)	
				1964 over 1957-59	1964 over 1963
				Percent	*Percent*
Organic chemicals, cyclic and acyclic, grand total:					
Production	45,598,853	70,343,302	78,677,699	72.5	11.8
Sales	23,744,812	37,046,363	42,766,420	80.1	15.4
Sales value	5,743,764	7,793,226	8,457,909	47.2	8.5
Cyclic, total:					
Production	14,381,651	22,490,017	25,505,853	77.3	13.4
Sales	8,829,037	13,477,603	15,241,685	72.6	13.1
Sales value	2,785,100	3,631,620	3,890,571	39.7	7.1
Acyclic, total:					
Production	31,217,202	47,853,285	53,171,846	70.3	11.1
Sales	14,915,775	23,568,760	27,524,735	84.5	16.8
Sales value	2,958,664	4,161,606	4,567,338	54.4	9.7
1. Intermediates, Cyclic					
Production	7,343,167	12,768,168	14,895,573	102.8	16.7
Sales	2,919,264	5,428,713	6,470,072	121.6	19.2
Sales value	481,920	642,884	711,119	47.6	10.6
2. Dyes, Cyclic					
Production	150,830	204,046	184,387	22.2	-9.6
Sales	141,731	186,951	178,273	25.8	-4.6
Sales value	182,513	239,676	264,023	44.6	10.2
3. Synthetic Organic Pigments, Cyclic					
Production	38,603	39,399	44,053	14.1	11.8
Sales	30,218	33,534	35,081	16.1	4.6
Sales value	58,648	79,600	84,131	43.4	5.7

TABLE 6.--*Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1963 and 1964* --Continued

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

Chemical	Average 1957-59	1963	1964	Increase, or decrease (-)	
				1964 over 1957-59	1964 over 1963
4. Medicinal Chemicals					
				Percent	*Percent*
Cyclic:					
Production	70,654	94,125	97,579	38.1	3.7
Sales	54,151	73,606	76,946	42.1	4.5
Sales value	535,297	605,080	612,233	14.4	1.2
Acyclic:					
Production	31,592	45,071	46,511	47.2	3.2
Sales	28,738	40,314	41,732	45.2	3.5
Sales value	35,660	33,875	33,459	-6.2	-1.2
5. Flavor and Perfume Materials					
Cyclic:					
Production	27,312	41,338	49,563	81.5	19.9
Sales	22,446	34,671	41,235	83.7	18.9
Sales value	33,903	51,446	56,571	66.9	10.0
Acyclic:					
Production	19,033	32,430	41,007	115.4	26.4
Sales	19,958	32,343	38,802	94.4	20.0
Sales value	21,912	25,940	27,163	24.0	4.7
6. Plastics and Resin Materials					
Cyclic:					
Production	2,278,862	3,489,361	3,915,046	71.8	12.2
Sales	1,900,032	2,886,387	3,256,105	71.4	12.8
Sales value	518,501	736,760	777,342	49.9	5.5
Acyclic:					
Production	2,628,779	5,479,112	6,188,018	135.4	12.9
Sales	2,438,853	4,629,750	5,470,616	125.3	18.2
Sales value	864,523	1,266,359	1,342,942	55.3	6.0
7. Rubber-Processing Chemicals					
Cyclic:					
Production	159,182	199,282	222,461	39.8	11.6
Sales	115,704	152,835	161,660	39.7	5.8
Sales value	74,479	101,757	108,656	45.9	6.8
Acyclic:					
Production	29,150	34,350	38,095	30.7	10.9
Sales	22,127	24,367	22,567	2.0	-7.4
Sales value	14,289	16,906	14,371	.6	-15.0
8. Elastomers (Synthetic Rubbers)					
Cyclic:					
Production	1,938,732	2,174,183	2,332,436	20.3	7.3
Sales	1,726,757	1,925,751	1,961,181	13.6	1.8
Sales value	404,897	434,474	450,913	11.4	3.8
Acyclic:					
Production	521,811	1,010,731	1,088,782	108.6	7.7
Sales	509,262	910,544	996,403	95.6	9.4
Sales value	199,627	332,457	358,989	79.8	8.0
9. Plasticizers					
Cyclic:					
Production	348,210	621,687	717,624	6.1	15.4
Sales	297,423	557,979	689,647	31.9	23.6
Sales value	83,509	103,000	119,565	43.2	16.1
Acyclic:					
Production	118,118	212,837	233,784	97.9	9.8
Sales	100,984	191,771	215,240	113.1	12.2
Sales value	38,772	65,181	67,903	75.1	4.2

TABLE 6.--*Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1963 and 1964*--Continued

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

Chemical	Average 1957-59	1963	1964	Increase, or decrease (-)	
				1964 over 1957-59	1964 over 1963
10. Surface-Active Agents					
Cyclic:				*Percent*	*Percent*
Production	852,314	1,308,791	1,347,809	58.1	3.0
Sales	800,432	1,222,238	1,245,176	55.6	1.9
Sales value	127,936	159,963	165,132	29.1	3.2
Acyclic:					
Production	502,715	671,867	770,879	53.3	14.7
Sales	432,135	567,445	654,754	51.5	15.4
Sales value	113,215	165,011	185,010	63.4	12.1
11. Pesticides and Other Organic Agricultural Chemicals					
Cyclic:					
Production	440,384	597,072	584,698	32.8	-2.1
Sales	375,627	498,082	522,691	39.2	4.9
Sales value	150,837	286,045	316,556	109.9	10.7
Acyclic:					
Production	105,080	166,405	198,051	88.5	19.0
Sales	91,938	153,389	169,664	84.5	10.6
Sales value	49,049	83,095	110,555	125.4	33.0
12. Miscellaneous Chemicals					
Cyclic:					
Production	733,401	952,565	1,114,624	52.0	17.0
Sales	445,252	476,856	603,618	35.6	26.6
Sales value	132,660	190,935	224,330	69.1	17.5
Acyclic:					
Production	27,260,924	40,200,482	44,566,719	63.5	10.9
Sales	11,271,780	17,018,837	19,914,957	76.7	17.0
Sales value	1,621,617	2,172,782	2,426,946	49.7	11.7

The following tabulation shows, by chemical groups, the number of companies that reported production in 1964 of one or more of the chemicals included in the groups listed in table 6:

Chemical group	*Number of companies*	*Chemical group*	*Number of companies*
Intermediates	203	Rubber-processing chemicals	33
Dyes	51	Elastomers (synthetic rubbers)	30
Synthetic organic pigments	39	Plasticizers	61
Medicinal chemicals	114	Surface-active agents	182
Flavor and perfume materials	53	Pesticides and other organic agricultural chemicals	86
Plastics and resin materials	337	Miscellaneous chemicals	325

Cyclic Intermediates

Cyclic intermediates are synthetic organic chemicals derived principally from coal-tar crudes produced by destructive distillation (pyrolysis) of coal and from petroleum and natural gas. 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 general, the way in which the greater part of the output of a given chemical is consumed determines its use classification in this report. Table 7A[1] gives statistics on production and sales of cyclic intermediates in 1964. Individual statistics given in the table represent more than 85 percent of the total quantity of intermediates produced. Since many of the intermediates included in the statistics represent successive steps in production, the totals necessarily include considerable duplication. In 1964 about two-fifths of the total output of cyclic intermediates was sold; the rest was consumed chiefly by the producing plants in the manufacture of more advanced intermediates and finished products.

Total production of cyclic intermediates in 1964--14,896 million pounds--was the largest on record, and was 16.7 percent larger than the output of 12,768 million pounds reported for 1963. The larger output of cyclic intermediates in 1964 was attributable to increased demand by a number of industries that consume large quantities of intermediates, particularly those industries that produce dyes, plastics and resin materials, and plasticizers. Sales of cyclic intermediates in 1964 amounted to 6,470 million pounds, valued at $711 million, compared with 5,429 million pounds, valued at $643 million, in 1963. In terms of quantity, sales of cyclic intermediates in 1964 were 19.2 percent larger than those in 1963 and in terms of value, 10.6 percent larger.

TABLE 7A.--*Cyclic intermediates: U.S. production and sales, 1964*

[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 7B in pt. III lists alphabetically all cyclic intermediates for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	14,895,573	6,470,072	711,119	$0.11
Acetanilide, tech	3,905	1,305	341	.26
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	475	164	255	1.55
5-Amino-2-(p-aminoanilino)benzenesulfonic acid	15	...	...	...
2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	33	...	...	...
1-Aminoanthraquinone and salt	1,152	29	99	3.41
2-Aminoanthraquinone and salt	965	...	...	...
6-Amino-3,4'-azodi(benzenesulfonic acid)	60	...	...	...
1-Amino-4-benzamidoanthraquinone	75	...	...	...
1-Amino-5-benzamidoanthraquinone	104	...	...	...
6-(p-Aminobenzamido)-1-naphthol-3-sulfonic acid	38	...	...	...
2-Amino-p-benzenedisulfonic acid [SO_3H=1]	21	...	...	...
1-Amino-4-bromo-2-anthraquinonesulfonic acid and sodium salt	253	...	...	...
1-Amino-2-bromo-4-hydroxyanthraquinone	113	...	...	...
1-Amino-5-chloroanthraquinone	86	...	...	...
2-Amino-3-chloroanthraquinone	48	...	...	...
o-(3-Amino-4-chlorobenzoyl)benzoic acid	106	...	...	...
6-Amino-4-chloro-1-phenol-2-sulfonic acid	17	...	...	...
6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=1]	919	268	330	1.23

See footnotes at end of table.

[1] See also table 7B, pt. III, which lists these products alphabetically and identifies the manufacturers, and appendix A, which shows imports of intermediates and related products during 1963 and 1964.

TABLE 7A.--*Cyclic intermediates: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
2-Amino-5-chloro-p-toluenesulfonic acid [SO_3H=1]	1,334	...	...	...
1-Amino-2,4-dibromoanthraquinone	245	...	...	...
4'-Amino-N-methylacetanilide	14	...	...	...
2-Amino-1,5-naphthalenedisulfonic acid	85	...	...	...
3-Amino-1,5-naphthalenedisulfonic acid (Cassella acid)	241	...	...	...
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	1,168	...	...	...
2-Amino-1-naphthalenesulfonic acid (Tobias acid)	4,506	...	...	...
5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)	149	...	...	...
5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed)	303	...	...	...
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	90	56	90	$1.61
8-Amino-1-naphthalenesulfonic acid (Peri acid)	476	...	...	...
8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)	224	...	...	...
8-Amino-2-naphthol	59	...	...	...
8-Amino-1-naphthol-3,6-disulfonic acid (H acid), monosodium salt	3,506	...	...	...
1-Amino-2-naphthol-4-sulfonic acid (1,2,4-acid)	1,151	...	...	...
6-Amino-1-naphthol-3-sulfonic acid (J acid), sodium salt	596	...	...	...
7-Amino-1-naphthol-3-sulfonic acid (Gamma acid), sodium salt	578	186	272	1.46
2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	36	...	...	...
2-Amino-4-nitrophenol	98	...	...	...
2-Amino-1-phenol-4-sulfonamide	62	...	...	...
2-Amino-1-phenol-4-sulfonic acid	100	...	...	...
p-(p-Aminophenylazo)benzenesulfonic acid	205	...	...	...
4-Amino-m-toluenesulfonic acid [SO_3H=1]	223	...	...	...
6-Amino-m-toluenesulfonic acid [SO_3H=1]	280	...	...	...
16-Aminoviolanthrone	21	...	...	...
2-Amino-3,5-xylenesulfonic acid [SO_3H=1]	69	...	...	...
Aniline (Aniline oil)	169,909	61,073	8,406	.14
Anilinomethanesulfonic acid and salt	242	...	...	...
8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	364	...	...	...
6-Anilino-1-naphthol-3-sulfonic acid (Phenyl J acid)	66	...	...	...
o-Anisidine	1,672	600	433	.72
o-Anisidinomethanesulfonic acid	372	...	...	...
Anthra[1,9]pyrazol-6(2H)-one (Pyrazoleanthrone)	30	...	...	...
Anthraquinone, 100%	2,760	...	...	...
1,5-Anthraquinonedisulfonic acid	261	...	...	...
1,8-Anthraquinonedisulfonic acid, potassium salt	312	...	...	...
2,6-Anthraquinonedisulfonic acid and salt	271	...	...	...
1-Anthraquinonesulfonic acid and salt	2,691	...	...	...
Anthrarufin (1,5-Dihydroxyanthraquinone)	255	...	...	...
Benzaldehyde, tech	3,338	3,615	1,452	.40
1-Benzamido-5-chloroanthraquinone	109	...	...	...
7H-Benz[de]anthracen-7-one, (Benzanthrone)	1,987	64	109	1.70
Benzidine hydrochloride and sulfate	1,369	893	906	1.01
Benzoic acid, tech	15,864	7,998	1,392	.17
o-Benzoylbenzoic acid	5,786	...	...	...
3,3'-Bianthra[1,9]pyrazole-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow)	19	...	...	...
[4,4'-Bi-7H-benz[de]anthracen]-7,7'-dione	476	...	...	...
[1,1'-Binaphthalene]-8,8'-dicarboxylic acid	33	...	...	...
1,4-Bis[1-anthraquinonylamino]anthraquinone	122	...	...	...
4,4'-Bis[dimethylamino]benzophenone (Michler's ketone)	96	...	...	...
3-Bromo-7H-benz[de]anthracen-7-one (Bromobenzanthrone)	145	...	...	...
o-sec-Butylphenol	1,093	...	...	...
Camphoric acid	10	4	15	3.75
1-Chloroanthraquinone	197	...	...	...
2-Chloroanthraquinone	1,010	...	...	...
Chlorobenzene, mono-	537,500	50,040	3,238	.06
o-(p-Chlorobenzoyl)benzoic acid	1,633	...	...	...
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	8,193	1,499	252	.17
6-Chlorometanilic acid	24	...	...	...
1-Chloro-2-methylanthraquinone	215	...	...	...
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	301	226	201	.89
1-Chloro-5-nitroanthraquinone	103	...	...	...
1-Chloro-8-nitroanthraquinone	46	...	...	...
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	20,088	9,648	631	.07
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)	8,063	...	...	...
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	86,902	...	...	...

See footnotes at end of table.

TABLE 7A.-- *Cyclic intermediates: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
4-Chloro-3-nitrobenzenesulfonamide	258	...	...	...
4-Chloro-3-nitrobenzenesulfonyl chloride	235	...	...	...
o-(4-Chloro-3-nitrobenzoyl)benzoic acid	93	...	...	...
4-Chloro-2-nitrotoluene	396	...	...	...
α-Chlorotoluene (Benzyl chloride)	52,408	8,471	1,551	$0.18
5-Chloro-o-toluidine [NH_2=1] and hydrochloride	657	159	218	1.37
Cresols, total[2]	62,467	52,244	10,951	.21
m-, o-, and p-Cresols	26,147	22,811	7,135	.31
(m,p)-Cresol (from coal tar and petroleum)	24,445	19,009	2,247	.12
(o,m,p)-Cresol[3]	11,875	10,424	1,569	.15
Cresylic acid, refined, total[2]	63,690	47,343	5,400	.11
From coal tar	22,208	22,808	2,679	.12
From petroleum	41,482	24,535	2,721	.11
Cumene	549,841	...	...	...
Cyclohexane	1,367,142	1,064,807	40,865	.04
Cyclohexanol	...	3,667	901	.25
Cyclohexanone	293,955	11,028	2,895	.26
1,4-Diaminoanthraquinone	85	...	...	...
1,5-Diaminoanthraquinone	66	...	...	...
2,6-Diaminoanthraquinone	116	...	...	...
4,4′-Diamino-2,2′-biphenyldisulfonic acid	4	...	...	...
4,4′-Diamino-2,2′-stilbenedisulfonic acid	2,882	14	32	2.29
4,5′-Dibenzamido-1,1′-iminodianthraquinone	129	...	...	...
1,5-Dibenzoylnaphthalene	183	...	...	...
3,9-Dibromo-7H-benz[de]anthracen-7-one	224	...	...	...
2,5-Dichloroaniline and hydrochloride [NH_2=1]	138	...	...	...
1,8-Dichloroanthraquinone	77	...	...	...
o-Dichlorobenzene	52,308	37,825	4,251	.11
o(and p)-Dichlorobenzene	12,997	16,189	528	.03
p-Dichlorobenzene	63,154	65,952	5,898	.09
3,3′-Dichlorobenzidine base and salts	2,345	1,956	2,332	1.19
2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	313	...	...	...
2,6-Dichloro-4-nitroaniline	225	185	306	1.65
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)	417	...	...	...
2,5-Dichlorosulfanilic acid [SO_3H=1]	102	...	...	...
p-Diethylaminobenzaldehyde	26	...	...	...
N,N-Diethylaniline	1,480	946	517	.55
1,5-Dihydroxy-4,8-dinitroanthraquinone	137	...	...	...
1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin)	186	...	...	...
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	448	...	...	...
3,3′-Dimethoxybenzidine	776	518	871	1.68
N,N-Dimethylaniline	10,855	4,901	1,063	.22
N,N-Dimethylbenzylamine	78	...	...	...
2,2′-Dimethyl-1,1′-bianthraquinone	118	...	...	...
N,N-Dimethyl-p-nitrosoaniline	89	...	...	...
p-(2,4-Dinitroanilino)phenol	33	...	...	...
2,4-Dinitrophenol, tech	1,037	...	...	...
4,4′-Dinitro-2,2′-stilbenedisulfonic acid	4,159	...	...	...
Diphenylacetic acid	7	6	9	1.50
1,4-Di(p-toluidino)anthraquinone	162	...	...	...
Dodecylbenzene[4]	413,972	352,417	29,049	.08
Dodecylphenol	25,783	...	...	...
N-Ethylaniline, refined	409	...	...	...
Ethylbenzene	2,953,879	473,217	19,933	.04
N-Ethyl-N-phenylbenzylamine	493	...	...	...
2-Ethyl-2-phenylmalonic acid, diethyl ester	259	...	...	...
3-(N-Ethyl-m-toluidino)propionitrile	61	...	...	...
o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)	239	20	46	2.30
p-Hydrazinobenzenesulfonic acid	153	...	...	...
p-Hydroxybenzoic acid, methyl ester	255	200	295	1.48
p-Hydroxybenzoic acid, propyl ester	96	80	184	2.30
1,1′-Iminobis[4-aminoanthraquinone]	109	...	...	...
1,1′-Iminobis[5-benzamidoanthraquinone]	63	...	...	...
6,6′-Iminobis[1-naphthol-3-sulfonic acid]	17	...	...	...

See footnotes at end of table.

TABLE 7A.--*Cyclic intermediates: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
1,1'-Iminobis[4-nitroanthraquinone]	91	...	...	...
1,1'-Iminodianthraquinone (Dianthrimide)	90	...	...	...
Isocyanic acid derivatives, total	137,960	126,519	65,199	$0.52
Diphenylmethane 4,4'-diisocyanate (MDI)	3,899	2,600	2,902	1.12
Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	113,627	107,265	53,676	.50
All other	20,434	16,654	8,621	.52
4,4'-Isopropylidenediphenol (Bisphenol A)	92,948	41,146	8,900	.22
Isoviolanthrone (Isodibenzanthrone)	40	...	...	...
Leuco-1,4-diaminoanthraquinone	332	...	...	...
Leuco quinizarin (1,4,9,10-Anthratetrol)	61	...	...	...
Leuco tetrahydroxyanthraquinone	93	...	...	...
Melamine	...	25,246	6,291	.25
o-Mercaptobenzoic acid	13	...	...	...
1-Methylaminoanthraquinone	227	...	...	...
4,4'-Methylenebis[N,N-diethylaniline]	59	...	...	...
4,4'-Methylenebis[N,N-dimethylaniline](Methane base)	1,340	513	288	.56
2-Methyl-1-nitroanthraquinone	108	...	...	...
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	125	36	66	1.83
3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	279	218	355	1.63
α-Methylstyrene	14,112	...	...	...
1,5-Naphthalenedisulfonic acid	62	...	...	...
2,7-Naphthalenedisulfonic acid	111	...	...	...
1,4,5,8-Naphthalenetetracarboxylic acid	57	...	...	...
1-Naphthol (α-Naphthol)	...	896	579	.65
2-Naphthol-3,6-disulfonic acid, disodium salt	2,059	791	716	.91
2-Naphthol-6-sulfonic acid (Schaeffer's acid) and sodium salt	366	...	...	...
Naphth[1,2]oxadiazole-5-sulfonic acid	888	...	...	...
2-(Naphthylthio)acetic acid	9	...	...	...
p-Nitroaniline	10,890	7,876	3,322	.42
4-Nitro-o-anisidine [NH_2=1]	73	...	...	...
5-Nitro-o-anisidine [NH_2=1]	331	...	...	...
1-Nitro-2-anthraquinonecarboxylic acid	37	...	...	...
5-Nitro-1-anthraquinonesulfonic acid	116	...	...	...
5(and 8)-Nitro-1-anthraquinonesulfonic acid	25	...	...	...
Nitrobenzene	239,216	9,513	860	.09
m-Nitrobenzenesulfonic acid and sodium salt	3,090	2,118	849	.40
m-Nitrobenzoic acid and sodium salt	255	...	...	...
3-Nitro-1,5-naphthalenedisulfonic acid	207	...	...	...
7(and 8)-Nitronaphth[1,2]oxadiazole-5-sulfonic acid	758	...	...	...
p-Nitrophenol	18,935	...	...	...
5-Nitro-o-toluenesulfonic acid [SO_3H=1]	6,680	...	...	...
5-Nitro-o-toluidine [NH_2=1]	358	...	...	...
2-Nitro-p-toluidine [NH_2=1]	941	643	699	1.09
16-Nitroviolanthrone	69	...	...	...
Nonylphenol	60,585	18,982	2,271	.12
1-(7-Oxo-7H-benz[de]anthracen-3-ylamino)anthraquinone	181	...	...	...
1,1'-(7-Oxo-7H-benz[de]anthracen-3,9-ylenediimino)dianthraquinone	447	...	...	...
5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T)	54	...	...	...
Phenol, grand total[2]	1,113,056	493,321	47,735	.10
Natural, total	50,287	54,238	5,054	.09
From coal tar	35,639	38,443	3,470	.09
From petroleum	14,648	15,795	1,584	.10
Synthetic, total	1,062,769	439,083	42,681	.10
From cumene	443,872	199,674	18,149	.09
Other synthetic	618,897	239,409	24,532	.10
1-Phenol-4-sulfonic acid	6,646	6,648	966	.15
Phenylacetic acid, potassium salt	1,414	1,452	526	.36
Phenylacetonitrile (α-Tolunitrile)	1,740	636	369	.58
p-Phenylazoaniline (p-Aminoazobenzene) and hydrochloride	133	...	...	...
2,2'-(Phenylimino)diethanol (Phenyldiethanolamine)	545	...	...	...
1(2H)-Phthalazinone	135	135	659	4.88
Phthalic anhydride	557,517	283,736	27,605	.10

See footnotes at end of table.

TABLE 7A.--*Cyclic intermediates: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
2-Picoline (α-Picoline)[5]	3,297	1,042	370	$0.36
Piperidine	401	...	...	...
Propiophenone	587	256	303	1.18
Pyranthrone	20	...	...	...
2° Pyridine[5]	5,503	...	...	...
Quinaldine	33	...	...	...
Quinizarin	1,411	74	81	1.09
2-Quinizarinsulfonic acid	...	18	39	2.17
Salicylaldehyde	2,156	2,055	2,249	1.09
Salicylic acid, tech	20,769	3,199	1,095	.34
Styrene, all grades	2,571,395	1,368,179	110,845	.08
Terephthalic acid, dimethyl ester	355,587	...	...	...
1,4,5,8-Tetrachloroanthraquinone	34	...	...	...
o(and p)-Toluenesulfonic acid	4,348	4,306	725	.17
o-(p-Toluoyl)benzoic acid	318	...	...	...
4-(o-Tolylazo)-o-toluidine	443	...	...	...
1,3,3-Trimethyl-$\Delta^{2,\alpha}$-indolineacetaldehyde	89	...	...	...
1,3,3-Trimethyl-2-methyleneindoline	185	...	...	...
6,6'-Ureylenebis[1-naphthol-3-sulfonic acid] (J acid urea)	258	...	...	...
Violanthrone (Dibenzanthrone)	436	...	...	...
o-Xylene	336,557	306,049	8,087	.03
p-Xylene	295,730	313,019	26,978	.09
Xylenols, medium b.p	5,930	6,058	656	.11
All other cyclic intermediates	2,173,805	1,165,579	244,919	.21

[1] Calculated from rounded figures.

[2] Includes data for coke ovens and gas-retort ovens, reported to the Division of Bituminous Coal, U.S. Bureau of Mines, Department of the Interior, and for tar and petroleum refineries and other producers, reported to the U.S. Tariff Commission.

[3] Includes some mixed cresols. Figures include (o,m,p)-cresol from coal tar and from petroleum.

[4] Includes branched- and straight-chain dodecylbenzene and tridecylbenzene.

[5] Includes data for coke ovens and gas-retort ovens, reported to the Division of Bituminous Coal, U.S. Bureau of Mines, Department of the Interior, and for tar refineries and other producers, reported to the U.S. Tariff Commission.

In 1964, production of two intermediates amounted to over 2 billion pounds each. The output of ethylbenzene totaled 2,954 million pounds (20.5 percent more than in 1963) and that of styrene, 2,571 million pounds (19.4 percent more than in 1963). Ethylbenzene is used almost entirely in the manufacture of styrene, which, in turn, is used almost entirely in the manufacture of plastics materials and synthetic rubber. The output of other large-volume intermediates in 1964 compared with production in 1963 was as follows: Cyclohexane, 26.7 percent larger; phenol, 18.9 percent larger; and phthalic anhydride, 21.6 percent larger. Production of cumene and monochlorobenzene was larger by 26.9 percent and 3.6 percent, respectively, in 1964 than in 1963. Production of dodecylbenzene (including tridecylbenzene) in 1964 was 15.5 percent smaller than that in 1963. The output of terephthalic acid, dimethyl ester amounted to 356 million pounds in 1964, representing an increase of 7.4 percent over the 331 million pounds produced in 1963. Production of orthoxylene amounted to 337 million pounds in 1964, compared with 304 million pounds in 1963--representing an increase of 10.8 percent.

Dyes

Dyes produced in the United States are all derived in whole or in part from cyclic intermediates. About three-fourths of the dyes consumed in the United States are used by the textile industry to dye natural and synthetic fibers or fabrics; the rest are used chiefly by the industries that produce organic pigments, paper, and leather. Of the several thousand different synthetic dyes that are known, more than two 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.

Table 8A[2] shows U.S. production and sales of dyes in 1964, total and by individual dyes, using the *Colour Index* classification and terminology (which was used for the first time in the Commission's 1958 report).

Total domestic production of dyes in 1964 amounted to 184 million pounds, while sales amounted to 178 million pounds, valued at $264 million. The value of dyes sold in 1964 was 10 percent larger than that in 1963. Statistics on the quantity of dyes produced and sold in 1964 are not comparable with those for 1963 because of a change in the method of reporting sulfur dyes. Data on production and sales of two forms of sulfur dyes, the solubilized and leuco forms, were reported in commercial concentrations in 1963; these same dyes were reported on a more concentrated active ingredient basis in 1964.

For many important individual low- and medium-priced dyes, for which statistics are given in table 8A, production was larger in 1964 than in 1963. The output of Direct Black 38 was 6.3 million pounds in 1964, or 5.0 percent more than the 6.0 million pounds produced in 1963; that of Vat Green 1 was 5.9 million pounds, or 19.7 percent more than the 4.9 million pounds produced in 1963. Other important dyes whose output was substantially larger in 1964 than in 1963 were Disperse Black 9 (53.8 percent), Disperse Yellow 3 (41.4 percent), Direct Blue 86 (22.5 percent), and Vat Blue 6 (10.6 percent).

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*

[Listed below are all benzenoid 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 8B in pt. III 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	184,387	178,273	264,023	$1.48
ACID DYES				
Total	17,794	17,090	35,812	2.10
Acid yellow dyes, total	2,766	2,481	5,556	2.24
Acid Yellow 3	...	28	84	3.00
Acid Yellow 11	51	53	109	2.06
Acid Yellow 17	482	445	972	2.18
Acid Yellow 23	385	280	592	2.11
Acid Yellow 36	196	212	315	1.49
Acid Yellow 40	88	82	223	2.72
Acid Yellow 42	37	35	62	1.77
Acid Yellow 44	20	22	71	3.23
Acid Yellow 54	54	57	123	2.16
Acid Yellow 73	219	59	136	2.31
Acid Yellow 99	83	82	185	2.26
All other	1,151	1,126	2,684	2.38
Acid orange dyes, total	2,687	2,511	3,735	1.49
Acid Orange 1	38	39	121	3.10
Acid Orange 7	763	684	600	.88
Acid Orange 8	354	306	355	1.16
Acid Orange 10	319	319	409	1.28
Acid Orange 24	479	457	610	1.33
Acid Orange 60	...	32	83	2.59
Acid Orange 74	...	45	100	2.22
All other	734	629	1,457	2.32
Acid red dyes, total	3,003	2,600	5,281	2.03
Acid Red 1	456	496	557	1.12
Acid Red 4	143	147	266	1.81

See footnotes at end of table.

[2] See also table 8B, pt. III, which lists these products and identifies the manufacturers, and appendix A (table 23), which shows imports of dyes during the years 1963-64.

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
ACID DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Acid red dyes--Continued				
Acid Red 14	...	82	118	$1.44
Acid Red 18	102	120	137	1.14
Acid Red 26	88	49	57	1.16
Acid Red 37	64	57	155	2.72
Acid Red 73	188	190	427	2.25
Acid Red 85	150	163	276	1.69
Acid Red 87	465	83	161	1.94
Acid Red 88	163	136	194	1.43
Acid Red 89	29	39	66	1.69
Acid Red 99	135	...	...	...
Acid Red 115	20	18	29	1.61
Acid Red 137	119	128	405	3.16
Acid Red 151	52	55	119	2.16
Acid Red 182	36	33	101	3.06
Acid Red 186	25	21	53	2.52
All other	768	783	2,160	2.76
Acid violet dyes, total	424	381	745	1.96
Acid Violet 1	36	46	68	1.48
Acid Violet 3	104	84	144	1.71
Acid Violet 7	101	83	115	1.39
Acid Violet 12	14	18	30	1.67
Acid Violet 17	64	64	148	2.31
Acid Violet 43	...	5	20	4.00
All other	105	81	220	2.72
Acid blue dyes, total	3,369	3,234	9,890	3.06
Acid Blue 7	79	82	228	2.78
Acid Blue 9	566	474	586	1.24
Acid Blue 25	99	110	593	5.39
Acid Blue 40	16	13	64	4.92
Acid Blue 41	84	75	260	3.47
Acid Blue 43	30	27	172	6.37
Acid Blue 45	602	602	1,918	3.19
Acid Blue 78	56	51	338	6.63
Acid Blue 113	345	347	482	1.39
Acid Blue 158 and 158A	...	210	479	2.28
All other	1,492	1,243	4,770	3.84
Acid green dyes, total	757	772	2,210	2.86
Acid Green 3	140	169	196	1.16
Acid Green 9	14	18	79	4.39
Acid Green 12	...	13	51	3.92
Acid Green 16	116	113	441	3.90
Acid Green 20	41	32	61	1.91
Acid Green 22	...	64	135	2.11
Acid Green 25	157	177	649	3.67
All other	289	186	598	3.22
Acid brown dyes, total	684	700	1,631	2.33
Acid Brown 14	274	261	373	1.43
All other	410	439	1,258	2.87
Acid black dyes, total	4,104	4,411	6,764	1.53
Acid Black 1	1,381	1,499	1,723	1.15
Acid Black 24	92	128	228	1.78
Acid Black 48	33	27	148	5.48
Acid Black 52	438	...	...	...
Acid Black 107	84	96	246	2.56
All other	2,076	2,661	4,419	1.66

See footnotes at end of table.

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
AZOIC DYES AND COMPONENTS				
Azoic Compositions	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	2,041	1,707	3,441	$2.02
Azoic Yellow 1	44	44	73	1.66
Azoic Yellow 2	51	...	...	...
Azoic Orange 3	70	40	83	2.08
Azoic red dyes, total	659	453	849	1.87
Azoic Red 1	187	144	261	1.81
Azoic Red 2	78	57	110	1.93
Azoic Red 6	302	172	291	1.69
Azoic Red 16	7	9	24	2.67
All other	85	71	163	2.30
Azoic Blue 2	10	9	17	1.89
Azoic Blue 3	90	83	141	1.70
Azoic Brown 9	155	114	363	3.18
Azoic black dyes	685	677	1,304	1.93
All other azoic compositions	277	287	611	2.13
Azoic Diazo Components, Bases (Fast Color Bases)				
Total	1,391	1,272	1,984	1.56
Azoic Diazo Component 4, base	31	33	42	1.27
Azoic Diazo Component 9, base	...	52	43	.83
Azoic Diazo Component 12, base	267	266	350	1.32
Azoic Diazo Component 32, base	266	258	419	1.62
Azoic Diazo Component 48, base	44	35	61	1.74
All other azoic diazo components, bases	783	628	1,069	1.70
Azoic Diazo Components, Salts (Fast Color Salts)				
Total	2,137	1,973	2,028	1.03
Azoic Diazo Component 1, salt	14	13	19	1.46
Azoic Diazo Component 3, salt	290	266	179	.67
Azoic Diazo Component 5, salt	105	111	136	1.23
Azoic Diazo Component 6, salt	15	16	17	1.06
Azoic Diazo Component 8, salt	44	49	49	1.00
Azoic Diazo Component 9, salt	222	235	153	.65
Azoic Diazo Component 10, salt	20	13	20	1.54
Azoic Diazo Component 11, salt	38	36	60	1.67
Azoic Diazo Component 12, salt	129	139	151	1.09
Azoic Diazo Component 13, salt	419	414	290	.70
Azoic Diazo Component 28, salt	180	181	210	1.16
Azoic Diazo Component 32, salt	201	57	63	1.11
Azoic Diazo Component 36, salt	...	73	132	1.81
Azoic Diazo Component 48, salt	36	36	39	1.08
Azoic Diazo Component 49, salt	31	34	101	2.97
All other azoic diazo components, salts	393	300	409	1.36
Azoic Coupling Components (Naphthol AS and Derivatives)				
Total	3,218	2,447	4,696	1.92
Azoic Coupling Component 2	227	197	204	1.04
Azoic Coupling Component 3	18	17	52	3.06

See footnotes at end of table.

TABLE 8A.-- *Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
AZOIC DYES AND COMPONENTS--Continued				
Azoic Coupling Components (Naphthol AS and Derivatives) --Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Azoic Coupling Component 4	...	7	15	$2.14
Azoic Coupling Component 7	1,041	775	1,415	1.83
Azoic Coupling Component 14	148	103	219	2.13
Azoic Coupling Component 17	203	160	313	1.96
Azoic Coupling Component 18	744	658	782	1.19
Azoic Coupling Component 19	...	14	67	4.79
Azoic Coupling Component 20	106	86	176	2.05
Azoic Coupling Component 21	79	62	139	2.24
Azoic Coupling Component 29	28	25	53	2.12
All other azoic coupling components	624	343	1,261	3.68
BASIC DYES				
Total	9,154	8,553	20,878	2.44
Basic Yellow 2	714	768	1,570	2.04
Basic Yellow 11	332	337	1,353	4.01
Basic Yellow 13	56	49	172	3.51
Basic orange dyes, total	1,330	1,141	2,116	1.85
Basic Orange 1	294	276	297	1.08
Basic Orange 2	581	482	580	1.20
Basic Orange 21	367	304	955	3.14
All other	88	79	284	3.59
Basic red dyes, total	1,039	933	3,149	3.38
Basic Red 2	176	166	477	2.87
Basic Red 14	317	313	941	3.01
All other	546	454	1,731	3.81
Basic violet dyes, total	2,650	2,605	5,277	2.03
Basic Violet 1	914	865	1,112	1.29
Basic Violet 3	1,056	1,120	2,034	1.82
Basic Violet 4	42	44	125	2.84
Basic Violet 14	116	81	290	3.58
Basic Violet 16	104	98	353	3.60
All other	418	397	1,363	3.43
Basic blue dyes, total	1,201	984	3,292	3.35
Basic Blue 1	17	18	82	4.56
Basic Blue 7	123	106	354	3.34
Basic Blue 9	403	307	716	2.33
Basic Blue 26	57	63	188	2.98
All other	601	490	1,952	3.98
Basic Green 1	90	85	273	3.21
Basic Green 4	489	509	1,334	2.62
Basic Brown 1	240	219	317	1.45
Basic Brown 4	605	609	808	1.33
All other basic dyes	408	314	1,217	3.88
DIRECT DYES				
Total	31,490	31,939	46,807	1.47
Direct yellow dyes, total	5,752	5,548	10,021	1.81
Direct Yellow 4	414	410	866	2.11
Direct Yellow 5	145	123	351	2.85
Direct Yellow 6	783	737	1,202	1.63
Direct Yellow 11	871	808	981	1.21

See footnotes at end of table.

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DIRECT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Direct yellow dyes--Continued				
Direct Yellow 12	368	292	700	$2.40
Direct Yellow 26	8	6	17	2.83
Direct Yellow 28	262	279	551	1.97
Direct Yellow 29	122	98	148	1.51
Direct Yellow 44	401	378	646	1.71
Direct Yellow 50	331	349	664	1.90
Direct Yellow 59	45	50	75	1.50
Direct Yellow 84	172	211	309	1.46
All other	1,830	1,807	3,511	1.94
Direct orange dyes, total	1,726	1,834	4,002	2.18
Direct Orange 1	21	14	33	2.36
Direct Orange 8	143	135	204	1.51
Direct Orange 15	129	161	201	1.25
Direct Orange 26	47	62	127	2.05
Direct Orange 34	97	97	233	2.40
Direct Orange 37	56	60	145	2.42
Direct Orange 39	98	100	208	2.08
Direct Orange 72	248	285	598	2.10
Direct Orange 73	19	31	126	4.06
Direct Orange 81	49	36	110	3.06
Direct Orange 102	164	166	446	2.69
All other	655	687	1,571	2.29
Direct red dyes, total	3,291	3,400	7,220	2.12
Direct Red 1	175	167	261	1.56
Direct Red 2	381	402	709	1.76
Direct Red 4	30	31	85	2.74
Direct Red 10	18	19	32	1.68
Direct Red 13	69	84	138	1.64
Direct Red 16	34	56	104	1.86
Direct Red 23	265	297	656	2.21
Direct Red 24	326	346	640	1.85
Direct Red 26	130	113	295	2.61
Direct Red 28	200	177	235	1.33
Direct Red 31	36	31	126	4.06
Direct Red 37	58	67	172	2.57
Direct Red 39	61	65	189	2.91
Direct Red 75	37	33	111	3.36
Direct Red 79	197	201	482	2.40
Direct Red 80	427	444	812	1.83
Direct Red 81	291	293	751	2.56
Direct Red 83	128	105	165	1.57
Direct Red 149	14	13	44	3.38
Direct Red 152	...	5	25	5.00
All other	414	451	1,188	2.63
Direct violet dyes, total	253	194	570	2.94
Direct Violet 1	16	15	33	2.20
Direct Violet 9	174	118	282	2.39
Direct Violet 48	34	30	118	3.93
All other	29	31	137	4.42
Direct blue dyes, total	7,049	7,186	10,076	1.40
Direct Blue 1	417	404	710	1.76
Direct Blue 2	1,828	1,977	1,659	.84
Direct Blue 6	522	523	271	.52
Direct Blue 8	55	55	103	1.87
Direct Blue 14	96	123	104	.85
Direct Blue 15	41	48	79	1.65
Direct Blue 22	...	20	34	1.70
Direct Blue 24	...	44	57	1.30

See footnotes at end of table.

TABLE 8A.-- *Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DIRECT DYES--Continued				
Direct blue dyes--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Direct Blue 25	71	61	164	$2.69
Direct Blue 26	...	6	9	1.50
Direct Blue 67	33	34	138	4.06
Direct Blue 71	62	86	223	2.59
Direct Blue 76	622	606	861	1.42
Direct Blue 78	83	107	302	2.82
Direct Blue 80	431	448	722	1.61
Direct Blue 86	1,186	1,182	1,850	1.57
Direct Blue 98	155	147	271	1.84
Direct Blue 120 and 120A	91	116	240	2.07
Direct Blue 126	185	158	391	2.47
Direct Blue 151	...	28	36	1.29
All other	1,171	1,013	1,852	1.83
Direct green dyes, total	1,140	1,046	2,466	2.36
Direct Green 1	230	159	200	1.26
Direct Green 6	424	401	458	1.14
Direct Green 8	48	37	48	1.30
Direct Green 12	...	17	17	1.00
Direct Green 38	...	11	40	3.64
All other	438	421	1,703	4.05
Direct brown dyes, total	1,910	1,989	2,569	1.29
Direct Brown 1 and 1A	378	426	424	1.00
Direct Brown 2	157	200	295	1.48
Direct Brown 6	97	81	89	1.10
Direct Brown 31	116	96	270	2.81
Direct Brown 74	65	52	86	1.65
Direct Brown 95	683	696	543	.78
Direct Brown 111	...	37	133	3.59
Direct Brown 154	184	194	248	1.28
All other	230	207	481	2.32
Direct black dyes, total	10,369	10,742	9,883	.92
Direct Black 4	271	297	309	1.04
Direct Black 9	52	61	72	1.18
Direct Black 19	224	238	334	1.40
Direct Black 22	690	648	543	.84
Direct Black 37	...	13	17	1.31
Direct Black 38	6,338	6,615	5,155	.78
Direct Black 51	118	113	328	2.90
Direct Black 80	1,883	2,005	1,836	.92
All other	793	752	1,289	1.71
DISPERSE DYES				
Total	13,132	11,993	28,032	2.34
Disperse yellow dyes, total	2,126	1,975	4,030	2.04
Disperse Yellow 1	23	21	50	2.38
Disperse Yellow 3	933	849	1,438	1.69
Disperse Yellow 5	69	60	214	3.57
Disperse Yellow 23	...	60	167	2.78
Disperse Yellow 33	234	226	358	1.58
Disperse Yellow 37	103	98	198	2.02
Disperse Yellow 54	207	155	564	3.64
All other	557	506	1,041	2.06
Disperse orange dyes, total	967	797	1,434	1.80
Disperse Orange 3	115	98	168	1.71
Disperse Orange 5	...	69	152	2.20
Disperse Orange 17	174	119	145	1.22
All other	678	511	969	1.90

See footnotes at end of table.

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
DISPERSE DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Disperse red dyes, total	1,620	1,511	4,679	$3.10
Disperse Red 1	211	227	352	1.55
Disperse Red 5	63	35	46	1.31
Disperse Red 11	64	42	218	5.19
Disperse Red 13	...	13	19	1.46
Disperse Red 17	189	123	145	1.18
Disperse Red 60	59	73	259	3.55
All other	1,034	998	3,640	3.65
Disperse violet dyes, total	369	315	817	2.59
Disperse Violet 1	38	30	117	3.90
All other	331	285	700	2.46
Disperse blue dyes, total	5,056	4,790	13,831	2.89
Disperse Blue 1	306	311	1,285	4.13
Disperse Blue 3	1,741	1,565	2,563	1.64
Disperse Blue 7	252	271	1,702	6.28
Disperse Blue 64	179	...	...	...
All other	2,578	2,643	8,281	3.13
Disperse brown dyes	131	140	227	1.62
Disperse black dyes, total	2,863	2,465	3,014	1.22
Disperse Black 1	342	332	392	1.18
Disperse Black 9	2,122	1,744	1,879	1.08
All other	399	389	743	1.91
FIBER-REACTIVE DYES				
Fiber-reactive dyes, total	1,640	1,526	6,261	4.10
Reactive yellow dyes	243	225	851	3.78
Reactive blue dyes	683	621	3,019	4.86
All other reactive dyes	714	680	2,391	3.52
FLUORESCENT BRIGHTENING AGENTS				
Total	16,675	15,673	27,802	1.77
Fluorescent Brightening Agent 68	31	33	354	10.73
All other fluorescent brightening agents	16,644	15,640	27,448	1.75
FOOD, DRUG, AND COSMETIC COLORS				
Total	2,909	2,846	11,069	3.89
Food, Drug, and Cosmetic Dyes				
Total	2,710	2,630	9,970	3.79
FD&C Blue No. 1	65	58	638	11.00
FD&C Red No. 2	786	785	2,220	2.83
FD&C Red No. 3	49	43	720	16.74
FD&C Red No. 4	277	324	1,620	5.00
FD&C Yellow No. 5	700	644	2,135	3.32
FD&C Yellow No. 6	659	595	1,768	2.97
All other food, drug, and cosmetic dyes	174	181	869	4.80
Drug and Cosmetic and External Drug and Cosmetic Dyes				
Total	199	216	1,099	5.09
D&C Red No. 7	9	12	46	3.83
D&C Red No. 19	7	9	48	5.33

See footnotes at end of table.

TABLE 8A.--*Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
FOOD, DRUG, AND COSMETIC COLORS--Continued				
Drug and Cosmetic and External Drug and Cosmetic Dyes--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
D&C Red No. 21	35	40	140	$3.50
D&C Red No. 36	10	8	30	3.75
All other drug and cosmetic and external drug and cosmetic dyes	138	147	835	5.68
MORDANT DYES				
Total	3,551	3,976	4,995	1.26
Mordant yellow dyes, total	205	185	312	1.69
Mordant Yellow 1	...	37	50	1.35
Mordant Yellow 8	11	12	21	1.75
Mordant Yellow 16	14	13	19	1.46
All other	180	123	222	1.80
Mordant orange dyes, total	105	108	176	1.63
Mordant Orange 1	41	37	61	1.65
Mordant Orange 6	45	...	...	...
All other	19	71	115	1.62
Mordant red dyes, total	133	141	370	2.62
Mordant Red 7	70	69	138	2.00
All other	63	72	232	3.22
Mordant blue dyes, total	101	103	321	3.12
Mordant Blue 1	54	52	182	3.50
All other	47	51	139	2.73
Mordant brown dyes, total	264	261	642	2.46
Mordant Brown 1	62	55	126	2.29
Mordant Brown 33	33	...	...	...
Mordant Brown 40	10	12	33	2.75
All other	159	194	483	2.49
Mordant black dyes, total	2,736	3,164	3,138	.99
Mordant Black 3	...	20	25	1.25
Mordant Black 11	2,054	2,273	1,968	.87
Mordant Black 13	...	40	111	2.78
Mordant Black 17	409	521	522	1.00
Mordant Black 38	...	14	41	2.93
All other	273	296	471	1.59
All other mordant dyes	7	14	36	2.57
SOLVENT DYES				
Total	8,547	7,974	13,380	1.68
Solvent yellow dyes, total	1,136	861	1,816	2.11
Solvent Yellow 2	41	31	49	1.58
Solvent Yellow 3	45	38	59	1.55
Solvent Yellow 14	747	516	512	.99
Solvent Yellow 47	41	42	184	4.38
All other	262	234	1,012	4.32
Solvent orange dyes, total	365	345	671	1.94
Solvent Orange 3	19	17	37	2.18
Solvent Orange 7	121	108	165	1.53
All other	225	220	469	2.13

See footnotes at end of table.

TABLE 8A.-- *Benzenoid dyes: U.S. production and sales, 1964*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
SOLVENT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Solvent red dyes, total	1,192	1,140	2,215	$1.94
Solvent Red 24	293	295	530	1.80
Solvent Red 26	300	257	450	1.75
Solvent Red 49	20	21	136	6.48
All other	579	567	1,099	1.94
Solvent violet dyes, total	541	466	950	2.04
Solvent Violet 8	378	318	472	1.48
All other	163	148	478	3.23
Solvent green dyes, total	193	115	427	3.71
Solvent Green 3	146	70	252	3.60
All other	47	45	175	3.89
Solvent brown dyes	65	60	227	3.78
All other solvent dyes	5,055	4,987	7,074	1.42
SULFUR DYES[2]				
Total	17,776	17,268	9,798	.57
Sulfur Blue 7	121	123	103	.84
Leuco Sulfur Blue 7	639	...	...	...
Sulfur Blue 11	21	16	19	1.19
Sulfur Brown 10	47	50	35	.70
Sulfur Black 1	1,076	1,188	407	.34
Leuco Sulfur Black 2	2,776	2,452	974	.40
All other sulfur dyes	13,096	13,439	8,260	.61
VAT DYES				
Total	52,518	51,699	46,162	.89
Vat yellow dyes, total	3,394	3,431	4,641	1.35
Vat Yellow 2, 8-1/2%	1,784	1,884	1,637	.87
Vat Yellow 4, 12-1/2%	764	735	835	1.14
All other	846	812	2,169	2.67
Vat orange dyes, total	2,296	2,077	4,729	2.28
Vat Orange 1, 20%	485	373	1,060	2.84
Solubilized Vat Orange 1, 26%	8	12	88	7.33
Vat Orange 2, 12%	300	263	550	2.09
Vat Orange 4, 6%	62	93	258	2.77
Vat Orange 5, 10%	...	119	170	1.43
Solubilized Vat Orange 5, 30%	6	4	42	10.50
Vat Orange 7, 11%	207	225	591	2.63
Vat Orange 9, 12%	101	106	255	2.41
Vat Orange 15, 10%	471	464	980	2.11
All other	656	418	735	1.76
Vat red dyes, total	1,126	1,056	2,306	2.18
Vat Red 1, 13%	528	501	783	1.56
Solubilized Vat Red 1, 37%	...	6	38	6.33
Vat Red 13, 11%	100	91	263	2.89
Vat Red 15, 10%	171	157	172	1.10
Vat Red 32, 20%	33	33	127	3.85
All other	294	268	923	3.44
Vat violet dyes, total	783	807	1,578	1.96
Vat Violet 1, 11%	283	234	504	2.15
Vat Violet 2, 20%	36	29	69	2.38
Vat Violet 9, 12%	...	82	287	3.50
Vat Violet 13, 6-1/4%	308	380	473	1.24
All other	156	82	245	2.99

See footnotes at end of table.

TABLE 8A.-- *Benzenoid dyes: U.S. production and sales, 1964*--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	20,894	20,519	11,969	$0.58
Vat Blue 4, 10%	74	66	148	2.24
Vat Blue 6, 8-1/3%	3,550	3,353	3,457	1.03
Solubilized Vat Blue 6, 17-1/2%	31	39	244	6.26
Vat Blue 18, 13%	960	1,034	1,655	1.60
Vat Blue 20, 14%	1,152	992	1,097	1.11
All other	15,127	15,035	5,368	.36
Vat green dyes, total	11,378	11,436	7,916	.69
Vat Green 1, 6%	5,902	5,599	3,325	.59
Vat Green 3, 10%	2,955	2,959	2,092	.71
Solubilized Vat Green 3, 26%	17	...	...	...
Vat Green 8, 8-1/2%	1,127	1,347	966	.72
Vat Green 9, 12-1/2%	1,302	1,444	1,275	.88
All other	75	87	258	2.97
Vat brown dyes, total	5,063	4,632	6,325	1.37
Vat Brown 1, 11%	1,018	964	1,735	1.80
Vat Brown 3, 11%	990	891	1,422	1.60
Vat Brown 5, 13%	144	100	145	1.45
All other	2,911	2,677	3,023	1.13
Vat black dyes, total	7,584	7,741	6,698	.87
Vat Black 9, 16%	108	123	295	2.40
Vat Black 25, 12-1/2%	3,120	3,313	2,364	.71
Vat Black 27, 12-1/2%	966	909	1,059	1.16
All other	3,390	3,396	2,980	.88
All other dyes[3]	414	337	878	2.61

[1] Calculated from rounded figures.
[2] Production and sales quantities of C.I. Leuco Sulfur and C.I. Solubilized Sulfur dyes are reported in terms of the usual commercial concentration of the C.I. Sulfur dyes.
[3] Includes oxidation bases, ingrain dyes, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

On the other hand, the output of a few important dyes was smaller in 1964 than in 1963. Production of Vat Green 3 was 3.0 million pounds in 1964, or 7.9 percent less than the 3.2 million pounds produced in 1963; that of Mordant Black 11 was 2.1 million pounds, or 14.8 percent less than the 2.4 million pounds produced in 1963. The output of Vat Green 9 was 24.4 percent smaller in 1964 than in 1963; that of Vat Green 8 was 20.8 percent smaller; and that of Acid Black 1 was 19.9 percent smaller.

Table 9 summarizes production and sales of dyes in 1964, by class of application. Five classes of dyes grouped by class of application accounted for 74 percent of the total output of dyes in 1964. Vat dyes accounted for 28.5 percent of the total; direct dyes, for 17.1 percent; acid dyes, for 9.6 percent; sulfur dyes, for 9.6 percent; and fluorescent brightening agents, for 9.1 percent. Of the above five classes, the output for acid and vat dyes remained about the same in 1964 as in 1963. The output of direct dyes was 10.9 percent larger in 1964 than in 1963. Statistics on sulfur dyes and fluorescent brightening agents were not published separately for 1963.

Of the remaining classes, the output of fiber-reactive dyes was 1.6 million pounds in 1964, or 44.9 percent more than the 1.1 million pounds in 1963. Production of food, drug, and cosmetic colors was 21.0 percent larger in 1964 than in 1963; disperse dyes, 16.0 percent larger; solvent dyes, 11.7 percent larger; and basic dyes, 4.6 percent larger. On the other hand, the output of mordant dyes was 12.5 percent smaller in 1964 than in 1963, and that of azoic dyes and components, 1.0 percent smaller.

Table 10 shows production and sales of dyes in 1964, by chemical class. In 1964, three chemical classes of dyes accounted for approximately two-thirds of all the dyes produced: Azo dyes accounted for 31.4 percent of the total; anthraquinone dyes, for 22.6 percent; and stilbene dyes, for 10.0 percent. The output of each of these three classes was larger in 1964 than in 1963: Stilbene dyes were 16.0 percent larger; azo dyes, 8.5 percent larger; and anthraquinone dyes, 1.8 percent larger. Of the remaining chemical classes for which 1963 and 1964 statistics are published, production of eight classes was larger in 1964 than in 1963. No comparable statistics for 1963 were published on the following classes of dyes: Cyanine, indigoid, and sulfur. In terms of value of sales, the most important classes of dyes in 1964 were the azo dyes ($96.6 million), the anthraquinone dyes ($66.9 million), the stilbene dyes ($29.2 million), and the triarylmethane dyes ($12.7 million).

TABLE 9.--*Benzenoid dyes: U.S. production and sales, by class of application, 1964*

Class of application	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	184,387	178,273	264,023	$1.48
Acid	17,794	17,090	35,812	2.10
Azoic dyes and components:				
Azoic compositions	2,041	1,707	3,441	2.02
Azoic diazo components, bases (Fast color bases)	1,391	1,272	1,984	1.56
Azoic diazo components, salts (Fast color salts)	2,137	1,973	2,028	1.03
Azoic coupling components (Naphthol AS and derivatives)	3,218	2,447	4,696	1.92
Basic	9,154	8,553	20,878	2.44
Direct	31,490	31,939	46,807	1.47
Disperse	13,132	11,993	28,032	2.34
Fiber-reactive	1,640	1,526	6,261	4.10
Fluorescent brightening agents	16,675	15,673	27,802	1.77
Food, drug, and cosmetic colors	2,909	2,846	11,069	3.89
Mordant	3,551	3,976	4,995	1.26
Solvent	8,547	7,974	13,380	1.68
Sulfur[2]	17,776	17,268	9,798	.57
Vat	52,518	51,699	46,162	.89
All other[3]	414	337	878	2.61

[1] Calculated from rounded figures.
[2] Production and sales quantities of C.I. Leuco Sulfur and C.I. Solubilized Sulfur dyes are reported in terms of the usual commercial concentration of the C.I. Sulfur dyes.
[3] Includes oxidation bases, ingrain dyes, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

TABLE 10.--*Benzenoid dyes: U.S. production and sales, by chemical class, 1964*

Chemical class	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	184,387	178,273	264,023	$1.48
Anthraquinone	41,661	40,675	66,889	1.64
Azo, total	57,897	57,367	96,579	1.68
Monoazo	21,084	19,932	38,522	1.93
Disazo	16,873	17,278	28,867	1.67
Trisazo	11,883	12,303	12,730	1.03
Polyazo	2,344	2,218	3,819	1.72
Not specified	5,713	5,636	12,641	2.24
Azoic	8,787	7,399	12,149	1.64
Cyanine	373	362	1,113	3.07
Indigoid	5,729	6,144	3,302	.54
Ketone imine	731	782	1,614	2.06
Methine	1,074	974	3,367	3.46
Nitro	720	679	1,258	1.85
Oxazine	172	144	601	4.17
Phthalocyanine	1,987	1,868	4,800	2.57
Quinoline	637	519	1,658	3.19
Stilbene	18,488	17,640	29,166	1.65
Sulfur[2]	17,776	17,268	9,798	.57
Thiazole	462	480	1,043	2.17
Triarylmethane	5,607	5,312	12,682	2.39
Xanthene	1,312	737	3,473	4.71
All other[3]	20,974	19,923	14,531	.73

[1] Calculated from rounded figures.
[2] Production and sales quantities of C.I. Leuco Sulfur and C.I. Solubilized Sulfur dyes are reported in terms of the usual commercial concentration of the C.I. Sulfur dyes.
[3] Includes acridine, aminoketone, azine, coumarin, hydroxyketone, nitroso, oxidation bases, thiazine, vat sulfur, and miscellaneous dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

Pigments

As the terms are used in this report, synthetic 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 benzenoid pigments in 1964 are given in table 11A.[3] 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 12. Prior to 1961, statistics for toners included the quantities and values of extenders and diluents. Beginning in 1961, data were collected for both the full-strength and extended toners on a full-strength-toner-content basis. Individual toners and lakes are identified in this report by the names used in the second edition of the *Colour Index* rather than by their common names.[4]

Total production of benzenoid pigments in 1964 was 44.1 million pounds--11.8 percent more than the 39.4 million pounds produced in 1963 and 18.6 percent more than the 37.2 million pounds produced in 1962. Total sales of benzenoid pigments in 1964 amounted to 35.1 million pounds, valued at $84.1 million, compared with 33.5 million pounds, valued at $79.6 million, in 1963 and 31.6 million pounds, valued at $74.3 million, in 1962. In terms of quantity, sales of benzenoid pigments in 1964 were 4.6 percent larger than in 1963 and 11.0 percent larger than in 1962; in terms of value, sales in 1964 were 5.7 percent larger than in 1963 and 13.2 percent larger than in 1962.

Production of toners in 1964 amounted to 40.0 million pounds--12.6 percent more than the 35.6 million pounds reported for 1963. Sales in 1964 were 31.4 million pounds, valued at $80.9 million, compared with 30.1 million pounds, valued at $76.2 million, in 1963. Sales in 1964 were thus 4.4 percent larger than those in 1963 in terms of quantity, and 6.2 percent larger in terms of value. Production of red toners in 1964 amounted to 17.8 million pounds, or 44.5 percent of the total output of toners. The individual toners listed in the report which were produced in the largest quantities in 1964 were Pigment Green 7, 4.0 million pounds; Pigment Blue 15, alpha form, 3.9 million pounds; Pigment Yellow 12, 3.2 million pounds; Pigment Red 49, barium toner, 3.1 million pounds; and Pigment Blue 19, 3.0 million pounds.

Production of lakes totaled 4.0 million pounds in 1964--4.8 percent more than the 3.8 million pounds reported for 1963. Sales of lakes in 1964 amounted to 3.7 million pounds, valued at $3.3 million, compared with sales in 1963 of 3.4 million pounds, valued at $3.4 million. Sales in 1964 were thus 6.8 percent larger than those in 1963 in terms of quantity, but 5.1 percent smaller in terms of value. Pigment Blue 24, with an output of 2.0 million pounds, was the lake produced in largest quantity in 1964.

For each of 14 selected pigments, or groups of pigments, the Commission's report gives figures on sales by commercial forms. Pigment Yellow 12, Pigment Red 90, and Pigment Blue 19 were sold principally in the flushed form. The remaining 11 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 and Pigment Blue 24 without revealing the operations of individual companies.

[3] See also table 11B, pt. III, which lists these products alphabetically and identifies the manufacturers, and table 23 in appendix A, which shows imports of benzenoid pigments during the years 1963-64.

[4] See appendix C, which lists the common names of all the pigments mentioned in this report.

TABLE 11A.--*Benzenoid pigments: U.S. production and sales, 1964*

[Listed below are all toners and lakes 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 11B in pt. III lists all toners and lakes for which data on production or sales were reported and identifies the manufacturer of each]

Pigment	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	44,053	35,081	84,131	$2.40
TONERS				
Total	40,028	31,428	80,870	2.57
Yellow toners, total	5,958	3,953	10,583	2.68
Hansa yellows, total	1,152	925	2,437	2.63
Pigment Yellow 1, C.I. 11 680	540	401	748	1.87
Pigment Yellow 3, C.I. 11 710	128	88	208	2.36
Other Hansa yellows	484	436	1,481	3.40
Benzidine yellows, total	4,642	2,931	6,994	2.39
Pigment Yellow 12, C.I. 21 090	3,180	1,791	3,900	2.18
Pigment Yellow 13, C.I. 21 100	195	116	375	3.23
Pigment Yellow 14, C.I. 21 095	978	793	1,889	2.38
Pigment Yellow 17, C.I. 21 105	176	130	436	3.35
Other benzidine yellows	113	101	394	3.90
All other	164	97	1,152	11.88
Orange toners, total	768	651	2,814	4.32
Pigment Orange 2, C.I. 12 060	36	...	...	...
Pigment Orange 5, C.I. 12 075	206	161	255	1.58
Pigment Orange 13, C.I. 21 110	155	145	487	3.36
Pigment Orange 16, C.I. 21 160	179	152	418	2.75
All other	192	193	1,654	8.57
Red toners, total	17,817	14,949	31,964	2.14
Naphthol reds, total	791	605	2,665	4.40
Pigment Red 2, C.I. 12 310	63	51	159	3.12
Pigment Red 5, C.I. 12 490	115	74	385	5.20
Pigment Red 13, C.I. 12 395	6	5	20	4.00
Pigment Red 17, C.I. 12 390	84	78	235	3.01
Pigment Red 18, C.I. 12 350	11	...	...	...
Pigment Red 22, C.I. 12 315	98	86	252	2.93
Pigment Red 23, C.I. 12 355	123	117	431	3.68
Other naphthol reds	291	194	1,183	6.10
Pigment Red 1, C.I. 12 070, dark	198	171	212	1.24
Pigment Red 1, C.I. 12 070, light	241	198	239	1.21
Pigment Red 3, C.I. 12 120	1,913	1,395	2,155	1.54
Pigment Red 4, C.I. 12 085	372	259	362	1.40
Pigment Red 38, C.I. 21 120	144	131	594	4.53
Pigment Red 48, C.I. 15 865	2,365	2,076	3,881	1.87
Pigment Red 49, C.I. 15 630:				
Barium toner	3,058	2,926	2,844	.97
Calcium toner	1,425	1,349	1,375	1.02
Sodium toner	240	282	291	1.03
Pigment Red 52, C.I. 15 860	910	828	1,232	1.49
Pigment Red 53, C.I. 15 585, barium toner	1,884	1,534	1,934	1.26
Pigment Red 57, C.I. 15 850, calcium toner	937	836	1,259	1.51
Pigment Red 63, C.I. 15 880	41	32	67	2.09
Pigment Red 81, C.I. 45 160, PMA	228	169	1,059	6.27
Pigment Red 81, C.I. 45 160, PTA	131	128	818	6.39
Pigment Red 90, C.I. 45 380	1,243	595	1,109	1.86
All other	1,696	1,435	9,868	6.88
Violet toners, total	1,077	1,015	3,673	3.62
Pigment Violet 1, C.I. 45 170, PMA	58	57	172	3.02
Pigment Violet 1, C.I. 45 170, PTA	43	39	239	6.13
Pigment Violet 3, C.I. 42 535, fugitive	444	424	624	1.47
Pigment Violet 3, C.I. 42 535, PMA	359	333	982	2.95
Pigment Violet 3, C.I. 42 535, PTA	30	32	129	4.03
All other	143	130	1,527	11.75

See footnotes at end of table.

TABLE 11A.--*Benzenoid pigments: U.S. production and sales, 1964* --Continued

Pigment	Production	Sales		
		Quantity	Value	Unit value[1]
TONERS--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Blue toners, total	9,531	7,460	21,229	$2.85
Pigment Blue 1, C.I. 42 595, PMA	177	142	672	4.73
Pigment Blue 1, C.I. 42 595, PTA	37	30	152	5.07
Pigment Blue 9, C.I. 42 025, PMA	3	3	12	4.00
Pigment Blue 9, C.I. 42 025, PTA	10	8	50	6.25
Pigment Blue 14, C.I. 42 600, PMA	56	57	511	8.96
Pigment Blue 15, C.I. 74 160, alpha form	3,864	3,149	8,417	2.67
Pigment Blue 15, C.I. 74 160, beta form	2,007	1,577	4,596	2.91
Pigment Blue 19, C.I. 42 750A	3,033	2,235	5,342	2.39
Pigment Blue 25, C.I. 21 180	142	...	...	...
All other	202	259	1,477	5.70
Green toners, total	4,581	3,169	10,170	3.21
Pigment Green 1, C.I. 42 040, PMA	15	11	60	5.45
Pigment Green 1, C.I. 42 040, PTA	8	6	37	6.17
Pigment Green 2, C.I. 42 040 and 49 005, PMA	50	50	230	4.60
Pigment Green 2, C.I. 42 040 and 49 005, PTA	44	37	236	6.38
Pigment Green 4, C.I. 42 000, PTA	4	6	21	3.50
Pigment Green 7, C.I. 74 260	4,004	2,760	8,292	3.00
Pigment Green 8, C.I. 10 006	174	145	187	1.29
All other	282	154	1,107	7.19
Brown toners, total	105	74	265	3.58
Pigment Brown 5, C.I. 15 800	61	46	82	1.78
All other	44	28	183	6.54
Black toners	191	157	172	1.10
LAKES				
Total	4,025	3,653	3,261	.89
Red lakes, total	860	848	851	1.00
Pigment Red 60, C.I. 16 105	113	110	195	1.77
Pigment Red 83, C.I. 58 000	78	74	249	3.36
(Acid Red 26), C.I. 16 150	575	575	255	.44
All other	94	89	152	1.71
Violet lakes, total	110	124	272	2.19
Pigment Violet 5, C.I. 58 055	96	108	248	2.30
All other	14	16	24	1.50
Blue lakes, total	2,058	1,690	1,605	.95
Pigment Blue 24, C.I. 42 090	2,026	1,660	1,586	.96
All other	32	30	19	.63
Black lakes: (Natural Black 3), C.I. 75 291	71	66	67	1.02
All other lakes[2]	926	925	466	.50

[1] Calculated from rounded figures.
[2] Includes all brown, green, orange, and yellow lakes and all other black lakes.

Note.--The C.I. *(Colour Index)* numbers shown in this report are the identifying numbers given in the second edition of the *Colour Index*.
The abbreviations PMA and PTA stand for phosphomolybdic and phosphotungstic (including phosphotungstomolybdic) acids, respectively.

TABLE 12.--*U.S. sales of selected dry full-strength colors, dry extended colors, dry dispersions, aqueous dispersions, and flushed colors, 1964*

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	1,791	4,102	$2.29
Dry full-strength toner	607	1,314	2.16
Dry extended toner, aqueous dispersions[3] and flushed color[4]	1,184	2,788	2.35
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	1,140	3,169	2.78
Dry full-strength toner	800	2,207	2.76
Dry extended toner and dry dispersions[4]	83	196	2.36
Aqueous dispersions[3]	112	298	2.66
Flushed color	145	468	3.23
Pigment Red 3, C.I. 12 120, total	1,395	2,212	1.59
Dry full-strength toner and dry extended toner[4]	863	1,332	1.54
Aqueous dispersions[3]	57	97	1.70
Flushed color	475	783	1.65
Pigment Red 48, C.I. 15 865, total	2,076	3,915	1.89
Dry full-strength toner	1,932	3,626	1.88
Dry extended toner	37	75	2.03
Dry dispersions	28	60	2.14
Aqueous dispersions[3] and flushed color[4]	79	154	1.95
Pigment Red 49, C.I. 15 630, barium toner, total	2,926	2,992	1.02
Dry full-strength toner	2,072	2,016	.97
Dry dispersions and aqueous dispersions[3 4]	5	5	1.00
Flushed color	849	971	1.14
Pigment Red 49, C.I. 15 630, calcium toner, total	1,349	1,454	1.08
Dry full-strength toner and dry dispersions[4]	1,108	1,127	1.02
Aqueous dispersions[3] and flushed color[4]	241	327	1.36
Pigment Red 49, C.I. 15 630, sodium toner[4]	282	306	1.09
Pigment Red 53, C.I. 15 585, barium toner, total	1,534	2,003	1.31
Dry full-strength toner	958	1,205	1.26
Flushed color	576	798	1.39
Pigment Red 90, C.I. 45 380, total	595	1,209	2.03
Dry full-strength toner and dry extended toner[4]	53	114	2.15
Flushed color	542	1,095	2.02
Pigment Violet 3, C.I. 42 535, fugitive, total	424	629	1.48
Dry full-strength toner and dry extended toner[4]	279	409	1.47
Flushed color	145	220	1.52
Pigment Violet 3, C.I. 42 535, permanent (PMA and PTA), total	365	1,127	3.09
Dry full-strength toner	193	610	3.16
Dry extended toner, dry dispersions and aqueous dispersions[3 4]	75	226	3.01
Flushed color	97	291	3.00
Pigment Blue 15, C.I. 74 160, alpha form, total	3,149	8,588	2.73
Dry full-strength toner	1,756	4,527	2.58
Dry extended toner	447	1,560	3.49
Dry dispersions	80	178	2.22
Aqueous dispersions[3]	714	1,924	2.69
Flushed color	152	399	2.62
Pigment Blue 15, C.I. 74 160, beta form, total	1,577	4,594	2.91
Dry full-strength toner	863	2,749	3.19
Dry extended toner and dry dispersions[4]	36	127	3.53
Aqueous dispersions[3]	402	1,090	2.71
Flushed color	276	628	2.28
Pigment Blue 19, C.I. 42 750A, total	2,235	5,430	2.43
Dry full-strength toner and dry extended toner[4]	454	1,097	2.42
Aqueous dispersions[3] and flushed color[4]	1,781	4,333	2.43

See footnotes at end of table.

TABLE 12.--*U.S. sales of selected dry full-strength colors, dry extended colors, dry dispersions, aqueous dispersions, and flushed colors, 1964* --Continued

Selected pigments by commercial forms	Sales		
	Quantity[1]	Value	Unit value[2]
	1,000 pounds	*1,000 dollars*	*Per pound*
Pigment Blue 24, C.I. 42 090[4]	1,660	1,967	$1.18
Pigment Green 7, C.I. 74 260, total	2,760	8,529	3.09
Dry full-strength toner	1,740	5,235	3.01
Dry extended toner	258	924	3.58
Dry dispersions	130	482	3.71
Aqueous dispersions[3]	464	1,459	3.14
Flushed color	168	429	2.55

[1] Quantity of the various commercial forms is given in terms of dry full-strength toner (or dry lake) content.
[2] Calculated from rounded figures.
[3] Includes presscake.
[4] Separate data on these commercial forms may not be published without revealing the operations of individual companies.

Note.--The C.I. *(Colour Index)* numbers shown in this report are the identifying numbers given in the second edition of the *Colour Index*.
The abbreviations PMA and PTA stand for phosphomolybdic and phosphotungstic (including phosphotungstomolybdic) acids, respectively.

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 the technical grade material. They include alkaloids, antibiotics and other anti-infective agents, antihistamines, autonomic drugs, central-nervous-system depressants and stimulants, hormones, vitamins, and other therapeutic agents for human or veterinary use and for animal feed supplements.

Statistics on the production of medicinal chemicals are in terms of 100-percent content of the medicinal chemical itself, exclusive of all diluents or other materials used in mixing or compounding tablets, solutions, and suspensions for consumer use. Except for antibiotics, the statistics on sales include only that part of the original (primary) production that was sold in undiluted or uncompounded form. Sales of antibiotics include all sales by the primary producers, both diluted and undiluted, in bulk or in dosage forms.

Statistics on U.S. production and sales of medicinal chemicals in 1964 are given in table 13A.[5] Total production of medicinal chemicals in 1964 amounted to 144 million pounds, or 3.5 percent more than the 139 million pounds produced in 1963, and 13.1 percent more than the 127 million pounds produced in 1962. Total sales of medicinal chemicals in 1964 amounted to 119 million pounds, valued at $646 million, compared with sales in 1963 of 114 million pounds, valued at $639 million, and sales in 1962 of 104 million pounds, valued at $601 million. Sales in 1964 were thus 4.2 percent larger than in 1963 and 14.5 percent larger than in 1962 in terms of quantity, and 1.0 percent larger than in 1963 and 7.5 percent larger than in 1962 in terms of value.

Since 1962, the data published on medicinal chemicals have been divided into antibiotics and benzenoid and nonbenzenoid groups, instead of into cyclic and acyclic groups as in previous years. Totals for the cyclic and acyclic groups are shown in this report, however, in order to permit comparison of the statistics for 1964 with those for the years prior to 1962. Production of cyclic medicinal chemicals in 1964 amounted to 98 million pounds, or 3.7 percent more than the output of 94 million pounds reported for 1963. Sales of cyclic medicinals in 1964 amounted to 77 million pounds, valued at $612 million, compared with sales in 1963 of 74 million pounds, valued at $605 million. Production of acyclic medicinals in 1964 amounted to 47 million pounds, or 3.2 percent more than the output of 45 million pounds reported for 1963. Sales of acyclic medicinals in 1964 amounted to 42 million pounds, valued at $33 million, compared with sales in 1963 of 40 million pounds, valued at $34 million.

Production of antibiotics for all uses in 1964 amounted to 6.5 million pounds, of which 3.9 million pounds was for human or veterinary use and 2.6 million pounds was for animal feed supplements, food preservation, and crop spraying. Sales amounted to 5.7 million pounds, valued at $386 million. The most important antibiotics, in terms of value, were the penicillin salts and tetracycline. Production of penicillin salts for all uses amounted to 1,202 trillion U.S.P. units; sales totaled 965 trillion U.S.P. units, valued at $86 million. Production of tetracycline for human or veterinary use amounted to 176 million grams of activity; sales totaled 152 million grams of activity, valued at $55 million.

Production of benzenoid medicinals in 1964 amounted to 78 million pounds; sales totaled 61 million pounds, valued at $162 million. The benzenoid medicinal chemicals that were produced in largest quantity in 1964 were aspirin, 28.2 million pounds; salicylic acid, 13.1 million pounds; and the anti-infective sulfonamides, 5.0 million pounds.

Production of nonbenzenoid medicinals in 1964 amounted to 60 million pounds; sales totaled 52 million pounds, valued at $98 million. The most important nonbenzenoid medicinal chemicals, in terms of quantity, were choline chloride, production of which amounted to 25.2 million pounds, piperazine and salts, 7.0 million pounds, and methionine and its hydroxy analogue, 6.0 million pounds.

Production of all vitamins, both benzenoid and nonbenzenoid, amounted to 14.1 million pounds in 1964; sales amounted to 10.6 million pounds, valued at $60.6 million. The most important vitamins, in terms of value, were vitamins A, B_2, B_{12}, and C. Production of vitamin A alcohol and esters amounted to 618 trillion U.S.P. units; sales totaled 470 trillion U.S.P. units, valued at $19.7 million. Production of vitamin B_2 (riboflavin) amounted to 662,000 pounds; sales totaled 701,000 pounds, valued at $6.4 million. Sales of vitamin B_{12} (cyanocobalamin) amounted to 398,000 grams, valued at $6.9 million. Production of vitamin C (ascorbic acid) and derivatives amounted to 7.4 million pounds; sales totaled 5.3 million pounds, valued at $10.3 million.

[5] See also table 13B, pt. III, which lists these products alphabetically and identifies the manufacturers, and table 23 in appendix A, which shows imports of coal-tar medicinal chemicals and pharmaceuticals during the years 1963-64.

TABLE 13A.--*Medicinal chemicals: U.S. production and sales, 1964*

[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 13B in pt. III lists alphabetically all medicinal chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production[1]	Sales[2]		
		Quantity	Value	Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	144,090	118,678	645,692	$5.44
Cyclic[4]	97,579	76,946	612,233	7.96
Acyclic[4]	46,511	41,732	33,459	.80
MEDICINAL CHEMICALS, ANTIBIOTICS[5]				
Total	6,540	5,729	385,910	67.36
For human or veterinary use, total	3,913	3,235	328,445	101.53
Bacitracin	7	5	1,128	225.60
Dihydrostreptomycin	...	436	6,306	14.46
Neomycin	92	70	5,069	72.41
Penicillins, total	1,569	1,215	82,389	67.81
Penicillin G, potassium	505	413	18,411	44.58
Penicillin G, procaine	799	623	12,204	19.59
Penicillin G, other	54	31	10,972	353.94
Phenethicillin and potassium salt	14	12	3,954	329.50
All other penicillins	197	136	36,848	270.94
Tetracycline	388	336	54,570	162.41
All other[6]	1,857	1,173	178,983	152.59
For animal feed supplements, food preservation, and crop spraying, total	2,627	2,494	57,465	23.04
Bacitracin	158	136	3,089	22.71
Penicillin G, procaine	565	515	3,659	7.10
All other[6]	1,904	1,843	50,717	27.55
MEDICINAL CHEMICALS, BENZENOID[7]				
Total	77,557	61,344	162,067	2.64
Alkaloids, except those affecting the autonomic or central nervous system	47	20	656	32.80
Antihistamines, total	344	167	4,810	28.80
Antinauseants	56	...	...	...
2-[p-Chloro-α-(2-dimethylaminoethyl)benzyl]pyridine (Chlorpheniramine) maleate	26	9	269	29.89
2-[α-(2-Dimethylaminoethyl)benzyl]-pyridine (Pheniramine) maleate	10	8	269	33.62
2-[(2-Dimethylaminoethyl)(p-methoxybenzyl)amino]pyridine (Pyrilamine) maleate	15	...	...	...
All other	237	150	4,272	28.48
Anti-infective agents, total	17,736	10,887	60,669	5.57
Antimony, arsenic, bismuth, and mercury compounds[8]	2,937	...	...	...
1-Hexadecylpyridinium (Cetylpyridinium) chloride	10	...	...	...
Phenolic antiseptics and disinfectants	157	136	299	2.20
Quinoline derivatives, total	320	227	2,905	12.80
5-Chloro-7-iodo-8-quinolinol (Iodochlorhydroxyquin)	11	...	...	...
5,7-Diiodo-8-quinolinol (Diiodohydroxyquin)	21	...	...	...
8-Quinolinol (Oxyquinoline) benzoate	3	2	8	4.00
8-Quinolinol (Oxyquinoline) sulfate	10	...	...	...
All other	275	225	2,897	12.88
Sulfonamides, total	4,964	1,476	6,783	4.60
Sulfathiazole	144	111	291	2.62
All other	4,820	1,365	6,492	4.76
Other anti-infective agents, total	9,348	9,048	50,682	5.60
Anthelmintic, antifungal, and antiprotozoan agents	7,229	6,616	45,179	6.83
All other[9]	2,119	2,432	5,503	2.26
Autonomic drugs, total	338	230	4,815	20.93
Parasympatholytic (anticholinergic) agents	...	28	1,645	58.75

See footnotes at end of table.

TABLE 13A.--*Medicinal chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales[2]		
		Quantity	Value	Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MEDICINAL CHEMICALS, BENZENOID[7]--Continued				
Autonomic drugs--Continued				
Sympathomimetic (adrenergic) agents, total	245	...	...	...
Epinephrine	(10)	(10)	33	$127.91
α-(Isopropylaminomethyl)protocatechuyl alcohol (Isoproterenol)	...	1	29	29.00
Norephedrine (Phenylpropanolamine) hydrochloride	156	140	1,038	7.41
Phenylephrine hydrochloride	45	40	1,596	39.90
All other	44	...	...	...
All other autonomic drugs	93	21	474	22.57
Benzothiadiazine derivatives	...	54	6,777	125.50
Bismuth subgallate	16	25	95	3.80
Central depressants, total	35,469	31,883	33,445	1.05
Dihydrocodeinone (Hydrocodone) bitartrate	1	1	203	203.00
5-Ethyl-5-phenylbarbituric acid (Phenobarbital)	242	288	759	2.64
5-Ethyl-5-phenylbarbituric acid, sodium derivative	8	9	36	4.00
p-Hydroxyacetanilide (Acetaminophen)	1,060	1,037	1,357	1.31
Salicylates, total	30,935	27,712	16,323	.59
Aspirin	28,221	24,864	13,560	.55
Sodium salicylate	...	465	337	.72
All other	2,714	2,383	2,426	1.02
Skeletal muscle relaxants and tranquilizers, total	400	162	5,533	34.15
Phenothiazine derivatives	...	3	158	52.67
3-o-Tolyloxy-1,2-propanediol (Mephenesin)	62	...	...	...
All other	338	159	5,375	33.81
All other central depressants	2,823	2,674	9,234	3.45
Central stimulants, total	214	151	5,504	36.45
Amphetamines, total	103	78	516	6.62
Amphetamine, dextroamphetamine, and levamphetamine base and salts	70	...	...	...
Methamphetamine base and hydrochloride	33	...	...	...
Antidepressants	41	22	2,690	122.27
All other central stimulants	70	51	2,298	45.06
Guaiacol glyceryl ether	32	35	113	3.23
Salicylic acid	13,127	10,587	4,143	.39
Synthetic hypoglycemic agents	1,010	...	...	...
Vitamins, total	3,442	2,911	21,747	7.47
B_2 (Riboflavin) (All grades)	662	701	6,383	9.11
B_{12} (Cyanocobalamin) (All grades)[11]	...	1	6,852	6,852.00
Niacin (Nicotinic acid) (All grades)	1,549	1,218	1,505	1.24
Niacinamide (Nicotinamide)	802	757	1,369	1.81
All other	429	234	5,638	24.09
All other benzenoid medicinals[12]	5,782	4,394	19,293	4.39
MEDICINAL CHEMICALS, NONBENZENOID[13]				
Total	59,993	51,605	97,715	1.89
Anti-infective agents, total	8,219	5,935	10,583	1.78
Caprylates and undecylenates	417	397	502	1.26
Derivatives of 5-nitrofurane, 5-nitroimidazole, and 5-nitrothiazole	619	547	5,684	10.39
Halogen compounds	140	...	...	...
Piperazine and salts, total	6,950	4,774	3,831	.80
Piperazine	2,631	917	854	.93
Piperazine hydrochloride	417	413	459	1.11
Piperazine phosphate	196	191	154	.81
All other	3,706	3,253	2,364	.73
All other anti-infective agents	93	217	566	2.61

See footnotes at end of table.

TABLE 13A.--*Medicinal chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales[2]		
		Quantity	Value	Unit value[3]
MEDICINAL CHEMICALS, NONBENZENOID[13]--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Autonomic drugs	17	...	...	...
Central depressants and stimulants, total	4,929	3,710	9,518	$2.57
Barbiturates, total	529	213	1,604	7.53
5-sec-Butyl-5-ethylbarbituric acid (Butabarbital) and sodium derivative	...	50	358	7.16
5-Ethyl-5-(1-methylbutyl)barbituric acid (Pentobarbital)	...	8	50	6.25
All other	529	155	1,196	7.72
Caffeine (natural and synthetic)	2,791	2,441	4,260	1.75
2-Methyl-2-propyl-1,3-propanediol dicarbamate (Meprobamate)	1,173	902	2,430	2.69
Succinylcholine chloride	8	...	...	...
All other central depressants and stimulants	428	154	1,224	7.95
Digestants and lipotropic agents, total	31,787	30,654	12,705	.41
Betaine base, hydrate, and hydrochloride	44	...	...	...
Bile acids and salts	117	...	...	...
Choline salts:				
Choline bitartrate	208	210	197	.94
Choline chloride (All grades)	25,194	24,314	5,042	.21
Choline dihydrogen citrate	71	64	61	.95
Tricholine citrate	...	18	19	1.06
Methionine and hydroxy analogue	6,049	5,860	6,203	1.06
All other digestants and lipotropic agents	104	188	1,183	6.29
Hormones, total	...	30	19,850	661.67
Hydrocortisone alcohol and acetate	...	12	2,800	233.33
Prednisone	3	...	...	...
All other	...	18	17,050	947.22
Theobromine and theophylline derivatives	74	50	192	3.84
Therapeutic nutrients, total	2,762	2,612	3,196	1.22
Amino acids, total	1,739	1,663	2,407	1.45
Amino acid mixtures	23	...	...	...
Aspartic acid and salts	37	...	...	...
Glutamic acid	81	58	94	1.62
All other	1,598	1,605	2,313	1.44
Calcium gluconate	652	575	367	.64
All other therapeutic nutrients	371	374	422	1.13
5-Ureidohydantoin (Allantoin)	17	17	83	4.88
Vitamins, total	10,663	7,718	38,831	5.03
Ascorbic acid and derivatives, total	7,409	5,348	10,329	1.93
Ascorbic acid	6,080	4,405	8,291	1.88
All other	1,329	943	2,038	2.16
Pantothenic acid and derivatives, total	1,711	1,208	3,017	2.50
dl-Calcium pantothenate	1,359	986	1,893	1.92
All other	352	222	1,124	5.06
Vitamin A alcohol and esters, total[11]	694	533	19,700	36.96
Vitamin A palmitate (medicinal grade)	211	172	6,787	39.46
All other	483	361	12,913	35.77
Vitamin D_2 (Ergocalciferol)[11]	1	1	325	325.00
All other vitamins[11]	848	628	5,460	8.69
All other nonbenzenoid medicinal chemicals[14]	1,522	879	2,757	3.14

See footnotes on following page.

Footnotes for table 13A

[1] The data on production are those for medicinal chemicals in bulk; they do not include finished preparations, such as tablets, capsules, and ampoules, which are manufactured from bulk chemicals.

[2] Except for antibiotics, sales include only that part of the original production which is sold in undiluted or uncompounded form, including that sold in bulk and that sold in packages (tablets, ampoules, etc.). Sales of antibiotics include all forms (both undiluted or uncompounded and diluted or compounded), including that sold in bulk and that sold in packages.

[3] Calculated from rounded figures.

[4] Since 1962, medicinal chemicals have been divided into antibiotics, benzenoid, and nonbenzenoid groups, instead of into cyclic and acyclic groups, as in previous reports. Totals for the cyclic and acyclic groups are shown in this report in order to facilitate comparison of the statistics for 1964 with those for the years prior to 1962.

[5] For statistical purposes, reported quantities of antibiotics have been converted from grams of activity or U.S.P. units to pounds by means of the following conversion factors: Procaine penicillin G, 453.6 million units=1 pound; penicillin V salts, 768.9 million units=1 pound; other penicillin salts and hygromycin B, 756 million units=1 pound; bacitracin, 22.7 million units=1 pound; polymyxin B, 2,812.3 million units=1 pound; all other antibiotics, 453.6 grams of activity=1 pound. Statistics for all individually publishable antibiotics are given in the following tabulation in terms of million U.S.P. units (MU), billion U.S.P. units (BU), or kilograms of activity (Kg.):

Antibiotic	Production	Sales (bulk and dosage forms)		
		Quantity	Value	Unit value
			1,000 dollars	
Bacitracin (MU), total	3,728,231	3,217,150	4,235	$1.32
For human or veterinary use	150,095	119,140	1,128	9.47
For other uses	3,578,136	3,098,010	3,107	1.00
Dihydrostreptomycin, for human or veterinary use (Kg.)	...	197,692	6,306	31.90
Neomycin, for human or veterinary use (Kg.)	41,763	31,798	5,069	159.41
Penicillin salts (BU), total	1,202,328	964,857	86,048	89.18
dl-α-Phenoxyethyl penicillin (Phenethicillin) and potassium salt, for human or veterinary use	10,723	9,197	3,954	429.92
Potassium penicillin G, for human or veterinary use	381,729	312,057	18,411	59.00
Procaine penicillin G, total	618,575	516,097	15,863	30.74
For human or veterinary use	362,115	282,738	12,204	43.16
For other uses	256,460	233,359	3,659	15.68
Other penicillin G salts, for human or veterinary use	40,905	23,441	10,972	468.07
Other penicillin salts, for human or veterinary use	150,396	104,065	36,848	354.09
Streptomycin, for all uses (Kg.)	280,995	259,378	7,543	29.08
Tetracycline, for human or veterinary use (Kg.)	176,269	152,154	54,570	358.65

[6] Includes streptomycin, for which separate statistics cannot be published by use category, because publication would reveal the operations of individual companies. Statistics for streptomycin are given in terms of kilograms in footnote 5.

[7] The term "benzenoid," as used in this report, describes any cyclic medicinal chemical, other than antibiotics, whose molecule contains any one or more of the following types of rings: 6-membered carbocyclic rings with conjugated double bonds, e.g., the benzene ring or the quinone ring; 6-membered heterocyclic rings with 1 hetero atom and conjugated double bonds, e.g., the pyridine rings; or 6-membered heterocyclic rings with 2 hetero atoms and conjugated double bonds, except the pyrimidine ring, e.g., the pyrazine ring or the pyridazine ring.

[8] Production of all antimony, arsenic, and bismuth compounds, both benzenoid and nonbenzenoid, including bismuth subgallate, amounted to 2,918,000 pounds. Production of all mercury compounds, both benzenoid and nonbenzenoid, amounted to 51,000 pounds.

[9] Includes sales of antimony, arsenic, bismuth, and mercury compounds and of 1-hexadecylpyridinium chloride.

[10] Production of epinephrine amounted to 266 pounds; sales amounted to 258 pounds.

[11] For statistical purposes, reported quantities of vitamins A, B_{12}, D_2, and D_3 have been converted from grams or U.S.P. units to pounds by means of the following conversion factors: Vitamin A acetate, 1.307 billion units = 1 pound; vitamin A alcohol, 1.510 billion units=1 pound; vitamin A natural esters, 1.080 billion units=1 pound; vitamin A palmitate, 0.816 billion units=1 pound; vitamin B_{12}, 453.6 grams=1 pound; vitamins D_2 and D_3, 18.14 billion units=1 pound. Statistics for these vitamins (except vitamin D_3, for which reported statistics cannot be published because publication would reveal the operations of individual companies) are given in the following tabulation in terms of grams or U.S.P. units:

Vitamin	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Vitamin A, total	Billion units	617,508	470,043	19,700	$41.91
Palmitate, except feed grade	-----do------	172,232	140,734	6,787	48.23
All other	-----do------	445,276	329,309	12,913	39.21
Vitamin B_{12}	Grams--------	...	397,876	6,852	17.22
Vitamin D_2	Billion units	22,398	19,674	325	16.52

[12] Includes production of benzothiadiazine derivatives and sales of synthetic hypoglycemic agents.

[13] The term "nonbenzenoid," as used in this report, describes any cyclic or acyclic medicinal chemical, other than antibiotics, whose molecule does not contain any of the types of rings described in footnote 7 above. All acyclic compounds and any cyclic compound whose molecule contains only one or more of the following types of rings are classified as "nonbenzenoid": Fully or partially reduced rings, e.g., the piperidine ring or the cyclohexadiene ring; rings with more or less than 6 members, e.g., the imidazole ring or the azepine ring; heterocyclic rings with more than 2 hetero atoms, e.g., the triazine ring; or the pyrimidine ring.

[14] Includes production of hydrocortisone alcohol and acetate and "all other" hormones and sales of autonomic drugs.

Flavor and Perfume Materials

Flavor and perfume materials are organic chemicals that are used in the manufacture of foods, beverages, cosmetics, and soaps, and to disguise unpleasant odors in industrial products. Most of them have desirable flavors or odors, and some have the quality of enhancing natural flavors when added to certain foods. This report includes data on materials derived from natural products by actual chemical processes and from coal tar; it does not include data on purely natural products, such as floral essences, essential oils, and other materials that are obtained by simple extraction or by distillation from natural vegetable and animal sources.

The flavor and perfume materials covered in this report are grouped as either cyclic or acyclic materials, according to their chemical structure. Cyclic materials are further classified as (1) benzenoid and naphthalenoid, and (2) terpenoid, heterocyclic, and alicyclic. Statistics on production and sales of flavor and perfume materials in 1964 are given in table 14A.[6]

Production of flavor and perfume materials in 1964 amounted to 90.6 million pounds--22.8 percent more than the output of 73.8 million pounds in 1963. Sales in 1964 amounted to 80.0 million pounds, valued at $83.7 million, compared with 67.0 million pounds, valued at $77.4 million, in 1963.

Production of cyclic flavor and perfume materials in 1964 amounted to 49.6 million pounds--19.9 percent more than the 41.3 million pounds reported for 1963. Sales of cyclic flavor and perfume materials in 1964 were 41.2 million pounds, valued at $56.6 million, compared with 34.7 million pounds, valued at $51.4 million, in 1963. The individual chemical in the cyclic group that was produced in the greatest volume in 1964 was methyl salicylate (3.8 million pounds). Production of synthetic sweeteners, as a group, amounted to 12.2 million pounds, representing an increase of 113.7 percent over the quantity produced in 1963.

The output of acyclic flavor and perfume materials in 1964 amounted to 41.0 million pounds--26.4 percent more than the 32.4 million pounds reported for 1963. By far the most important of the acyclic materials in 1964 was monosodium glutamate, a flavor-enhancing product, production of which totaled 38.6 million pounds. Sales of acyclic flavor and perfume materials in 1964 amounted to 38.8 million pounds, valued at $27.2 million, compared with 32.3 million pounds, valued at $25.9 million, in 1963.

TABLE 14A.--*Flavor and perfume materials: U.S. production and sales, 1964*

[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 14B in pt. III lists alphabetically 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	90,570	80,037	83,734	$1.05
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total	49,563	41,235	56,571	1.37
Benzenoid and Naphthalenoid				
Total	21,054	20,147	24,547	1.22
4-Allylveratrole (Eugenyl methyl ether)	18	11	34	2.97
Anethole (p-Propenylanisole)	1,576	1,438	1,102	.76
p-Anisaldehyde (p-Methoxybenzaldehyde)	699	766	1,105	1.44
Benzophenone[2]	264	278	252	.91
Benzyl acetate	1,116	1,202	506	.42
Benzyl alcohol[2]	3,373	2,970	1,159	.39
Benzyl cinnamate	3	4	13	3.57
Benzyl ether	103	102	19	.19
Benzyl propionate	13	12	13	1.14
Benzyl salicylate	222	203	272	1.34
Cinnamaldehyde	804	605	411	.68
Cinnamyl alcohol	209	153	213	1.39
α,α-Dimethylphenethyl acetate	26	22	100	4.56
Eugenol	274	264	534	2.02
Isobutyl phenylacetate (Isobutyl α-toluate)	19	21	19	.90
Isobutyl salicylate	46	44	45	1.01
Isoeugenol	95	93	267	2.88

See footnotes at end of table.

[6] See also table 14B, pt. III, which lists these products alphabetically and identifies the manufacturers, and table 23 in appendix A, which shows imports of benzenoid flavor and perfume materials during the years 1963-64.

TABLE 14A.--*Flavor and perfume materials: U.S. production and sales, 1964*--Continued

Material	Production	Sales		
		Quantity	Value	Unit value[1]
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued				
Benzenoid and Naphthalenoid--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Isopentyl salicylate (Amyl salicylate)	410	386	263	$0.68
4'-Methoxyacetophenone	...	8	18	2.16
Methyl anthranilate	412	120	258	2.14
α-Methylcinnamaldehyde	14	...	...	...
Methyl salicylate (Synthetic wintergreen oil)	3,784	3,738	2,006	.54
α-Pentylcinnamaldehyde (α-Amylcinnamaldehyde)	433	444	610	1.37
Phenethyl isobutyrate	8	6	15	2.25
Phenethyl phenylacetate (Phenethyl α-toluate)	7	7	27	3.60
3-Phenyl-1-propanol (Hydrocinnamic alcohol)	14	19	35	1.87
4-Propenylveratrole (Isoeugenyl methyl ether)	9	7	29	3.83
All other benzenoid and naphthalenoid materials	7,103	7,224	15,222	2.10
Terpenoid, Heterocyclic, and Alicyclic				
Total	28,509	21,088	32,024	1.52
Cedryl acetate	112	107	229	2.13
Citral (Geranial)	218	63	248	3.92
Citronellol	675	448	821	1.83
Citronellyl acetate	31	23	42	1.79
Citronellyl formate	20	20	60	2.96
Coumarin	1,030	1,000	2,464	2.46
Essential oils, chemically modified	118	117	160	1.37
Geraniol	845	557	852	1.53
Geranyl acetate	78	68	123	1.82
Geranyl formate	10	9	25	2.79
Hydrocoumarin (3,4-Dihydrocoumarin)	26	23	96	4.16
Hydroxycitronellal	556	538	2,469	4.59
Ionones	206	161	645	4.01
Isobornyl acetate	1,373	1,330	528	.40
Linalyl acetate	659	407	1,286	3.16
Menthol, synthetic, tech. and U.S.P.	289	280	983	3.51
Menthone	...	7	17	2.58
Methylionones, total	476	444	1,929	4.34
α, β, γ, and δ, individually	363	355	1,496	4.22
α and β, mixed	113	89	433	4.85
Nerol	...	7	40	5.56
Piperonal (Heliotropin)	210	252	506	2.01
Rhodinol	10	11	293	27.77
Sweeteners, synthetic	12,215	8,658	9,721	1.12
Terpineols	3,532	3,607	901	.25
Terpinyl acetate	641	677	317	.47
Vetivenyl acetate	19	18	1,007	54.47
All other terpenoid, heterocyclic, and alicyclic materials	5,160	2,256	6,262	2.78
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total	41,007	38,802	27,163	.70
Allyl hexanoate (Allyl caproate)	46	47	174	3.72
Decanal (Capraldehyde) (C_{10})	13	13	50	3.86
Ethyl butyrate	310	237	165	.69
Ethyl hexanoate (Ethyl caproate)	3	1	3	1.94
Ethyl nonanoate (Ethyl pelargonate)	3	1	4	3.28
Glutamic acid, monosodium salt (Monosodium glutamate)	38,632	36,630	24,843	.68
4-Hydroxyundecanoic acid, γ-lactone (γ-Undecalactone)	5	4	24	5.25
Isopentyl butyrate (Amyl butyrate)	57	47	37	.80
Lauraldehyde (Dodecyl aldehyde) (C_{12})	...	18	105	5.69
All other acyclic materials	1,938	1,804	1,758	.97

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

Plastics and Resin Materials

Plastics and resin materials are condensation or polymerization products of organic chemicals containing necessary fillers, plasticizers, and extenders. At some stage in their manufacture they exist in such physical condition that they can be shaped or processed by the application of heat and pressure. Some types of plastics may be molded, cast, or extruded into finished or semifinished forms. Other types are used as adhesives, for the treatment of textiles and paper, and for protective coatings. Still other types of plastics materials may be processed into sheets, rods, and tubes, which are further manufactured into finished articles. Except for vinyl resins, the statistics given in the following tables are based on the total weight of the materials, excluding liquids. Statistics for vinyl resins are given on the basis of resin content.

Statistics on production and sales of plastics and resins in 1964 are given in table 15A[7] according to chemical composition and broad end uses. In general, this table follows 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-64). However, data are included for plastics materials which are not covered in the monthly report and for a number of smaller producers that do not report

TABLE 15A.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1964*

[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 15B in pt. III lists all plastics and resin materials for which data on production or sales were reported and identifies the manufacturer of each]

Kind and use	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds, dry basis[2]	*1,000 pounds, dry basis*[2]	*1,000 dollars*	*Per pound*
Grand total	10,103,064	8,726,721	2,120,284	$0.24
Plastics and resin materials, benzenoid	3,915,046	3,256,105	777,342	.24
Plastics and resin materials, nonbenzenoid	6,188,018	5,470,616	1,342,942	.25
THERMOSETTING RESINS				
Total	2,954,795	2,343,943	618,213	.26
Alkyd resins, total	593,627	309,696	80,621	.26
Protective coatings:				
Phthalic anhydride type, total	524,942	254,618	66,949	.26
Unmodified	387,520	194,959	49,300	.25
Modified	137,422	59,659	17,649	.30
Polybasic acid type	55,716	43,597	9,417	.22
All other uses[3]	12,969	7,905	2,686	.34
Sales for export	...	3,576	1,569	.44
Coumarone-indene and petroleum polymer resins, total	354,349	328,311	33,269	.10
Floor tile	91,556	80,031	...	...
Rubber compounding	57,431	55,615	...	...
All other uses	205,362	165,071	...	...
Sales for export	...	27,594	...	...
Epoxy resins:				
Unmodified, total	96,204	95,923	56,824	.59
Bonding and adhesives	...	12,569	...	...
Protective coatings	...	42,328	...	...
Reinforced plastics	...	13,322	...	...
All other uses	...	16,109	...	...
Sales for export	...	11,595	...	...
Modified	8,941	4,936	3,278	.66
Polyester resins,[4] total	316,628	276,282	84,556	.31
Reinforced plastics:				
Sheets, flat and corrugated	...	33,231	...	...
All other	...	168,670	...	...
Surface coatings	...	2,377	...	...
All other uses	...	62,314	...	...
Sales for export	...	9,690	...	...
Silicone resins	10,981	10,051	22,963	2.28

See footnotes at end of table.

[7] See also table 15B, pt. III, which lists these products according to chemical composition, and identifies the manufacturers.

TABLE 15A.-- *Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1964*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds, dry basis[2]	*1,000 pounds, dry basis*[2]	*1,000 dollars*	*Per pound*
THERMOSETTING RESINS--Continued				
Phenolic and other tar acid resins, total	832,540	685,169	166,002	$0.24
Molding materials	247,326	225,351	...	...
Bonding and adhesive resins for--				
Laminating	113,844	66,612	...	...
Coated and bonded abrasives	21,701	18,038	...	...
Friction materials	31,584	29,376	...	...
Thermal insulation	107,141	47,992	...	...
Foundry or shell molding	53,799	53,551	...	...
Plywood	99,073	89,683	...	...
Fibrous and granulated wood	28,546	27,806	...	...
All other bonding and adhesive uses	40,469	36,591	...	...
Protective coatings, unmodified and modified	32,271	23,427	...	...
All other uses	56,786	50,436	...	...
Sales for export	...	16,306	...	...
Polyurethane and diisocyanate resins	35,634	31,066	18,100	.58
Rosin modifications, total	119,492	114,993	22,521	.20
Rosin and rosin esters, unmodified (ester gums)	74,284	71,437	13,401	.19
All other	45,208	43,556	9,120	.21
Urea and melamine resins, total	[5] 570,274	473,827	124,939	.26
Textile treating and coating resins	56,107	49,079	...	...
Paper treating and coating resins	48,355	33,801	...	...
Bonding and adhesive resins for--				
Laminating	57,605	37,683	...	...
Plywood	116,607	100,407	...	...
Fibrous and granulated wood	84,665	72,267	...	...
All other bonding and adhesive uses	17,820	16,068	...	...
Protective coatings	56,882	35,735	...	...
All other uses (including molding)	132,233	111,238	...	...
Sales for export	...	17,549	...	...
All other thermosetting resins[6]	16,125	13,689	5,140	.38
THERMOPLASTIC RESINS				
Total	7,148,269	6,382,778	1,502,071	.24
Cellulose plastics materials, total	161,281	156,991	107,170	.68
Sheets, continuous:				
Under 0.003 gage	17,927	17,739	...	...
0.003 gage and over	39,692	38,207	...	...
All other sheets, rods, and tubes	4,609	6,222	...	...
Molding and extrusion materials	99,053	94,823	...	...
Polyamide resins[7]	75,597	58,408	54,115	.93
Styrene type plastics materials:				
Production and sales	[8] 1,727,864	1,559,534	333,927	.21
Used by reporting companies in processing	...	128,265	...	...
Sales and use, total	...	1,687,799	...	...
Molding	...	843,117	...	...
Textile and paper treating and coating	...	128,698	...	...
Emulsion paint	...	39,704	...	...
Extrusion	...	229,585	...	...
All other uses	...	282,399	...	...
Sales for export	...	164,296	...	...
Vinyl resins (resin content basis):				
Polyvinyl acetate resins:				
Production and sales	282,307	228,233	66,497	.29
Used by reporting companies in processing	...	51,416	...	...
Sales and use, total	...	279,649	...	...
Emulsion paint	...	96,760	...	...

See footnotes at end of table.

TABLE 15A.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1964*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds, dry basis[2]	*1,000 pounds, dry basis*[2]	*1,000 dollars*	*Per pound*
THERMOPLASTIC RESINS--Continued				
Vinyl resins (resin content basis)--Continued				
Polyvinyl acetate resins--Continued				
Used by reporting companies in processing--Continued				
Sales and use--Continued				
Adhesives	...	100,868	...	...
Bonding and sizing	...	17,927	...	...
All other uses	...	60,505	...	...
Sales for export	...	3,589	...	...
Polyvinyl chloride and copolymer resins:				
Production and sales	1,636,891	1,373,740	240,056	$0.17
Used by reporting companies in processing	...	273,569	...	...
Sales and use, total	...	1,647,309	...	...
Calendering:				
Film, under 6 mils	...	79,449	...	...
Sheet, 6 mils and over	...	248,993	...	...
Flooring	...	243,657	...	...
Coating, bonding, and adhesives:				
Paper and textile coating (including calendering)	...	155,773	...	...
Flooring	...	62,972	...	...
Extrusion:				
Wire and cable	...	195,485	...	...
Garden hose	...	13,806	...	...
All other extrusions	...	190,095	...	...
Molding:				
Records	...	74,703	...	...
Slush and rotational molding	...	39,185	...	...
All other moldings	...	24,293	...	...
All other uses	...	249,026	...	...
Sales for export	...	69,872	...	...
All other vinyl resins:				
Production and sales	[9] 147,629	96,836	60,857	.63
Used by reporting companies in processing	...	44,427	...	...
Sales and use, total	...	141,263	...	...
Polyolefin plastics materials:				
Polyethylene, density 0.940 and below:				
Production and sales	1,955,095	1,930,267	320,752	.17
Used by reporting companies in processing	...	170,387	...	...
Sales and use, total	...	2,100,654	...	...
Injection molding	...	257,436	...	...
Blow molding	...	38,585	...	...
Extrusions:				
Film and sheet	...	745,365	...	...
Wire and cable coating	...	194,317	...	...
Extrusion coating on paper and other substrates	...	255,288	...	...
Pipe	...	25,172	...	...
All other extrusions	...	14,541	...	...
All other uses	...	198,867	...	...
Sales for export	...	371,083	...	...
Polyethylene, density over 0.940:				
Production and sales	658,320	550,472	113,948	.21
Used by reporting companies in processing	...	55,449	...	...
Sales and use, total	...	605,921	...	...
Injection molding	...	100,144	...	...
Blow molding	...	238,870	...	...
Extrusions:				
Film and sheet	...	24,959	...	...
Wire and cable coating	...	20,294	...	...
Pipe	...	21,417	...	...
All other extrusions (including extrusion coating and filament)	...	21,524	...	...
All other uses	...	114,890	...	...
Sales for export	...	63,823	...	...

See footnotes at end of table.

TABLE 15A.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1964*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value[1]
THERMOPLASTIC RESINS--Continued				
Polyolefin plastics materials--Continued	*1,000 pounds, dry basis*[2]	*1,000 pounds, dry basis*[2]	*1,000 dollars*	*Per pound*
Polypropylene:				
Production and sales	270,176	225,712	54,823	$0.24
Used by reporting companies in processing	...	35,156	...	...
Sales and use, total	...	260,868	...	...
Molding	...	108,455	...	...
Extrusion	...	113,543	...	...
All other uses (including export)	...	38,870	...	...
All other thermoplastic resins[10]	233,109	202,585	149,926	.74

[1] Calculated from rounded figures.
[2] For the purpose of this report, "dry basis" is defined as the total weight of the material, *including* resin, plasticizers, fillers, extenders, colors and stabilizers, and *excluding* water, solvents, and other liquid diluents.
[3] Includes saturated polyesters for urethanes.
[4] The term "polyester resins" includes unsaturated alkyds copolymerized with a monomer such as styrene, and polyallyl resins such as diallyl phthalate and allyl diglycol carbonate.
[5] Includes 418,314 thousand pounds of urea-formaldehyde type, and 151,960 thousand pounds of melamine-formaldehyde type.
[6] Includes data for acetone-formaldehyde resins, styrene-alkyd polyesters, toluenesulfonamide resins, and other thermosetting resins, which were produced in small quantities.
[7] Includes both nylon and non-nylon types.
[8] Includes straight polystyrene, 592,151 thousand pounds; rubber modified polystyrene, 683,850 thousand pounds; styrene-butadiene copolymers, 188,161 thousand pounds; and all other, including ABS and SAN, 263,702 thousand pounds.
[9] Includes 32,382 thousand pounds of polyvinyl alcohol.
[10] Includes data for acrylic, fluorocarbon, polycarbonate, polyoxymethylene, polyterpene, and other thermoplastic resins.

monthly. The monthly data for 1964, moreover, were returned to the reporting companies for verification or correction. In consequence, many of the figures in the following table are revised from those shown in the monthly release of March 23, 1965, which contained yearend cumulative totals for 1964. The figures in the thermoplastics section of the table under "Used by reporting companies in processing" represent captive use of the materials. The quantities reported under "Sales and use" in this section include data for captive consumption, and for outside sales as defined in the introduction to this volume.

In 1964, total U.S. production of synthetic plastics and resin materials, including cellulosics, amounted to 10,103 million pounds, or 12.6 percent more than the 8,968 million pounds reported for 1963. Sales of synthetic plastics and resin materials in 1964 amounted to 8,727 million pounds, valued at $2,120 million. Production of benzenoid plastics and resin materials in 1964 amounted to 3,915 million pounds, and that of nonbenzenoid materials, to 6,188 million pounds. These figures compare with production in 1963 of 3,489 million pounds, and 5,479 million pounds, respectively. Production of all thermosetting resins in 1964 was 2,955 million pounds, and that of thermoplastic resins was 7,148 million pounds.

In 1964, polyethylene, polystyrene, and polyvinyl chloride resins were the materials produced in the largest volume. The total output of high-density and low-density polyethylene resins in 1964 amounted to 2,613 million pounds, compared with 2,270 million pounds in 1963. Sales of polyethylene resins in 1964 were 2,481 million pounds, valued at $435 million. Production of styrene type plastics materials in 1964 was 1,728 million pounds, compared with 1,494 million pounds in 1963. Sales of such materials in 1964 were 1,560 million pounds, valued at $334 million. The output of polyvinyl chloride and copolymer resins in 1964 amounted to 1,637 million pounds, compared with 1,386 million pounds in 1963. Sales of polyvinyl chloride resins in 1964 totaled 1,374 million pounds, valued at $240 million. Other synthetic plastics and resin materials produced in 1964 in large volume were phenolic and other tar acid resins (833 million pounds), alkyd resins (594 million pounds), urea and melamine resins (570 million pounds), coumarone-indene and petroleum polymer resins (354 million pounds), polyester resins (317 million pounds), and polyvinyl acetate resins (282 million pounds).

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, and peptizers. Statistics on production and sales of rubber-processing chemicals in 1964 are given in table 16A.[8]

Production of rubber-processing chemicals as a group in 1964 amounted to 261 million pounds, or 11.5 percent more than the 234 million pounds reported for 1963. The larger total output of rubber-processing chemicals in 1964 is attributable principally to increased production of antioxidants and thiazole accelerators. Sales of rubber-processing chemicals in 1964 amounted to 184 million pounds, valued at $123 million, compared with 177 million pounds, valued at $119 million, in 1963.

TABLE 16A.--*Rubber-processing chemicals: U.S. production and sales, 1964*

[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 16B in pt. III lists separately all rubber-processing chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	260,556	184,227	123,027	$0.67
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total	222,461	161,660	108,656	.67
Accelerators, total	87,295	53,317	31,493	.59
Aldehyde-amines	1,983	1,382	1,463	1.06
Dithiocarbamic acid derivatives	270	204	333	1.63
Thiazole derivatives, total	75,015	42,220	22,222	.53
N-Cyclohexyl-2-benzothiazolesulfenamide	10,100	5,652	3,564	.63
2,2′-Dithiobis(benzothiazole)	21,045	10,316	5,247	.51
2-Mercaptobenzothiazole	7,972	5,018	1,937	.39
All other[2]	35,898	21,234	11,474	.54
All other accelerators	10,027	9,511	7,475	.79
Amino and hydroxy compounds, total[3]	105,357	82,382	59,984	.73
Amino compounds, total	85,406	67,950	46,707	.69
N,N′-Diphenyl-p-phenylenediamine	1,609	1,587	1,406	.89
All other	83,797	66,363	45,301	.68
Hydroxy compounds, total	19,951	14,432	13,277	.92
Phenol, alkylated	9,312	4,904	2,623	.53
All other	10,639	9,528	10,654	1.12
N-Nitrosodiphenylamine	3,089	2,164	1,173	.54
Peptizers	5,003	4,631	3,101	.67
All other cyclic rubber-processing chemicals[4]	21,717	19,166	12,905	.67
RUBBER-PROCESSING CHEMICALS, ACYCLIC				
Total	38,095	22,567	14,371	.64
Accelerators, total	25,255	13,431	10,369	.77
Dithiocarbamic acid derivatives, total[5]	13,003	7,277	5,802	.80
Dibutyldithiocarbamic acid, sodium salt	974	...	...	...
Dibutyldithiocarbamic acid, zinc salt	1,424	1,119	1,249	1.12
Diethyldithiocarbamic acid, zinc salt	1,058	704	570	.81
Dimethyldithiocarbamic acid, potassium salt	298	...	...	...
Dimethyldithiocarbamic acid, sodium salt	6,618	2,484	947	.38
Dimethyldithiocarbamic acid, zinc salt	955	903	757	.84
All other	1,676	2,067	2,279	1.10

See footnotes at end of table.

[8] See also table 16B, pt. III, which lists these products alphabetically and identifies the manufacturers.

TABLE 16A.--*Rubber-processing chemicals: U.S. production and sales, 1964*-- Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued				
Accelerators--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Thiurams, total[6]	11,896	5,934	4,337	$0.73
Bis(dimethylthiocarbamoyl)disulfide	...	4,132	2,651	.64
Bis(dimethylthiocarbamoyl)sulfide	...	1,071	1,141	1.07
All other	11,896	731	545	.75
All other accelerators	356	220	230	1.05
Dodecyl mercaptans	10,249	8,129	3,489	.43
All other acyclic rubber-processing chemicals[7]	2,591	1,007	513	.51

[1] Calculated from rounded figures.
[2] Includes small quantities produced and sold for uses other than rubber processing.
[3] Data on production and sales of aldehyde and acetone amine antioxidants are included below in "All other cyclic rubber-processing chemicals."
[4] Includes aldehyde and acetone amines, blowing agents, inhibitors, modifiers, stabilizers, and tackifiers.
[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 reported in table 20A "Pesticides and Other Organic Agricultural Chemicals."
[6] Includes data for small amounts of tetramethylthiuram sulfides for uses other than in the processing of natural and synthetic rubbers.
[7] Includes blowing agents, peptizers, modifiers, and conditioning and lubricating agents.

The output of cyclic rubber-processing chemicals in 1964 amounted to 222 million pounds, or 11.6 percent more than the 199 million pounds reported for 1963. Sales in 1964 were 162 million pounds, valued at $109 million, compared with 153 million pounds, valued at $102 million, in 1963. Of the total output of cyclic rubber-processing chemicals in 1964, accelerators accounted for 39.2 percent and amino and hydroxy antioxidants, for 47.4 percent. Production of amino and hydroxy antioxidants, which amounted to 105.4 million pounds in 1964, included 85.4 million pounds of amino compounds and 20.0 million pounds of hydroxy compounds. In 1963 the output of amino antioxidants amounted to 79.2 million pounds and that of hydroxy antioxidants, to 17.0 million pounds. Sales of amino antioxidants in 1964 were 68.0 million pounds, valued at $46.7 million; sales of hydroxy antioxidants were 14.4 million pounds, valued at $13.3 million.

Production of acyclic rubber-processing chemicals in 1964 amounted to 38.1 million pounds, compared with the 34.4 million pounds reported for 1963. Sales in 1964 totaled 22.6 million pounds, valued at $14.4 million, compared with 24.4 million pounds, valued at $16.9 million, in 1963. Accelerators, principally dithiocarbamic acid derivatives and tetramethylthiuram sulfides, accounted for 66.3 percent of the output of acyclic rubber-processing chemicals in 1964. Dodecyl mercaptans, together with blowing agents, peptizers, modifiers, and lubricating and conditioning agents, accounted for the remainder of the output in the acyclic group.

Elastomers (Synthetic Rubbers)

The synthetic rubber industry in the United States continued to operate at a high level of capacity in 1964. The styrene-butadiene, or S-type, rubber is a general-purpose material used in the manufacture of tires and other rubber goods, and is the most important type of synthetic rubber, in terms of quantity produced. Several other types of synthetic rubbers are also produced in large volume; among them are the polybutadiene-acrylonitrile type, or N-type, the polybutadiene-isoprene type, or Butyl-type, neoprene, and stereo elastomers.

The total output of all types of elastomers in the United States in 1964 amounted to 3,421 million pounds--somewhat more than the 3,185 million pounds reported for 1963. Sales of elastomers covered in this report amounted to 2,958 million pounds, valued at $810 million, in 1964, compared with 2,836 million pounds, valued at $767 million, in 1963. Statistics on the production and sales of elastomers are given in table 17A.[9]

[9] See also table 17B, pt. III, which lists these products alphabetically and identifies the manufacturers.

Production of cyclic elastomers, which consisted chiefly of the polybutadiene-styrene type (S-type), amounted to 2,332 million pounds in 1964, compared with 2,174 million pounds in 1963. Sales of these elastomers amounted to 1,961 million pounds, valued at $451 million, in 1964, compared with 1,926 million pounds, valued at $434 million, in 1963. Production of polyurethane type elastomers in 1964 amounted to 7.3 million pounds.

TABLE 17A.--*Elastomers (synthetic rubbers):*[1] *U.S. production and sales, 1964*

[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 17B in pt. III lists alphabetically all elastomers for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds[3]	*1,000 pounds*[3]	*1,000 dollars*	*Per pound*
Grand total	3,421,218	2,957,584	809,902	$0.27
ELASTOMERS, CYCLIC				
Total	2,332,436	1,961,181	450,913	.23
Polybutadiene-styrene type (S-type)	2,306,065	[4] 1,944,595	437,616	.23
Polybutadiene-styrene-vinylpyridine type	19,075	10,520	6,868	.65
Polyurethane type	7,296	6,066	6,429	1.06
ELASTOMERS, ACYCLIC				
Total	1,088,782	996,403	358,989	.36
Polybutadiene-acrylonitrile type (N-type)	117,443	102,439	49,161	.48
Polychloroprene type (Neoprene)	316,040	...	...	...
Polyisobutylene-isoprene type (Butyl)	221,558	....	...	...
Silicone elastomers	8,276	6,286	23,714	3.77
Stereo elastomers	364,826	285,230	65,430	.23
All other acyclic elastomers[5]	60,639	602,448	220,684	.37

[1] The term "elastomers" is defined as substances in bale, crumb, powder, latex, and other crude forms which can be vulcanized or similarly processed into materials that can be stretched at 68° F. to at least twice their original length and, after having been so stretched and the stress removed, will return with force to approximately their original length.
[2] Calculated from rounded figures.
[3] Elastomer-content basis.
[4] Partly estimated.
[5] Includes data for the production and sales of polyalkalene sulfide, and polyisobutylene elastomers, and natural rubber modifications; and for sales of neoprene and Butyl 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.

The output of acyclic elastomers, including N-type, neoprene, Butyl, silicone, and stereo elastomers, amounted to 1,089 million pounds in 1964, compared with the 1,011 million pounds reported for 1963. Sales of these elastomers amounted to 996 million pounds, valued at $359 million, in 1964, compared with 911 million pounds, valued at $332 million, in 1963. The output of silicone elastomers in 1964 amounted to 8.3 million pounds, and that of stereo elastomers, to 365 million pounds.

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 resins, or (3) develop new improved properties not present in the original resins. Plasticizers reduce the viscosity of the resins and make it easier to shape and form them at high temperatures and pressures. They also impart flexibility and other desirable properties to the finished product. Statistics on production and sales of plasticizers are given in table 18A.[10]

[10] See also table 18B, pt. III, which lists these products alphabetically and identifies the manufacturers.

TABLE 18A. --*Plasticizers:*[1] *U.S. production and sales, 1964*

[Listed below are all plasticizers for which reported data 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 18B in pt. III lists all plasticizers for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	951,408	904,887	187,468	$0.21
PLASTICIZERS, CYCLIC				
Total	717,624	689,647	119,565	.17
Phosphoric acid esters:				
Cresyl diphenyl phosphate[3]	16,061	13,855	3,488	.25
Tricresyl phosphate[3]	32,419	30,123	8,027	.27
Triphenyl phosphate	8,982	1,970	708	.36
Phthalic anhydride esters, total	601,403	590,106	91,775	.16
Butyl octyl phthalate	12,422	16,595	2,365	.14
Dibutyl phthalate	18,228	14,902	2,889	.19
Dicyclohexyl phthalate	6,730	...	...	...
Diethyl phthalate	15,058	9,975	1,936	.19
Dihexyl phthalate	713	776	143	.18
Diisodecyl phthalate	77,963	73,521	10,934	.15
Di(2-methoxyethyl) phthalate	8,939	5,964	1,143	.19
Dimethyl phthalate	4,253	3,978	841	.21
Dioctyl phthalates, total	323,619	326,626	45,907	.14
Di(2-ethylhexyl) phthalate	188,761	196,105	27,847	.14
Diiso-octyl and mixed dioctyl phthalates	134,858	130,521	18,060	.14
Ditridecyl phthalate	11,528	11,072	2,387	.22
Octyl decyl phthalates	21,475	24,185	4,164	.17
All other phthalic anhydride esters	100,475	102,512	19,066	.19
Trimellitic acid esters	1,140	1,335	579	.43
All other cyclic plasticizers[4]	57,619	52,258	14,988	.29
PLASTICIZERS, ACYCLIC[5]				
Total	233,784	215,240	67,903	.32
Adipic acid esters, total	36,143	33,040	8,527	.26
Di(2-(2-butoxyethoxy)ethyl) adipate	957	913	360	.39
Di(2-ethylhexyl) adipate	6,053	6,117	1,494	.24
Diisobutyl adipate	730	786	244	.31
Diisodecyl adipate	8,051	6,974	2,067	.30
Diiso-octyl adipate	5,862	...	...	...
Octyl decyl adipate	10,280	10,156	2,700	.27
All other	4,210	8,094	1,662	.21
Azelaic acid esters	13,359	12,972	3,966	.31
Complex linear polyesters and polymeric plasticizers	43,272	40,626	16,316	.40
Epoxidized esters, total	58,020	62,993	15,346	.24
Epoxidized soya oils	38,455	43,522	10,265	.24
Octyl epoxy tallates	17,007	16,833	4,004	.24
All other	2,558	2,638	1,077	.41
Glycerol monoricinoleate	423	170	64	.38
Isopropyl myristate	2,682	2,598	904	.35
Isopropyl palmitate	1,316	1,377	448	.33

See footnotes at end of table.

TABLE 18A.--*Plasticizers:*[1] *U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[2]
PLASTICIZERS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Oleic acid esters, total	11,447	8,046	1,947	$0.24
Butyl oleate	2,769	1,792	383	.21
Glycerol trioleate (Triolein)	3,767	2,506	521	.21
Isopropyl oleate	281	...	...	...
Methyl oleate	1,708	...	...	...
n-Propyl oleate	801	633	116	.18
All other	2,121	3,115	927	.30
Phosphoric acid esters	11,731	8,211	3,237	.39
Sebacic acid esters:				
Dibutyl sebacate	4,521	2,759	1,693	.61
Di(2-ethylhexyl) sebacate	7,547	7,703	4,034	.52
Stearic acid esters, total	7,399	6,957	1,718	.25
n-Butyl stearate	3,019	2,823	680	.24
All other	4,380	4,134	1,038	.25
All other acyclic plasticizers[6]	35,924	27,788	9,703	.35

[1] Does not include data for clearly defined extenders or secondary plasticizers.
[2] Calculated from rounded figures.
[3] Includes material produced for use as motor-fuel additive.
[4] Includes data for toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.
[5] Dibutyl maleate is now published in table 22A, "Miscellaneous Chemicals."
[6] Includes data for citric and acetylcitric, lauric, myristic, palmitic, ricinoleic, sebacic, and tartaric acid esters, glycerol and glycol esters of certain fatty acids, glycerol tripropionate, and other acyclic plasticizers.

Total U.S. production of plasticizers in 1964 amounted to 951 million pounds--representing an increase of 14.0 percent over the output of 835 million pounds reported for 1963. Sales in 1964 of the plasticizers covered by this report amounted to 905 million pounds, valued at $187 million, compared with 750 million pounds, valued at $168 million, in 1963.

Production of cyclic plasticizers in 1964, which consisted chiefly of the esters of phthalic anhydride and phosphoric acid, amounted to 718 million pounds, compared with 622 million pounds in 1963. Sales of cyclic plasticizers in 1964 amounted to 690 million pounds, valued at $120 million, compared with 558 million pounds, valued at $103 million, in the previous year.

Production of acyclic plasticizers in 1964 amounted to 234 million pounds, compared with 213 million pounds in 1963. Sales of acyclic plasticizers in 1964 amounted to 215 million pounds, valued at $68 million, compared with 192 million pounds, valued at $65 million, in 1963. Production of complex linear polyesters in 1964 amounted to 43 million pounds, and that of epoxidized esters, to 58 million pounds. Other products included in the acyclic class are the esters of adipic, azelaic, oleic, sebacic, and stearic acids.

Surface-Active Agents

The surface-active agents covered in this report include synthetic organic detergents and wetting, emulsifying, and dispersing agents that function in either aqueous or nonaqueous systems. Soaps, waxes, and plasticizers are not included. The data are reported in terms of 100-percent organic, surface-active ingredients, and thus exclude all inorganic salts, water, and other diluents. Originally developed as soap substitutes for the textile industry, surface-active agents have proved valuable in many other applications. A major part of the output of surface-active agents is consumed in the form of packaged household and industrial detergents. The remainder is used as wetting, dispersing, penetrating, and emulsifying agents in the processing of textiles and leather, in ore flotation and oil-drilling operations, and in the manufacture of paints, agricultural sprays, lubricants, cosmetics, foods, pharmaceuticals, and many other products.

Statistics on U.S. production and sales of surface-active agents in 1964 are given in table 19A.[11] Total production of surface-active agents in 1964 amounted to 2,119 million pounds--7.0 percent more than the 1,981 million pounds produced in 1963, and 8.7 percent more than the 1,949 million pounds produced in 1962. Sales in 1964 totaled 1,900 million pounds, valued at

[11] See also table 19B, pt. III, which lists these products alphabetically and identifies the manufacturers.

$350 million, compared with 1,790 million pounds, valued at $325 million, in 1963, and 1,758 million pounds, valued at $317 million, in 1962. Sales in 1964 were thus 6.2 percent larger than in 1963 and 8.0 percent larger than in 1962 in terms of quantity, and 7.7 percent larger than in 1963 and 10.4 percent larger than in 1962 in terms of value.

Production of anionic materials in 1964 amounted to 1,434 million pounds, or 67.7 percent of total production; sales of anionic materials were 1,365 million pounds, valued at $196 million. Production of those surface-active agents which are generally considered nonionic amounted to 581 million pounds, or 27.4 percent of the total; sales were 434 million pounds, valued at $108 million. Production of cationic materials amounted to 98 million pounds, or 4.6 percent of the total; sales totaled 96 million pounds, valued at $43 million. Production of amphoteric materials amounted to 4.6 million pounds, or approximately 0.2 percent of the total; sales totaled 4.5 million pounds, valued at $2.8 million.

TABLE 19A.--*Surface-active agents: U.S. production and sales, 1964*

[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 19B in pt. III lists all surface-active agents for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production[1]	Sales		
		Quantity[1]	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	2,118,688	1,899,930	350,142	$0.18
Amphoteric	4,562	4,536	2,755	.61
Anionic	1,434,399	1,365,424	196,092	.14
Cationic	98,348	95,518	43,228	.45
Nonionic	581,379	434,452	108,067	.25
BENZENOID SURFACE-ACTIVE AGENTS				
Total	1,347,809	1,245,176	165,132	.13
Not Sulfated or Sulfonated				
Total	273,786	209,146	46,006	.22
Amides, amines, and quaternary ammonium salts, total	8,018	7,602	7,217	.95
Benzyl(coconut oil alkyl)dimethylammonium chloride	58	56	47	.84
Benzyldimethyl(mixed alkyl)ammonium chloride	3,548	3,468	3,166	.91
Benzyldimethyloctadecylammonium chloride	309	286	260	.91
Benzyldodecyldimethylammonium chloride	789	747	651	.87
(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride	31	30	37	1.23
(Dodecylbenzyl)trimethylammonium chloride	158	149	113	.76
Heterocyclic compounds	696	475	563	1.19
Oxygen-containing compounds	706	694	923	1.33
All other	1,723	1,697	1,457	.86
Carboxylic acid esters and ethers, total	263,545	199,570	38,062	.19
Dodecylphenol, ethoxylated	52,483	22,680	6,394	.28
Iso-octylphenol, ethoxylated	1,676	...	...	...
Nonylphenol, ethoxylated	132,778	114,822	18,198	.16
Phenol, ethoxylated	4,027	2,774	620	.22
Other carboxylic acid esters and ethers	72,581	59,294	12,850	.22
Phosphoric and polyphosphoric acid esters and salts, total	2,223	1,974	727	.37
Nonyl and dinonylphenol, ethoxylated and phosphated	2,045	1,799	662	.37
All other	178	175	65	.37
Sulfated and Sulfonated				
Total	1,074,023	1,036,030	119,126	.11
Alkylphenols, ethoxylated and sulfated, total	40,579	...	...	...
Nonylphenol, ethoxylated and sulfated	20,213	20,079	4,253	.21
All other	20,366	...	...	...

See footnotes at end of table.

TABLE 19A.--*Surface-active agents: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales		
		Quantity[1]	Value	Unit value[2]
BENZENOID SURFACE-ACTIVE AGENTS--Continued				
Sulfated and Sulfonated--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Benzenesulfonates, total	590,670	575,756	90,497	$0.16
Benzene-, toluene-, and xylenesulfonates:				
Toluenesulfonic acid, sodium salt	9,253	9,209	721	.08
Xylenesulfonic acid, ammonium salt	18,459	18,549	1,441	.08
Xylenesulfonic acid, potassium salt	1,498	...	...	...
Xylenesulfonic acid, sodium salt	23,612	20,970	2,042	.10
Branched chain dodecyl- and tridecylbenzenesulfonates, total	445,453	436,787	73,655	.17
Dodecylbenzenesulfonic acid	61,219	59,844	14,295	.24
Dodecylbenzenesulfonic acid, ammonium salt	8,177	...	...	...
Dodecylbenzenesulfonic acid, calcium salt	9,932	5,501	1,719	.31
Dodecylbenzenesulfonic acid, diethanolamine salt	184	187	72	.38
Dodecylbenzenesulfonic acid, isopropylamine salt	3,907	3,611	1,122	.31
Dodecylbenzenesulfonic acid, (mixed alkyl)-amine salt	388	349	102	.29
Dodecylbenzenesulfonic acid, sodium salt	320,020	324,658	47,867	.15
Dodecylbenzenesulfonic acid, triethanolamine salt	3,204	3,176	939	.30
Tridecylbenzenesulfonic acid, sodium salt	30,911	27,884	5,278	.19
All other	7,511	11,577	2,261	.20
Straight chain dodecyl- and tridecylbenzenesulfonates:				
Dodecylbenzenesulfonic acid	3,834	1,213	267	.22
Dodecylbenzenesulfonic acid, sodium salt	48,886	49,079	5,517	.11
Dodecylbenzenesulfonic acid, triethanolamine salt	127	...	...	...
All other benzenesulfonates[3]	39,548	39,949	6,854	.17
Lignosulfonates, total	426,788	412,943	14,762	.04
Lignosulfonic acid, calcium salt	325,574	311,843	10,130	.03
All other	101,214	101,100	4,632	.05
Naphthalenesulfonates, total	9,634	5,521	2,289	.41
Diisopropylnaphthalenesulfonic acid	333	...	...	...
Isopropylnaphthalenesulfonic acid	427	223	120	.54
All other	8,874	5,298	2,169	.41
Other benzenoid surface-active agents, sulfated and sulfonated	6,352	[4] 21,731	[4] 7,325	[4] .34
NONBENZENOID SURFACE-ACTIVE AGENTS				
Total	770,879	654,754	185,010	.28
Not Sulfated or Sulfonated				
Total	461,149	366,605	120,802	.33
Amides, amines, and quaternary ammonium salts, total	162,816	156,104	61,992	.40
Acyclic quaternary ammonium salts, total	17,610	20,048	6,746	.34
Bis(hydrogenated tallow alkyl) dimethylammonium chloride	13,223	15,798	3,909	.25
Hexadecyltrimethylammonium salts	410	434	440	1.01
All other	3,977	3,816	2,397	.63
Amine acetates, total	1,585	1,865	587	.31
(Hydrogenated tallow alkyl) amine acetate	444	...	...	...
All other	1,141	1,865	587	.31
Amine salts, anionic, total	694	559	344	.62
Oleic acid, triethanolamine salt	74	17	8	.47
All other	620	542	336	.62
Amines, alkoxylated, total	11,852	11,421	4,925	.43
(Mixed alkyl)amine, ethoxylated	2,383	2,157	982	.46
(Tallow alkyl)amine, ethoxylated	691	658	550	.84
All other	8,778	8,606	3,393	.39
Fatty acid - alkanolamine condensates, total	71,293	67,340	19,846	.29
Diethanolamine condensates, total	54,499	51,102	15,366	.30
Castor oil acids - diethanolamine condensate	...	12	7	.58

See footnotes at end of table.

TABLE 19A.--*Surface-active agents: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales		
		Quantity[1]	Value	Unit value[2]
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued				
Not Sulfated or Sulfonated--Continued				
Amides, amines, and quaternary ammonium salts--Continued				
Fatty acid - alkanolamine condensates--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Diethanolamine condensates--Continued				
Coconut oil acids - diethanolamine condensates:				
(Amine/acid ratio=2/1)	13,858	11,850	4,196	$0.35
(Amine/acid ratio=1/1)	16,712	15,973	4,541	.28
Lauric acid - diethanolamine condensate	16,194	16,789	4,701	.28
Oleic acid - diethanolamine condensates:				
(Amine/acid ratio=2/1)	1,298	937	224	.24
(Amine/acid ratio=1/1)	1,097	1,084	396	.37
Stearic acid - diethanolamine condensate	1,914	1,931	726	.38
Tall oil acids - diethanolamine condensate	334	...	...	...
Other diethanolamine condensates	3,092	2,526	575	.23
Other alkanolamine condensates, total	16,794	16,238	4,480	.28
Lauric acid - isopropanolamine condensate	1,394	...	...	...
Stearic acid - ethanolamine condensates	269	249	95	.38
All other	15,131	15,989	4,385	.27
Fatty acid - polyamine condensates, total	16,877	15,378	5,494	.36
Oleic acid - diethylenetriamine condensate	1,216	...	...	...
Stearic acid - diethylenetriamine condensate	905	749	469	.63
All other	14,756	14,629	5,025	.34
Fatty acid - polyamine condensates, ethoxylated, total	6,109	4,281	3,476	.81
Oleic acid - ethylenediamine condensate, monoethoxylated	3,357	...	...	...
Stearic acid - ethylenediamine condensate, monoethoxylated	2,517	1,532	1,650	1.08
All other	235	2,749	1,826	.66
Heterocyclic compounds, total	7,443	6,683	3,362	.50
2-Heptadecyl-1-(2-hydroxyethyl)-2-imidazoline	123	120	66	.55
Rosinpolyamidoimidazoline	208	...	...	...
All other	7,112	6,563	3,296	.50
N-Substituted amino acids and polypeptides	4,974	4,350	7,293	1.68
Other amides, amines, and quaternary ammonium salts, total	24,379	24,179	9,919	.41
N-(Coconut oil alkyl)-1,3-propylenediamine	989	1,084	832	.77
N-(9-Octadecenyl)-1,3-propylenediamine	1,400	1,194	471	.39
N-(Tallow alkyl)-1,3-propylenediamine	3,720	3,837	1,762	.46
All other	18,270	18,064	6,854	.38
Carboxylic acid esters, total	132,281	102,689	33,516	.33
Ethylene glycol and diethylene glycol esters, total	5,347	4,904	1,525	.31
Diethylene glycol di- and sesquistearate	285	262	73	.28
Diethylene glycol monolaurate	536	559	172	.31
Diethylene glycol mono-oleate	132	126	30	.24
Diethylene glycol monostearate	1,025	828	209	.25
Ethylene glycol distearate	212	213	73	.34
Ethylene glycol monostearate	888	776	320	.41
All other	2,269	2,140	648	.30
Glycerol esters, total	67,083	56,936	15,336	.27
Complex glycerol esters[5]	4,700	2,754	1,192	.43
Glycerol esters of chemically defined fatty acids, total	21,613	20,217	6,239	.31
Glycerol mono-oleate	940	905	314	.35
Glycerol monostearate	20,246	18,923	5,797	.31
All other	427	389	128	.33
Glycerol esters of mixed fatty acids, total	40,770	33,965	7,905	.23
Glycerol monoester of coconut oil acids	361	449	117	.26
Glycerol monoester of cottonseed oil acids	1,455	...	...	...
All other	38,954	33,516	7,788	.23
Polyethylene glycol esters, total	21,169	14,157	4,911	.35
Polyethylene glycol esters of chemically defined fatty acids, total	15,323	9,218	3,491	.38
Polyethylene glycol dilaurate	596	590	213	.36
Polyethylene glycol dioleate	2,774	611	214	.35
Polyethylene glycol distearate	322	276	103	.37

See footnotes at end of table.

TABLE 19A.--*Surface-active agents: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales		
		Quantity[1]	Value	Unit value[2]
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued				
Not Sulfated or Sulfonated--Continued				
Carboxylic acid esters--Continued				
Polyethylene glycol esters--Continued				
Polyethylene glycol esters of chemically defined fatty acids--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Polyethylene glycol monolaurate	3,887	2,111	833	$0.39
Polyethylene glycol mono-oleate	2,644	1,987	771	.39
Polyethylene glycol monostearate	4,611	3,398	1,276	.38
All other	489	245	81	.33
Polyethylene glycol esters of mixed fatty acids, total	5,846	4,939	1,420	.29
Polyethylene glycol coconut oil ester	350	274	86	.31
Polyethylene glycol rosin ester	...	671	213	.32
Polyethylene glycol tall oil ester	3,596	2,929	670	.23
All other	1,900	1,065	451	.42
Other carboxylic acid esters, total	38,682	26,692	11,744	.44
Anhydrosorbitol tall oil ester	401	...	...	...
Ethoxylated anhydrosorbitol monolaurate	2,600	2,482	1,065	.43
Ethoxylated anhydrosorbitol mono-oleate	3,446	3,135	1,372	.44
Ethoxylated anhydrosorbitol monostearate	1,970	1,906	832	.44
Ethoxylated anhydrosorbitol trioleate	430	415	184	.44
Ethoxylated anhydrosorbitol tristearate	708	987	415	.42
1,2-Propanediol monolaurate	174	179	68	.38
1,2-Propanediol monostearate	1,042	847	270	.32
All other	27,911	16,741	7,538	.45
Ethers, total	119,474	63,139	15,495	.25
Castor oil, ethoxylated	2,593	2,131	756	.35
n-Dodecyl alcohol, ethoxylated	48,947	1,930	900	.47
Mixed primary straight chain alcohols, ethoxylated	17,974	15,233	2,237	.15
9-Octadecenyl alcohol, ethoxylated	2,934	1,966	942	.48
Tridecyl alcohol, ethoxylated	7,524	6,994	1,546	.22
All other	39,502	34,885	9,114	.26
Fatty acids, potassium and sodium salts:				
Coconut oil acids, potassium and sodium salts	289	287	49	.17
Lauric acid, potassium salt	102	100	16	.16
Mixed vegetable fatty acids, potassium salt	494	487	107	.22
Oleic acid, potassium salt	863	708	215	.30
Oleic acid, sodium salt	1,034	1,011	188	.19
Rosin acids, sodium salt	90	90	21	.23
Stearic acid, sodium salt	1,841	1,865	947	.51
Tall oil acids, potassium salt	6,379	6,375	1,090	.17
Tall oil acids, sodium salt	97	81	15	.19
Phosphoric and polyphosphoric acid esters, total	4,890	3,665	2,490	.68
Alcohols, phosphated and polyphosphated, total	3,862	2,651	1,807	.68
2-Ethylhexyl phosphate, sodium salt	229	201	63	.31
Mixed mono- and dialkyl phosphate	324	276	215	.78
Octyl polyphosphate	112	112	44	.39
All other	3,197	2,062	1,485	.72
Other phosphoric and polyphosphoric acid esters	1,028	1,014	683	.67
Other nonbenzenoid surface-active agents, not sulfated or sulfonated[6]	30,499	30,004	4,661	.16
Sulfated and Sulfonated				
Total	309,730	288,149	64,208	.22
Dicarboxylic acid amides, sulfated and sulfonated	1,492	1,521	935	.61
Dicarboxylic acid esters, sulfated and sulfonated, total	5,427	5,515	2,592	.47
Sulfosuccinic acid, bis(2-ethylhexyl)ester	3,993	3,880	1,780	.46
All other	1,434	1,635	812	.50

See footnotes at end of table.

TABLE 19A.--*Surface-active agents: U.S. production and sales, 1964*--Continued

Chemical	Production[1]	Sales		
		Quantity[1]	Value	Unit value[2]
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued				
Sulfated and Sulfonated--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
n-Dodecyl sulfate salts, total	41,097	36,704	12,028	$0.33
n-Dodecyl sulfate, ammonium salt	1,849	1,836	921	.50
n-Dodecyl sulfate, sodium salt	12,777	10,948	5,724	.52
n-Dodecyl sulfate, triethanolamine salt	10,018	8,584	1,928	.22
All other	16,453	15,336	3,455	.23
Fats, oils, and waxes, sulfated and sulfonated, total	31,692	19,522	4,193	.21
Castor oil, sulfonated	8,119	3,799	1,195	.31
Coconut oil, sulfonated	1,686	813	171	.21
Cod oil, sulfonated	2,222	1,702	265	.16
Grease, other than wool, sulfonated	660	625	98	.16
Neat's-foot oil, sulfonated	1,166	491	107	.22
Peanut oil, sulfonated	1,309	1,183	309	.26
Rice-bran oil, sulfonated	187	...	...	...
Soybean oil, sulfonated	214	196	71	.36
Sperm oil, sulfonated	6,948	4,152	795	.19
Tall oil, sulfonated	714	...	...	...
Tallow, sulfonated	7,312	5,383	853	.16
All other	1,155	1,178	329	.28
Other nonbenzenoid surface-active agents, sulfated and sulfonated, total	230,022	224,887	44,460	.20
Butyl sulfo-oleate	1,564	1,499	357	.24
Coconut oil acids - ethanolamine condensate, sulfated, potassium salt	45	45	48	1.07
n-Dodecyl alcohol, ethoxylated and sulfated, sodium salt	579	413	255	.62
Isopropyl sulfo-oleate	1,123	665	194	.29
N-Methyl-N-oleoyltaurine	2,780	2,763	1,473	.53
Oleic acid, sulfonated	4,837	3,607	849	.24
Propyl sulfo-oleate	810	719	184	.26
All other[7]	218,284	215,176	41,100	.19

[1] All quantities are given in terms of 100-percent organic surface-active ingredient.
[2] Calculated from rounded figures.
[3] Includes sales of xylenesulfonic acid, potassium salt, and of straight chain dodecylbenzenesulfonic acid, triethanolamine salt; also includes production and sales of "All other" benzene-, toluene-, and xylenesulfonates, of "All other" straight chain dodecyl- and tridecylbenzenesulfonates, and of all branched chain alkylbenzenesulfonates other than dodecyl- and tridecylbenzenesulfonates.
[4] Includes sales of "All other" alkylphenols, ethoxylated and sulfated.
[5] E.g., glycerol lactate palmitate and glycerol diacetyltartrate monostearate.
[6] Includes production and sales of "All other" fatty acids, potassium and sodium salts.
[7] Includes alcohols, alkanes, amines, ethers, fatty acids, fatty acid amides, fatty acid esters, and quaternary ammonium compounds, sulfated and sulfonated.

Production of benzenoid surface-active agents in 1964 amounted to 1,348 million pounds, or 3.0 percent more than the 1,309 million pounds reported for 1963. Sales of benzenoid surface-active agents in 1964 totaled 1,245 million pounds, valued at $165 million, compared with sales in 1963 of 1,222 million pounds, valued at $160 million. Of the benzenoid surface-active agents for which individual statistics are shown in the table, those produced in largest quantity were lignosulfonic acid, calcium salt, 326 million pounds; branched chain dodecylbenzenesulfonic acid, sodium salt, 320 million pounds; nonylphenol, ethoxylated, 133 million pounds; branched chain dodecylbenzenesulfonic acid, 61 million pounds; dodecylphenol, ethoxylated, 52 million pounds; and straight chain dodecylbenzenesulfonic acid, sodium salt, 49 million pounds.

Production of nonbenzenoid surface-active agents in 1964 amounted to 771 million pounds, or 14.7 percent more than the 672 million pounds reported for 1963. Sales of nonbenzenoid surface-active agents in 1964 totaled 655 million pounds, valued at $185 million, compared with the 567 million pounds, valued at $165 million, reported for 1963. Of the nonbenzenoid surface-active agents for which individual statistics are shown in the table, those produced in largest quantity were n-dodecyl alcohol, ethoxylated, 49 million pounds; glycerol monostearate, 20 million pounds; coconut oil acids - diethanolamine condensate (amine/acid ratio=1/1), 17 million pounds; and lauric acid - diethanolamine condensate, 16 million pounds.

Pesticides and Other Organic Agricultural Chemicals

This section of the report covers pesticides (fungicides, herbicides, insecticides, and rodenticides) and other organic agricultural chemicals, such as plant hormones, seed disinfectants, soil conditioners, and soil fumigants. The data are given in terms of 100-percent active material; they thus exclude such materials as diluents, emulsifiers, synergists, and wetting agents. Statistics on production and sales of pesticides and other organic agricultural chemicals in 1964 are given in table 20A.[1,2]

Production of pesticides and other organic agricultural chemicals in 1964 amounted to 783 million pounds--about 2 percent more than the 763 million pounds reported for 1963. Sales in 1964 were 692 million pounds, valued at $427 million, compared with 651 million pounds, valued at $369 million, in 1963.

The output of cyclic pesticides and other chemicals included in the cyclic group amounted to 585 million pounds in 1964--about 2 percent less than the 597 million pounds produced in 1963.

TABLE 20A.--*Pesticides and other organic agricultural chemicals: U.S. production and sales, 1964*

[Listed below are all pesticides and other organic agricultural 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 20B in pt. III lists all pesticides and other organic agricultural chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	782,749	692,355	427,111	$0.62
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC				
Total	584,698	522,691	316,556	.61
Fungicides, total	80,774	63,115	21,415	.34
Mercury fungicides	1,138	1,132	3,164	2.80
Naphthenic acid, copper salt	1,897	1,860	540	.29
Pentachlorophenol (PCP)	36,901	29,236	5,005	.17
2,4,5-Trichlorophenol and salts	13,662	...	...	...
All other[2]	27,176	30,887	12,706	.41
Herbicides and plant hormones, total	186,344	117,868	124,611	1.06
2-sec-Butyl-4,6-dinitrophenol (DNBP)	4,146	2,691	1,497	.56
2-sec-Butyl-4,6-dinitrophenol, ammonium salt	55	52	108	2.08
Phenoxyacetic acid derivatives:				
(2,4-Dichlorophenoxy)acetic acid (2,4-D)	53,714	25,006	7,573	.30
(2,4-Dichlorophenoxy)acetic acid esters and salts, total	54,366	40,262	15,827	.39
(2,4-Dichlorophenoxy)acetic acid, n-butyl ester	7,242	5,766	2,498	.43
(2,4-Dichlorophenoxy)acetic acid, dimethylamine salt	14,091	9,618	4,094	.43
(2,4-Dichlorophenoxy)acetic acid, ethyl ester	607	749	194	.26
(2,4-Dichlorophenoxy)acetic acid, iso-octyl ester	6,159	6,010	2,414	.40
(2,4-Dichlorophenoxy)acetic acid, isopropyl ester	4,508	...	...	...
All other	21,759	18,119	6,627	.37
(2,4,5-Trichlorophenoxy)acetic acid (2,4,5-T)	11,434	3,729	3,174	.85
(2,4,5-Trichlorophenoxy)acetic acid esters and salts, total	12,963	6,895	5,056	.73
(2,4,5-Trichlorophenoxy)acetic acid, n-butyl ester	1,754	551	439	.80
(2,4,5-Trichlorophenoxy)acetic acid, iso-octyl ester	3,699	2,933	2,514	.86
(2,4,5-Trichlorophenoxy)acetic acid, triethylamine salt	361	414	410	.99
All other	7,149	2,997	1,693	.56
Phenylmercury acetate (PMA)	495	468	2,248	4.80
All other[3]	49,171	38,765	89,128	2.30
Insecticides and rodenticides, total	317,580	341,708	170,530	.50
Aldrin-toxaphene group[4]	105,296	105,551	50,935	.48
Hexachlorocyclohexane (Benzene hexachloride) and lindane[5]	...	11,765	1,934	.16
Organophosphorus insecticides, total	39,661	42,769	51,527	1.20
O,O-Diethyl O-(p-nitrophenyl) phosphorothioate (Parathion)	12,768	10,338	7,349	.71
O,O-Dimethyl O-(p-nitrophenyl) phosphorothioate (Methyl parathion)	18,640	21,713	16,431	.76
All other[6]	8,253	10,718	27,747	2.59
1,1,1-Trichloro-2,2-bis(p-chlorophenyl)-ethane (DDT)	123,709	129,373	18,993	.15
All other[7]	48,914	52,250	47,141	.90

See footnotes at end of table.

[1,2] See also table 20B, pt. III, which lists these products alphabetically and identifies the manufacturers.

TABLE 20A.--*Pesticides and other organic agricultural chemicals: U.S. production and sales, 1964*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	198,051	169,664	110,555	$0.65
Fungicides, total	31,929	32,441	24,050	.74
Dimethyldithiocarbamic acid, ferric salt (Ferbam)	1,838	1,863	735	.39
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	2,251	2,238	859	.38
Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)	6,664	4,039	1,780	.44
All other[8]	21,176	24,301	20,676	.85
Herbicides and plant hormones, total	40,042	34,159	38,839	1.14
Methanearsonic acid, disodium salt	2,167	2,667	1,128	.42
All other[9]	37,875	31,492	37,711	1.20
Insecticides, rodenticides, and soil conditioners and fumigants, total	126,080	103,064	47,666	.46
Bromomethane (Methyl bromide)	16,994	16,042	6,712	.42
1,2-Dibromo-3-chloropropane	5,314	3,910	1,756	.45
Organophosphorus insecticides, total	41,501	30,486	31,839	1.04
Ethyl pyrophosphate (Tetraethyl pyrophosphate) (TEPP)	669	538	450	.84
All other[10]	40,832	29,948	31,389	1.05
All other insecticides, rodenticides, and soil conditioners and fumigants[11]	62,271	52,626	7,359	.14

[1] Calculated from rounded figures.
[2] Includes captan, dichlone, glyodin, sodium pentachlorophenate, tri- and tetrachlorophenols, and others.
[3] Includes dimethylurea compounds, dinitrophenol compounds, endothal, isopropyl carbanilates (IPC and CIPC), maleic hydrazide, triazines, and others.
[4] Includes aldrin, chlordane, dieldrin, endrin, heptachlor, and toxaphene.
[5] Production of gamma isomer content is not publishable because publication would reveal the operations of the individual producers. Sales of gamma isomer content in benzenehexachloride and lindane totaled 3.2 million pounds.
[6] Includes carbophenothion, diazinon, other phosphorothioates and phosphorodithioates, and others.
[7] Includes DDD, endosulfan, methoxychlor, tetradifon and other chlorinated insecticides, 1-naphthyl methylcarbamate, small amounts of rodenticides and insect repellents, hexachlorocyclohexane and lindane (production only), and others.
[8] Includes dodine, mercury compounds, maneb, and others.
[9] Includes CDAA, thiocarbamate and organophosphorus herbicides, sodium dichloropropionate, sodium TCA, and others.
[10] Includes DDVP, ethion, malathion, naled, phorate, and others.
[11] Includes soil conditioners and fumigants, small quantities of rodenticides, and others.

Sales in 1964 were 523 million pounds, valued at $317 million, compared with 498 million pounds, valued at $286 million, in 1963. The chemical in this group which was produced in the greatest quantity in 1964--as in each year since it was first separately reported in 1944--was the insecticide DDT. The output of this product in 1964 amounted to 124 million pounds, compared with 179 million pounds in 1963. The sharp decline in the production of DDT in 1964 was due in part to the large inventory carried over from the preceding year and in part to a sharp decrease in exports.

Production of acyclic pesticides and other acyclic organic agricultural chemicals in 1964 amounted to 198 million pounds--about 19 percent more than the 166 million pounds reported for 1963. Sales in 1964 were 170 million pounds, valued at $111 million, compared with 153 million pounds, valued at $83 million in 1963.

Miscellaneous Chemicals

As used in this report, the term "miscellaneous chemicals" refers to those synthetic organic products that are not included in the use groups covered in the preceding sections of the report. These miscellaneous chemicals, which account for about three-fifths of the output of all synthetic organic chemicals, 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.

Production of miscellaneous chemicals in 1964 amounted to 45.7 billion pounds, or 11.0 percent more than the output of 41.2 billion pounds reported for 1963. Sales of miscellaneous chemicals in 1964 amounted to 20.5 billion pounds, valued at $2.7 billion, compared with 17.5 billion pounds, valued at $2.4 billion, in 1963. Statistics on production and sales of miscellaneous chemicals in 1964 are given in table 21A.[13]

[13] See also table 21B, pt. III, which lists these products alphabetically and identifies the manufacturers.

TABLE 21A.--*Miscellaneous chemicals: U.S. production and sales, 1964*

[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 21B in pt. III lists alphabetically all miscellaneous chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	45,681,343	20,518,575	2,651,276	$0.13
MISCELLANEOUS CHEMICALS, CYCLIC				
Total	1,114,624	603,618	224,330	.37
Benzoic acid salts: Sodium benzoate, tech. and U.S.P	5,614	5,110	1,497	.29
Benzoyl peroxide	5,022	4,832	4,558	.94
Butyl benzoate	577	...	...	...
Cyclopropane	163	162	2,271	14.02
2,6-Di-tert-butyl-p-cresol:				
Food grade	4,316	4,063	2,381	.59
Tech	15,537	12,822	7,044	.55
Ethylmorpholine	879	870	1,011	1.16
Flotation reagents	4,523	...	...	...
Gasoline additives, total[2]	11,333	6,633	6,110	.92
N,N-Di-sec-butyl-p-phenylenediamine	...	2,441	2,133	.87
N,N'-Disalicylidene-1,2-propanediamine	1,403	915	1,610	1.76
All other	9,930	3,277	2,367	.72
Hexamethylenetetramine, tech	42,776	28,755	5,241	.18
Lubricating oil and grease additives, total	466,691	276,352	58,132	.21
Oil soluble petroleum sulfonate, barium salt	34,847	...	...	...
Oil soluble petroleum sulfonate, calcium salt	156,041	83,628	16,518	.20
Oil soluble petroleum sulfonate, sodium salt	127,430	68,396	10,420	.15
All other	148,373	124,328	31,194	.25
Morpholine	15,102	12,638	6,114	.48
Naphthenic acid salts, total[3] [4]	20,427	18,784	6,012	.32
Calcium naphthenate	1,383	1,231	549	.45
Cobalt naphthenate	3,122	2,521	1,637	.65
Iron naphthenate	161	137	48	.35
Lead naphthenate	12,903	12,305	2,709	.22
Manganese naphthenate	1,323	1,250	473	.38
Zinc naphthenate	1,069	906	337	.37
All other	466	434	259	.60
Photographic chemicals:				
Benzotriazole	20	16	84	5.25
p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline) - zinc chloride	119	104	247	2.38
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline) - zinc chloride	63	...	...	...
Pinene	...	10,042	1,398	.14
Tall oil salts, total[3]	9,007	7,964	2,729	.34
Calcium tallate	704	589	191	.32
Cobalt tallate	2,391	2,337	1,242	.53
Iron tallate	519	479	127	.27
Lead tallate	4,262	3,494	859	.25
Manganese tallate	899	862	247	.29
Zinc tallate	58	36	11	.31
All other	174	167	52	.31

See footnotes at end of table.

TABLE 21A.--*Miscellaneous chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Tanning materials, synthetic, total	34,001	32,175	6,616	$0.21
2-Naphthalenesulfonic acid, formaldehyde condensate and salts	29,871	28,086	4,991	.18
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated)	3,318	3,024	994	.33
All other	812	1,065	631	.59
Textile chemicals, other than surface-active agents	1,928	1,144	700	.61
All other miscellaneous cyclic chemicals	476,526	181,152	112,185	.62
MISCELLANEOUS CHEMICALS, ACYCLIC				
Total	44,566,719	19,914,957	2,426,946	.12
Acetaldehyde	1,058,013	100,466	6,613	.07
Acetic acid, synthetic, 100%[5]	1,099,986	234,477	17,025	.07
Acetic acid salts, total	23,154	17,596	3,889	.22
Copper acetate	171	132	91	.69
Potassium acetate	2,853	2,974	444	.15
Sodium acetate	14,649	...	...	...
Zinc acetate	...	322	160	.50
All other	5,481	14,168	3,194	.23
Acetic anhydride, 100%, from all sources	1,399,203	...	...	...
Acetone, total	1,054,756	672,093	31,997	.05
From isopropyl alcohol	761,154	450,771	22,879	.05
All other	293,602	221,322	9,118	.04
Acrylic acid	32,532	4,369	1,471	.34
Acrylonitrile	594,177	311,147	48,808	.16
Adipic acid	...	60,830	14,810	.24
Alcohols, monohydric, unsubstituted, total	7,936,892	4,165,648	261,812	.06
Alcohols C9 or lower, total	7,567,198	4,011,240	236,818	.06
Amyl alcohols	32,179	22,080	3,007	.14
Butyl alcohols, total	799,219	399,164	38,305	.10
Normal (n-Propylcarbinol)	388,540	288,133	28,789	.10
All other	410,679	111,031	9,516	.09
Ethyl alcohol, synthetic[6]	2,071,116	1,163,477	73,325	.06
Hexyl alcohol	5,208	...	...	...
Iso-octyl alcohols	142,042	128,256	14,972	.12
Isopropyl alcohol	1,503,957	538,651	33,541	.06
Methanol, synthetic	2,631,657	1,497,380	42,683	.03
All other	381,820	262,232	30,985	.12
Alcohols C10 or higher, total	369,694	154,408	24,994	.16
Decyl alcohols	64,720	50,431	5,719	.11
Dodecyl alcohol (Lauryl alcohol) (95%)	16,672	...	...	...
1-Hexadecanol (Cetyl alcohol) (95%)	1,777	1,837	496	.27
1-Octadecanol (Stearyl alcohol) (95%)	...	5,321	889	.17
All other	286,525	96,819	17,890	.18
Amines, total	611,134	183,344	57,419	.31
Coconut oil amine	1,157	986	505	.51
Diethylamine	8,260	...	...	...
Dimethylamine	54,129	30,865	6,038	.20
Isopropylamine	7,729	...	...	...
Methylamine, mono-	18,003	18,091	2,971	.16
Octadecylamine	749	830	383	.46
Oleylamine	931	650	274	.42
Tallow amine	3,153	2,858	877	.31
Tallow amine, hydrogenated	9,951	9,572	2,636	.28
Trimethylamine	12,129	5,381	829	.15
All other	494,943	114,111	42,906	.38

TABLE 21A.--*Miscellaneous chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Amyl acetates, 90%+	8,664	7,106	1,193	$0.17
Bis(2-chloroethyl) ether (Dichlorodiethyl ether), all grades	...	8,832	165	.02
2-Butanone (Methyl ethyl ketone)	288,934	276,416	31,157	.11
2-Butanone oxime	2,760	2,675	2,009	.75
2-Butanone peroxide	1,486	1,448	2,492	1.72
Butyl acetates, total	116,593	112,822	11,539	.10
Normal	77,782	75,047	7,804	.10
All other	38,811	37,775	3,735	.10
tert-Butyl hydroperoxide	130	126	249	1.98
tert-Butyl peroxide (Di-tert-butyl peroxide)	1,074	886	1,531	1.73
Butyric acid	...	633	151	.24
Caprolactam (Hexahydro-2H-azepin-2-one)	245,688	121,777	41,065	.34
Carbon disulfide	668,780	601,201	24,191	.04
Cellulose ethers, total	85,805	79,294	43,521	.55
Sodium carboxymethylcellulose, 100%+	44,930	42,454	18,712	.44
All other	40,875	36,840	24,809	.67
Chloral (Trichloroacetaldehyde)	57,614	...	...	...
Chloroacetic acid, mono-	60,511	...	...	...
Chloroacetic acid, ethyl ester	1,734	...	...	...
2-Chloro-N,N-dimethylethylamine (Dimethylaminoethyl chloride) hydrochloride	207	...	...	...
2-Chlorotriethylamine hydrochloride	...	40	49	1.22
Decanoyl peroxide	314	288	423	1.47
Dibutyl fumarate	5,143	4,630	984	.21
Dibutyl maleate	6,052	3,653	791	.22
2-Diethylaminoethanol	...	2,240	1,054	.47
Diethylene glycol	151,475	125,051	13,818	.11
Diethyl malonate (Malonic ester)	...	607	442	.73
Dilauryl 3,3'-thiodipropionate	937	905	895	.99
2-Dimethylaminoethanol	1,257	947	664	.70
Dioctyl maleate	165	...	...	...
Dipropylene glycol	27,101	25,225	3,158	.13
Dodecenylsuccinic anhydride	968	830	390	.47
Epichlorohydrin	...	32,045	7,165	.22
Erucamide	...	429	503	1.17
Ethanolamines, total	173,937	144,107	26,728	.19
2-Aminoethanol (Monoethanolamine)	60,286	48,225	9,770	.20
2,2'-Iminodiethanol (Diethanolamine)	65,521	49,043	8,165	.17
2,2',2''-Nitrilotriethanol (Triethanolamine)	48,130	46,839	8,793	.19
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	...	47,216	7,740	.16
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	36,294	29,154	5,056	.17
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	8,277	1,378	228	.17
Ethyl acetate, 85%+	117,746	101,212	10,366	.10
Ethyl acetoacetate	980	799	348	.44
Ethyl acrylate	90,831	36,177	9,737	.27
Ethylene glycol	1,814,600	1,202,562	110,085	.09
Ethylene oxide	2,163,035	198,209	20,502	.10
Ethyl ether, all grades	87,807	79,680	5,353	.07
Ethyl formate	...	168	56	.33
2-Ethylhexanoic acid (α-Ethylcaproic acid) salts, total	4,346	2,966	3,023	1.02
Calcium 2-ethylhexanoate	...	143	86	.60
Cobalt 2-ethylhexanoate	773	638	649	1.02
Lead 2-ethylhexanoate	274	227	96	.42
Manganese 2-ethylhexanoate	69	56	28	.50
Zinc 2-ethylhexanoate	219	178	102	.57

See footnotes at end of table.

TABLE 21A. --*Miscellaneous chemicals; U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
2-Ethylhexanoic acid (α-Ethylcaproic acid) salts--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
All other	3,011	1,724	2,062	$1.20
2-Ethyl-1-hexyl acrylate	22,590	20,464	6,521	.32
Ethyl propionate	24	...	...	...
Ethyl silicate (Tetraethoxysilane)	4,871	3,924	1,577	.40
Formaldehyde (37% by weight)	2,839,884	1,067,340	27,973	.03
Formic acid, 90%	19,396	18,769	2,597	.14
Formic acid salts	30,572	...	...	...
Fumaric acid	30,145	23,629	3,844	.16
Gluconic acid, tech	3,503	3,269	1,110	.34
Gluconic acid, sodium salt, tech	8,904	7,530	2,285	.30
Halogenated hydrocarbons, total	8,116,012	3,704,041	417,943	.11
1-Bromobutane (n-Butyl bromide)	43	...	...	...
Carbon tetrachloride	535,891	464,547	33,719	.07
Chlorinated paraffins, total	39,887	...	...	...
35%-64% chlorine	29,664	...	...	...
All other	10,223	...	...	...
Chlorodifluoromethane	...	43,380	27,093	.62
Chloroethane (Ethyl chloride)	666,111	252,660	18,322	.07
Chloroform	119,210	98,104	8,199	.08
Chloromethane (Methyl chloride)	134,011	67,199	5,233	.08
Dichlorodifluoromethane	227,873	226,327	65,680	.29
1,2-Dichloroethane (Ethylene dichloride)	2,199,378	445,508	20,671	.05
Dichloromethane (Methylene chloride)	179,602	156,693	14,020	.09
1,2-Dichloropropane (Propylene dichloride)	58,489	32,294	816	.03
Dichlorotetrafluoroethane	13,401	12,629	7,020	.56
Iodomethane (Methyl iodide)	20	10	30	3.00
Tetrachloroethylene (Perchloroethylene)	365,729	335,619	31,704	.09
Trichloroethylene	370,465	370,076	32,122	.09
Trichlorofluoromethane	148,498	139,367	28,504	.20
Vinyl chloride, monomer (Chloroethylene)	1,614,981	597,124	37,895	.06
All other	1,442,423	462,504	86,915	.19
Isoascorbic acid, sodium salt	2,631	2,363	3,141	1.33
Isopropyl acetate	38,048	33,559	3,717	.11
Isopropyl ether	...	2,970	246	.08
Lactic acid, 100%	...	8,069	2,956	.37
Lauroyl chloride	9,353	...	...	...
Lauroyl peroxide	1,427	1,397	1,687	1.21
Linoleic acid salts, total[3]	542	523	182	.35
Calcium linoleate	128	133	28	.21
Cobalt linoleate	231	...	...	...
All other	183	390	154	.39
Lubricating oil additives, total	380,686	165,733	34,511	.21
Phosphorodithioates (Dithiophosphates)	101,928	53,282	13,492	.25
Sulfurized sperm oil	23,484	...	...	...
All other	255,274	112,451	21,019	.19
Maleic anhydride	118,109	67,792	8,271	.12
Mercaptoacetic (Thioglycolic) acid derivatives, total	4,671	4,180	5,709	1.37
2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate)	225	...	...	...
Ammonium mercaptoacetate	1,723	...	...	...
All other	2,723	4,180	5,709	1.37
2-Methoxyethanol (Ethylene glycol monoethyl ether)	73,376	61,819	10,757	.17
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	11,022	3,764	656	.17

See footnotes at end of table.

TABLE 21A.--*Miscellaneous chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	...	343	68	$0.20
Methyl acetate	8,897	...	...	...
4-Methyl-2-pentanone (Methyl isobutyl ketone)	158,607	134,822	17,131	.13
Oleic acid salts, total[7]	339	327	280	.86
Copper oleate	52	35	14	.40
All other	287	292	266	.91
Oxalic acid	22,935	19,655	2,778	.14
Oxalic acid salts	4,677	4,469	1,238	.28
Palmitic acid salts, total	245	...	...	...
Aluminum palmitate	86	...	...	...
Zinc palmitate	159	...	...	...
Palmitoyl chloride	137	...	...	...
Pentaerythritol	69,296	64,208	15,517	.24
Pentaerythritol tetranitrate	4,776	2,668	2,108	.79
Phosgene (Carbonyl chloride)	244,965	...	...	...
Phosphorus acid esters, not elsewhere specified	9,749	8,308	4,184	.50
Polyethylene glycol	39,120	33,650	8,220	.24
Polypropoxy ethers, total	173,224	157,167	31,841	.20
Glycerol tri(polyoxypropylene) ether	117,120	110,347	21,775	.20
All other	56,104	46,820	10,066	.21
Polypropylene glycol	95,987	...	...	...
Propionic acid	39,117	11,572	1,302	.11
Propionic acid salts:				
Calcium propionate	11,404	...	...	...
Sodium propionate	5,357	...	...	...
Propylene glycol (1,2-Propanediol)	236,357	211,454	22,593	.11
Propylene oxide	569,060	60,319	7,583	.13
Sarcosine and salt	1,566	...	...	...
Sequestering agents, total	34,883	23,839	9,031	.38
(Diethylenetrinitrilo)pentaacetic acid, sodium salt	1,541	1,300	411	.32
N,N-Dihydroxyethylglycine, sodium salt	150	124	84	.68
(Ethylenedinitrilo)tetraacetic acid (Ethylenediamine-tetraacetic acid)	5,706	2,968	1,108	.37
(Ethylenedinitrilo)tetraacetic acid, disodium salt	680	...	...	...
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	19,010	11,755	4,196	.36
(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt	3,294	2,814	1,320	.47
All other	4,502	4,878	1,912	.39
Sodium formaldehydesulfoxylate	4,673	4,778	1,032	.22
Sodium methoxide (Sodium methylate)	5,440	5,240	1,604	.31
Stearic acid salts, total[8]	31,884	29,906	10,830	.36
Aluminum stearates, total	5,014	4,630	1,716	.37
Aluminum distearate	3,639	3,334	1,236	.37
Aluminum monostearate	855	816	310	.38
Aluminum tristearate	520	480	170	.35
Calcium stearate	11,046	10,427	2,951	.28
Lead stearate	411	359	140	.39
Lithium stearate	339	361	184	.51
Magnesium stearate	1,326	1,367	531	.39

See footnotes at end of table.

TABLE 21A.--*Miscellaneous chemicals: U.S. production and sales, 1964*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Stearic acid salts--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Zinc stearate	9,982	9,880	3,948	$0.40
All other	3,766	2,882	1,360	.47
Tallow amide, hydrogenated	824	796	298	.37
Tetraethyllead	586,956	571,565	304,715	.53
Triethylene glycol	44,539	35,610	6,137	.17
Urea in compounds or mixtures (100% basis), total	[9] 2,419,764	2,296,736	[10] 97,813	.04
In feed compounds	238,872	257,925	11,325	.04
In liquid fertilizer	869,879	838,043	37,441	.04
In solid fertilizer	1,092,287	1,058,971	42,826	.04
All other	218,726	141,797	6,221	.04
Vinyl acetate, monomer	440,331	217,310	24,731	.11
Zinc formaldehydesulfoxylate	1,380	1,405	631	.45
All other miscellaneous acyclic chemicals	7,543,372	1,813,971	486,933	.27

[1] Calculated from rounded figures.
[2] Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given in the section "Plasticizers."
[3] Quantities are given on the basis of solid naphthenate, tallate, or linoleate content.
[4] Statistics exclude production and sales of copper naphthenate. Statistics on copper naphthenate are given in the section "Pesticides and Other Organic Agricultural Chemicals."
[5] In addition, sales of recovered acetic acid totaled 70,784 thousand pounds, valued at 3,992 thousand dollars.
[6] Statistics on production of ethyl alcohol from natural sources by fermentation are issued by the Alcohol Tax Unit, U.S. Internal Revenue Service.
[7] Statistics exclude production and sales of potassium and sodium oleate. Statistics on these oleates are included in the section "Surface-Active Agents."
[8] Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included in the section "Surface-Active Agents."
[9] Production of urea in primary solution totaled 2,487,279 thousand pounds.
[10] Includes estimated values for sales of urea in nitrogen compounds.

The total output of miscellaneous cyclic chemicals in 1964 was 1.1 billion pounds, or 17.0 percent more than the output of 953 million pounds reported for 1963. Sales in 1964 totaled 604 million pounds, valued at $224 million, compared with 477 million pounds, valued at $191 million, in 1963. The most important subgroup of cyclic compounds was the lubricating oil additives, the output of which was 467 million pounds in 1964.

Total production of miscellaneous acyclic chemicals in 1964 was 44.6 billion pounds--10.9 percent more than the output of 40.2 billion pounds reported for 1963. Sales in 1964 totaled 19.9 billion pounds, valued at $2.4 billion, compared with 17.0 billion pounds, valued at $2.2 billion, in 1963.

Production of alcohols and halogenated hydrocarbons in 1964 each exceeded that of any of the use groups of synthetic organic chemicals except cyclic intermediates and plastics and resin materials. Production of monohydric, unsubstituted alcohols totaled 7.9 billion pounds in 1964, about 10.8 percent more than in 1963. Alcohols are used as solvents, intermediates, and antifreeze materials, and for other purposes. Production of halogenated hydrocarbons totaled 8.1 billion pounds in 1964, or 12.9 percent more than the 7.2 billion pounds reported for 1963. Halogenated hydrocarbons are used as solvents, intermediates, refrigerants, and aerosol propellants, and for other purposes.

Individual chemicals the output of which exceeded 1 billion pounds in 1964 were formaldehyde (2.8 billion pounds, compared with 2.5 billion pounds in 1963); synthetic methanol (2.6 billion pounds, compared with 2.3 billion pounds); urea (2.4 billion pounds, compared with 2.2 billion pounds); ethylene oxide (2.2 billion pounds, compared with 1.9 billion pounds); dichloroethane (2.2 billion pounds, compared with 1.8 billion pounds); ethyl alcohol (2.1 billion pounds, compared with 2.0 billion pounds); ethylene glycol (1.8 billion pounds, compared with 1.7 billion pounds); vinyl chloride (1.6 billion pounds, compared with 1.4 billion pounds); isopropyl alcohol (1.5 billion pounds in each year); and acetic anhydride (1.4 billion pounds, compared with 1.3 billion pounds).

PART III. ALPHABETICAL LIST OF INDIVIDUAL PRODUCTS, BY GROUPS, AND NAMES OF MANUFACTURERS

This section of the report consists of (1) a series of tables that supplement the statistical information given in parts I and II, and (2) a Directory of Manufacturers. The tables with numbers that include the letter "B" supplement the tables in part I or part II with numbers that include the letter "A"; for example, table 8B in part III supplements table 8A in part II.

Each table in part III lists alphabetically the individual items in each group for which data on production or sales were reported for 1964. The tables include data on only those chemicals for which the volume of production or sales in 1964 exceeded 1,000 pounds or for which the value of sales exceeded $1,000. Where separate statistics for an item are given in the tables in part I or part II, an asterisk (*) precedes the name of the item in the tables in part III. The manufacturers of each product are indicated by identification codes which are listed in the Directory of Manufacturers (table 22). A few companies, however, have specifically requested that they not be identified as having produced or sold certain items. These manufacturers are indicated by a small letter "x" in the tables.

Tar Crudes

TABLE 4B.--*Tar crudes for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Tar crudes for which separate statistics are given in table 4A are marked below with an asterisk (*); products not so marked do not appear in table 4A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. Table 22 identifies all U.S. producers of tar crudes (except producers that report to the Division of Bituminous Coal, U.S. Bureau of Mines)]

Product	Manufacturers' identification codes (according to list in table 22)[1]
*Crude light oil	CBT.[2]
Light-oil distillates:	
*Benzene, specification and industrial grades	ACY, KPP.
*Toluene, specification and other grades	ACY, KPP.
*Xylene, all grades	ACY, KPP.
*Solvent naphtha	ACY, KPT, NEV, PAI.
*All other light-oil distillates	ACP, NEV, PAI.
*Pyridine crude bases	ACP, KPT.
*Naphthalene, crude, solidifying at--	
*Less than 74° C	COP, NEV.
*74° C. to less than 76° C	KPT.
*76° C. to less than 79° C	ACP, KPT, PRD, RIL.
Crude tar-acid oils having a tar-acid content of--	
*5% to less than 24%	ACP, RIL.
*24% to 51%	ACP, KPT, RIL.
Cresylic acid, crude	ACP, KPT, PRD.
*Creosote oil (Dead oil):	
*Distillate as such	ACP, ACY, CBT, COP, KPT, RIL, WTC.
*Creosote in coal-tar solution	ACP, HUS, JEN, KPT, RIL.
All other distillate products	ACP, KPT, NEV, PAI.
*Tar, road	ACP, KPT, RIL, WTC.
*Tar for other uses:	
Crude	KPT, RIL.
Refined	ACP, KPT, RIL, RUR.
Pitch of tar:	
*Soft and medium (water softening points less than 110° F., and 110° F. to 160° F.).	ACP, CBT, COP, JEN, KPT, RIL.
*Hard (water softening point above 160° F.)	ACP, COP, KPT, RIL.
Pitch-of-tar coke and pitch emulsion	JEN, RIL.

[1] Does not include manufacturers' identification codes for producers that report to the Division of Bituminous Coal, U.S. Bureau of Mines. These producers are listed in the U.S. Bureau of Mines Mineral Industry Survey, May 17, 1965, entitled "Coke Producers in the U.S. in 1964."

[2] Crude light oil production and sales of this company are not included with the U.S. Bureau of Mines figures given in table 4A.

Crude Products From Petroleum and Natural Gas for Chemical Conversion

TABLE 5B.--*Crude products from petroleum and natural gas for chemical conversion for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Crude products from petroleum and natural gas for chemical conversion for which separate statistics are given in table 5A are marked below with an asterisk (*); products not so marked do not appear in table 5A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
AROMATICS AND NAPHTHENES	
*Alkyl aromatics, distillates, and solvents	ACC, DUP, ELP, ENJ, FG, GOC, JCC, MOC, MON, OMC, PLC, SM, SOG, USI, VPT, WYN.
*Benzene (except motor grade):	
*Benzene, 1°	APR, ASH, ATR, CCP, CSD, DLH, DXS, ELP, ENJ, GOC, GRS, MOC, MON, PLC, PRO, RIC, SHO, SM, SNT, SOG, SUN, TOC, TX, VPT.
*Benzene, 2°	AMO, CO, DOW, SHO, SKO, SOC, UCC.
*Cresylic acid, crude	ATR, PRD, RIC, SHO, SOI.
*Naphthalene, all grades	ASH, COL, CSO, MON, SUN, TID.
*Naphthenic acids:	
Acid number lower than 150	RIC, SUN, TX.
*Acid number 150-199	PRO, RIC, SM, SOC, SUN.
Acid number 200-224	PRO, RIC, SM, SOC.
Acid number 225-249	NOP, PRO, RIC, SM, SOC.
Sodium carbolate and phenate, crude	ATR, GOC, SIN.
*Toluene:	
*Nitration grade, 1°	ASH, ATR, CSD, DLH, ENJ, GOC, GRS, LEN, MOC, MON, PLC, PRO, RIC, SHC, SHO, SIN, SNT, SOG, SUN, TOC, TX, UCC, VPT.
*Pure commercial grade, 2°	DOW, MON, RIC.
Solvent grade	CO, FG.
All other	CSD, DXS, ELP, GRS, RIC, SHO, SM, SOC, SUN, TOC, TX, VEL.
*Xylenes, mixed:	
Aviation grade	CSD, CSO, SOG.
*3°	ASH, ATR, DLH, MON, PRO, SNT.
5°	MOC, SIN.
All other	AMO, CCP, CSD, ENJ, GRS, LEN, MON, RIC, SHO, SM, SOC, SUN, TOC, TX, VPT.
All other aromatics and naphthenes	ACC, ELP, ENJ, JCC, LEN, PAS, PLC, SM.
ALIPHATIC HYDROCARBONS	
C_1 hydrocarbon: Methane	CCP, MOC, PAN.
*C_2 hydrocarbons:	
*Acetylene	ACY, DOW, DUP, MNO, MON, UCC, x.
*Ethane	ACU, CCP, ENJ, MOC, MON, PAN, SHC, SHO, SM, SOI, TX, UCC, USI.
*Ethylene	CCP, DOW, DUP, EKX, ELP, ENJ, GOC, JCC, KPP, MOC, MON, OMC, PET, PLC, RIC, SHC, SM, SNO, TX, UCC, USI.
C_2 and C_3 hydrocarbons, mixed	GYR, PLC, SM.
*C_3 hydrocarbons:	
*Propane	ASH, CCP, CSD, DXS, ENJ, GRS, MOC, OMC, PAN, PLC, SHO, SIN, SM, SNT, SOG, SOI, SPI, UCC, UOC, USI.
Propane-propylene mixture	GOC, TX.
*Propylene	ASH, CCP, DOW, EKX, ELP, ENJ, GOC, JCC, MOC, MON, PET, PLC, RIC, SHC, SHO, SIN, SIO, SM, SOG, SOI, SPI, SUN, UCC, UOC.
*C_4 hydrocarbons:	
*1,3-Butadiene, grade for rubbers (elastomers)	CPY, DOW, ELP, ENJ, FRS, GGC, ILC, MON, PET, PLC, PTT, SHC, SM, SOC, SPI, TID, TUS, UCC.
*Butadiene and butylene fractions	DOW, GYR, PLC, SHC, SHO, SIN, SOC.

TABLE 5B.--*Crude products from petroleum and natural gas for chemical conversion for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Product	Manufacturers' identification codes (according to list in table 22)
ALIPHATIC HYDROCARBONS--Continued	
*C_4 hydrocarbons--Continued	
*n-Butane	CCP, CSD, DXS, ELP, MOC, OMC, PAN, PLC, SHM, SHO, SM, SNT, SOC, SOI, UCC, USI.
1-Butene	PLC, PTT, SPI.
2-Butene	MON, PLC, PTT.
*1-Butene and 2-butene mixture	AMO, CCP, ENJ, GOC, MOC, PLC, PRO, PTT, SHO, SOC, SOI, SPI, TX.
*Isobutane	CCP, DXS, ELP, MOC, OMC, PAN, PLC, SHO, SOI, UCC, USI.
*Isobutylene	CCP, ENJ, PRO, PTT, SIN.
All other	APR, JCC, MON, PLC, SM, SOI, UCC, USI.
*C_5 hydrocarbons:	
Isopentane (2-Methylbutane)	CCP, CSD, ENJ, PLC, SHO, SM, SOI, UCC.
*Isoprene (2-Methyl-1,3-butadiene)	ENJ, GYR, PLC, SHC.
n-Pentane	APR, PLC.
All other	ENJ, GYR, MOC, MON, PAS, PET, PLC, SHC, USI.
C_6 hydrocarbons:	
Diisopropyl (2,3-Dimethylbutane)	PLC.
*Hexane	ENJ, PLC, PRO, SOG.
Neohexane (2,2-Dimethylbutane)	PLC.
All other	APR, PLC.
C_7 hydrocarbons:	
*n-Heptane	CSD, EKX, ENJ, PLC, PRO.
*Heptenes, mixed	ENJ, GOC, HOU, SIN, SOG, TID.
All other	PLC.
C_8 hydrocarbons:	
*Diisobutylene (Diisobutene)	ATR, PTT, TX.
n-Octane	ENJ, PLC.
2,2,4-Trimethylpentane (Iso-octane)	PLC.
All other	PLC.
Hydrocarbons, C_9 and above:	
1-Dodecene	CO.
Eicosane	ATR.
*Nonene (Tripropylene)	AMO, ATR, ENJ, GOC, PAS, PRO, RIC, SUN.
Pentadecene	CO.
*Polybutene	CSD, SOC, SOI.
*Tetrapropylene	DXS, ENJ, GOC, MOC, PRO, RIC, SNT, SOC, SUN, TX.
Tridecene concentrate	ENJ.
Triisobutylene	ATR.
All other	ENJ, GOC, HOU, KEN, PLC, SOC, TID, UCC, x.
*Hydrocarbon derivatives:	
1-Butanethiol	PAS.
tert-Butyl mercaptan (2-Methyl-2-propanethiol)	PAS, PLC.
Di-tert-butyl disulfide	PLC.
tert-Dodecyl mercaptan	PAS.
Ethyl mercaptan (Ethanethiol)	CSD, PAS, SOC.
Isopropyl mercaptan	PAS, SOC.
Methyl mercaptan (Methanethiol)	ACC, PAS.
tert-Octyl mercaptan	PAS, PLC.
n-Propyl mercaptan (1-Propanethiol)	PAS.
All other	EKX, PAS, PLC, SOC.
All other aliphatic hydrocarbons: Alpha olefins, molecular weight ranges:	
C_6-C_7	ATR, GOC, GYR, PLC, SOC.
C_8-C_{10}	ATR, ENJ, GOC, SOC.
C_{11}-C_{15}	ENJ, GOC, SOC.
C_{16}-C_{20}	ENJ.
All other	EKX, GOC, SOC.

Cyclic Intermediates

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Cyclic intermediates for which separate statistics are given in table 7A are marked below with an asterisk (*); cyclic intermediates not so marked do not appear in table 7A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
Aceanthryleno[2,1-a]aceanthrylene-5,13-dione	ICI.
8-Acetamido-1-(4-acetamido-2-hydroxy-5-nitrophenylazo)-2-naphthol.	TRC.
3-Acetamido-6-aminobenzenesulfonic acid	ICI.
5-Acetamido-2-aminobenzenesulfonic acid	G.
3-(2-Acetamido-4-aminophenylazo)-1,5-naphthalenedisulfonic acid.	TRC.
p-Acetamidobenzoic acid	DUP.
2-Acetamido-3-chloroanthraquinone	G, ICI.
*Acetanilide, tech	CTN, EKT, MRK, SAL, SW.
Acetoacetanilide	FMP, UCC.
o-Acetoacetanisidide	FMP, UCC.
o-Acetoacetotoluidide	FMP, UCC.
Acetoacetoxylidide	FMP.
1'-Acetonaphthone	GIV.
Acetone phenylhydrazone	DUP.
Acetophenone, tech	ACP, UCC.
p-Acetotoluidide	ACY.
N-Acetylanthranilic acid	DUP.
p-Acetylbenzenesulfonamide	LIL.
p-Acetylbenzenesulfonic acid, sodium salt	LIL.
p-Acetylbenzenesulfonylurethane	LIL.
N^4-Acetylsulfamethoxypyridazine	ACY.
N-Acetylsulfanilyl chloride	ACY, CTN, MRK.
Adenine	ARA.
Alkylbenzene	ATR, MON, UCC.
Alkylphenol, mixed	G.
α-dl-5-Allyl-6-imino-1-methyl-5-(1-methyl-2-pentynyl)-barbituric acid.	LIL.
Aminoaceanthryleno[2,1-a]aceanthrylene-5,13-dione	ICI.
*4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	DUP, G, NAC, TRC.
3'-Aminoacetophenone	SDH.
*5-Amino-2-(p-aminoanilino)benzenesulfonic acid	CMG, G, TRC, YAW.
1-Amino-4-(3-amino-4-sulfoanilino)-2-anthraquinonesulfonic acid.	TRC.
1-Amino-4-(4-amino-3-sulfoanilino)-2-anthraquinonesulfonic acid.	TRC.
5-Amino-2-anilinobenzenesulfonic acid	NAC.
*2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	CMG, DUP, TRC, VPC.
3-Amino-p-anisanilide	PCW.
5-Amino-2-o-anisidinobenzenesulfonic acid	TRC.
*1-Aminoanthraquinone and salt	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
*2-Aminoanthraquinone and salt	ACY, DUP, G, NAC, TRC.
1-Amino-2-anthraquinonecarboxylic acid	DUP.
1-Amino-2-anthraquinonesulfonic acid	G.
5(and 8)-Amino-1-anthraquinonesulfonic acid	ICI.
N-(4-Amino-1-anthraquinonyl)anthranilic acid	G.
N-(5-Amino-1-anthraquinonyl)anthranilic acid	DUP.
1-Amino-N^1-anthraquinonyl-2-anthraquinonecarboxamide	G.
4-Aminoantipyrine	SDW.
*6-Amino-3,4'-azodi(benzenesulfonic acid)	AAP, CMG, DUP, G, NAC, TRC.
8-Aminobenz[a]acridin-7(12H)-one	NAC.
*1-Amino-4-benzamidoanthraquinone	ACY, MAY, NAC, TRC.
*1-Amino-5-benzamidoanthraquinone	G, ICI, NAC, TRC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
6-[p-(p-Aminobenzamido)benzamido]-1-naphthol-3-sulfonic acid.	DUP.
*6-(p-Aminobenzamido)-1-naphthol-3-sulfonic acid	DUP, G, NAC, TRC, VPC.
3'-Aminobenzanilide	DUP.
4'-Aminobenzanilide	G, TRC.
*2-Amino-p-benzenedisulfonic acid [SO_3H=1]	DUP, G, NAC, TRC.
o-Aminobenzenethiol	GAM.
2-Aminobenzimidazole	EK.
5-Amino-2(3H)-benzimidazolone	DUP.
p-Aminobenzoic acid, tech	DUP, G.
p-Aminobenzoic acid, diethylaminoethyl ester (Procaine)	SDW.
2-Amino-6-benzothiazolecarboxylic acid	DUP.
1-Amino-2-bromo-4-(4'-aminoanilino)anthraquinone-5(and 8)-sulfonic acid.	ICI.
5(and 8)-Amino-8(and 5)-bromo-1,6(and 1,7)-anthraquinone-disulfonic acid.	TRC.
*1-Amino-4-bromo-2-anthraquinonesulfonic acid and sodium salt.	AAP, DUP, G, ICI, NAC, TRC.
1-Amino-4-bromo(benzamido)anthraquinone	AAP.
2-Amino-1-bromo-3-chloroanthraquinone	ICI, MAY.
*1-Amino-2-bromo-4-hydroxyanthraquinone	AAP, DUP, ICC, TRC.
1-Amino-4-bromo-2-methylanthraquinone	ICI.
1-Amino-2-bromo-4-(p-toluidino)anthraquinone	G, ICI.
1-Amino-2-chloroanthraquinone	AAP.
*1-Amino-5-chloroanthraquinone	ACY, DUP, ICI, MAY, NAC, TRC.
1-Amino-8-chloroanthraquinone	DUP, NAC.
2-Amino-1-chloroanthraquinone	DUP, G.
*2-Amino-3-chloroanthraquinone	G, ICI, MAY.
4-Amino-6-chloro-m-benzenedisulfonamide	ABB.
4-Amino-6-chloro-m-benzenedisulfonamide hydrochloride	ABB.
2-Amino-5-chlorobenzophenone	ICI.
2-Amino-6-chlorobenzothiazole hydrochloride	DUP.
*o-(3-Amino-4-chlorobenzoyl)benzoic acid	AAP, G, ICI, MAY.
2-Amino-5-chloro-p-cumenesulfonic acid	SW.
2-Amino-5-chloro-4-ethylbenzenesulfonic acid	ACY.
1-Amino-2-chloro-4-hydroxyanthraquinone	AAP.
2-Amino-4-chloro-6-nitrophenol	CMG.
2-Amino-4-chlorophenol	G, MEE, NAC.
*6-Amino-4-chloro-1-phenol-2-sulfonic acid	CMG, NAC, TRC.
2-Amino-6-chloropyrazine	ACY.
3-Amino-6-chloropyridazine	ACY.
*6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=1]	ACY, DUP, HSC, NAC, SW.
*2-Amino-5-chloro-p-toluenesulfonic acid [SO_3H=1]	ACY, HSC, SW.
2-Amino-p-cresol	TRC.
*1-Amino-2,4-dibromoanthraquinone	AAP, DUP, G, ICI, NAC, TRC.
1-Amino-2,4-dibromoanthraquinone-5(and 8)-sulfonic acid	ICI.
4'-Amino-2',5'-diethoxybenzanilide	G.
5-Amino-2-(2,3-dihydro-2-oxobenzimidazol-5-ylamino)-benzenesulfonic acid.	DUP.
4-Amino-1,3-dihydroxyanthraquinone	G, TRC.
2-Amino-4-(dimethylbenzyl)phenol	TRC.
3-Amino-9-ethylcarbazole	AAP.
p-Amino-N-ethyl-N-1-naphthylbenzamide	G.
2-Amino-N-ethyl-5-nitrobenzenesulfonanilide	G.
Aminoethylpiperazine	UCC.
1-Amino-4-hydroxyanthraquinone	AAP, G.
2-Amino-3-hydroxyanthraquinone	G, NAC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
8-[4-(8-Amino-1-hydroxy-3,6-disulfo-2-naphthylazo)-5-methoxy-o-tolylazo]-1-naphthol-3,6-disulfonic acid, benzenesulfonate.	TRC.
1-Amino-4-[m-(2-hydroxyethylsulfonyl)anilino]-2-anthraquinonesulfonic acid.	DUP.
3'-Amino-2'-hydroxy-5'-nitroacetanilide	TRC.
2-(2-Amino-5-hydroxy-7-sulfo-1-naphthylazo)-5-nitrobenzoic acid.	TRC.
1-(6-Amino-1-hydroxy-3-sulfo-2-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
5-Aminoisophthalic acid	G.
2-Amino-N-isopropyl-1-phenol-4-sulfonamide	TRC.
4-Amino-3-(β-methanesulfanamidoethyl)-N,N-diethylaniline hydrochloride.	EKT.
N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide.	DUP.
5-Amino-6-methoxy-2-naphthalenesulfonic acid	NAC, TRC.
m-(4-Amino-3-methoxyphenylazo)benzenesulfonic acid	DUP, TRC.
8-Amino-6-methoxyquinoline	SDW.
1-Amino-2-methoxy-4-(p-toluenesulfonamido)anthraquinone	AAP, G.
3-(4-Amino-5-methoxy-o-tolylazo)-1,5-naphthalenedisulfonic acid.	TRC.
7-(4-Amino-5-methoxy-o-tolylazo)-1,3-naphthalenedisulfonic acid.	TRC.
8-(4-Amino-5-methoxy-o-tolylazo)-1-naphthol-3,6-disulfonic acid, benzenesulfonate.	TRC.
*4'-Amino-N-methylacetanilide	CMG, G, NAC.
1-Amino-2-methylanthraquinone	DUP, ICI.
2-Amino-5-(6-methyl-2-benzothiazolyl)benzenesulfonic acid	G.
4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stilbenedisulfonic acid.	TRC.
2-Amino-5-methylpyridine	RIL.
2-Amino-6-methylpyridine	NEP, RIL.
2-Amino-4-methylpyrimidine (2-Amino-4-methyldiazine)	ACY.
2-Amino-4-(methylsulfonyl)phenol	NAC, TRC.
2-Amino-5-methyl-1,3,4-thiadiazole	ACY.
1-Amino-2-methyl-4-(p-toluidino)anthraquinone	ICI.
1-Aminonaphth[2,3-c]acridan-5,8,14-trione	DUP.
4-Aminonaphth[2,3-c]acridan-5,8,14-trione	DUP.
6-Aminonaphth[2,3-c]acridan-5,8,14(13H)trione	G.
*2-Amino-1,5-naphthalenedisulfonic acid	ACY, SDH, SW.
*3-Amino-1,5-naphthalenedisulfonic acid (Cassella acid)	G, NAC, TRC.
3-Amino-2,7-naphthalenedisulfonic acid	TRC.
4-Amino-1,5-naphthalenedisulfonic acid	NAC.
4-Amino-1,6-naphthalenedisulfonic acid	DUP.
*6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	ACY, DUP, G, NAC, TRC.
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)	ACY, DUP, G, NAC, TRC.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid)	DUP.
*2-Amino-1-naphthalenesulfonic acid (Tobias acid)	ACY, HSC, IMP, SW.
4(and 5)-Amino-1-naphthalenesulfonic acid	ACY, TRC.
5-Amino-1-naphthalenesulfonic acid (Laurent's acid)	DUP.
*5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)	ALL, DUP, G, NAC, TRC.
*5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed).	ALL, DUP, G, NAC, TRC.
*6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	KLS, NAC, SNA.
*8-Amino-1-naphthalenesulfonic acid (Peri acid)	DUP, NAC, SDC, TRC.
*8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)	ALL, DUP, G, NAC, TRC.
7-Amino-1,3,6-naphthalenetrisulfonic acid	DUP.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid)	DUP, NAC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
4-Amino-1,3,5-naphthalenetrisulfonic acid, 4,5-sultam, trisodium salt.	DUP.
8-Amino-1-naphthoic acid	G.
5-Amino-1-naphthol	NAC.
5(and 8)-Amino-2-naphthol	G.
*8-Amino-2-naphthol	ALL, CMG, DUP, G, TRC, VPC.
8-Amino-1-naphthol-3,6-disulfonic acid, benzenesulfonate	TRC.
7-Amino-1-naphthol-3,6-disulfonic acid (2R acid), mono-sodium salt.	DUP, NAC.
*8-Amino-1-naphthol-3,6-disulfonic acid (H acid), mono-sodium salt.	DUP, MON, NAC.
8-Amino-1-naphthol-5,7-disulfonic acid (Chicago acid) (2S acid), monosodium salt.	DUP, NAC.
*1-Amino-2-naphthol-4-sulfonic acid (1,2,4-acid)	ACY, G, NAC, TRC, VPC.
*6-Amino-1-naphthol-3-sulfonic acid (J acid), sodium salt	CMG, DUP, G, NAC, TRC.
*7-Amino-1-naphthol-3-sulfonic acid (Gamma acid), sodium salt.	DUP, G, NAC, TRC.
8-Amino-1-naphthol-5-sulfonic acid (S acid), sodium salt	NAC.
3-Amino-5-(m-nitrobenzamido)-p-toluenesulfonic acid	G.
*2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	ACY, DUP, G, NAC, TRC.
4-Amino-3-nitrobenzoic acid	DUP.
*2-Amino-4-nitrophenol	DUP, G, NAC, TRC.
2-Amino-5-nitrophenol	NAC.
4-Amino-2-nitrophenol	ACY.
l-2-Amino-1-(p-nitrophenyl)-1,3-propanediol	PD.
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	DUP, NAC, TRC.
2-Amino-5-nitrothiazole	ACY, EKT.
3'-Aminooxanilic acid	CMG.
4'-Aminooxanilic acid	DUP.
3-Amino-2-oxazolidinone	NOR.
p-Aminophenethyl alcohol	EKT.
5-Amino-2-o-phenetidinobenzenesulfonic acid, sodium salt	NAC.
o-Aminophenol	FMT.
p-Aminophenol	ABB, DUP, SDC.
*2-Amino-1-phenol-4-sulfonamide	CMG, DUP, NAC, TRC, VPC.
2-Amino-1-phenol-4-sulfonanilide	TRC.
*2-Amino-1-phenol-4-sulfonic acid	AAP, CWN, DUP, NAC, TRC.
m-(p-Aminophenylazo)benzenesulfonic acid	AAP, TRC.
*p-(p-Aminophenylazo)benzenesulfonic acid	ACY, CMG, DUP, G, NAC, TRC.
7-(4-Aminophenylazo)-1,3-naphthalenedisulfonic acid	TRC.
5-(p-Aminophenylazo)salicylic acid	VPC.
2-(p-Aminophenyl)-6-methylbenzothiazole	DUP, NAC.
2-(p-Aminophenyl)-6-methyl-7-benzothiazolesulfonic acid and salt.	DUP, TRC.
1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid	VPC.
2-Aminopyridine	NEP, RIL.
4-Aminopyridine	RIL.
2-Aminopyrimidine	ACY.
3-Aminoquinoline	EK.
5-Aminosalicylic acid	AAP, TRC.
N-(4-Amino-3-sulfoanthraquinonyl)anthranilic acid	G.
3'-(3-Amino-4-sulfophenylsulfamoyl)-3"-sulfamoyl-3-phthalocyaninesulfonic acid, copper derivative.	DUP.
2-Aminothiazole	ACY, MRK.
3-Amino-p-toluamide	SDH.
1-Amino-4-(p-toluenesulfonamido)-2-anthraquinonesulfonic acid.	AAP.
1-Amino-4-(p-toluenesulfonamido)-2-anthraquinonesulfonic acid, sodium salt.	DUP, G.
5-Amino-o-toluenesulfonanilide	G.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
*4-Amino-m-toluenesulfonic acid [SO_3H=1]	ACY, DUP, G, SDH, SNA.
*6-Amino-m-toluenesulfonic acid [SO_3H=1]	DUP, HSC, NAC, SW.
5-Amino-2-(p-toluidino)benzenesulfonic acid	DUP, NAC, TRC.
m-(4-Amino-3-tolylazo)benzenesulfonic acid	TRC.
3-(4-Amino-o-tolylazo)-1,5-naphthalenedisulfonic acid	TRC.
4-(4-Amino-m-tolylazo)-m-toluenesulfonic acid	NAC.
*16-Aminoviolanthrone	ACY, G, TRC.
*2-Amino-3,5-xylenesulfonic acid [SO_3H=1]	DUP, NAC, SDH, STG, WJ.
5-Amino-2,4-xylenesulfonic acid	DUP.
4-Amino-2,6-xylenol	UPJ, x.
*Aniline (Aniline oil)	ACY, DOW, DUP, NAC.
Aniline hydrochloride	ACY.
1-Anilino-2-anthraquinonecarboxylic acid	NAC.
*Anilinomethanesulfonic acid and salt	AAP, ACY, DUP, NAC, TRC.
*8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	CMG, DUP, NAC, SDC.
*6-Anilino-1-naphthol-3-sulfonic acid (Phenyl J acid)	ALT, CMG, DUP, G, NAC, TRC.
7-Anilino-1-naphthol-3-sulfonic acid (Phenyl gamma acid)	DUP, G, NAC.
Anisic acid	HN, ICO.
o-Anisic acid	ACY.
m-Anisidine	EK.
*o-Anisidine	AAP, ALL, DUP, KLS, MON.
p-Anisidine	DUP, MON.
1-p-Anisidino-4-hydroxyanthraquinone	AAP.
*o-Anisidinomethanesulfonic acid	AAP, DUP, G, NAC, TRC, VPC.
2-o-Anisidino-5-nitrobenzenesulfonic acid	TRC.
p-Anisoin	CTN.
Anisole, tech	DUP, LIL.
Anthracene, refined	ACP.
Anthraflavic acid (2,6-Dihydroxyanthraquinone)	DUP, G, TRC.
Anthranilic acid (o-Aminobenzoic acid)	DUP, LEM, MEE, NAC.
*Anthra[1,9]pyrazol-6(2H)-one (Pyrazoleanthrone)	DUP, G, TRC.
*Anthraquinone, 100%	ACY, DUP, G, TRC.
2-Anthraquinonecarboxylic acid	ACY, NAC.
*1,5-Anthraquinonedisulfonic acid	ACY, DUP, ICI, TRC.
1,5-Anthraquinonedisulfonic acid, disodium salt	DUP, G, TRC.
1,5(and 1,8)-Anthraquinonedisulfonic acid and salt	DUP, TRC.
1,8-Anthraquinonedisulfonic acid	DUP.
*1,8-Anthraquinonedisulfonic acid, potassium salt	G, ICI, TRC.
*2,6-Anthraquinonedisulfonic acid and salt	AAP, DUP, G, ICI, NAC, TRC, VPC.
*1-Anthraquinonesulfonic acid and salt	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
2-Anthraquinonesulfonic acid and salt (Silver salt)	DUP, NAC.
1,1'-[1,5(and 1,8)-Anthraquinonylenediamino]bisnaphth-[2,3-c]acridan-5,8,14-trione.	DUP.
N,N'-(1,5-Anthraquinonylene)dianthranilic acid	DUP, ICI.
N,N'-(1,5-Anthraquinonylene)dioxamic acid	G, MEE, TRC.
1-(1-Anthraquinonyl)-1,2-hydrazinedisulfonic acid, disodium salt.	DUP, G.
*Anthrarufin (1,5-Dihydroxyanthraquinone)	ACY, CMG, DUP, G, NAC, TRC.
Anthrone	ICI.
Arsanilic acid and salt, tech	ABB.
4',4'''-Azobis[4-biphenylcarboxylic acid]	DUP, G, TRC.
Barbituric acid	KF, LIL.
Barbituric acid, sodium derivative	ABB, KF.
*Benzaldehyde, tech	BPC, HN, TNP.
4-(4-Benzamido-1-anthraquinonylamino)naphth[2,3-c]-acridan-5,8,14-trione.	DUP.
N-(5-Benzamido-1-anthraquinonyl)-p-toluenesulfonamide	ICI.
1-Benzamido-4-chloroanthraquinone	DUP, G.
*1-Benzamido-5-chloroanthraquinone	ACY, DUP, G, ICI, MAY, NAC, TRC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
1-(4-Benzamido-2,5-diethoxyphenyl)-3-methyl-3-(2-sulfoethyl) triazene.	G.
[3-(4-Benzamido-6-methoxy-m-tolyl)-1-methyltriazen-3-yl]-acetic acid.	G.
8-Benzamido-1-naphthol-3,6-disulfonic acid	TRC.
3-Benzamido-1-naphthol-3-sulfonic acid	TRC.
Benzanilide	DUP.
*7H-Benz[de]anthracen-7-one (Benzanthrone)	AAP, ACY, ATL, CMG, DUP, G, ICI, MAY, NAC, SDC, TRC.
Benzeneboronic acid	EDC.
m-Benzenedisulfonic acid	KPT.
Benzenesulfonamide	NES.
Benzenesulfonic acid	EK, UPF.
Benzenesulfonic acid, 2-propyn-1-ol ester	ABB.
Benzenesulfonyl chloride	NES.
1,2,4-Benzenetricarboxylic acid, 1,2-anhydride	ACC.
Benzhydrol (Diphenylmethanol)	ARA, TBK.
Benzidine base	NAC.
*Benzidine hydrochloride and sulfate	CWN, FIN, LAK, NAC, x.
Benzil (Bibenzoyl)	HN, LEM.
Benzilic acid	BPC, LEM.
2-Benzofuranacetonitrile	EK.
*Benzoic acid, tech	ACC, FRO, HK, HN, MON, TNP.
Benzoic anhydride	EK.
Benzoin	BPC, HN.
Benzonitrile	TNP, x.
Benzophenonetetracarboxylic dianhydride	GOC.
Benzo[b]thiophen-3(2H)-one	G.
1H-Benzotriazole	MEE.
Benzoylacetic acid, ethyl ester	FMP.
*o-Benzoylbenzoic acid	ACY, DUP, G, NAC.
Benzoyl chloride	HK, HN, TNP.
4-Benzoyl-3-hydroxyphenyl methacrylate	x.
2-Benzoyl-4-sulfobenzoic acid	DUP.
2-Benzoyl-4'-(p-toluenesulfonamido)acetanilide	EK.
Benzylamine	ICO, MLS.
dl-Benzyl-2-amino-1-propanol	LIL.
4-Benzyl-6-chloro-3-keto-2-methyl-7-sulfamyl-1,2,4-benzylthiadiazine-1,1-dioxide.	ABB.
4-Benzyl-6-chloro-3-keto-7-sulfamyl-1,2,4-benzylthiadiazine-1,1-dioxide.	ABB.
Benzyl disulfide	CCW.
Benzylethanolamine	MLS.
Benzyl ether (Dibenzyl ether)	BPC, TBK.
4-(N-Benzyl-N-ethylamino)-o-toluenesulfonic acid	NAC.
N-Benzyl-N-ethyl-m-toluidine	DUP, NAC.
Benzylidene phthalide	LIL.
4-Benzylidineiminoantipyrine	SDW.
p-(Benzyloxy)phenol	EK.
Benzyl polysulfide	HK.
Benzyltrimethylammonium hydroxide	MLS.
Benzyltrimethylammonium methoxide	MLS.
*3,3'-Bianthra[1,9]pyrazole-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow).	DUP, G, TRC.
[3,3'-Bi-7H-benz[de]anthracen]-7,7'-dione	DUP.
*[4,4'-Bi-7H-benz[de]anthracen]-7,7'-dione	ACY, DUP, ICI, MAY.
endo-cis-Bicyclo[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride.	NAC.
*[1,1'-Binaphthalene]-8,8'-dicarboxylic acid	DUP, G, NAC.
Biphenyl	DOW, MON.
2,2',4,4'-Biphenyltetrol	IDC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
2,2′-Biquinoline	EK.
*1,4-Bis[1-anthraquinonylamino]anthraquinone	ACY, DUP, G, MAY, NAC, TRC.
1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-Bis[5-chloro-1-anthraquinonylamino]anthraquinone (mixed).	TRC.
1,5-Bis[1-anthraquinonylamino]anthraquinone	DUP, NAC.
Bis[1-anthraquinonylamino]violanthrene	G.
α^2,α^6-Bis[5-tert-butyl-6-hydroxy-m-tolyl]mesitol	ACY.
N,N′-Bis[1-chloro-2-anthraquinonyl]-4′,4′′′-azobis-[4-biphenylcarboxamide].	G.
Bis(chloro sulfonyl)phthalocyaninedisulfonic acid, copper derivative.	TRC.
4,4′-Bis[diethylamino]benzhydrol	G.
4,4′-Bis[diethylamino]benzhydrol, 2,6-naphthalene-disulfonate.	G.
4,4′-Bis[diethylamino]benzhydrol salt, 2,7-naphthalene-disulfonic acid mixture.	DUP, TRC.
4,4′-Bis[diethylamino]benzophenone (Ethyl ketone base)	SDH.
4-Bis[(p-diethylaminophenyl)methyl]-2,7-naphthalene-disulfonic acid, leuco form.	TRC.
4,4′-Bis[dimethylamino]benzhydrol (Michler's hydrol)	SDH.
*4,4′-Bis[dimethylamino]benzophenone (Michler's ketone)	DUP, G, NAC, SDH.
Bis[p-dimethylaminophenyl]methanesulfonic acid and salt	NAC.
1,5(and 1,8)-Bis[2,4-dinitrophenoxy]-4,8(and 4,5)-dinitroanthraquinone.	DUP.
4,4′-Bis[p-hydroxyphenylazo]-2,2′-stilbenedisulfonic acid-	TRC.
4,4′-Bis[p-hydroxyphenyl]valeric acid	JNS.
2,4-Bis(methylsulfamyl)-5-chloroaniline	ABB.
Bis(o-nitrophenyl)sulfide	x.
m-Bis(m-phenoxyphenoxy)benzene	EK.
2-Bromoacetophenone	EK.
p-Bromoaniline	EK.
4-Bromoanisole	ICO, OPC.
*3-Bromo-7H-benz[de]anthracen-7-one (Bromobenzanthrone)	ACY, DUP, G, MAY.
Bromobenzene, mono-	DOW.
p-Bromobenzenesulfonyl chloride	EK.
Bromobenzoic acid	RSA.
o-Bromobenzoic acid	EK.
4-Bromobenzophenone	ICO.
6-Bromo-5-chlorobenzoxazolone	MEE.
2-Bromo-6-chloro-4-nitroaniline	AAP.
Bromocyclopentane	LIL.
2-Bromodibenzofuran	G.
2-Bromo-4,6-dinitroaniline	TRC.
Bromoethylbenzene	DOW.
2-Bromo-3′-hydroxyacetophenone, benzoate	SDH.
1-Bromo-4-(N-methylacetamido)anthraquinone	G.
1-Bromo-4-methylaminoanthraquinone	AAP, DUP, G.
6-Bromo-3-methyl-7H-dibenz[f,ij]isoquinoline-2,7(3H)-dione.	G.
1-Bromonaphthalene	EK.
4-Bromonaphthalic anhydride	G.
1-(9-Bromo-7-oxo-7H-benz[de]anthracen-3-ylamino)anthraquinone.	NAC.
p-Bromophenol	EK.
(p-Bromophenyl)acetonitrile	BPC.
(p-Bromophenyl)hydrazine hydrochloride	EK.
2-Bromopyridine	NEP.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
α-Bromotoluene	BPC, EK.
p-Bromotoluene	BPC.
1-Bromo-2,4,6-triethylbenzene	DUP.
p-Butoxyphenol	ABB.
4-[3-(p-Butoxyphenoxy)propyl] morpholine	ABB.
4'-Butoxy-2-piperidinopropiophenone hydrochloride	ICO.
p-n-Butylaminobenzoic acid, ethyl ester	ICO.
p-Butylaniline	DUP.
2-tert-Butylanthraquinone	DUP.
p-tert-Butylbenzaldehyde	GIV.
n-Butylbenzene	PLC.
sec-Butylbenzene	PLC.
tert-Butylbenzene	PLC.
p-tert-Butylbenzoic acid	SHC.
o-(p-tert-Butylbenzoyl)benzoic acid	DUP.
6-Butyl-m-cresol [CH=L]	KPT.
6-tert-Butyl-m-cresol	PIT.
2-tert-Butyl-p-cresol	ACY.
2'-tert-Butyl-4',6'-dimethylacetophenone	GIV.
2-tert-Butyl-4-ethylphenol	ACY.
N'-Butyl-4-methoxymetanilamide	KLS.
N^1-Butyl-4-methoxymetanilamide	G.
2-tert-Butyl-5-methylanisole	GIV.
*o-sec-Butylphenol	DOW, PRD, TNA.
p-sec-Butylphenol	DOW.
o-tert-Butylphenol	TNA.
p-tert-Butylphenol	DOW, KPT, PRD, UCP.
Butylphenols, mixed	DOW.
p-tert-Butyltoluene	GIV, SHC.
5-tert-Butyl-1,2,3-trimethylbenzene	GIV.
5-tert-Butyl-m-xylene	GIV, x.
6-tert-Butyl-2,4-xylenol	KPT, PIT.
Butyrophenone	TBK.
*Camphoric acid	FIN, OTC, PYL.
Camphoric anhydride	FIN, OTC.
Camphosulfonic acid	OTC, PYL.
Carbazole, refined	SDC.
Carbonic acid, diphenyl ester	BKL.
1-(4-Carbonyl-o-anisyl)-3-methyl-3-(2-sulfoethyl)triazene	G.
2,4'-Carbonyldibenzoic acid	ACY.
6(and 2)-Carboxybenzene-2(and 4)-diazo-1-oxide	DUP.
5'-(o-Carboxybenzoyl)-2-chlorooxanilic acid	G.
3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate	G, NAC.
3-(Carboxymethyl-3-methyl)-1-p-tolyltriazene	G.
o-(Carboxymethylthio)benzoic acid	G.
5-(o-Carboxyphenylsulfamoyl)anthranilic acid	TRC.
[(o-Carboxyphenyl)thio]ethylmercury	LIL.
3-(2-Carboxy-4-sulfophenyl)-1-(2,5-dichlorophenyl)-3-ethyltriazene.	G.
3-(2-Carboxy-4-sulfophenyl)-1-(5-dimethylsulfamoyl-o-tolyl)-3-methyltriazene.	G.
3-(2-Carboxy-4-sulfophenyl)-3-ethyl-1-(5-nitro-o-anisyl)-triazene.	G.
Cedrene	GIV.
Chelidamic acid	SDW.
Chlorendic acid	HK.
2'-Chloroacetoacetanilide	FMP, UCC.
ω-Chloroacetophenone	EK.
2'-Chloroacetophenone	EK.
3'-Chloroacetophenone	RBC.
4'-Chloroacetophenone	LIL.
4'-(Chloroacetyl)acetanilide	DUP.
m-Chloroaniline	DUP, G.
o-Chloroaniline	DUP, MON.
p-Chloroaniline	DUP, MON.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
2-(Chloroanilino)ethanol	EKT.
3-(o-Chloroanilino)propionitrile	DUP.
5-Chloro-o-anisidine [NH_2=1] (4-Chloro-o-anisidine [OCH_3=1]).	BUC, KLS.
5-Chloro-o-anisidine hydrochloride	G.
4-Chloroanthranilic acid	DUP.
*1-Chloroanthraquinone	ACY, DUP, G, ICI, MAY, NAC, TRC.
*2-Chloroanthraquinone	ACY, G, NAC, TRC.
m-Chlorobenzaldehyde	RSA.
o-Chlorobenzaldehyde	HN, NAC, SDH.
p-Chlorobenzaldehyde	HN.
Chloro-7H-benz[de]anthracen-7-one (Chlorobenzanthrone)	ACY, DUP.
*Chlorobenzene, mono-	ACS, DOW, DUP, GGY, HK, HKD, MON, MTO, OMC, PPG.
1-Chlorobenzene-4-methylsulfone	TRC.
4-Chlorobenzenesulfinic acid	TRC.
p-Chlorobenzenesulfonamide	ACY.
1-(4-Chlorobenzhydrol)-4-methylpiperazine	ABB.
o-Chlorobenzoic acid	HN, SDH.
5-Chloro-2-benzoxazolinone	x.
*o-(p-Chlorobenzoyl)benzoic acid	ACY, DUP, G, ICI, NAC.
o-(p-Chlorobenzoyl)chloride	HN.
p-Chlorobenzoyl chloride	HN.
4,4'-(o-Chlorobenzylidene)di-2,5-xylidine	G.
Chloro-(p-chlorophenyl)phenylmethane	OPC, TBK.
Chlorocyclohexane	ACY.
2-Chloro-1,4-dibutoxy-5-nitrobenzene	FMT.
2-Chloro-1,4-diethoxy-5-nitrobenzene	FMT, G.
2-Chloro-N,N-diethyl-4-nitroaniline	DUP.
N-(3-Chloro-9,10-dihydroxy-2-anthryl)acetamide-bis[acid sulfate].	G.
4'-Chloro-2',5'-dimethoxyacetoacetanilide	PCW.
4-Chloro-2,5-dimethoxyaniline	PCW.
5-Chloro-2,4-dimethoxyaniline	ALL, PCW.
4-Chloro-N,N-dimethyl-3-nitrobenzenesulfonamide	EKT, G.
5-Chloro-4,7-dimethyl-3(2H)-thianaphthenone	NAC.
*1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	AAP, DUP, NAC, SDC.
1-Chloro-2,4-dinitrobenzene and 2-chloro-1,3-dinitro-benzene mixture.	DUP.
3-Chloro-4,6-dinitrobenzenesulfonic acid	TRC.
3-Chlorodiphenylamine	SK.
Chlorodiphenylmethane	TBK.
α-Chloro-o(and/or p)-dodecyltoluene [CH_3=1]	ORO.
4-[(2-Chloroethyl)ethylamino]-o-tolualdehyde	G.
p-[(2-Chloroethyl)methylamino]benzaldehyde	G.
2-Chloro-N-ethyl-5-nitrobenzenesulfonanilide	G.
Chloroformic acid, benzyl ester	RSA.
Chloroformic acid, phenyl ester	EK.
4-Chloro-3-hydrazinobenzenesulfonic acid	G.
1-Chloro-4-hydroxyanthraquinone	ICI.
5'-Chloro-3-hydroxy-2-naphthol-o-anisidide	PCW.
3-Chloro-4-hydroxyquinoline-3,4-carbonic acid	SDH.
6-Chloroisatoic anhydride	MEE.
o-Chloro-α-[(isopropylamino)methyl]benzyl alcohol hydrochloride.	LIL.
4-Chloro-N-isopropyl-3-nitrobenzenesulfonamide	TRC.
5-Chlorometanilic acid	NAC.
*6-Chlorometanilic acid	AAP, DUP, SW.
5-Chloro-2-methoxybenzenediazonium chloride	G.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
N-(5-Chloro-2-methoxyphenylazo)sarcosine	ATL.
*1-Chloro-2-methylanthraquinone	AAP, ACY, CMG, G, ICI, NAC, TRC.
6-Chloro-2-methyl-7-chlorosulfamoyl-2H-1,2,4-benzothiadiazin-3(4H)-one, 1,1-dioxide.	ABB.
1-(Chloromethyl)-2,4-dimethylbenzene	BPC.
4-(Chloromethyl)-1,2-dimethylbenzene	BPC.
5-Chloro-1-methylisatoic anhydride	MEE.
6-Chloro-2-methyl-7-(N-methylsulfamoyl)-2H-1,2,4-benzothiadiazin-3(4H)-one, 1,1-dioxide.	ABB.
α-Chloromethylnaphthalene	BPC.
4-Chloro-3-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid.	DUP, G.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide	ABB.
5-Chloro-2-(n-methyl)-sulfamyl-4-sulfamyl-n-benzylaniline	ABB.
Chloronaphthalenes	G, KPT.
*2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	ACY, DOW, DUP, HSC.
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	DOW, DUP, VPC.
*1-Chloro-5-nitroanthraquinone	ACY, DUP, MAY, NAC, TRC.
*1-Chloro-8-nitroanthraquinone	DUP, MAY, NAC.
*1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	AAP, DUP, MON, UPM.
1-Chloro-2(and 4)-nitrobenzene (Chloronitrobenzenes, o- and p-).	AAP, SDC.
*1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)	DUP, G, MON, UPM.
*1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	AAP, DUP, MON, UPM.
*4-Chloro-3-nitrobenzenesulfonamide	AAP, DUP, EKT, G, ICC, TRC.
4-Chloro-3-nitrobenzenesulfonanilide	TRC.
2-Chloro-5-nitrobenzenesulfonic acid	CMG, NAC.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt	DUP, G.
4-Chloro-3-nitrobenzenesulfonic acid	G, NAC.
*4-Chloro-3-nitrobenzenesulfonyl chloride	AAP, DUP, EKT.
2-Chloro-4-nitrobenzoic acid	SAL.
2-Chloro-5-nitrobenzoic acid	TRC.
*o-(4-Chloro-3-nitrobenzoyl)benzoic acid	AAP, G, ICI, NAC.
4-Chloro-2-nitrophenol	DUP, MEE.
4-Chloro-6-nitro-1-phenol-2-sulfonic acid	TRC.
4-Chloro-3-nitrophenyl methyl sulfone	TRC.
2-Chloro-4-nitrotoluene	DUP.
2-Chloro-6-nitrotoluene	DUP.
*4-Chloro-2-nitrotoluene	AAP, BUC, DUP.
4-Chloro-3-nitrotoluene	AAP, BUC.
m-Chlorophenol	EK.
o-Chlorophenol	DOW, MON.
p-Chlorophenol	DOW, MON.
2-Chlorophenothiazine	SK.
p-Chlorophenylacetonitrile	ICO, TBK.
4-Chloro-α-phenyl-o-cresol	MON.
4-Chloro-o-phenylenediamine	FMT.
3-(o-Chlorophenyl)-5-methyl-4-isoxazole carbonyl chloride	ICO.
3-(o-Chlorophenyl)-5-methyl-4-isoxazolecarboxylic acid	ICO.
1-(m-Chlorophenyl)-3-methyl-2-pyrazolin-5-one	TRC.
2-Chloro-4-phenylphenol	DOW.
p-Chlorophenyl-2-pyridyl carbinol	RIL.
4-Chlorophthalic acid	DUP, SW.
Chlorophthalic anhydride	HK.
1-(3-Chloropropyl)-4-methylpiperazine	SK.
N^1-(6-Chloro-3-pyridazinyl)sulfanilamide	ACY.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
2-Chloropyridine	FMT, NEP.
2-Chloroquinizarin	HSH.
7-Chloro-4-quinolinol	SDW.
4-Chlororesorcinol	AAP, G.
2-Chloro-5-sulfamoylbenzoic acid	TRC.
8-Chlorotheophylline	MAL.
2-Chlorothiaxanthenone	KF.
2-Chlorothiophene	GAM.
m-Chlorotoluene	HK.
o-Chlorotoluene	HN.
p-Chlorotoluene	HN.
*α-Chlorotoluene (Benzyl chloride)	BPC, HK, HN, MON, TNP.
1-Chloro-5-p-toluenesulfonamidoanthraquinone	ICI.
6-Chloro-m-toluidine	BUC.
3-Chloro-o-toluidine [NH_2=1]	DUP.
4-Chloro-o-toluidine [NH_2=1] and hydrochloride	AAP, PCW.
*5-Chloro-o-toluidine [NH_2=1] (4-Chloro-o-toluidine [CH_3=1])	AAP, BUC, DUP, NAC, SDH.
*5-Chloro-o-toluidine hydrochloride [NH_2=1]	ATL, AUG, BUC, KLS, SDH.
3-Chloro-p-toluidine [NH_2=1]	DUP.
N-(5-Chloro-o-tolylazo)sarcosine	ATL, BUC, G.
Chloro-p-tolylmercury	EK.
1-(6-Chloro-o-tolyl)-3-methyl-2-pyrazolin-5-one	TRC.
1-(5-Chloro-o-tolyl)-1-tetrazene	G.
(4-Chloro-o-tolylthio)acetic acid	NAC.
3-Chloro-α,α,α-trifluoro-6-nitrotoluene	MEE.
4-Chloro-α,α,α-trifluoro-3-nitrotoluene	G.
p-Chloro-α,α,α-trifluorotoluene	HK.
2-Chloro-1,3,5-trinitrobenzene	EK.
Chlorotriphenylmethane	EK.
α-Chloro-p-xylene	BPC.
2-Chloro-p-xylene	DUP.
4-Chloro-2,5-xylenesulfonyl chloride	G, NAC.
4-Chloro-3,5-xylenol	OTA.
6-Chloro-3,4-xylylmethylcarbamate	UPJ.
4-Chloro-2,5-xylylthioacetic acid	NAC.
Cholic acid	SRL, WIL.
Chrysazin (1,8-Dihydroxyanthraquinone)	DUP, G.
Cinnamoyl chloride	TBK, x.
s-Collidine (2,4,6-Trimethylpyridine)	KPT, NAC, RIL.
*Cresols:[1]	
m-Cresol	KPT.
o-Cresol:	
From coal tar	KPT, PRD.
From petroleum	MER, NPC, PRD, SW.
p-Cresol	ACY, HPC, SW.
Cresols, mixed:[1]	
*(m,p)-Cresol:	
From coal tar	ACP, KPT, PIT, PRD.
From petroleum	MER, NPC, PRD.
*(o,m,p)-Cresol:	
From coal tar	ACP, KPT.
From petroleum	PIT, PRD.
2,3-Cresotic acid	DOW.
*Cresylic acid, refined:[1]	
*From coal tar	ACP, KPT, PRD.
*From petroleum	MER, NPC, PIT, PRD, SHO, SM.

See footnote at end of table.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
Cryptocyanine	EK.
*Cumene	ACC, ACP, CLK, DOW, GOC, HPC, PLC, SHC, SKO, SOC, TX.
2-[p-(2-Cyanoacetimido)phenyl]-6-methyl-7-benzothiazole-sulfonic acid.	DUP.
N-(β-Cyanoethyl)-N-(β-acetoxyethyl)aniline	EKT.
4-[(2-Cyanoethyl)ethylamino]-o-tolualdehyde	DUP, G.
p-[(2-Cyanoethyl)methylamino]benzaldehyde	DUP, G.
8-Cyano-1-naphthalenesulfonic acid	DUP, G.
Cyanuric chloride	ACY, GGY, NIL.
*Cyclohexane	CO, DUP, GOC, PLC, PRO, SOG.
1,4-Cyclohexanedicarboxylic acid, dimethyl ester	x.
1,2-Cyclohexanedicarboxylic anhydride	NAC.
1,2-Cyclohexanedione	RSA.
*Cyclohexanol	DUP, MON, NAC.
*Cyclohexanone	DBC, DUP, MON, NAC.
Cyclohexanone oxime	NAC, x.
Cyclohexene	KF, PLC.
4-Cyclohexene-1,2-dicarboximide	CHO.
4-Cyclohexene-1,2-dicarboxylic anhydride	NAC, PTT.
Cyclohexylamine	ABB, JCC, PAS, VGC, x.
p-Cyclohexyloxy benzoic acid	LIL.
Cyclohexyl-2-propanone	GIV, TBK.
N-Cyclohexyltaurate, sodium salt	G.
Cyclopentanepropionic acid	ARA.
Cyclopentanol	LIL.
Cyclopentene	PLC.
(2-Cyclopenten-1-yl)-2-propanone	LIL.
Cyclopentylphenylglycolic acid, methyl ester	ARA.
p-Cymene	HNW, HPC, NAC.
Cytosine arabinoside hydrochloride	UPJ.
Decylbenzene	NAC.
Decylphenol	G.
Dehydroacetic acid, sodium salt	GAN.
Desoxycholic acid	WIL.
1,5(and 1,8)-Diacetamidoanthraquinone	AAP.
3'-[Di(2-acetoxyethyl)-amino]-p-acetophenetidide	TRC.
4,4'-Diacetylamino-3,3'-dinitrobiphenyl	AAP.
N,N-Diacetyl-4,4'-diaminobiphenyl	AAP.
N,N-Diallylcamphoramic acid	WYT.
N^2,N^2-Diallylmelamine	ACY.
*1,4-Diaminoanthraquinone	CMG, DUP, G, NAC, TRC.
*1,5-Diaminoanthraquinone	DUP, G, TRC.
1,5(and 1,8)-Diaminoanthraquinone	AAP, TRC.
*2,6-Diaminoanthraquinone	AAP, DUP, G, NAC, TRC, VPC.
1,4-Diamino-2,3-anthraquinonedicarbonitrile	DUP.
1,4-Diamino-2,3-anthraquinonedicarboximide	DUP.
4,8-Diaminoanthrarufin	G, ICC.
3,3'-Diaminobenzanilide	AAP.
3,4-Diaminobenzanilide	AAP.
2,4-Diaminobenzenesulfonic acid [SO_3H=1]	DUP, NAC, TRC.
2,5-Diaminobenzenesulfonic acid [SO_3H=1]	TRC.
*4,4'-Diamino-2,2'-biphenyldisulfonic acid	AAP, ACY, NAC.
3,7-Diaminodibenzothiophenedisulfonic acid, 5,5-dioxide, disodium salt.	ACY.
Diaminodibromodi-p-toluidinoanthraquinone	ICI.
1,4-Diamino-2,3-dichloroanthraquinone	CMG, DUP.
1,5-Diamino-4,8-dihydroxyanthraquinone	VPC.
1,5(and 1,8)-Diamino-4,8(and 4,5)-dihydroxyanthraquinone	DUP.
4,5-Diamino-1,8-dihydroxyanthraquinone	ICI.
4,8-Diamino-1,5-dihydroxy-2,6-anthraquinonedisulfonic acid	TRC.
4,4'-Diamino-3,3'-dimethyltriphenylmethane	ACY.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
1,4-Diamino-5-nitroanthraquinone	G.
2,4-Diamino-6-phenyl-s-triazine	RH, TNP.
2,6-Diaminopyridine	NEP, RIL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid	ACY, DUP, G, NAC, SDH, TRC, VPC.
Diaminotetrabromoanthraquinone	ICI.
4,6-Diamino-m-toluenesulfonic acid [SO_3H=1]	NAC.
3,5-Diamino-p-toluenesulfonic acid [SO_3H=1]	G.
Di-tert-amylphenoxyacetyl chloride	x.
1,5-Dianilino-2,6-anthraquinonedicarboxylic acid	G, NAC.
o-Dianisidine	LAK.
N-(o-Dianisidine)methyltaurine	BUC.
1,2-Dianthronyl-1,2-ethanediol	ICI.
Diarylguanidine	DUP.
p-Diazo-N,N-dimethylaniline-1-amino-8-naphthol-3-sulfonate-6-sulfonic acid, sodium salt.	IDC.
1,5-Dibenzamidoanthraquinone	G, TRC.
4,9-Dibenzamido-3',4',6',7'-diphthalocylcarbazole	ICI.
*4,5'-Dibenzamido-1,1'-iminodianthraquinone	ACY, DUP, G, ICI, MAY, NAC, TRC.
5,5'-Dibenzamido-1,1',4,1''-trianthrimide	ICI.
2-Dibenzofuranol	G.
Dibenzothiophene	EK, EVN.
*1,5-Dibenzoylnaphthalene	ACY, DUP, G, HST, ICI, TRC, VPC.
1',2',6',7'-Dibenzpyrene-7,14-quinone	ATL, ICI.
N,N'-Dibenzylethylenediamine	WYT.
N,N'-Dibenzylethylenediamine diacetate	WYT.
N,N-Dibenzylsulfanilic acid	ICI.
2,4'-Dibromoacetophenone	EK.
*3,9-Dibromo-7H-benz[de]anthracen-7-one	DUP, G, MAY, NAC, TRC.
m-Dibromobenzene	EK.
p-Dibromobenzene	DOW.
2,2'-Dibromobiphenyl	EDC.
Dibromodibenzo[b,def]chrysene-7,14-dione	ICI.
ar-Dibromoethylbenzene	DOW.
2,6-Dibromo-1,5-naphthalenediol	EK.
Dibromo-8,16-pyranthrenedione	DUP.
X,Y-Dibromothianthrene	TRC.
Dibromoviolanthrone	G.
2,5-Dibutoxyaniline	EKT.
2,6-Di-tert-butyl-4-nonylphenol	G.
2,4-Di-tert-butylphenol	DOW.
2,4-Dichloroaniline	EK.
3,4-Dichloroaniline	DUP, MON.
*2,5-Dichloroaniline and hydrochloride [NH_2=1]	AAP, DUP, KLS, NAC, SDH.
3,4-Dichloroaniline-6-sulfonic acid	SW.
3-(2,4-Dichloroanilino)-1-(2,4,6-trichlorophenyl)-2-pyrazolin-5-one.	EK.
1,5-Dichloroanthraquinone	DUP, ICI, NAC.
1,5(and 1,8)-Dichloroanthraquinone	DUP, NAC.
*1,8-Dichloroanthraquinone	G, ICI, TRC.
4,5-Dichloro-1,8-anthraquinonedisulfonic acid	G.
2,2'-Dichloroazobenzene	DUP.
3-(3,4-Dichlorobenzamido)-1-phenyl-2-pyrazolin-5-one	EK.
Dichlorobenzanthrone	ACY.
m-Dichlorobenzene	EK, WOI, x.
*o-Dichlorobenzene	ACS, CPD, DOW, DUP, DVC, MON, OMC, PPG, SCC, SVT, WOI.
*o(and p)-Dichlorobenzene	GGY, HKD, MTO.
*p-Dichlorobenzene	ACS, CPD, DOW, DUP, DVC, HK, MON, PPG, SCC, SVT, WOI.
4,6-Dichloro-m-benzenedisulfonamide	ABB.
4,6-Dichloro-m-benzenedisulfonyl chloride	ABB.
*3,3'-Dichlorobenzidine base and salts	ALL, CWN, IMP, LAK, NAC.
2,4-Dichlorobenzoic acid	HN.
2,6-Dichlorobenzonitrile	x.
2,5-Dichloro-3,6-bis(9-ethylcarbazol-3-ylamino)-p-benzoquinone.	TRC.
8,18-Dichloro-5,15-diethyl-5,15-dihydrodiindolo-(3,2-b:3',2'-m)triphenodioxazine.	AAP, TRC.
2,5-Dichloro-3,6-dihydroxy-p-benzoquinone	EK.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbonitrile.	LIL.
4,5-Dichloro-3,6-dioxocyclohexene-1,2-dicarbonitrile	ARA.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
Dichlorodiphenylsilane	DCC.
Dichlorodiphenyl sulfone	NES.
2',7'-Dichlorofluorescein	EK.
2,5-Dichloro-4-hydrazinobenzenesulfonic acid	G.
2-(5,8-Dichloro-1-hydroxy-2-naphthylazo)-1-phenol-4-sulfonamide.	TRC.
7,16-Dichloroindanthrene	ICI.
Dichloroisoviolanthrone	ICI.
*2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid.	ACY, CMG, DUP, G, KLS, TRC, VPC.
Dichloromethylphenol	EKT.
*2,6-Dichloro-4-nitroaniline	AAP, DUP, EKT, G, MEE, PCW, TRC.
1,2-Dichloro-4-nitrobenzene	DUP, MON.
*1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)	AAP, DUP, NAC, VPC.
2,4-Dichlorophenol	DOW, MON.
1-(2,5-Dichlorophenyl)-3-triazene-carbonitrile	G.
2,6-Dichloropyrazine	ACY.
3,6-Dichloropyridazine	ACY.
4,7-Dichloroquinoline	SDW.
3,5-Dichlorosalicylic acid	ICO.
*2,5-Dichlorosulfanilic acid [SO_3H=1]	CMG, DUP, G, VPC.
2,5-Dichloro-4-sulfobenzenediazonium sulfate	TRC.
α,α-Dichlorotoluene (Benzal chloride)	NAC.
p,α-Dichlorotoluene	HN.
2,4-Dichloro-5-(p-toluenesulfonamido)-1-naphthol	EK.
2,4-Dichloro-3,5-xylenol	OTA.
Dicyclohexylamine	ABB, VGC.
Dicyclohexylcarbodiimide	G.
Dicyclopentadiene and cyclopentadiene	ENJ, UCC.
Dicyclopentadiene dioxide	UCC.
2,4-Di(1,1-dimethylpropyl)phenol (Di-tert-amylphenol)	PAS.
2,5-Diethoxyaniline	ALL.
2',5'-Diethoxybenzanilide	G.
p-Diethoxybenzene	G.
2,5'-Diethoxy-4'-nitrobenzanilide	G.
1,4-Diethoxy-2-nitrobenzene	G.
*p-Diethylaminobenzaldehyde	DUP, G, NAC.
α-(2-Diethylaminoethyl)-α-phenylcyclohexanemethanol, hydrochloride.	ACY.
m-Diethylaminophenol (N,N-Diethyl-3-aminophenol)	ACY, DUP, MON.
3-(p-Diethylaminophenylazo)-1H-1,2,4-triazole	TRC.
3-Diethylaminopropiophenone	ACY.
4-Diethylamino-o-tolualdehyde	DUP.
*N,N-Diethylaniline	ACY, DSC, DUP, NAC, SDH.
N,N-Diethyl-m-anisidine	DUP.
Diethylbenzene	DOW, KPP.
N,N-Diethylcyclohexylamine	DUP.
N,N-Diethylmetanilic acid	DUP.
N^1,N^1-Diethyl-4-methoxymetanilamide	G, PCW.
N,N-Diethyl-1-naphthylamine	DUP.
N,N-Diethyl-p-nitrosoaniline	G.
N,N-Diethyl-4-nitroso-m-anisidine hydrochloride	DUP.
N,N-Diethyl-4-nitroso-m-phenetidine	G.
N,N-Diethyl-m-phenetidine	G.
Diethyl terephthaloyldiacetate	G.
N,N-Diethyl-m-toluidine	DUP.
6,15-Dihydro-5,9,14,18-anthrazinetetrone	TRC.
10,11-Dihydro-5H-dibenzo[a,d]cycloheptene-5-one	LIL.
3,4-Dihydro-3,4-dioxo-1-naphthalenesulfonic acid, sodium salt.	EK.
3,4-Dihydro-6-methoxy-1(2H)-naphthalenone	GAM.
10,11-Dihydro-5-[3-(methylamino)propyl]-5H-dibenzo[a,d]-cycloheptene-5-ol.	LIL.
2,3-Dihydro-4H-pyran	QKO.
1,4-Dihydroxyanthraquinone	DUP.
1,5(and 1,8)-Dihydroxyanthraquinone	DUP, NAC, SDH.
2,5-Dihydroxybenzenesulfonic acid	NES.
3,4-Dihydroxybenzoic acid (Protocatechuic acid)	AMB.
4,4'-Dihydroxy-3,3'-dimethylbiphenyl	EK.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
Dihydroxydinitroanthraquinone	DUP.
*1,5-Dihydroxy-4,8-dinitroanthraquinone	G, ICI, TRC, VPC.
*1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin).	DUP, EKT, G, ICI, NAC.
1,5-Dihydroxy-4,8-dinitro-2,6-anthraquinonedisulfonic acid	VPC.
1,8-Dihydroxy-4,5-dinitro-2,6-anthraquinonedisulfonic acid	DUP.
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid).	HSH, NAC.
6,7-Dihydroxy-2-naphthalenesulfonic acid	FMT, G, IDC, NAC.
3,5-Dihydroxy-2-naphthoic acid	G.
11β,21-Dihydroxypregna-4,17(20)-cis-dien-3-one	UPJ.
11β,21-Dihydroxypregna-1,4,17(20)-cis-trien-3-one	UPJ.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalenedisulfonic acid, trisodium salt.	EK.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	ACY, DUP, G, ICI, MAY, NAC.
m-Diiodobenzene	EK.
2,5-Diiodobenzoic acid	RSA.
3,5-Diiodo-L-tyrosine	EK.
N,N'-Diisopropyl-p-phenylenediamine	DUP.
2,5-Dimethoxyaniline	EKT, KLS.
1,5(and 1,8)-Dimethoxyanthraquinone	TRC.
m-Dimethoxybenzene	ACY, ICO.
p-Dimethoxybenzene	G, ICO.
*3,3'-Dimethoxybenzidine	AIL, CWN, DUP, SDH.
3,3'-Dimethoxybenzidine hydrochloride	CWN.
2,4-Dimethoxybenzoic acid	ACY.
1,1-(3,3'-Dimethoxy-4,4'-biphenylene)bis[3-methyl-3-(2-sulfoethyl)triazene].	G.
1,4-Dimethoxy-2-nitrobenzene	EKT.
2,5-Dimethoxy-4'-nitrostilbene	UPJ.
3,4-Dimethoxyphenethylamine (Homoveratrylamine)	LIL.
4-(2',5'-Dimethoxyphenethyl)aniline hydrochloride	UPJ.
N-(3,4-Dimethoxyphenethyl)-2-(o-nitrophenyl)acetamide	x.
(3,4-Dimethoxyphenyl)acetic acid	LIL.
(3,4-Dimethoxyphenyl)acetonitrile	LIL.
16,17-Dimethoxyviolanthrone	ICI, MAY.
m-Dimethylaminobenzoic acid	SDH.
α-Dimethylamino-o-cresol	TKL.
6-Dimethylamino-2-(2-(2,5-dimethyl-1-phenyl-3-pyrryl)-vinyl)-1-methyl-1-quinolinium methyl sulfate.	x.
6-(Dimethylaminoethyl)-2-methoxy-4-nitrophenol	MEE.
Dimethylaminoethyl-4-methylpiperazine	UCC.
o-(2-Dimethylaminoethyl)phenol	RH.
2-[(2-Dimethylaminoethyl)thenylamino]pyridine (non-medicinal grade).	ABB.
α,α',α''-tris(Dimethylamino)mesitol	TKL.
o-(Dimethylaminomethyl)-p-butylphenol	RH.
m-Dimethylaminophenol	ACY, NAC.
N-(p-Dimethylaminophenyl)-1,4-naphthoquinoneimine	NAC.
*N,N-Dimethylaniline	ACY, DSC, DUP, NAC, SDH.
7,12-Dimethylbenz[a]anthracene	EK.
*N,N-Dimethylbenzylamine	ICO, MLS, x.
α,α'-Dimethylbenzyl hydroperoxide	ACP.
4-(α,α-Dimethylbenzyl)-2-phenylazophenol	TRC.
*2,2'-Dimethyl-1,1'-bianthraquinone	AAP, ACY, CMG, DUP, G, ICI, NAC, TRC.
2,4-Di(1-methylbutyl)phenol	PAS.
5,5-Dimethyl-1,3-cyclohexanedione	EKT.
N,N-Dimethylcyclohexylamine	DUP, EKT.
N,N-Dimethyl-2,2-diphenylacetamide	UPJ.
2',7'-Dimethylfluoran	WLM.
Dimethylhydantoin	GLY.
2,6-Dimethylhydroquinone	UPJ.
2,8-Dimethyl-13β-hydroxy-9(13β)-ceroxenone	WLM.
2,3-Dimethylindole	DUP.
2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydrochloride	IDC.
*N,N-Dimethyl-p-nitrosoaniline	ACY, DUP, G, NAC.
N,N-Dimethyl-p-phenylenediamine	EKT, NAC.
N,N-Dimethyl-p-phenylenediamine hydrochloride	EK.
Dimethylpiperazine	WYN.
1,4-Dimethylpiperazine	JCC, SEL.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
p-(1,1-Dimethylpropyl)phenol	PAS, UCP.
N,N-Dimethylsulfanilic acid	G.
Dimethyl-p-toluidine	SEL.
N,N-Dimethyl-p-toluidine	EK.
2,4-Dinitroaniline	AAP, ACY.
*p-(2,4-Dinitroanilino)phenol	DUP, G, NAC.
1,5(and 1,8)-Dinitroanthraquinone	AAP, TRC.
2,4-Dinitro-N,N'-(1,5-anthraquinonylene)dioxamic acid	TRC.
3,4'-Dinitrobenzanilide	AAP.
m-Dinitrobenzene	DUP, NAC.
2,4-Dinitrobenzenesulfonic acid	TRC.
3,5-Dinitrobenzoic acid	DUP, GAM, SAL, SDH.
3,5-Dinitrobenzoyl chloride	EK.
Dinitro(3,3'-bi-7H-benz[de]anthracen)-7,7'-dione	DUP, MAY.
2,4-Dinitrocumene	DUP.
1-(3,5-Dinitro-2-hydroxyphenylazo)-2-naphthol	TRC.
*2,4-Dinitrophenol, tech	AAP, DUP, NAC, SDC.
2,4-Dinitrophenylhydrazine	EK.
3,5-Dinitrosalicylic acid	EK.
*4,4'-Dinitro-2,2'-stilbenedisulfonic acid	ACY, DUP, G, NAC, SDH, TRC.
2,4-Dinitrotoluene	DUP, NAC.
2,4(and 2,6)-Dinitrotoluene	DUP, MOB.
3,5-Dinitro-p-toluenesulfonic acid	G.
1,5-Diphenoxyanthraquinone	ICI, VPC.
1,5(and 1,8)-Diphenoxyanthraquinone	AAP, DUP.
1,8-Diphenoxyanthraquinone	EKT, G, ICI.
*Diphenylacetic acid	ARA, BPC, LIL.
Diphenylacetone	TBK.
Diphenylamine	ACY, DOW, DUP.
6,8-Diphenylamino-1-naphthalenesulfonic acid	NAC.
2,8-Diphenylanthra[1,2-d:5,6-d']bisthiazole-6,12-dione	ICI.
α-d-1,2-Diphenyl-4-dimethylamino-2-hydroxy-3-methylbutane, camphor sulfonate.	LIL.
N,N'-Diphenylethylenediamine	DOW, RPC.
1,3-Diphenyl-1,3-propanedione	EK.
1,3-Diphenyltriazene	NAC.
2,4-Disulfonyl-5-chloro-(N-benzyl)-aniline	ABB.
2,5-Dithiobiurea	ACY.
Dithiodibenzoic acid	MEE.
2,2'-Dithiodibenzoic acid	LIL.
*1,4-Di(p-toluidino)anthraquinone	ATL, CMG, G, ICI, NAC, TRC, VPC.
1,5-Di(p-toluidino)anthraquinone	ICI.
1,8-Di(p-toluidino)anthraquinone	ICI.
1,4-Di(p-toluidino)-5,8-dihydroxyanthraquinone	ICI.
Divinylbenzene	DOW, FG, KPP.
Dixylylethane	GOC.
Dixylylguanidine	ACY.
Dodecylaniline	MON.
*Dodecylbenzene (including tridecylbenzene):	
Straight-chain	CO.
Other	ATR, CO, MON, NAC, SOC.
Dodecylmethylbenzene	x.
Dodecylmethylbenzyl chloride	x.
Dodecylnitrobenzene	MON.
*Dodecylphenol	G, MON, x.
o-Ethoxybenzoic acid	ACY.
(o-Ethoxybenzoyl)acetonitrile	ACY.
6-Ethoxy-2-mercaptobenzothiazole	ARA, DUP.
2-Ethoxynaphthalene	ICO, NAC.
2-Ethoxy-1-naphthoyl chloride	ICO, OFC.
4-Ethoxy-o-phenylenediamine	TRC.
3-Ethylamino-p-cresol	DUP.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
3-Ethylamino-p-toluenesulfonic acid [SO_3H=1]	DUP.
*N-Ethylaniline, refined	ACY, DUP, NAC, SDH.
2-(N-Ethylanilino)ethanol	DUP, EKT, G.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride	DUP.
(N-Ethylanilino)propionitrile	EKT.
α-(N-Ethylanilino)-m-toluenesulfonic acid	G.
α-(N-Ethylanilino)-p-toluenesulfonic acid	ICC, NAC, SDH, TRC, WJ.
N-Ethyl-p-anisidine	EKT.
N-Ethylanthranilic acid	G, SDH.
2-Ethylanthraquinone	NAC.
*Ethylbenzene	DOW, ENJ, FG, KPP, KPT, MDN, SHC, SIN, SKC, SNT, TOC, UCC.
o-(p-Ethylbenzoyl)benzoic acid	NAC.
Ethylbenzyl chloride	BPC.
N-Ethyl-N-(2-chloroethyl)aniline	DUP.
1-Ethyl-7-methyl-1,8-naphthyridin-4-one-3-carboxylic acid	SDH.
N-Ethyl-1-naphthylamine	DSC, DUP.
9-Ethyl-3-nitrocarbazole	TRC.
p-Ethylphenol	ACY.
*N-Ethyl-N-phenylbenzylamine	DUP, NAC, SDH.
*2-Ethyl-2-phenylmalonic acid, diethyl ester	BPC, MAL, VPC.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine) (MEP)	UCC.
1-Ethylpiperidine	RIL.
N-Ethyl-5-sulfoanthranilic acid	SDH.
6-Ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene	GIV.
N-Ethyl-m-toluidine	DUP.
N-Ethyl-o-toluidine	DUP.
3-(N-Ethyl-m-toluidino)-1,2-propanediol	EKT.
*3-(N-Ethyl-m-toluidino)propionitrile	DUP, EKT, G.
1-Ethynylcyclohexanol	EKT, NAC.
o-Fluoroaniline	NEP.
1-Fluoro-2,4-dinitrobenzene	EK.
o-Fluorotoluene	EK.
4-Formyl-m-benzenedisulfonic acid	G.
*o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)	G, NAC, SDH, VPC.
m-Formylbenzenesulfonic acid, sodium salt	G.
Furan	DUP.
Furfuryl alcohol	QKO.
Hexachlorobenzene	KPT, SCC.
Hexachlorocyclopentadiene	HK, VEL.
Hexachlorophenyl ether	DOW.
N-Hexadecylmorpholine	APD.
2,2′,4,4′,6,6′-Hexanitrodiphenylamine	EK.
Hippuric acid	BPC.
*p-Hydrazinobenzenesulfonic acid	ACY, G, STG, WJ.
3-Hydrazino-5-nitro-p-toluenesulfonic acid [SO_3H=1]	G.
Hydroquinone, tech	CRS, EKT.
2′-Hydroxyacetophenone	OTC.
3′-Hydroxyacetophenone	SDH.
4′-Hydroxyacetophenone	OTC.
3′-Hydroxyacetophenone benzoate	SDH.
6′-Hydroxy-m-acetotoluidide	TRC.
1-Hydroxyanthraquinone	AAP.
p-Hydroxybenzaldehyde	DOW.
2-Hydroxy-11H-benzo[a]carbazole-3-carboxylic acid	G.
p-Hydroxybenzoic acid	HN.
p-Hydroxybenzoic acid, butyl ester	HN, WSN.
p-Hydroxybenzoic acid, ethyl ester	HN, ICO, WSN.
*p-Hydroxybenzoic acid, methyl ester	HN, ICO, LEM, WSN.
*p-Hydroxybenzoic acid, propyl ester	HN, ICO, LEM, WSN.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
6'-Hydroxy-m-benzotoluidide	TRC.
o-(p-Hydroxybenzoyl)benzoic acid	LIL.
4-Hydroxycoumarin	ABB.
4-Hydroxy-N^1,N^1-dimethylmetanilamide	G.
3-(N-2-Hydroxyethylanilino)propionitrile	ICC.
N-β-Hydroxyethyl-2,4-dihydroxybenzamide	IDC.
3-Hydroxy-N-2-hydroxyethyl-2-naphthamide	x.
6'-Hydroxy-5'-(2-hydroxy-5-nitrophenylazo)-m-acetotoluidide	TRC.
N-[7-Hydroxy-8-(2-hydroxy-5-nitrophenylazo)-1-naphthyl]-acetamide.	TRC.
Hydroxyisophthalic acid	SDH.
2-Hydroxy-α^1,α^3-mesitylenediol	ACY.
2-Hydroxy-3-methylcinchoninic acid	G.
3-Hydroxy-2-methylcinchoninic acid	DUP, TRC.
N-Hydroxymethylphthalamide	ACY.
7-Hydroxy-1-naphthalenecarbamic acid, methyl ester	TRC.
1-Hydroxy-2-naphthalenesulfonic acid, potassium salt	EK.
3-Hydroxy-2-naphthanilide (Naphthol AS)	ATL, PCW.
1-Hydroxy-2-naphthoic acid	NAC.
2-Hydroxy-1-naphthoic acid	BL.
3-Hydroxy-2-naphthoic acid (B.O.N.)	AUG, DUP, HN, PCW.
3-Hydroxy-2-naphthoic acid, methyl ester	PCW.
1-Hydroxy-2-naphthoic acid, phenyl ester	EK.
3-Hydroxy-2-naphtho-o-toluidide	ACY, ATL.
N-(7-Hydroxy-1-naphthyl)acetamide	CMG, TRC.
1-(2-Hydroxy-1-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
N-(7-Hydroxynaphthyl)benzamide	TRC.
3'-[(7-Hydroxy-1-naphthyl)carbamoyl]acetanilide	TRC.
1-(2-Hydroxy-4-nitrophenylazo)-2-naphthol	TRC.
4-Hydroxypropiophenone	MLS.
2-Hydroxy-4-sulfo-1-naphthalenediazonium hydroxide, inner salt.	ACY.
1-Hydroxy-4-(p-toluidino)anthraquinone	ICI.
2-Imidazolidinone modifications	RH.
*1,1'-Iminobis[4-aminoanthraquinone]	ACY, CMG, DUP, G, ICI, MAY, NAC, TRC.
1,1'-Iminobis[4-benzamidoanthraquinone]	ACY, MAY.
*1,1'-Iminobis[5-benzamidoanthraquinone]	G, ICI, TRC.
*6,6'-Iminobis[1-naphthol-3-sulfonic acid]	DUP, G, NAC, TRC.
*1,1'-Iminobis[4-nitroanthraquinone]	ACY, DUP, ICI, MAY, TRC.
*1,1'-Iminodianthraquinone (Dianthrimide)	ACY, DUP, G, ICI, MAY, NAC, TRC.
2,2'-Iminodipyridine	RIL.
1,3-Indandione	PIG.
1-Iodonaphthalene	EK.
Isatin	NAC.
Isatoic anhydride	MEE.
*Isocyanic acid derivatives:	
Bitolylene diisocyanate (TODI)	CWN.
Dianisidine diisocyanate (DADI)	CWN.
3,4-Dichlorophenylisocyanate	DUP.
*Diphenylmethane 4,4'-diisocyanate (MDI)	CWN, DUP, MOB, NAC.
Phenylisocyanate	CWN.
Polyisocyanates (complex)	MOB.
Polymethylene polyphenylisocyanate	CWN.
Toluene 2,4-diisocyanate	DUP.
Toluene 2,4- and 2,6-diisocyanate (65/35 mixture)	DUP, NAC.
*Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	DUP, MOB, NAC.
Other isocyanic acid derivatives	CWN, MOB, UCC, UPC.
Isonicotinic acid, methyl ester	RIL.
Isonicotinonitrile	RIL.
Isonitrosopropiophenone	ICO, NEP.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
Isooctylphenol	G.
Isophorone	UCC.
Isophthalic acid (1,3-Benzenedicarboxylic acid)	ACC, SOC.
Isophthalic acid, dimethyl ester	MTR.
Isophthalic acid, diphenyl ester	BJL.
Isophthalonitrile	x.
N-Isopropylaniline	ACY, EKT.
p-Isopropylbenzoic acid	EK.
5,5′-Isopropylidenebis(2-hydroxy-m-xylene-α,α′-diol)	ARK.
*4,4′-Isopropylidenediphenol (Bisphenol A)	DOW, MON, SHC, UCP.
4,4′-Isopropylidenediphenol, ethoxylated	APD.
4,4′-Isopropylidenediphenol, propoxylated	APD.
o-Isopropylphenol	TNA.
4-Isopropyl-m-phenylenediamine	DUP.
Isothiocyanic acid, phenyl ester	TNC.
*Isoviolanthrone (Isodibenzanthrone)	ACY, DUP, G, MAY.
*Leuco-1,4-diaminoanthraquinone	ACY, ATL, DUP, G, ICC, ICI, MAY, TRC.
*Leuco quinizarin (1,4,9,10-Anthratetrol)	AAP, ACY, EKT, HSH, ICC, NAC.
*Leuco tetrahydroxyanthraquinone	G, ICC, TRC.
2,4-Lutidine	ACP, KPT.
3,4-Lutidine	RIL.
Mandelonitrile	KF.
*Melamine	ACN, ACY, RCI.
dl-p-Mentha-1,8-diene (Limonene)	HNW.
p-Mentha-1,4(8)-diene	GIV.
p-Mentha-1,8-diene	GIV.
*o-Mercaptobenzoic acid	EVN, LIL, MED.
Metanilamide	CMG, VPC.
Metanilic acid (m-Aminobenzenesulfonic acid)	DUP, NAC, TRC.
1-Methoxyanthraquinone	G.
4-Methoxymetanilic acid	G.
4′-Methoxy-2-(p-methoxyphenyl)acetophenone	CTN.
N-(2-Methoxy-1-naphthyl)acetamide	TRC.
2-Methoxy-4-nitrophenol	MEE.
p-Methoxyphenylacetic acid	TBK.
5-Methoxy-m-phenylenediamine (m-Diaminoanisole)	AAP.
4′-Methoxypropiophenone, crude	LIL.
*1-Methylaminoanthraquinone	AAP, ACY, DUP, G, ICI, NAC.
1-Methylamino-4-(p-toluidino)anthraquinone	G, ICI.
N-Methylaniline	ACY, DUP, NAC.
2-(N-Methylanilino)ethanol	G.
3-(N-Methylanilino)propionitrile	DUP.
5-Methyl-o-anisidine [NH_2=1]	DUP.
m-Methylanisole	GIV.
N-Methylanthranilic acid	ICC.
2-Methylanthraquinone	ACY, NAC.
1-(3-Methyl-2-anthraquinonylamino)-5-(7-oxo-7H-benz[de]-anthracen-3-ylamino)anthraquinone.	DUP.
3-Methylbenzo[f]quinoline	ACY, G.
2-Methylbenzothiazole	FMT.
N-Methylbenzylamine	ABB, MLS.
Methyl benzyl ether	UCC.
3-Methylcholanthrene	EK.
Methylcyclohexane	DOW, PLC.
N-Methylcyclohexylamine	DUP.
4-Methyl-α,α-diphenyl-1-piperazineethanol dihydrochloride	ABB.
N-Methyleneaniline	DUP.
4,4′-Methylenebis[2-chloroaniline]	DUP.
*4,4′-Methylenebis[N,N-diethylaniline]	DUP, G, SDH, TRC.
*4,4′-Methylenebis[N,N-dimethylaniline] (Methane base)	ACY, DSC, DUP, G, NAC, SDH, x.
4,4′-Methylenebis[N,N-dimethyl-3-nitroaniline]	G.
5,5′-Methylenebis[toluene-2,4-diamine]	NAC.
Methylenedianiline	DOW, NAC.
Methylenedisalicylic acid	HN.
5-Methylene-2-norbornene	DOW.
1-Methylindole-3-carboxaldehyde	G.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
Methyl-N-methyl-N-piperazine acetate	ABB.
6-Methyl-2-(2-methyl-6-quinolyl)-7-benzothiazolesulfonic acid.	DUP.
Methylnaphthalene, crude	KPT, VEL.
1-Methylnaphthalene	RIL.
N-Methyl-4'-nitroacetanilide	G, NAC.
N-Methyl-p-nitroaniline	EK, G.
5-Methyl-4-nitro-o-anisidine	PCW.
4-Methyl-2-nitroanisole	DUP.
*2-Methyl-1-nitroanthraquinone	DUP, G, ICI, NAC.
2-Methyl-5-nitroimidazole	RDA.
N-Methyl-N-nitroso-p-toluenesulfonamide	EK.
Methylnorbornene-2,3-dicarboxylic anhydride, isomers	NAC.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide	CMG, VPC.
p-(3-Methyl-5-oxopyrazolin-1-yl)benzenesulfonic acid	KLS.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	G, TRC.
*p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	AAP, ACY, CMG, DUP, G, TRC, VPC.
3-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,5-naphthalenedisulfonic acid.	TRC.
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO_3H=1].	CMG, G, TRC.
2-Methyl-5-phenylbenzoxazole	EK.
1-Methyl-1-phenylhydrazine	EK.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid	ICO, x.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid hydrochloride.	ICO.
*3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	DOW, DUP, NAC, SDH, SDW, VPC.
N-Methylpiperazine	UCC.
3-(α-Methylpiperidino)propanol	LIL.
16α-Methyl-1,4,9(11)pregnatriene-17α-21-diol-3,20-dione, 21-ethyl carbonate.	SCH.
Methylpropylcarbinylbarbituric acid	LIL.
Methylpyrazine	WYN.
1-Methylpyrrole	DUP.
*α-Methylstyrene	ACP, CLK, DOW, HPC.
N-Methyl-5-sulfoanthranilic acid	G.
2-Methylsulfonyl-4-nitroaniline	EKT.
Methyl 2-thienyl ketone	GAM.
p-Methylthioaniline hydrochloride	EVN.
4-(Methylthio)-m-cresol	CRZ.
p-(Methylthio)phenol	CRZ.
3-Methyl-6-(p-toluidino)-7H-dibenz[f,ij]isoquinoline-2,7(3H)-dione.	ICI.
3-Methyl-1-(p-tolyl)-2-pyrazolin-5-one	VPC.
6'-Methyl-4'-p-tolylsulfonamido-m-benzanisidide	NAC.
Morpholino propylchloride	ABB.
Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude).	KPT, RIL.
1,3-Naphthalenediol	EK.
1,5-Naphthalenediol (1,5-Dihydroxynaphthalene)	NAC.
*1,5-Naphthalenedisulfonic acid	G, NAC, TRC.
*2,7-Naphthalenedisulfonic acid	DUP, NAC, TRC.
1-Naphthalenesulfonic acid	TRC.
1-Naphthalenesulfonic acid, sodium salt	TRC.
2-Naphthalenesulfonic acid	ACY, NAC.
2-Naphthalenesulfonic acid, sodium salt	ACY.
2-Naphthalenesulfonyl chloride	DUP.
*1,4,5,8-Naphthalenetetracarboxylic acid	G, HST, TRC.
1,3,6-Naphthalenetrisulfonic acid	G.
Naphthalic anhydride	DUP.
Naphthalimide	DUP, NAC.
Naphthionic acid (4-Amino-1-naphthalenesulfonic acid)	ACY, DUP.
Naphthionic acid, sodium salt	DUP, NAC.
*1-Naphthol (α-Naphthol)	DUP, NAC, UCC, UCP.
2-Naphthol, tech. (β-Naphthol)	ACY, NAC, SW.
p-Naphtholbenzein	EK.
2-Naphthol-3,6-disulfonic acid (R acid)	ATL.
*2-Naphthol-3,6-disulfonic acid, disodium salt	ACY, G, NAC, TRC, WJ.
2-Naphthol-6,8-disulfonic acid (G acid)	DUP, TRC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
2-Naphthol-6,8-disulfonic acid, dipotassium salt	G.
2-Naphthol-6,8-disulfonic acid, disodium salt	ACY, NAC.
1-Naphthol-3-sulfonamide	G.
1-Naphthol-4-sulfonic acid (Nevile & Winther's acid)	ATL, DUP, NAC.
1-Naphthol-5-sulfonic acid	NAC.
1-Naphthol-8-sulfonic acid	G, VPC.
*2-Naphthol-6-sulfonic acid (Schaeffer's acid)	NAC, SNA, TMS.
*2-Naphthol-6-sulfonic acid, sodium salt	ACY, TRC, WJ.
2-Naphthol-7-sulfonic acid	DUP.
1-Naphthol-3-sulfonic acid, benzenesulfonate, sodium salt	G.
1-Naphthol-8-sulfonic acid sultone (1,8-Naphthosultone)	ACY, TRC.
1,4-Naphthoquinone	EKT.
Naphthostyril	DUP, NAC.
*Naphth[1,2]oxadiazole-5-sulfonic acid	CMG, G, NAC, TRC, VPC.
1-Naphthylamine (α-Naphthylamine)	DUP, NAC.
1-(2-Naphthylamino)anthraquinonecarboxylic acid	TRC.
*2-(Naphthylthio)acetic acid	AAP, ACY, VPC.
Nicotinonitrile (3-Cyanopyridine)	NEP, RIL.
Nitro-aceanthra[2,1-a]aceanthrylene-5,13-dione	ICI.
3'-Nitroacetanilide	G.
4'-Nitroacetanilide	G, TRC.
4'-Nitro-o-acetanisidide	DUP.
2-Nitro-p-acetanisidide	DUP, SDH.
3'-Nitroacetophenone	SDH.
5'-Nitro-o-acetotoluidide	DUP.
m-Nitroaniline	ACY, DUP.
o-Nitroaniline	AAP, MON.
*p-Nitroaniline	AAP, MON, SDC, UPM.
3-Nitro-p-anisamide	x.
*4-Nitro-o-anisidine [NH_2=1]	AAP, DUP, SDH.
*5-Nitro-o-anisidine [NH_2=1]	ACY, AUG, DUP, KLS.
2-Nitro-p-anisidine [NH_2=1]	DUP, SDH.
o-Nitroanisole	DUP, MON.
p-Nitroanisole	DUP.
4-Nitroanthranilic acid	DUP.
5-Nitroanthranilic acid	TRC.
1-Nitroanthraquinone	ACY.
1'-Nitroanthraquinone-2'-carboxyaminoaceanthra[2,1-a]-aceanthrylene-5,13-dione.	ICI.
*1-Nitro-2-anthraquinonecarboxylic acid	DUP, G, MAY, NAC, TRC.
*5-Nitro-1-anthraquinonesulfonic acid	DUP, NAC, TRC.
*5(and 8)-Nitro-1-anthraquinonesulfonic acid	ICI, NAC, TRC.
8-Nitro-1-anthraquinonesulfonic acid	NAC.
8-Nitro-1-anthraquinonesulfonic acid, sodium salt	DUP, TRC.
2-(4-Nitro-2-anthraquinonyl)anthra[2,3]oxazole-5,10-dione	G, NAC.
m-Nitrobenzaldehyde	SDH.
6-(p-Nitrobenzamido)-1-naphthol-3-sulfonic acid	DUP, G.
3'-Nitrobenzanilide	DUP.
4'-Nitrobenzanilide	G, TRC.
*Nitrobenzene	ACY, DUP, G, MON, NAC.
3-Nitrobenzenesulfonanilide	G.
*m-Nitrobenzenesulfonic acid	ACY, DUP, NAC.
*m-Nitrobenzenesulfonic acid, sodium salt	AAP, G, MAY, MON, MRA.
m-Nitrobenzenesulfonyl chloride	ACY.
p-Nitrobenzenesulfonyl chloride	EK.
5-Nitro-2(3H)-benzimidazolone	DUP, G.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
*m-Nitrobenzoic acid	HK, SDH, WAY.
*m-Nitrobenzoic acid, sodium salt	WAY.
p-Nitrobenzoic acid	DUP.
p-Nitrobenzoic acid, ethyl ester	ICO.
p-Nitrobenzoic acid, propyl ester	ICO.
m-Nitrobenzoyl chloride	HK.
p-Nitrobenzoyl chloride	DUP, HK.
4'-Nitro-4-biphenylcarboxylic acid	DUP, TRC.
2-Nitro-p-cresol	SW.
Nitrocyclohexane	x.
Nitrodiphenylamine	ACY.
5-Nitro-2-furaldehydediacetate	NOR.
5-Nitro-2-furaldehyde semioxamazide	NOR.
4-Nitro-6-(5-hydroxy-3-methyl-1-phenyl-4-pyrazolylazo)-1-phenol-2-sulfonic acid.	TRC.
5-Nitroisophthalic acid	G, GAM.
1-Nitronaphthalene	DUP, NAC.
*3-Nitro-1,5-naphthalenedisulfonic acid	G, NAC, TRC.
8(and 5)-Nitro-1(and 2)-naphthalenesulfonic acid	G.
4-Nitronaphthalic anhydride	G.
*7(and 8)-Nitronaphth[1,2]oxadiazole-5-sulfonic acid	G, NAC, TRC, VPC.
p-Nitrophenethyl acetate	EKT.
Nitrophenethyl alcohol	EKT.
o-Nitrophenol	DUP.
*p-Nitrophenol	DUP, MON, SDC, UPM.
p-Nitrophenol, sodium salt	MON, UPM.
4'-(p-Nitrophenyl)acetophenone	DUP, G.
4-Nitro-o-phenylenediamine	DUP, FMT.
(p-Nitrophenyl)hydrazine	EK.
(p-Nitrophenyl)hydrazine hydrochloride	EK.
2-(p-Nitrophenyl)-(2H)-naphtho[1,2-d]triazole-6,8-disulfonic acid.	TRC.
1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid	VPC.
o-Nitrophenyl phenyl sulfone	G.
4-Nitrophthalic acid	EK.
3-Nitrophthalic anhydride	EK.
4-Nitrophthalimide	DUP.
1-Nitropyrene	TRC.
5-Nitro-4,6-pyrimidinediol	KF.
5-Nitrosalicylaldehyde	EK.
3(and 5)-Nitrosalicylic acid	G.
p-Nitrosophenol	ACY, DUP, NAC.
β-Nitrostyrene	CWN.
2-[4-(4-Nitro-2-sulfostyryl)-3-sulfophenyl]-2H-naphtho-[1,2]triazole-5-sulfonic acid.	TRC.
m-Nitrotoluene	DUP.
o-Nitrotoluene	DUP, NAC.
p-Nitrotoluene	DUP, NAC.
Nitrotoluene mixtures	DUP, NAC.
*5-Nitro-o-toluenesulfonic acid [SO_3H=1]	ACY, DUP, G, NAC, SDH, TRC.
3-Nitro-p-toluenesulfonic acid [SO_3H=1]	AAP, CMG.
4'-Nitro-p-toluenesulfono-o-toluidide	G.
3-Nitrotoluic acid chloride	x.
3-Nitro-p-toluic acid, methyl ester	SDH.
4-Nitro-o-toluidine [NH_2=1]	DUP, G.
*5-Nitro-o-toluidine [NH_2=1]	DUP, KLS, SDH.
*2-Nitro-p-toluidine [NH_2=1]	AAP, ACY, DUP, NAC, SDH, SW.
5-Nitro-2-p-toluidinobenzenesulfonic acid	TRC.
*16-Nitroviolanthrone	ACY, ATL, G, MAY, TRC.
4-Nitro-m-xylene	DUP.
Nitroxylenes, mixed	DUP, NAC.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
2-tert-Nonyl-p-cresol	USR.
Nonyl-dinonylphenol, mixture	JCC.
*Nonylphenol	G, JCC, MON, RH, UCP, USR.
Octylphenol	G, PRD, RH.
7-Oxabicyclo[4.1.0]heptane	ARA.
Oxanilide	WSN.
*1-(7-Oxo-7H-benz[de]anthracen-3-ylamino)anthraquinone	ACY, DUP, G, ICI, TRC.
*1,1'-(7-Oxo-7H-benz[de]anthracen-3,9-ylenediimino)-dianthraquinone.	ACY, DUP, G, ICI, MAY, NAC, TRC.
2-Oxocyclohexanecarboxylic acid, ethyl ester	ARA.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid	NAC, SDW.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester	G, VPC.
*5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	AAP, G, ICI, VPC.
5-Oxo-1-(p-sulfotolyl)-2-pyrazoline-3-carboxylic acid	VPC.
Oxydianiline	OTC.
4,4'-Oxydianiline	x.
4,4'-Oxydiphenol	EK.
Penicillin, N-ethylpiperidine salt	MRK.
Pentadecyltoluene	CO.
1,1,3,3,5-Pentamethylindan	GIV.
Pentylnaphthalenes (Amylnaphthalenes)	PAS.
o-Pentylphenol (o-Amylphenol)	PAS.
3,4,9,10-Perylenetetracarboxylic acid	DUP, G.
3,4,9,10-Perylenetetracarboxylic diimide	DUP, NAC.
Phenacetyl chloride	ICO.
β-Phenethylamine	MLS.
β-Phenethylamine sulfate	MLS.
o-Phenethylbenzoic acid	LIL.
o-Phenetidine	MON.
p-Phenetidine	DOW, MON.
*Phenol:	
*Natural:	
*From coal tar:[1]	
39° C., m.p	KPT, PRD.
82%-84%	ACP, KPT.
All other	ACP, KPT, PRD.
*From petroleum	MER, NPC, PIT, PRD, SW.
*Synthetic:	
By caustic fusion: U.S.P	MAL, MON, RCI.
From chlorobenzene by liquid-phase hydrolysis: U.S.P	DOW.
From chlorobenzene by vapor-phase hydrolysis: U.S.P	HKD, UCP.
*From cumene by oxidation: U.S.P	ACP, CLK, HPC, MON, SHC, SKO, SOC, UCC.
Phenolsulfonaphthalein, sodium salt	EK.
*1-Phenol-4-sulfonic acid	DOW, MON, UPF.
Phenoxypropanol	ICO.
2-Phenoxypropionic acid	ICO.
α-Phenoxypropionyl chloride	ICO.
Phenylacetic acid (α-Toluic acid)	BPC, GIV, TBK.
Phenylacetic acid, ethyl ester, tech	BPC, MAL.
*Phenylacetic acid, potassium salt	BPC, OPC, TBK.
Phenylacetic acid, sodium salt	BPC.
*Phenylacetonitrile (α-Tolunitrile)	BPC, OPC, SDW, TBK.
4'-Phenylacetophenone	DUP, NES.
2-Phenylanthr[2,3]oxazole-5,10-dione	G.
*p-Phenylazoaniline (p-Aminoazobenzene) and hydrochloride	AAP, ACY, DUP, G, NAC.
4-Phenylazodiphenylamine	EK.
4-Phenylazo-1-naphthylamine	DUP.
5-Phenylazosalicylic acid	TRC.
N^1-Phenyl-1,2,4-benzenetriamine	RBC.
1-Phenyl-1,3-butanedione	EK.
2-Phenylbutyric acid	BPC.

See footnote at end of table.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
α-Phenyl-o-cresol	RBC.
N,N'-p-Phenylenebis[acetamide]	ACY.
m-Phenylenediamine	ACY, DUP, G, NAC.
o-Phenylenediamine	FMT, MEE, TRC.
p-Phenylenediamine	BFG.
Phenyl ether (Diphenyl oxide)	ACY, DOW.
Phenylglycine	KF.
D(-)-2-Phenylglycine	OTC.
D(-)Phenylglycine and derivatives	KF.
Phenylglycine, sodium salt	NAC.
D(-)-2-Phenylglycyl chloride hydrochloride	OTC.
5-Phenylhydantoin	ABB, x.
Phenylhydrazine	DOW.
Phenylhydrazine hydrochloride	EK, VPC.
*2,2'-(Phenylimino)diethanol (Phenyldiethanolamine)	AAP, DUP, EKT, G.
3,3'-(Phenylimino)dipropionitrile	DUP.
Phenylmalonic acid, diethyl ester	BFC.
o-Phenylphenol	DOW, RCI.
o-Phenylphenol, chlorinated	DOW.
o-Phenylphenol, sodium salt	DOW.
p-Phenylphenol	DOW.
N-Phenyl-p-phenylenediamine	DUP, USR.
Phenylphosphonous acid	VIC.
Phenylphosphonous acid, sodium salt	VIC.
Phenylpiperazine	RSA.
1-Phenyl-1,2-propanedione, 2-oxime	BKL.
Phenyl-2-propanone	ORT, SK.
N-3-Phenylpropyl-p-toluidine	EK.
Phenyl 2-pyridyl ketone	RIL.
Phenyl sulfone	NES.
o-(Phenylsulfonyl)aniline	G.
Phenylthioacetic acid	EVN.
1-Phenyl-2-thiourea	EK.
Phenylundecanoic acid	EK.
Phloroglucinol	MRT.
Phthalazinone	AAP.
*1(2H)-Phthalazinone	KPT, NAC, SDH.
Phthalic acid	EK, KF.
Phthalic acid, disodium salt	TNC.
*Phthalic anhydride	ACP, GRH, HN, KPS, MON, PCC, RCI, SOC, SW, THC, UCC, WTC.
Phthalide	FMT, NAC.
Phthalimide	DUP, MEE, NAC, SFA.
Phthalocyaninato(2-)iron	DUP.
[Phthalocyanine(2-)]copper	ICI.
Phthalocyaninedisulfonic acid, copper derivative	ICI.
Phthalocyaninetetrasulfonyl chloride, copper derivative	DUP.
Phthaloyl chloride (Phthalyl chloride)	MON.
Picolines:[1]	
*2-Picoline (α-Picoline)	ACP, KPT, RIL, UCC.
3-Picoline (β-Picoline)	RIL.
4-Picoline (γ-Picoline)	RIL, UCC.
Picoline (3,4-mixture)	ACP, KPT.
Picolinic acid	NEP.
3-Picolylamine	RIL.
Picramic acid and salt	DUP.
Picric acid (Trinitrophenol)	DUP, NAC, SDC.
2-Pipecoline	LIL.
Piperazine mixture, crude	JCC.
*Piperidine	ABB, DUP, MRK, RIL.
3-Piperidinopropiophenone hydrochloride	ACY.
Polychlorobiphenyl	MON.
Polydodecylbenzene	CO.
Polyethylbenzene (80% Diethylbenzene)	UCC.
Primuline base	DUP, NAC.
Primulinesulfonic acid	ATL.

See footnote at end of table.

TABLE 7B. -- *Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
*Propiophenone	LIL, OPC, TBK.
Propylbenzene	EK.
2-Propylpyridine	RIL.
*Pyranthrone	CMG, ICI, TRC.
1-Pyreneamine	TRC.
Pyridine, refined:[1]	
*2° Pyridine	ACP, KPT, RIL.
Other grades	KPT.
2,5-Pyridinedicarboxylic acid	RIL.
Pyridine hydrochloride	EK.
3-Pyridinemethanol	RIL.
3-Pyridinol	NEP.
2(1H)-Pyridone	FMT.
4,6-Pyrimidinediol	KF.
2-Pyrimidinol	GGY.
Pyromellitic acid	DUP.
Pyromellitic dianhydride	DUP, HEX.
2-Pyrrolidinone	G.
3-(1-Pyrrolidinyl)propiophenone hydrochloride	LIL.
*Quinaldine	ACY, DUP, NAC.
*Quinizarin	AAP, ACY, CMG, DUP, EKT, HSH, ICC, ICI, JTC, MAY, NAC, TRC.
*2-Quinizarinsulfonic acid	G, HSH, NAC, PAT.
Quinoline:	
1° and 2° Quinoline	ACP, KPT.
Other grades	EK.
2,4-Quinolinediol	DUP.
8-Quinolinol (8-Hydroxyquinoline, tech.)	GAM.
Quinophthalone	DUP.
Quinothalone (Quinoline yellow, base)	NAC.
Resorcinol, monoacetate (nonmedicinal grade)	AAP.
Resorcinol, tech	KPT.
β-Resorcylaldehyde	EK, G.
β-Resorcylic acid	ACY, KPT.
β-Resorcylic acid, lead salt	ACY.
*Salicylaldehyde	DOW, HN, MTR.
Salicylanilide	PCW.
*Salicylic acid, tech	CFC, DOW, HN, MON, SDH.
Salicylic acid, ammonium chromium complex	TRC.
Salicylic acid, sodium salt (crude)	DOW.
Salicylideneaminoguanidine oleate	DUP.
Sodium phenoxide	DUP, FIN.
Styphnic acid, lead salt	REM.
*Styrene, all grades	ACC, CSD, DOW, ELP, FG, KPP, MCB, MON, SHC, SKC, SNT, UCC.
β-Styrenesulfonic acid, sodium salt	BKL.
4'-Sulfamoylacetanilide	ACY, CTN.
5-Sulfamoylanthranilic acid	TRC.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt	ACY, CTN, NAC.
4-Sulfoanthranilic acid	CMG.
5-Sulfoanthranilic acid	ICI.
o-Sulfobenzoic, cyclic anhydride	EK.
5-Sulfoisophthalic acid, dimethyl ester	x.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)	MON, UPF.
4-Sulfophthalic acid	CWN.
Terephthalic acid	ACC, DUP, SOC.
*Terephthalic acid, dimethyl ester	ACC, DUP, EKT, HPC.
Terephthaloyldiacetic acid, diethyl ester	PCW.
Terphenyl (Phenylbiphenyl)	MON.
[4,4',4'',4'''-Tetraaminophthalocyaninato(2-)]copper	DUP.
Tetrabromobisphenol A	DOW.
Tetrabromophenolphthalein, ethyl ester	EK.
Tetrabromophthalic anhydride	MCH.
Tetrabromo-8,16-pyranthrenedione	G, NAC.

See footnote at end of table.

TABLE 7B. -- *Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
1,3,6,8-Tetrabromopyrene	G.
*1,4,5,8-Tetrachloroanthraquinone	DUP, G, ICI, NAC.
1,2,4,5-Tetrachlorobenzene	DOW, HK.
Tetrachloronitrobenzene	SDH.
α,α,2,6-Tetrachlorotoluene	DUP.
Tetrachloroviolanthrone	ICI.
Tetrahydrofuran	DUP, QKO.
1,4,5,8-Tetrahydroxyanthraquinone	NAC.
1,4,5,8-Tetrakis[1',1'',1''',1'''' -anthraquinonylamino]-anthraquinone (Pentanthrimide).	ICI, NAC.
2-(1,1,3,3-Tetramethylbutyl)-p-cresol	ACY.
p-(1,1,3,3-Tetramethylbutyl)phenol	G.
N,N,N',N'-Tetramethyl-p-phenylenediamine dihydrochloride	EK.
[4,4',4'',4'''-Tetranitrophthalocyaninato(2-)]copper	DUP.
2-(2-Thenylamino)pyridine	ABB.
Thianthrene-X,Y-dicarboxylic acid	TRC.
Thianthrene-X,Y-dinitrile	TRC.
Thioanisole	PIT.
2-Thiobarbituric acid	EK.
3,3'-Thiobis[7H-benz[de]anthracen-7-one]	ACY, DUP, G.
4,4'-Thiodianiline	ACY.
6,6'-Thiodimetanilic acid	NAC.
Thiolbenzoic acid	EVN.
2-Thiophenecarboxaldehyde	ABB.
sym-Thymol	GIV.
o-Tolidine	CWN, DUP, LAK.
2,2'-o-Tolidinedisulfonic acid	AAP.
o-Tolidine hydrochloride	AAP, DUP, EK.
Toluenediamine	CMC.
Toluene-2,4-diamine (4-m-Tolylenediamine)	ACY, BL, DUP, G, NAC, SDC, TRC.
Toluene-3,4-diamine	x.
Toluene-2,5-diamine sulfate	EK.
Toluene-2,4-disulfonic acid	G.
o-Toluenesulfonamide	MON.
p-Toluenesulfonamide	MON.
*o(and p)-Toluenesulfonic acid	CTN, MON, NAC, NES, SW, UPF.
p-Toluenesulfonic acid	ACY, TN, UPF.
Toluenesulfonic acid, aniline salt	NES.
p-Toluenesulfonic acid, 2-chloroethyl ester	G.
p-Toluenesulfonic acid, ethyl ester	NAC.
p-Toluenesulfonic acid, methyl ester	ICI.
p-Toluenesulfonic acid monohydrate	CTN, NES.
p-Toluenesulfonyl chloride	MON.
p-Toluhydroquinone (Methylhydroquinone)	EKT.
m-Toluic acid	CWL.
o-Toluic acid	CWL.
p-Toluic acid	CWL.
m-Toluidine	DUP, NAC.
o-Toluidine	DUP, NAC.
o-Toluidine hydrochloride	ACY, EK.
p-Toluidine	DUP, NAC.
N-(p-Toluidine)methyltaurine	BUC.
Toluidines, mixed	DUP.
2-o-Toluidinoethanol	EKT.
N-(2-(m-Toluidino)ethyl)succinimide	EKT.
m-Toluidinomethanesulfonic acid	TRC.
o-Toluidinomethanesulfonic acid	TRC.
8-(p-Toluidino)-1-naphthalenesulfonic acid	NAC.
*o-(p-Toluoyl)benzoic acid	ACY, DUP, NAC.
*4-(o-Tolylazo)-o-toluidine	ACY, DUP, G, KLS, NAC, SDH, TRC.
4-(o-Tolylazo)-o-toluidine hydrochloride	G.
2,2'-(m-Tolylimino)diethanol	EKT, G.
3,4',5-Tribromosalicylanilide	DOW, MEE.
1,2,3(and 1,2,4)-Trichlorobenzene	PPG.
1,2,4-Trichlorobenzene	DOW, HK, SVT.

TABLE 7B.--*Cyclic intermediates for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
N,2,6-Trichloro-p-benzoquinoneimine	EK.
1,2,4-Trichloro-5-nitrobenzene	ALL, PCW.
Trichlorophenylsilane	DCC, UCS.
α,α,α-Trichlorotoluene (Benzotrichloride)	HK, HN, TNP.
α,2,4-Trichlorotoluene	HN.
α,2,4(and α,2,6)-Trichlorotoluene	BPC.
α,3,4-Trichlorotoluene	HN.
1,3,5-Triethylbenzene	DUP.
3-Trifluoromethyldiphenylamine	SK.
2-Trifluoromethylphenothiazine	SK.
α,α,α-Trifluoro-4-nitro-m-cresol	MEE.
α,α,α-Trifluoro-m-nitrotoluene	MEE.
α,α,α-Trifluorotoluene	HK.
α,α,α-Trifluoro-m-toluidine	MEE.
1,2,4-Trihydroxyanthraquinone	G.
2,3,5-Triiodobenzoic acid	EK.
3,4,5-Trimethoxybenzoic acid	ICO.
2,4,5-Trimethylaniline (Pseudocumidine)	NAC.
1,2,4-Trimethylbenzene (Pseudocumene)	ENJ, PLC.
2,3,3-Trimethy-3H-indole	G.
*1,3,3-Trimethyl-$\Delta^{2,\alpha}$-indolineacetaldehyde	DUP, G, VPC.
*1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)	DUP, G, VPC.
Trimethylphenylammonium iodide	EK.
α,α',2-Trimethyl-1,4-piperazine diethanol	WYN.
1,3,5-Trinitrobenzene	EK.
2,4,6-Trinitrobenzoic acid	EK.
2,4,7-Trinitrofluorenone-9-one	EK.
Triphenylmethanol	EK.
2,4,6-Tris[dimethylaminomethyl]phenol	RH.
Tropine	CTN.
m-Ureidoaniline	ICI.
*6,6'-Ureylenebis[1-naphthol-3-sulfonic acid] (J acid urea).	ACY, ATL, CMG, G, NAC, TRC, VPC.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	GIV, LIL, SLV.
p-Vinylbenzenesulfonic acid, sodium salt	DUP.
2-Vinylcyclohexene	UCC.
4-Vinylcyclohexene	PLC.
2,2'-Vinylenebis[benzimidazole]	TRC.
5-Vinyl-2-picoline (MVP)	PLC.
2-Vinylpyridine	RIL.
4-Vinylpyridine	RIL.
*Violanthrone (Dibenzanthrone)	ACY, ATL, DUP, G, ICI, MAY, TRC.
9-Xanthenecarboxylic acid	MAL.
m-Xylene	PLC, SNT, SOC.
*o-Xylene	ASH, CCP, CSD, CSO, DLH, ENJ, MON, PLC, SIN, SNT, SOC, TOC.
*p-Xylene	CSD, ENJ, SIN, SNT, SOC.
m-Xylene-α,α'-diamine	x.
Xylenesulfonic acid	NES.
2,5-Xylenesulfonic acid	EK.
Xylenol crystals	ACP, KPT.
Xylenols:	
Low b.p	NPC, PIT, PRD.
*Medium b.p	KPT, NPC, PIT, PRD.
Not classified as to b.p	KPT, NPC, PRD.
Xylidines:	
2,4-Xylidine (m-4-Xylidine)	DUP, NAC.
2,5-Xylidine (p-Xylidine)	DUP, NAC.
Original mixture	DUP, NAC.
4-(2,4-Xylylazo)-o-toluidine	NAC.
4-(2,5-Xylylazo)-o-toluidine	ACY, NAC.
4-(Xylylazo)xylidine	G.
4-(2,4-Xylylazo)-2,5-xylidine	NAC.
All other cyclic intermediates	CCW, G, HPC, ICC, LIL, UPJ, x, x, x.

[1] Does not include manufacturers' identification codes for producers that report to the Division of Bituminous Coal, U.S. Bureau of Mines. These producers are listed in the U.S. Bureau of Mines Mineral Industry Survey *Coke Producers in the United States in 1964*, May 17, 1965.

Dyes

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Dyes for which separate statistics are given in table 8A are marked below with an asterisk (*); dyes not so marked do not appear in table 8A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. An x signifies that the manufacturer did not consent to his identification with the designated product]

Dye	Manufacturers' identification codes (according to list in table 22)
ACID DYES	
*Acid yellow dyes:	
Acid Yellow 1	ACY.
Acid Yellow 2	DUP.
*Acid Yellow 3	ACY, DUP, NAC.
Acid Yellow 4	SDH.
Acid Yellow 7	NAC.
Acid Yellow 9	ACY.
*Acid Yellow 11	CMG, DUP, VPC.
Acid Yellow 14	TRC.
*Acid Yellow 17	ACY, ATL, BKS, CMG, DUP, G, NAC, PBC, SDH, TRC, VPC.
*Acid Yellow 23	AAP, ACY, G, MRX, NAC, SDH, TRC, VPC.
Acid Yellow 25	G.
Acid Yellow 29	G, TRC.
Acid Yellow 34	NAC.
*Acid Yellow 36	DUP, G, NAC, TRC.
Acid Yellow 38	NAC.
*Acid Yellow 40	ACY, DUP, G, NAC, TRC, VPC.
*Acid Yellow 42	AAP, ACY, G, VPC.
*Acid Yellow 44	AAP, G, NAC, VPC.
*Acid Yellow 54	ACY, BKS, CMG, G, NAC, TRC, VPC.
Acid Yellow 59	VPC.
Acid Yellow 60	NAC.
Acid Yellow 63	AAP, NAC.
Acid Yellow 65	TRC.
*Acid Yellow 73	G, NAC, NYC, SDH.
Acid Yellow 76	TRC.
Acid Yellow 90	NAC.
Acid Yellow 95	CMG.
*Acid Yellow 99	CMG, G, NAC, TRC, VPC.
Acid Yellow 114	CMG, TRC.
Acid Yellow 121	G.
Acid Yellow 124	DUP, NAC.
Acid Yellow 127	TRC.
Acid Yellow 128	TRC.
Acid Yellow 129	TRC.
Acid Yellow 151	ACY.
Acid Yellow 152	ACY.
Acid Yellow 159	TRC.
Other acid yellow dyes	ACY, ALT, CMG, DUP, VPC.
*Acid orange dyes:	
*Acid Orange 1	ALT, BKS, G, NAC.
Acid Orange 2	NAC.
Acid Orange 5	ACY.
Acid Orange 6	NAC.
*Acid Orange 7	AAP, ACY, ATL, BKS, CPC, G, NAC, PDC, TRC, YAW.
*Acid Orange 8	ACY, ATL, BKS, DUP, G, NAC, TRC.
*Acid Orange 10	ACY, ATL, DUP, G, NAC, TRC, VPC, YAW.
Acid Orange 12	NAC.
Acid Orange 19	G.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
ACID DYES--Continued	
*Acid orange dyes--Continued	
*Acid Orange 24	AAP, ACY, DUP, G, NAC, TRC, YAW.
Acid Orange 28	NAC.
Acid Orange 31	AAP.
Acid Orange 32	AAP.
Acid Orange 34	ACY.
Acid Orange 45	NAC, TRC.
Acid Orange 49	TRC.
Acid Orange 51	CMG, NAC, TRC.
Acid Orange 52	NAC.
Acid Orange 56	G.
*Acid Orange 60	CMG, DUP, G.
Acid Orange 62	TRC.
Acid Orange 63	G, TRC.
Acid Orange 64	ACY, DUP, NAC.
Acid Orange 69	ACY.
Acid Orange 72	G.
*Acid Orange 74	CMG, G, NAC, TRC.
Acid Orange 76	NAC, TRC.
Acid Orange 85	NAC.
Acid Orange 86	NAC, TRC.
Acid Orange 114	ACY.
Acid Orange 116	BKS, TRC.
Acid Orange 119	TRC.
Other acid orange dyes	ALT, VPC.
*Acid red dyes:	
*Acid Red 1	AAP, ACY, BKS, DUP, G, NAC, SDH, TRC, VPC, YAW.
*Acid Red 4	ATL, CMG, DUP, G, TRC, VPC, YAW.
Acid Red 12	G, NAC, TRC.
*Acid Red 14	ATL, DUP, G, NAC, PDC.
Acid Red 17	ATL, NAC, TRC, YAW.
*Acid Red 18	ACY, ATL, DUP, G, NAC, TRC.
Acid Red 25	TRC.
*Acid Red 26	ACY, ATL, CPC, G, NAC.
Acid Red 27	NAC.
Acid Red 29	NAC.
Acid Red 32	G, NAC.
Acid Red 33	NAC, YAW.
Acid Red 34	DUP, NAC.
Acid Red 35	AAP, G.
*Acid Red 37	BNS, CMG, DUP, G, NAC, TRC.
Acid Red 42	G.
Acid Red 52	G.
Acid Red 57	TRC.
Acid Red 60	TRC.
Acid Red 66	AAP, NAC.
*Acid Red 73	ACY, DUP, G, NAC, TRC.
Acid Red 76	NAC.
Acid Red 80	G, ICI.
*Acid Red 85	ACY, ALT, ATL, BKS, CMG, DUP, G, NAC, PDC, TRC, VPC, YAW.
*Acid Red 87	AMS, NYC, SDH.
*Acid Red 88	ACY, ATL, DUP, G, NAC, SDH, TRC, YAW.
*Acid Red 89	AAP, G, TRC, VPC.
Acid Red 92	NYC, SDH.
Acid Red 94	NYC.
Acid Red 97	ATL, G.
*Acid Red 99	CMG, NAC, TRC, VPC.
Acid Red 100	VPC.
Acid Red 106	YAW.
Acid Red 109	VPC.
Acid Red 113	DUP.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
ACID DYES--Continued	
*Acid red dyes--Continued	
Acid Red 114	ATL, DUP, G.
*Acid Red 115	G, NAC, TRC.
Acid Red 119	NAC.
Acid Red 133	G.
Acid Red 134	TRC.
*Acid Red 137	ACY, DUP, G, NAC, TRC.
*Acid Red 151	AAP, ACY, BKS, TRC, YAW.
Acid Red 153	YAW.
Acid Red 167	BKS, NAC, TRC.
Acid Red 172	VPC.
Acid Red 175	DUP.
Acid Red 178	DUP.
Acid Red 179	CMG.
*Acid Red 182	ACY, BKS, CMG, DUP, G, NAC.
Acid Red 183	CMG, TRC.
Acid Red 184	TRC.
*Acid Red 186	ACY, BKS, CMG, DUP, G, TRC, VPC.
Acid Red 190	ACY.
Acid Red 191	TRC.
Acid Red 194	TRC.
Acid Red 207	NAC.
Acid Red 212	TRC.
Acid Red 213	TRC.
Acid Red 218	NAC.
Acid Red 273	G.
Acid Red 292	ACY.
Acid Red 299	TRC.
Acid Red 309	TRC.
Other acid red dyes	ACY, ALT, ATL, TRC, VPC.
*Acid violet dyes:	
*Acid Violet 1	CMG, G, NAC.
*Acid Violet 3	ACY, DUP, NAC, TRC, YAW.
Acid Violet 6	NAC.
*Acid Violet 7	AAP, CMG, DUP, G, NAC, TRC, VPC.
Acid Violet 11	G.
*Acid Violet 12	CMG, DUP, G.
Acid Violet 13	DUP.
Acid Violet 14	TRC.
*Acid Violet 17	DUP, G, SDH, TRC.
Acid Violet 21	DUP.
Acid Violet 29	HSH.
Acid Violet 34	ICI, NAC.
Acid Violet 41	CMG.
*Acid Violet 43	DUP, HSH, ICI.
Acid Violet 49	ACY, NAC.
Acid Violet 56	CMG, G.
Acid Violet 58	G.
Acid Violet 76	NAC.
Acid Violet 78	NAC.
Other acid violet dyes	ALT, DUP, TRC.
*Acid blue dyes:	
Acid Blue 1	G, NAC, SDH.
*Acid Blue 7	ACY, G, NAC, SDH, VPC.
*Acid Blue 9	G, NAC, SDH, VPC.
Acid Blue 10	AAP, NAC.
Acid Blue 13	DUP.
Acid Blue 15	DUP, G.
Acid Blue 20	ACY, NAC.
Acid Blue 22	ACY, NYC.
Acid Blue 23	NAC, TRC.
*Acid Blue 25	ATL, CMG, DUP, G, NAC, TRC.
Acid Blue 26	NAC.
Acid Blue 27	CMG, G.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
ACID DYES--Continued	
*Acid blue dyes--Continued	
Acid Blue 29	YAW.
Acid Blue 34	NAC.
Acid Blue 35	NAC.
*Acid Blue 40	ATL, G, ICI, NAC, TRC.
*Acid Blue 41	CMG, G, NAC.
*Acid Blue 43	ACY, G, NAC, TRC.
*Acid Blue 45	ACY, CMG, DUP, G, NAC, TRC, VPC.
Acid Blue 47	DUP, ICI.
Acid Blue 48	HSC.
Acid Blue 58	DUP.
Acid Blue 59	NAC.
Acid Blue 62	G, VPC.
Acid Blue 63	CMG, NAC.
Acid Blue 67	CMG, NAC.
Acid Blue 69	DUP, G.
Acid Blue 74	DUP, NAC.
*Acid Blue 78	DUP, G, ICI, NAC, TRC.
Acid Blue 80	NAC, TRC.
Acid Blue 81	ICI.
Acid Blue 83	G.
Acid Blue 89	NAC.
Acid Blue 90	G, NAC, TRC.
Acid Blue 92	NAC.
Acid Blue 93	HSC.
Acid Blue 102	NAC, TRC.
Acid Blue 104	DUP, G, NAC.
*Acid Blue 113	CMG, DUP, G.
Acid Blue 118	BKS, G, NAC.
Acid Blue 120	BKS, G, NAC.
Acid Blue 122	DUP.
Acid Blue 137	NAC.
Acid Blue 145	DUP.
*Acid Blue 158 and 158A	ACY, BKS, G, NAC, TRC, VPC.
Acid Blue 165	DUP.
Acid Blue 179	G.
Acid Blue 230	TRC.
Acid Blue 231	TRC.
Other acid blue dyes	ACY, ALT, CMG, DUP, TRC, VPC.
*Acid green dyes:	
Acid Green 1	ACY, NAC.
*Acid Green 3	ACY, DUP, G, NAC, TRC, VPC.
Acid Green 5	G.
*Acid Green 9	ACY, DUP, G, NAC, VPC.
*Acid Green 12	G, NAC, TRC.
*Acid Green 16	DUP, G, NAC, SDH, TRC.
*Acid Green 20	CMG, DUP, G, NAC, TRC.
*Acid Green 22	G, HSH, NAC.
*Acid Green 25	AAP, ATL, CMG, G, ICI, NAC, TRC, VPC.
Acid Green 35	TRC.
Acid Green 41	ICI, VPC.
Acid Green 44	VPC.
Acid Green 50	ACY, G, VPC.
Acid Green 58	TRC.
Other acid green dyes	ALT, TRC, VPC.
*Acid brown dyes:	
Acid Brown 1	CMG, G.
Acid Brown 2	AAP.
Acid Brown 6	G.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
ACID DYES--Continued	
*Acid brown dyes--Continued	
*Acid Brown 14	AAP, ACY, DUP, G, NAC, TRC, YAW.
Acid Brown 19	TRC.
Acid Brown 22	DUP.
Acid Brown 28	TRC.
Acid Brown 29	DUP, NAC.
Acid Brown 31	G.
Acid Brown 45	TRC.
Acid Brown 96	ACY.
Acid Brown 97	ACY.
Acid Brown 98	ACY, TRC.
Acid Brown 152	G.
Acid Brown 158	G.
Acid Brown 223	G.
Acid Brown 243	G.
Other acid brown dyes	ALT, DUP, G, VPC
*Acid black dyes:	
*Acid Black 1	AAP, ACY, ATL, BKS, CMG, DUP, FAB, G, NAC, PDC, TRC, YAW.
Acid Black 2	ACY, NAC.
Acid Black 12	NAC.
Acid Black 16	NAC.
Acid Black 18	NAC.
*Acid Black 24	CMG, DUP, G, NAC.
Acid Black 26, 26A, and 26B	DUP, NAC, TRC.
Acid Black 29	G, NAC.
Acid Black 41	G, NAC.
*Acid Black 48	ACY, CMG, DUP, G, ICI, NAC, TRC.
*Acid Black 52	G, NAC, TRC.
Acid Black 53	CMG, NAC.
Acid Black 58	CMG, NAC, TRC.
Acid Black 60	TRC.
Acid Black 92	ACY.
*Acid Black 107	G, NAC, TRC.
Acid Black 138	VPC.
Other acid black dyes	ALT, BL, DUP, PDC.
AZOIC DYES AND COMPONENTS	
Azoic Compositions	
Azoic yellow dyes:	
*Azoic Yellow 1	ALL, ATL, BUC, G, HST, VPC.
*Azoic Yellow 2	ALL, BUC, HST, x.
Azoic Yellow 3	ATL, BUC, G.
Azoic orange dyes:	
*Azoic Orange 3	ALL, ATL, BUC, G, VPC, x.
Azoic Orange 4	G.
*Azoic red dyes:	
*Azoic Red 1	ALL, ATL, BUC, G, HST, x.
*Azoic Red 2	ALL, ATL, BUC, G, x.
*Azoic Red 6	ALL, ATL, BUC, G, HST, VPC, x.
Azoic Red 13	G.
Azoic Red 14	G.
Azoic Red 15	G.
*Azoic Red 16	ATL, BUC, G.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Compositions--Continued	
*Azoic red dyes--Continued	
Azoic Red 73	G.
Azoic Red 74	G.
Other azoic red dyes	ATL, BUC, G, VPC, x.
Azoic violet dyes:	
Azoic Violet 1	ATL, G, x.
Other azoic violet dyes	G.
Azoic blue dyes:	
*Azoic Blue 2	ATL, BUC, G.
*Azoic Blue 3	ALL, ATL, BUC, G, HST, x.
Azoic Blue 4	G.
Azoic Blue 6	ATL, G.
Azoic Blue 7	G.
Other azoic blue dyes	G, VPC.
Azoic green dyes:	
Azoic Green 1	ATL, G.
Other azoic green dyes	VPC.
Azoic brown dyes:	
*Azoic Brown 9	ATL, BUC, G, HST, VPC, x.
Azoic Brown 10	BUC.
Azoic Brown 26	G.
Other azoic brown dyes	BUC, G, VPC, x.
*Azoic black dyes:	
Azoic Black 1	G, HST.
Azoic Black 2	BUC.
Azoic Black 4	ALL, ATL, G.
Azoic Black 15	G.
Other azoic black dyes	ATL, G, VPC.
Other azoic compositions	ALL.
Azoic Diazo Components, Bases (Fast Color Bases)	
Azoic Diazo Component 1, base	SDH.
Azoic Diazo Component 2, base	AAP, ATL.
Azoic Diazo Component 3, base	AAP, KLS, SDH.
*Azoic Diazo Component 4, base	ALL, G, KLS, NAC, SDH.
Azoic Diazo Component 5, base	G, SDH.
Azoic Diazo Component 8, base	DUP, NAC.
*Azoic Diazo Component 9, base	AAP, DUP, VPC.
Azoic Diazo Component 10, base	BUC, G, KLS.
Azoic Diazo Component 11, base	BUC.
*Azoic Diazo Component 12, base	AAP, ALL, AUG, KLS, SDH.
Azoic Diazo Component 13, base	AAP, ALL, AUG, KLS, SDH.
Azoic Diazo Component 14, base	AAP.
Azoic Diazo Component 20, base	ALL, G.
Azoic Diazo Component 24, base	KLS.
Azoic Diazo Component 28, base	ALL, KLS, SDH.
*Azoic Diazo Component 32, base	AAP, ALL, ATL, AUG, BUC, DUP, KLS, SDH.
Azoic Diazo Component 34, base	G.
Azoic Diazo Component 41, base	ALL, G.
Azoic Diazo Component 42, base	ALL.
Azoic Diazo Component 44, base	AAP.
Azoic Diazo Component 46, base	ATL.
*Azoic Diazo Component 48, base	ALL, CWN, DUP, G.
Azoic Diazo Component 49, base	KLS.
Azoic Diazo Component 121, base	PCW.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Diazo Components, Salts (Fast Color Salts)	
*Azoic Diazo Component 1, salt	AAP, AUG, G, KLS, SDH.
Azoic Diazo Component 2, salt	ALL, BUC, KLS.
*Azoic Diazo Component 3, salt	AAP, ALL, AUG, BUC, G, KLS, NAC, SDH, VPC.
Azoic Diazo Component 4, salt	ALL, AUG, DUP.
*Azoic Diazo Component 5, salt	AAP, AUG, BUC, G, KLS, SDH, VPC.
*Azoic Diazo Component 6, salt	AAP, G, KLS, SDH.
*Azoic Diazo Component 8, salt	AAP, ALL, AUG, BUC, G, KLS.
*Azoic Diazo Component 9, salt	AAP, ALL, AUG, BUC, G, KLS, NAC, SDH, VPC.
*Azoic Diazo Component 10, salt	AUG, BUC, G, KLS.
*Azoic Diazo Component 11, salt	AAP, G, KLS.
*Azoic Diazo Component 12, salt	AAP, ALL, AUG, BUC, G, KLS, SDH.
*Azoic Diazo Component 13, salt	AAP, ALL, AUG, BUC, G, KLS, NAC, SDH, VPC.
Azoic Diazo Component 14, salt	AAP.
Azoic Diazo Component 20, salt	ALL, G.
*Azoic Diazo Component 28, salt	ALL, AUG, BUC, G, KLS, SDH, VPC.
*Azoic Diazo Component 32, salt	ALL, AUG, BUC, KLS, SDH.
Azoic Diazo Component 34, salt	G.
Azoic Diazo Component 35, salt	G.
*Azoic Diazo Component 36, salt	AAP, G, NAC.
Azoic Diazo Component 37, salt	G.
Azoic Diazo Component 41, salt	ALL, G.
Azoic Diazo Component 42, salt	ALL, G, KLS.
Azoic Diazo Component 44, salt	G.
*Azoic Diazo Component 48, salt	AAP, ALL, G, KLS, NAC, SDH.
*Azoic Diazo Component 49, salt	AAP, BUC, G, KLS.
Azoic Diazo Component 121, salt	BUC.
Other azoic diazo components, salts	G.
Azoic Coupling Components (Naphthol AS and Derivatives)	
Azoic Coupling Component 1	ATL, AUG.
*Azoic Coupling Component 2	ACY, ATL, BUC, DUP, G, NAC, PCW.
*Azoic Coupling Component 3	BUC, G, PCW.
*Azoic Coupling Component 4	ATL, BUC, G.
Azoic Coupling Component 5	AAP, G.
*Azoic Coupling Component 7	AAP, AUG, G, PCW.
Azoic Coupling Component 8	ATL, G, PCW.
Azoic Coupling Component 10	PCW, SDH.
Azoic Coupling Component 11	BUC, G, PCW.
Azoic Coupling Component 12	ALL, BUC, G, PCW.
Azoic Coupling Component 13	ALL, G.
*Azoic Coupling Component 14	ALL, ATL, BUC, G, PCW.
Azoic Coupling Component 15	G.
Azoic Coupling Component 16	G.
*Azoic Coupling Component 17	ACY, ALL, ATL, BUC, DUP, PCW.
*Azoic Coupling Component 18	ACY, ATL, BUC, DUP, G, PCW.
*Azoic Coupling Component 19	AAP, BUC, G, PCW.
*Azoic Coupling Component 20	ALL, ATL, BUC, DUP, G, PCW.
*Azoic Coupling Component 21	ATL, BUC, PCW.
Azoic Coupling Component 23	G, PCW.
Azoic Coupling Component 24	G.
*Azoic Coupling Component 29	ATL, BUC, G, PCW.
Azoic Coupling Component 34	BUC, G, PCW.
Azoic Coupling Component 35	ALL, G, PCW.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Coupling Components (Naphthol AS and Derivatives)--Continued	
Azoic Coupling Component 36	G.
Azoic Coupling Component 43	ATL, G.
Other azoic coupling components	ATL, G, VPC.
BASIC DYES	
Basic yellow dyes:	
Basic Yellow 1	DUP.
*Basic Yellow 2	ACY, DUP, NAC.
Basic Yellow 5	NAC.
*Basic Yellow 11	DUP, G, NAC, VPC.
*Basic Yellow 13	DUP, G, NAC.
Basic Yellow 15	DUP.
Basic Yellow 26	ACY.
Basic Yellow 27	ACY.
Basic Yellow 28	VPC.
Other basic yellow dyes	G, DUP.
*Basic orange dyes:	
*Basic Orange 1	ACY, DUP, G, NAC.
*Basic Orange 2	ACY, DSC, DUP, G, NAC, PDC, TRC.
Basic Orange 10	VPC.
Basic Orange 14	G.
Basic Orange 17	NAC.
*Basic Orange 21	DUP, G, NAC, VPC.
Basic Orange 22	G, NAC.
Basic Orange 24	DUP.
Basic Orange 25	DUP.
Basic Orange 26	DUP.
Basic Orange 31	ACY.
*Basic red dyes:	
Basic Red 1	DUP, G.
*Basic Red 2	DUP, G, NAC.
Basic Red 9	DSC, HSC.
Basic Red 12	DUP.
Basic Red 13	G, NAC.
*Basic Red 14	ACY, DUP, G, NAC, VPC.
Basic Red 15	DUP, G.
Basic Red 16	DUP.
Basic Red 17	DUP.
Basic Red 18	DUP.
Basic Red 19	DUP.
Basic Red 20	DUP.
Basic Red 22	ACY, TRC.
Basic Red 30	ACY.
*Basic violet dyes:	
*Basic Violet 1	ACY, DSC, HSC, NAC.
Basic Violet 2	ACY, NYC.
*Basic Violet 3	DSC, DUP, G, NAC, SDH.
*Basic Violet 4	DSC, DUP, G, NAC.
Basic Violet 7	G, NAC.
Basic Violet 10	ACY, DUP, G.
Basic Violet 13	DSC.
*Basic Violet 14	ACY, DSC, NYC.
Basic Violet 15	DUP.
*Basic Violet 16	DUP, G, VPC.
Basic Violet 18	ACY.
Other basic violet dyes	DUP, G.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
BASIC DYES--Continued	
*Basic blue dyes:	
*Basic Blue 1	DSC, G, NAC, SDH.
Basic Blue 3	G.
Basic Blue 4	DUP.
Basic Blue 5	DSC, SDH.
Basic Blue 6	ACY, NAC.
*Basic Blue 7	DSC, DUP, G, NAC, SDH.
*Basic Blue 9	ACY, G, NAC, SDH.
Basic Blue 11	DSC, DUP, SDH.
Basic Blue 21	DUP.
Basic Blue 22	DUP, NAC.
*Basic Blue 26	DSC, DUP, G, NAC, SDH.
Basic Blue 35	DUP.
Basic Blue 36	DUP.
Basic Blue 38	ACY, DUP.
Basic Blue 39	DUP.
Basic Blue 54	ACY.
Other basic blue dyes	ACY, G.
Basic green dyes:	
*Basic Green 1	ACY, DSC, DUP, NAC, SDH.
Basic Green 3	DUP.
*Basic Green 4	ACY, DSC, NAC, SDH.
Basic Green 5	ACY.
Other basic green dyes	DUP.
Basic brown dyes:	
*Basic Brown 1	ACY, DUP, G, NAC, TRC.
Basic Brown 2	G, NAC.
*Basic Brown 4	ACY, DUP, G, NAC, TRC.
Basic black dyes:	
Basic Black 3	G.
Other basic black dyes	DUP.
DIRECT DYES	
*Direct yellow dyes:	
*Direct Yellow 4	ACY, DUP, G, NAC, TRC.
*Direct Yellow 5	ACY, BL, G, NAC.
*Direct Yellow 6	ACY, DUP, G, NAC, TRC.
Direct Yellow 7	ATL.
Direct Yellow 8	G, NAC.
Direct Yellow 9	DUP.
*Direct Yellow 11	ACY, DUP, G, NAC, TRC.
*Direct Yellow 12	BKS, DUP, G, NAC, TRC.
Direct Yellow 19	TRC.
Direct Yellow 20	TRC.
Direct Yellow 23	DUP.
*Direct Yellow 26	ALT, BKS, DUP.
Direct Yellow 27	G.
*Direct Yellow 28	ATL, DUP, G, NAC, TRC.
*Direct Yellow 29	ATL, DUP, G.
Direct Yellow 39	TRC.
*Direct Yellow 44	ALT, ATL, BKS, DUP, G, NAC, TRC, VPC.
*Direct Yellow 50	ATL, BKS, BL, DUP, G, NAC, TRC, VPC.
*Direct Yellow 59	ATL, DUP, NAC.
Direct Yellow 63	DUP.
Direct Yellow 81	BKS, TRC.
*Direct Yellow 84	G, NAC, TRC.
Direct Yellow 103	NAC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DIRECT DYES--Continued	
*Direct yellow dyes--Continued	
Direct Yellow 105	TRC.
Direct Yellow 106	BKS, TRC.
Direct Yellow 107	G.
Direct Yellow 114	ACY.
Direct Yellow 117	TRC.
Direct Yellow 118	ACY, TRC.
Direct Yellow 121	TRC.
Direct Yellow 125	ACY.
Other direct yellow dyes	ALT, ATL, BL, DUP, FAB, G, VPC.
*Direct orange dyes:	
*Direct Orange 1	AAP, CMG, NAC, VPC.
Direct Orange 6	NAC.
*Direct Orange 8	ATL, DUP, G, NAC, TRC.
Direct Orange 10	AAP, NAC.
Direct Orange 11	G.
*Direct Orange 15	ACY, DUP, G, NAC, TRC.
*Direct Orange 26	ATL, CMG, DUP, G, NAC, TRC.
Direct Orange 29	ATL, BKS, TRC.
*Direct Orange 34	ACY, ATL, CMG, DUP, G, NAC.
*Direct Orange 37	ACY, CMG, DUP, G, TRC.
Direct Orange 38	NAC.
*Direct Orange 39	ATL, BKS, CMG, DUP, G.
Direct Orange 40	DUP.
Direct Orange 48	DUP.
Direct Orange 55	DUP, NAC.
Direct Orange 59	DUP, G.
Direct Orange 61	TRC.
Direct Orange 67	NAC, VPC.
Direct Orange 70	TRC.
*Direct Orange 72	ACY, ATL, BKS, BL, FAB, NAC, TRC, VPC.
*Direct Orange 73	DUP, G, TRC, VPC.
Direct Orange 74	DUP.
Direct Orange 76	DUP.
Direct Orange 78	DUP, VPC.
Direct Orange 79	DUP.
Direct Orange 80	DUP, VPC.
*Direct Orange 81	DUP, G, NAC, VPC.
Direct Orange 83	G, NAC.
Direct Orange 88	DUP.
*Direct Orange 102	ACY, DUP, G, NAC.
Direct Orange 105	BKS.
Direct Orange 110	TRC.
Other direct orange dyes	ALT, ATL, BL, DUP, G, VPC.
*Direct red dyes:	
*Direct Red 1	AAP, ATL, DUP, G, NAC, TRC, YAW.
*Direct Red 2	ATL, BKS, DUP, NAC, TRC.
*Direct Red 4	NAC, TRC, VPC.
Direct Red 5	NAC.
Direct Red 7	DUP.
*Direct Red 10	AAP, ACY, ATL, NAC.
*Direct Red 13	AAP, ATL, DUP, G, NAC, TRC, YAW.
*Direct Red 16	ATL, DUP, G, NAC, TRC.
Direct Red 20	G, NAC.
*Direct Red 23	ATL, BKS, CMG, DUP, FAB, G, NAC, TRC, VPC.
*Direct Red 24	AAP, ATL, BKS, BL, FAB, NAC, TRC, VPC.
*Direct Red 26	ATL, BKS, CMG, DUP, G, NAC, TRC, VPC.
*Direct Red 28	ATL, DUP, NAC, TRC.
Direct Red 30	VPC.
*Direct Red 31	ATL, DUP, G, NAC.
Direct Red 32	DUP, NAC.

TABLE 8B.-- *Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DIRECT DYES--Continued	
*Direct red dyes--Continued	
*Direct Red 37	ACY, ATL, G, NAC, TRC, YAW.
*Direct Red 39	ATL, G, NAC, TRC, YAW.
Direct Red 46	ATL, TRC.
Direct Red 53	NAC.
Direct Red 62	ATL, TRC.
Direct Red 72	G, TRC.
Direct Red 73	DUP, NAC.
*Direct Red 75	ACY, DUP, G, NAC, VPC.
Direct Red 76	G, NAC.
*Direct Red 79	ATL, BKS, CMG, NAC, TRC, VPC.
*Direct Red 80	AAP, ATL, BKS, BL, CMG, DUP, FAB, G, NAC, TRC, VPC.
*Direct Red 81	AAP, ACY, ALT, ATL, BKS, BL, CMG, DUP, G, NAC, TRC, VPC, YAW.
*Direct Red 83	ALT, ATL, BKS, CMG, DUP, NAC, TRC, VPC.
Direct Red 84	G, NAC, TRC.
Direct Red 94	NAC.
Direct Red 95	VPC.
Direct Red 100	NAC.
Direct Red 111	G.
Direct Red 117	BL, DUP.
Direct Red 122	CMG, G, TRC, VPC.
Direct Red 123	G.
Direct Red 127 and 127A	CMG, DUP, TRC.
Direct Red 139	VPC.
Direct Red 148	DUP.
*Direct Red 149	ATL, CMG, DUP, G, NAC, TRC.
*Direct Red 152	CMG, DUP, NAC.
Direct Red 153	NAC.
Direct Red 155	G.
Direct Red 209	TRC.
Other direct red dyes	ALT, BL, DUP, TRC.
*Direct violet dyes:	
*Direct Violet 1	AAP, ATL, DUP, NAC.
Direct Violet 7	G, NAC.
*Direct Violet 9	ATL, BKS, DUP, G, NAC, TRC.
Direct Violet 14	ATL, NAC.
Direct Violet 22	DUP.
Direct Violet 30	AAP.
Direct Violet 47	DUP, G.
*Direct Violet 48	DUP, NAC, TRC.
Direct Violet 49	NAC.
Direct Violet 51	DUP, NAC.
Direct Violet 60	NAC.
Direct Violet 67	DUP, NAC.
Direct Violet 68	DUP.
Other direct violet dyes	ALT.
*Direct blue dyes:	
*Direct Blue 1	AAP, ACY, ATL, BKS, BL, DUP, FAB, G, NAC, TRC, VPC, YAW.
*Direct Blue 2	AAP, ATL, BKS, BL, DUP, FAB, G, NAC, TRC, VPC, YAW.
*Direct Blue 6	AAP, ACY, ATL, BKS, BL, DUP, G, NAC, TRC, YAW.
*Direct Blue 8	ATL, BKS, DUP, G, NAC, TRC.
Direct Blue 10	DUP.
*Direct Blue 14	ATL, DUP, NAC, TRC.
*Direct Blue 15	ATL, DUP, G, NAC, YAW.
Direct Blue 21	TRC.
*Direct Blue 22	ATL, CMG, DUP, NAC.
*Direct Blue 24	BKS, NAC, TRC, YAW.
*Direct Blue 25	DUP, G, NAC, TRC, YAW.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DIRECT DYES--Continued	
*Direct blue dyes--Continued	
*Direct Blue 26	ATL, DUP, G, NAC.
Direct Blue 27	DUP.
Direct Blue 55	NAC.
Direct Blue 66	DUP.
*Direct Blue 67	ATL, DUP, NAC, TRC.
*Direct Blue 71	ATL, DUP, G, NAC, TRC.
Direct Blue 74	DUP.
Direct Blue 75	TRC.
*Direct Blue 76	ATL, BKS, BL, DUP, G, NAC, TRC, VPC.
*Direct Blue 78	ATL, CMG, DUP, G, NAC, TRC.
Direct Blue 79	TRC.
*Direct Blue 80	ALT, ATL, BKS, DUP, FAB, G, NAC, STD, TRC.
Direct Blue 84	DUP.
*Direct Blue 86	AAP, ACY, ATL, BKS, CMG, DUP, FAB, G, ICC, ICI, NAC, SDH, TMS, TRC, VPC.
Direct Blue 87	ICI.
Direct Blue 91	TRC.
*Direct Blue 98	AAP, ALT, ATL, G, ICC, TRC, VPC.
Direct Blue 100	ALT, NAC.
Direct Blue 104	DUP.
*Direct Blue 120 and 120A	ATL, BKS, DUP, G, TRC.
*Direct Blue 126	BL, DUP, G, NAC, TRC, VPC.
Direct Blue 127	G.
Direct Blue 130	NAC.
Direct Blue 133	G.
Direct Blue 136	G.
Direct Blue 143	DUP.
*Direct Blue 151	ATL, DUP, NAC, TRC.
Direct Blue 160	TRC.
Direct Blue 180	CMG, NAC, TRC.
Direct Blue 189	TRC.
Direct Blue 191	AAP, G.
Direct Blue 199	G.
Direct Blue 238	ACY.
Other direct blue dyes	ALT, ATL, BL, DUP, FAB, G, NAC, VPC.
*Direct green dyes:	
*Direct Green 1	AAP, ACY, ATL, BKS, DUP, G, NAC, TRC, YAW.
*Direct Green 6	AAP, ATL, BKS, BL, DUP, FAB, G, NAC, TRC, YAW.
*Direct Green 8	ATL, NAC, TRC, YAW.
*Direct Green 12	DUP, NAC, TRC.
Direct Green 14	NAC.
Direct Green 15	DUP.
Direct Green 26	NAC, TRC.
Direct Green 27	NAC, TRC.
Direct Green 28	TRC.
*Direct Green 38	DUP, G, NAC.
Direct Green 39	G.
Direct Green 41	DUP.
Direct Green 45	VPC.
Direct Green 47	DUP, G.
Other direct green dyes	ACY, ALT, ATL, BL, DUP.
*Direct brown dyes:	
*Direct Brown 1	ACY, ATL, BKS, BL, DUP, FAB, NAC.
*Direct Brown 1A	G, TRC, YAW.
*Direct Brown 2	AAP, ACY, ATL, BKS, BL, DUP, G, NAC, TRC, YAW.
*Direct Brown 6	DUP, G, NAC, TRC.
Direct Brown 11	NAC.
Direct Brown 21	DUP.
Direct Brown 25	DUP, NAC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DIRECT DYES--Continued	
*Direct brown dyes--Continued	
Direct Brown 27	G.
Direct Brown 29	NAC.
*Direct Brown 31	AAP, ATL, DUP, G, NAC, YAW.
Direct Brown 32	G.
Direct Brown 33	DUP, NAC.
Direct Brown 35	NAC.
Direct Brown 40	AAP.
Direct Brown 44	G, YAW.
Direct Brown 48	AAP.
Direct Brown 59	ACY.
*Direct Brown 74	AAP, DUP, NAC.
*Direct Brown 95	AAP, ALT, ATL, BKS, DUP, G, NAC, TRC, YAW.
Direct Brown 101	G.
Direct Brown 105	DUP.
Direct Brown 106	G, NAC.
*Direct Brown 111	DUP, G, TRC, VPC.
Direct Brown 112	NAC.
Direct Brown 125	G.
*Direct Brown 154	DUP, G, TRC, YAW.
Other direct brown dyes	ALT, BL, NAC, TRC, VPC, YAW.
*Direct black dyes:	
Direct Black 3	DUP.
*Direct Black 4	ATL, BKS, DUP, G, NAC, TRC, YAW.
Direct Black 8	TRC, YAW.
*Direct Black 9	BKS, DUP, G, NAC, TRC.
Direct Black 17	G, NAC, TRC.
*Direct Black 19	ATL, BKS, G, NAC, TRC, VPC.
*Direct Black 22	AAP, ALT, ATL, BKS, CMG, DUP, G, NAC, TRC, VPC, YAW.
Direct Black 29	ATL.
Direct Black 36	AAP.
*Direct Black 37	AAP, DUP, NAC.
*Direct Black 38	AAP, ACY, ATL, BKS, BL, DUP, FAB, G, NAC, TRC, YAW.
Direct Black 44	TRC.
*Direct Black 51	AAP, ATL, DUP, G, NAC, TRC.
Direct Black 55	DUP.
Direct Black 56	NAC, TRC.
Direct Black 61	TRC.
Direct Black 67	DUP, NAC.
Direct Black 71	ATL, VPC.
Direct Black 74	NAC.
Direct Black 75	G.
Direct Black 78	BKS, NAC.
*Direct Black 80	AAP, ATL, BKS, BL, FAB, G, NAC, TRC, VPC, YAW.
Direct Black 109	G.
Direct Black 130	ACY.
Other direct black dyes	ACY, ALT, ATL, VPC, YAW.
DISPERSE DYES	
*Disperse yellow dyes:	
*Disperse Yellow 1	DUP, G, ICC.
Disperse Yellow 2	DUP.
*Disperse Yellow 3	AAP, BL, DUP, EKT, G, HSH, ICC, NAC, SDH, STD, TRC.
*Disperse Yellow 5	EKT, G, ICC, STD.
Disperse Yellow 8	DUP, TRC.
Disperse Yellow 17	AAP.
*Disperse Yellow 23	DUP, EKT, ICC.
Disperse Yellow 31	G.
Disperse Yellow 32	DUP.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DISPERSE DYES--Continued	
*Disperse yellow dyes--Continued	
*Disperse Yellow 33	AAP, EKT, ICC.
Disperse Yellow 34	AAP, EKT, ICC.
*Disperse Yellow 37	AAP, EKT, ICC.
Disperse Yellow 42	DUP, TRC.
Disperse Yellow 50	TRC.
*Disperse Yellow 54	AAP, DUP, G, ICC, TRC.
Disperse Yellow 67	DUP.
Other disperse yellow dyes	DUP, EKT, G.
*Disperse orange dyes:	
*Disperse Orange 3	AAP, DUP, EKT, G, ICC, NAC, STD, TRC.
*Disperse Orange 5	AAP, EKT, G.
Disperse Orange 16	AAP.
*Disperse Orange 17	AAP, EKT, G, HSH, ICC, NAC, STD.
Disperse Orange 21	TRC.
Disperse Orange 25	DUP.
Disperse Orange 26	DUP.
Disperse Orange 29	AAP.
Disperse Orange 30	TRC.
Disperse Orange 38	TRC.
Disperse Orange 44	DUP.
Other disperse orange dyes	DUP, EKT, G, ICC, TRC.
*Disperse red dyes:	
*Disperse Red 1	AAP, DUP, EKT, G, ICC, NAC, STD, TRC, YAW.
Disperse Red 4	G, TRC.
*Disperse Red 5	AAP, EKT, G, HSH, ICC, STD.
Disperse Red 7	AAP.
Disperse Red 9	DUP.
*Disperse Red 11	AAP, DUP, G, TRC.
*Disperse Red 13	DUP, G, ICC.
Disperse Red 15	G, HSH, ICC, NAC.
*Disperse Red 17	AAP, DUP, EKT, G, HSH, ICC, STD, TRC.
Disperse Red 20	NAC.
Disperse Red 21	EKT.
Disperse Red 30	EKT, TRC.
Disperse Red 31	ICC.
Disperse Red 32	G.
Disperse Red 53	TRC.
Disperse Red 55	TRC.
Disperse Red 56	DUP.
Disperse Red 59	DUP, G.
*Disperse Red 60	AAP, DUP, VPC.
Disperse Red 61	DUP.
Disperse Red 65	DUP.
Disperse Red 66	AAP.
Disperse Red 73	TRC.
Disperse Red 96	ACY.
Other disperse red dyes	DUP, EKT, G, ICC, TRC, VPC.
*Disperse violet dyes:	
*Disperse Violet 1	AAP, DUP, G, ICC, STD, TRC.
Disperse Violet 4	AAP, G, ICC.
Disperse Violet 8	G.
Disperse Violet 11	EKT, NAC.
Disperse Violet 14	DUP.
Disperse Violet 17	ACY.
Disperse Violet 18	DUP.
Disperse Violet 22	G.
Disperse Violet 26	DUP.
Disperse Violet 27	AAP, BL, DUP, G.
Other disperse violet dyes	EKT, ICC.
*Disperse blue dyes:	
*Disperse Blue 1	AAP, G, TRC.
*Disperse Blue 3	AAP, EKT, G, ICC, NAC, STD, TRC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
DISPERSE DYES--Continued	
*Disperse blue dyes--Continued	
*Disperse Blue 7	EKT, G, HSH, ICC, TRC.
Disperse Blue 8	DUP.
Disperse Blue 9	G, ICC.
Disperse Blue 27	EKT.
Disperse Blue 35	G.
Disperse Blue 41	NAC.
Disperse Blue 51	G.
Disperse Blue 55	TRC.
Disperse Blue 59	DUP.
Disperse Blue 60	DUP.
Disperse Blue 61	DUP.
Disperse Blue 62	DUP.
Disperse Blue 63	DUP.
*Disperse Blue 64	DUP, G, TRC.
Disperse Blue 67	DUP.
Disperse Blue 70	AAP.
Disperse Blue 71	VPC.
Disperse Blue 73	TRC.
Disperse Blue 79	TRC.
Other disperse blue dyes	EKT, G, ICC, STD.
*Disperse brown dyes:	
Disperse Brown 2	DUP, G.
Other disperse brown dyes	EKT, ICC.
*Disperse black dyes:	
*Disperse Black 1	AAP, BL, DUP, G, TRC.
Disperse Black 2	DUP, TRC.
Disperse Black 6	DUP.
Disperse Black 7	YAW.
*Disperse Black 9	AAP, BL, DUP, EKT, G, KLS, NAC.
Other disperse black dyes	DUP, EKT, G, ICC, YAW.
FIBER-REACTIVE DYES	
*Reactive yellow dyes:	
Reactive Yellow 1	ICI.
Reactive Yellow 2	TRC.
Reactive Yellow 3	TRC.
Reactive Yellow 4	ICI.
Reactive Yellow 6	TRC.
Reactive Yellow 7	ICI.
Reactive Yellow 15	DUP.
Reactive Yellow 18	ICI.
Reactive Yellow 22	ICI.
Other reactive yellow dyes	G, HST.
Reactive orange dyes:	
Reactive Orange 1	ICI.
Reactive Orange 2	TRC.
Reactive Orange 4	ICI.
Reactive Orange 5	TRC.
Reactive Orange 7	DUP.
Reactive Orange 12	ICI.
Reactive Orange 13	ICI.
Reactive Orange 14	ICI.
Other reactive orange dyes	HST.
Reactive red dyes:	
Reactive Red 1	ICI.
Reactive Red 2	ICI.
Reactive Red 3	ICI.
Reactive Red 4	TRC.
Reactive Red 5	ICI.
Reactive Red 8	ICI.
Reactive Red 11	ICI.
Reactive Red 13	ICI.
Reactive Red 16	TRC.
Reactive Red 29	ICI.
Reactive Red 31	ICI.
Reactive Red 33	ICI.
Other reactive red dyes	DUP, G, HST.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
FIBER-REACTIVE DYES--Continued	
Reactive violet dyes:	
Reactive Violet 1	ICI.
Reactive Violet 2	TRC.
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	TRC.
Reactive Blue 7	TRC.
Reactive Blue 9	ICI.
Reactive Blue 19	DUP.
Reactive Blue 25	ICI.
Other reactive blue dyes	DUP, G, HST.
Reactive green dyes	HST.
Reactive brown dyes:	
Reactive Brown 1	TRC.
Reactive Brown 10	ICI.
Reactive black dyes:	
Reactive Black 1	TRC.
Reactive Black 9	ICI.
Other reactive black dyes	HST.
FLUORESCENT BRIGHTENING AGENTS	
Fluorescent Brightening Agent 1	GGY.
Fluorescent Brightening Agent 6	ACY.
Fluorescent Brightening Agent 8	ACY.
Fluorescent Brightening Agent 9	ACY, G.
Fluorescent Brightening Agent 22	GGY.
Fluorescent Brightening Agent 24	GGY.
Fluorescent Brightening Agent 25	G.
Fluorescent Brightening Agent 28	ACY, DUP.
Fluorescent Brightening Agent 30	G.
Fluorescent Brightening Agent 33	G.
Fluorescent Brightening Agent 34	DUP.
Fluorescent Brightening Agent 37	CIB.
Fluorescent Brightening Agent 45	TRC.
Fluorescent Brightening Agent 46	GGY.
Fluorescent Brightening Agent 49	S.
Fluorescent Brightening Agent 52	S.
Fluorescent Brightening Agent 61	ACY.
Fluorescent Brightening Agent 66	SDH.
*Fluorescent Brightening Agent 68	CCW, G, SDH.
Fluorescent Brightening Agent 71	ACY, G.
Fluorescent Brightening Agent 75	G.
Fluorescent Brightening Agent 102	DUP.
Fluorescent Brightening Agent 108	G.
Fluorescent Brightening Agent 113	VPC.
Fluorescent Brightening Agent 114	VPC.
Fluorescent Brightening Agent 125	ACY.
Fluorescent Brightening Agent 134	CIB.
Fluorescent Brightening Agent 135	CIB.
Fluorescent Brightening Agent 136	CIB.
Fluorescent Brightening Agent 139	CIB.
Fluorescent Brightening Agent 155	WLM.
Fluorescent Brightening Agent 159	ACY.
Fluorescent Brightening Agent 161	ACY.
Other fluorescent brightening agents	ACY, CCW, CIB, DUP, G, GGY, S, VPC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
FOOD, DRUG, AND COSMETIC COLORS	
Food, Drug, and Cosmetic Dyes	
*FD&C Blue No. 1	BAT, KON, NAC, SDH, WJ.
FD&C Blue No. 2	KON, NAC, SDH.
FD&C Green No. 1	NAC.
FD&C Green No. 3	WJ.
*FD&C Red No. 2	BAT, KON, NAC, SDH, STG, WJ.
*FD&C Red No. 3	BAT, KON, NAC, SDH, STG.
*FD&C Red No. 4	BAT, KON, NAC, SDH, STG, WJ.
FD&C Violet No. 1	NAC.
*FD&C Yellow No. 5	BAT, KON, NAC, SDH, STG, WJ.
*FD&C Yellow No. 6	BAT, KON, NAC, SDH, STG, WJ.
Other food, drug, and cosmetic dyes	KON, WJ.
Drug and Cosmetic Dyes	
D&C Black No. 1	KON, NAC.
D&C Blue No. 6	KON, NAC.
D&C Blue No. 9	NAC.
D&C Brown No. 1	NAC.
D&C Green No. 5	KON, NAC.
D&C Green No. 6	KON, NAC.
D&C Green No. 8	KON, SDH.
D&C Orange No. 4	KON, SNA.
D&C Orange No. 5	KON, SNA, TMS.
D&C Orange No. 10	TMS.
D&C Orange No. 14	TMS.
D&C Orange No. 17	KON, SNA.
D&C Red No. 2	KON.
D&C Red No. 3	KON, TMS.
D&C Red No. 6	SNA, TMS.
*D&C Red No. 7	KON, SNA, TMS.
D&C Red No. 8	TMS.
D&C Red No. 9	KON, SNA, TMS.
D&C Red No. 10	KON, SNA.
D&C Red No. 11	KON, SNA.
D&C Red No. 12	KON, SNA, TMS.
D&C Red No. 13	KON, SNA, TMS.
D&C Red No. 17	KON, NAC.
*D&C Red No. 19	KON, SNA, TMS.
*D&C Red No. 21	KON, SNA, TMS.
D&C Red No. 22	KON.
D&C Red No. 27	KON, SDH, TMS.
D&C Red No. 28	NAC, TMS.
D&C Red No. 30	KON.
D&C Red No. 31	KON.
D&C Red No. 33	KON, NAC.
D&C Red No. 34	KON, TMS.
*D&C Red No. 36	KON, SNA, TMS.
D&C Red No. 37	NAC.
D&C Red No. 39	SDH.
D&C Violet No. 2	NAC.
D&C Yellow No. 5	TMS.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
FOOD, DRUG, AND COSMETIC COLORS--Continued	
Drug and Cosmetic Dyes--Continued	
D&C Yellow No. 7	KON, TMS.
D&C Yellow No. 8	KON, NAC, TMS.
D&C Yellow No. 10	KON, NAC.
D&C Yellow No. 11	NAC.
Drug and Cosmetic Dyes, Externol	
Ext. D&C Blue No. 1	NAC.
Ext. D&C Green No. 1	NAC.
Ext. D&C Orange No. 3	KON, NAC.
Ext. D&C Red No. 8	SNA.
Ext. D&C Red No. 14	NAC.
Ext. D&C Red No. 15	KON, NAC.
Ext. D&C Violet No. 2	KON.
Ext. D&C Yellow No. 1	KON, NAC.
Ext. D&C Yellow No. 5	SNA.
Ext. D&C Yellow No. 7	KON.
INGRAIN DYES	
Ingrain blue dyes:	
Ingrain Blue 1	ICI.
Ingrain Blue 3	ICI.
Ingrain Blue 4	ICI.
Ingrain green dye: Ingrain Green 2	ICI.
MORDANT DYES	
*Mordant yellow dyes:	
*Mordant Yellow 1	ATL, G, PDC, TRC.
Mordant Yellow 3	ATL, NAC.
Mordant Yellow 5	NAC, TRC.
*Mordant Yellow 8	DUP, G, NAC, VPC.
Mordant Yellow 10	DUP.
Mordant Yellow 14	NAC, TRC.
*Mordant Yellow 16	ACY, DUP, NAC.
Mordant Yellow 20	NAC.
Mordant Yellow 26	NAC, VPC.
Mordant Yellow 29	G.
Mordant Yellow 30	TRC, VPC.
Mordant Yellow 36	PDC.
*Mordant orange dyes:	
*Mordant Orange 1	ACY, G, PDC, TRC, VPC.
Mordant Orange 4	G, VPC.
*Mordant Orange 6	ATL, G, TRC.
Mordant Orange 8	NAC, TRC.
Mordant Orange 30	NAC.
*Mordant red dyes:	
Mordant Red 3	ACY, NAC.
Mordant Red 5	NAC.
Mordant Red 6	G.
*Mordant Red 7	ACY, CMG, G, NAC, TRC, VPC.
Mordant Red 9	G, MRX, NAC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
MORDANT DYES--Continued	
*Mordant red dyes--Continued	
Mordant Red 11	ACY, NAC.
Mordant Red 36	TRC.
Mordant Red 59	TRC.
Mordant violet dyes:	
Mordant Violet 5	NAC.
Mordant Violet 11	G.
Mordant Violet 26	G.
*Mordant blue dyes:	
*Mordant Blue 1	AAP, DUP, G, NAC, TRC.
Mordant Blue 3	G, NAC.
Mordant Blue 7	TRC.
Mordant Blue 9	G, NAC.
Mordant Blue 13	HSH, NAC.
Mordant Blue 19	CMG.
Mordant green dyes:	
Mordant Green 9	NAC.
Mordant Green 11	ACY.
Mordant Green 36	PDC.
Mordant Green 47	NAC.
*Mordant brown dyes:	
*Mordant Brown 1	CMG, DUP, G, NAC, TRC, YAW.
Mordant Brown 12	PDC.
Mordant Brown 13	NAC.
Mordant Brown 15	G.
Mordant Brown 17	G.
Mordant Brown 18	DUP, NAC.
Mordant Brown 19	G.
Mordant Brown 21	G, VPC.
*Mordant Brown 33	DUP, NAC, TRC.
*Mordant Brown 40	CMG, DUP, G, NAC, VPC.
Mordant Brown 43	G.
Mordant Brown 50	TRC.
Mordant Brown 63	TRC.
Mordant Brown 70	DUP, PDC.
Mordant Brown 78	CMG.
*Mordant black dyes:	
Mordant Black 1	G, NAC.
*Mordant Black 3	G, NAC, TRC.
Mordant Black 5	NAC, TRC.
Mordant Black 7	G.
Mordant Black 8	VPC.
Mordant Black 9	NAC, VPC.
*Mordant Black 11	G, NAC, TRC, VPC.
*Mordant Black 13	G, HSH, NAC, TRC.
Mordant Black 16	NAC.
*Mordant Black 17	ACY, DUP, G, NAC, TRC.
Mordant Black 19	PDC.
Mordant Black 26	TRC.
*Mordant Black 38	CMG, DUP, NAC, TRC, VPC.
Other mordant black dyes	VPC.
OXIDATION BASES	
Oxidation Base 8 and 8A	ACY.
Oxidation Base 21	PDC.
Oxidation Base 22	ACY.
Oxidation Base 25	ACY.
Other oxidation bases	ACY.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
SOLVENT DYES	
*Solvent yellow dyes:	
Solvent Yellow 1	ACY.
*Solvent Yellow 2	AAP, ATL, DUP, FH, G.
*Solvent Yellow 3	AAP, DUP, FH, G, NAC, SDH.
Solvent Yellow 8	PAT.
Solvent Yellow 13	ACY, G, TRC.
*Solvent Yellow 14	AAP, ACY, ATL, DUP, FH, G, NAC, PAT, SDH.
Solvent Yellow 16	PAT.
Solvent Yellow 19	G.
Solvent Yellow 29	G, NAC.
Solvent Yellow 33	ACY, NAC.
Solvent Yellow 34	DUP.
Solvent Yellow 40	NAC.
Solvent Yellow 42	NAC.
Solvent Yellow 43	G.
Solvent Yellow 44	G, NAC.
Solvent Yellow 45	DUP, NAC.
*Solvent Yellow 47	ACY, DUP, G, NAC.
Solvent Yellow 53	NAC.
Solvent Yellow 56	ACY, FH.
Solvent Yellow 66	NAC.
Solvent Yellow 71	ACY.
Solvent Yellow 72	ACY.
Other solvent yellow dyes	ACY, DSC.
*Solvent orange dyes:	
Solvent Orange 2	AAP.
*Solvent Orange 3	ACY, DSC, G, NAC.
Solvent Orange 5	G, TRC.
*Solvent Orange 7	ACY, ATL, FH, G, NAC.
Solvent Orange 20	ACY, G, NAC, TRC.
Solvent Orange 23	NAC.
Solvent Orange 24	DUP.
Solvent Orange 25	ACY, DUP.
Solvent Orange 31	NAC.
Solvent Orange 47	FH.
Solvent Orange 48	ACY.
Solvent Orange 51	ACY.
Other solvent orange dyes	DSC, DUP, PAT.
*Solvent red dyes:	
Solvent Red 8	G.
Solvent Red 22	G.
*Solvent Red 24	ACY, DUP, G, NAC, PAT, SDH.
*Solvent Red 26	AAP, ACY, FH, NAC.
Solvent Red 27	NAC.
Solvent Red 33	DUP.
Solvent Red 34	DUP.
Solvent Red 35	G.
Solvent Red 40	G.
Solvent Red 41	DSC.
*Solvent Red 49	ACY, DUP, G.
Solvent Red 52	G, ICI.
Solvent Red 63	NAC.
Solvent Red 65	NAC.
Solvent Red 68	NAC.
Solvent Red 69	DUP.
Solvent Red 74	NAC.
Solvent Red 76	NAC.
Solvent Red 80	ACY, NAC.
Solvent Red 105	ACY.
Solvent Red 108	ACY.
Solvent Red 111	ACY.
Solvent Red 115	ACY.
Other solvent red dyes	ACY, DSC, DUP, ICI, PAT.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
SOLVENT DYES--Continued	
*Solvent violet dyes:	
Solvent Violet 7	NAC.
*Solvent Violet 8	ACY, DSC, NAC.
Solvent Violet 9	DSC.
Solvent Violet 13	AAP, HSH, ICI.
Solvent Violet 14	ICI.
Solvent Violet 17	NAC.
Other solvent violet dyes	DSC, PAT.
Solvent blue dyes:	
Solvent Blue 3	SW.
Solvent Blue 4	DSC, DUP, SDH.
Solvent Blue 5	DSC.
Solvent Blue 6	DSC.
Solvent Blue 7	ACY, NAC.
Solvent Blue 9	G.
Solvent Blue 11	G, ICI.
Solvent Blue 12	DUP, NAC.
Solvent Blue 16	NAC.
Solvent Blue 30	NAC.
Solvent Blue 31	NAC.
Solvent Blue 32	AAP.
Solvent Blue 33	G.
Solvent Blue 36	DUP, NAC.
Solvent Blue 37	DUP.
Solvent Blue 38	ACY, CMG, DUP, NAC.
Solvent Blue 39	NAC.
Solvent Blue 43	NAC.
Solvent Blue 58	ACY.
Solvent Blue 59	ACY.
Solvent Blue 60	ACY.
Other solvent blue dyes	AAP, DSC, G, ICI, PAT, SDH.
*Solvent green dyes:	
Solvent Green 1	ACY, DSC, SDH.
Solvent Green 2	G.
*Solvent Green 3	AAP, ACY, ATL, CMG, G, HSH, ICI, NAC.
Solvent Green 10	DUP.
Solvent Green 11	DUP.
Other solvent green dyes	DSC, NAC.
*Solvent brown dyes:	
Solvent Brown 11	G.
Solvent Brown 12	ACY, G.
Solvent Brown 17	DUP.
Solvent Brown 19	DUP.
Solvent Brown 20	ACY, DUP.
Solvent Brown 21	NAC.
Solvent Brown 38	ACY.
Other solvent brown dyes	ACY, DSC.
Solvent black dyes:	
Solvent Black 3	NAC.
Solvent Black 5	ACY, NAC.
Solvent Black 7	ACY, FH, NAC.
Solvent Black 12	NAC.
Solvent Black 13	NAC.
Solvent Black 17	DUP.
Solvent Black 19	G.
Solvent Black 20	NAC.
Solvent Black 26	ACY.
Other solvent black dyes	DSC, DUP.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
SULFUR DYES	
Sulfur yellow dyes:	
Sulfur Yellow 2	NAC.
Leuco Sulfur Yellow 2	ACY, NAC.
Sulfur Yellow 4	AUG, DUP, SDC.
Leuco Sulfur Yellow 4	SDC.
Leuco Sulfur Yellow 15	ACY.
Other sulfur yellow dyes	ACY, SDC.
Sulfur red dyes:	
Sulfur Red 1	DUP, NAC.
Leuco Sulfur Red 1	NAC.
Sulfur Red 6	ACY, DUP, NAC.
Sulfur Red 8	DUP.
Sulfur blue dyes:	
*Sulfur Blue 7	ACY, DUP, NAC, SDC.
*Leuco Sulfur Blue 7	ACY, NAC, SDC.
Leuco Sulfur Blue 8	SDC.
Sulfur Blue 9	ACY, NAC.
Leuco Sulfur Blue 9	SDC.
*Sulfur Blue 11	DUP, NAC, SDC.
Sulfur Blue 13	ACY, NAC.
Leuco Sulfur Blue 13	ACY.
Sulfur Blue 15	ACY, DUP, NAC.
Sulfur Blue 16	ACY, NAC.
Other sulfur blue dyes	ACY, SDC.
Sulfur green dyes:	
Sulfur Green 1	NAC.
Sulfur Green 2	DUP, NAC, SDC.
Leuco Sulfur Green 2	SDC.
Solubilized Sulfur Green 2	SDH.
Sulfur Green 3	NAC, SDC.
Leuco Sulfur Green 3	SDC.
Sulfur Green 8	AUG.
Sulfur Green 11	DUP.
Sulfur Green 14	DUP.
Leuco Sulfur Green 16	SDC.
Other sulfur green dyes	SDC.
Sulfur brown dyes:	
Sulfur Brown 3	SDC.
Leuco Sulfur Brown 3	SDC.
Solubilized Sulfur Brown 3	AUG.
*Sulfur Brown 10	DUP, NAC, SDC.
Leuco Sulfur Brown 10	NAC, SDC.
Solubilized Sulfur Brown 10	AUG.
Sulfur Brown 14	ACY, AUG.
Leuco Sulfur Brown 14	ACY.
Sulfur Brown 20	DUP.
Sulfur Brown 30	ACY.
Sulfur Brown 33	ACY.
Leuco Sulfur Brown 37	SDC.
Sulfur Brown 39	DUP, SDC.
Sulfur Brown 40	DUP.
Sulfur Brown 43	NAC.
Sulfur Brown 44	NAC.
Leuco Sulfur Brown 44	NAC.
Sulfur Brown 45	NAC.
Sulfur Brown 50	NAC.
Sulfur Brown 76	ACY.
Other sulfur brown dyes	ACY, NAC, SDC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
SULFUR DYES--Continued	
Sulfur black dyes:	
*Sulfur Black 1	DUP, NAC, SDC.
Leuco Sulfur Black 1	ACY, NAC, SDC.
Sulfur Black 2	ACY, DUP, NAC.
*Leuco Sulfur Black 2	ACY, NAC, SDC.
Sulfur Black 6	G.
Leuco Sulfur Black 6	NAC.
Sulfur Black 10	ACY, DUP.
Leuco Sulfur Black 10	ACY, NAC.
Sulfur Black 11	G, SDC.
Leuco Sulfur Black 11	SDC.
Other sulfur black dyes	SDC.
VAT DYES	
*Vat yellow dyes:	
Vat Yellow 1, 12-1/2%	NAC.
*Vat Yellow 2, 8-1/2%	AAP, ATL, DUP, G, ICI, NAC, TRC, VPC.
Solubilized Vat Yellow 2, 25%	G, ICI.
Vat Yellow 3, 12-1/2%	DUP.
*Vat Yellow 4, 12-1/2%	AAP, ACY, ATL, CMG, G, HST, ICI, TRC, VPC.
Solubilized Vat Yellow 4, 37-1/2%	G, HST, ICI.
Vat Yellow 10, 10%	G.
Vat Yellow 13, 6-1/2%	ICI.
Vat Yellow 14, 12-1/2%	TRC.
Vat Yellow 15, 11-1/2%	ACY.
Vat Yellow 16, 16-2/3%	DUP.
Vat Yellow 20	G.
Vat Yellow 21, 9-1/2%	ATL, DUP.
Vat Yellow 22, 10%	DUP, G.
Vat Yellow 27	VPC.
Vat Yellow 28, 10%	NAC.
Vat Yellow 33	ICI, TRC.
Vat Yellow 34, 8-1/2%	DUP.
Vat Yellow 41, 9%	ACY.
Other vat yellow dyes	MAY, NAC, VPC.
*Vat orange dyes:	
*Vat Orange 1, 20%	CMG, G, HST, ICI, NAC, TRC, VPC.
*Solubilized Vat Orange 1, 26%	G, HST, ICI.
*Vat Orange 2, 12%	AAP, ACY, CMG, DUP, G, ICI, NAC, TRC.
Vat Orange 3, 13-1/2%	CMG, DUP, G.
*Vat Orange 4, 6%	ACY, CMG, DUP, NAC.
*Vat Orange 5, 10%	AAP, ACY, DUP, HST.
*Solubilized Vat Orange 5, 30%	G, HST, ICI.
*Vat Orange 7, 11%	G, HST, TRC.
*Vat Orange 9, 12%	AAP, ACY, CMG, DUP, G, ICI, NAC, TRC.
Vat Orange 11, 6%	DUP, NAC.
*Vat Orange 15, 10%	AAP, ACY, G, ICI, NAC, TRC, VPC.
Vat Orange 23, 17-1/2%	ACY, DUP.
Vat Orange 24	DUP.
Other vat orange dyes	G, SDC.
*Vat red dyes:	
*Vat Red 1, 13%	AAP, ACY, DUP, HST.
*Solubilized Vat Red 1, 37%	G, HST, ICI.
Vat Red 10, 18%	G, NAC, TRC.
Solubilized Vat Red 10, 31%	G.
Vat Red 12, 8-1/2%	DUP.
*Vat Red 13, 11%	DUP, G, NAC, TRC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
VAT DYES--Continued	
*Vat red dyes--Continued	
Vat Red 14, 10%	G, HST.
*Vat Red 15, 10%	G, HST, TRC.
Vat Red 16, 11%	DUP.
Vat Red 17, 10%	G.
Vat Red 23	DUP.
Vat Red 29, 18%	G, NAC.
*Vat Red 32, 20%	DUP, G, NAC.
Vat Red 35, 12-1/2%	NAC, TRC.
Vat Red 44, 17%	TRC.
Vat Red 52, 10%	DUP.
Vat Red 53, 12%	DUP.
Vat Red 56	ACY.
Vat Red 62	DUP.
Other vat red dyes	DUP, G, TRC, VPC.
*Vat violet dyes:	
*Vat Violet 1, 11%	ACY, DUP, G, ICI, MAY, NAC, TRC.
Solubilized Vat Violet 1, 26%	G, ICI.
*Vat Violet 2, 20%	ACY, G, HST, NAC.
Vat Violet 3, 15%	G, HST, NAC.
Solubilized Vat Violet 3, 43%	G.
*Vat Violet 9, 12%	DUP, G, ICI, MAY, NAC.
Vat Violet 12, 10%	DUP.
*Vat Violet 13, 6-1/4%	CMG, DUP, G, ICI, NAC, TRC.
Vat Violet 14, 12-1/2%	DUP, NAC.
Vat Violet 17, 12-1/2%	DUP, G, NAC.
Other vat violet dyes	NAC.
*Vat blue dyes:	
Vat Blue 1, 20%	DUP, NAC.
Solubilized Vat Blue 1, 25%	G.
Vat Blue 3, 16%	HST.
*Vat Blue 4, 10%	ACY, DUP, G.
Vat Blue 5, 16%	ATL, DUP, HST, NAC, VPC.
Solubilized Vat Blue 5, 38%	G, HST.
*Vat Blue 6, 8-1/3%	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC, VPC.
*Solubilized Vat Blue 6, 17-1/2%	G, HST, ICI.
Vat Blue 7, 12-1/2%	NAC.
Solubilized Vat Blue 9, 35%	G.
Vat Blue 12, 6-1/2%	DUP.
Vat Blue 14, 8-1/3%	DUP, G, NAC, TRC.
Vat Blue 16, 16%	ACY, DUP, NAC.
*Vat Blue 18, 13%	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
*Vat Blue 20, 14%	AAP, ACY, ATL, DUP, G, ICI, MAY, NAC, TRC.
Vat Blue 29	G.
Vat Blue 39, 12%	G.
Vat Blue 43	SDC.
Vat Blue 53	G.
Vat Blue 60	DUP.
Vat Blue 61, 16%	DUP.
Other vat blue dyes	G, SDC, x.
*Vat green dyes:	
*Vat Green 1, 6%	AAP, ACY, ATL, DUP, G, ICI, MAY, NAC, TRC.
Solubilized Vat Green 1, 12-1/2%	G, HST, ICI.
*Vat Green 3, 10%	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
*Solubilized Vat Green 3, 26%	G, HST, ICI.
*Vat Green 8, 8-1/2%	DUP, G, ICI, NAC.
*Vat Green 9, 12-1/2%	ACY, ATL, DUP, G, MAY, NAC, SDC, TRC.
Vat Green 15, 17%	NAC.

TABLE 8B.--*Benzenoid dyes for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Dye	Manufacturers' identification codes (according to list in table 22)
VAT DYES--Continued	
*Vat green dyes--Continued	
Vat Green 18, 8%	DUP.
Vat Green 20, 6%	DUP.
Other vat green dyes	SDC.
*Vat brown dyes:	
*Vat Brown 1, 11%	ACY, DUP, G, ICI, MAY, NAC, TRC.
Solubilized Vat Brown 1, 17%	G, ICI.
*Vat Brown 3, 11%	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC, VPC.
*Vat Brown 5, 13%	AAP, ACY, G, HST, NAC, VPC.
Vat Brown 6, 17-1/2%	TRC.
Vat Brown 11, 12%	MAY, TRC.
Vat Brown 12, 12-1/2%	DUP, NAC.
Vat Brown 13, 17%	MAY.
Vat Brown 14, 12%	HST.
Vat Brown 20, 10-1/2%	DUP, G, NAC.
Vat Brown 25, 11-1/2%	G.
Vat Brown 29, 13%	ACY.
Vat Brown 31, 28%	AAP.
Vat Brown 38, 20%	ICI.
Vat Brown 40, 14%	DUP.
Vat Brown 57	TRC.
Other vat brown dyes	DUP, G, NAC, SDC, VPC.
*Vat black dyes:	
Solubilized Vat Black 1, 27-1/2%	G, HST, ICI.
*Vat Black 9, 16%	G, NAC, TRC.
Vat Black 11, 17-1/2%	ACY.
Vat Black 13, 14%	DUP, NAC.
Vat Black 14, 11-1/2%	DUP.
Vat Black 15	AAP.
Vat Black 18, 15-1/2%	G, NAC.
Vat Black 21, 18-1/2%	ACY.
Vat Black 22, 19%	ACY, TRC.
*Vat Black 25, 12-1/2%	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
*Vat Black 27, 12-1/2%	AAP, ACY, CMG, DUP, G, ICI, MAY, NAC, TRC.
Vat Black 34, 16%	ICI.
Vat Black 36	DUP.
Vat Black 38	G.
Vat Black 52	ACY.
Other vat black dyes	DUP, G, NAC, SDC, TRC.
All other dyes	ACY, FH, PAT, VPC.

Pigments

TABLE 11B.--*Benzenoid pigments for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Benzenoid pigments for which separate statistics are given in table 11A are marked below with an asterisk (*); products not so marked do not appear in table 11A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
TONERS	
*Yellow toners:	
*Hansa yellows:	
*Pigment Yellow 1, C.I. 11 680	ACY, AMS, CIK, DUP, FCL, G, HAR, HSC, HSH, ICI, IMP, KON, PPG, S, SDH, SNA, SW, WDC.
*Pigment Yellow 3, C.I. 11 710	HAR, HSC, HSH, HST, IMP, KCW, KON, S, SW, WDC.
Pigment Yellow 4, C.I. 11 665	HAR, HSH, SNA.
Pigment Yellow 5, C.I. 11 660	HSH, 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.
Pigment Yellow 60	SW.
Pigment Yellow 73	HAR, SW.
Pigment Yellow 74	DUP, SW.
All other Hansa yellows	DUP, HSC, IMP, KCW, SDH, SNA, WDC.
*Benzidine yellows:	
*Pigment Yellow 12, C.I. 21 090	ACY, AMS, DUP, FCL, G, HAR, HSC, HSH, HST, ICC, IMP, KON, LVY, MRX, S, SDH, SNA, SW, WDC.
*Pigment Yellow 13, C.I. 21 100	FCL, G, HAR, HST, ICC, IMP, ROM, SNA, SW.
*Pigment Yellow 14, C.I. 21 095	ACY, AMS, BUC, CPC, DUP, FCL, G, HAR, HSC, HSH, HST, ICC, IMP, KON, MRX, ROM, S, SDH, SNA, SW, x.
*Pigment Yellow 17, C.I. 21 105	ACY, AMS, DUP, HST, ICC, IMP, SDH, SNA, SW.
Pigment Yellow 65, C.I. 11 740	SW.
Pigment Yellow 83	HAR.
All other benzidine yellows	HSH, HST, ICC, IMP, ROM, S, SW.
Pigment Yellow 18, C.I. 49 005	IMP.
(Basic Yellow 2), C.I. 41 000, fugitive	MRX, S.
(Vat Yellow 1), C.I. 70 600	HAR, TRC.
(Vat Yellow 20), C.I. 68 420	HAR.
All other	ACY, HSH, ICC, S, SW.
*Orange toners:	
Pigment Orange 1, C.I. 11 725	HAR, KCW, SNA.
*Pigment Orange 2, C.I. 12 060	FCL, HSC, IMP, SDH, SW.
*Pigment Orange 5, C.I. 12 075	ACY, HSC, IMP, SNA, SW.
Pigment Orange 9	DUP.
*Pigment Orange 13, C.I. 21 110	ACY, AMS, BUC, G, HAR, ICC, ICI, IMP, KON, S, SNA, SW.
Pigment Orange 15, C.I. 21 130	G, HAR.
*Pigment Orange 16, C.I. 21 160	BUC, DUP, FCL, G, HAR, HST, ICC, IMP, ROM, SDH, SNA, SW.
Pigment Orange 30	SW.
(Vat Orange 3), C.I. 59 300	HAR, TRC.
(Vat Orange 4), C.I. 59 710	HAR.
(Vat Orange 7), C.I. 71 105	G, HAR.
(Vat Orange 15), C.I. 69 025	HAR.
All other	ICC, KON, ROM, SDH, SNA, SW.
*Red toners:	
*Naphthol reds:	
*Pigment Red 2, C.I. 12 310	EAK, G, HAR, HSC, IMP, KCW, KON, MRX, SDH, SW.
*Pigment Red 5, C.I. 12 490	DUP, G, HAR, HST, ICC, ICI, IMP, ROM, S, SDH, SNA, SW.
Pigment Red 7, C.I. 12 420	ICI, S.
Pigment Red 9, C.I. 12 460	IMP.
Pigment Red 10, C.I. 12 440	KCW.
*Pigment Red 13, C.I. 12 395	HAR, IMP, KCW.

See note at end of table for definition of abbreviations.

TABLE 11B.--*Benzenoid pigments for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Pigment	Manufacturers' identification codes (according to list in table 22)
TONERS--Continued	
*Red toners--Continued	
*Naphthol reds--Continued	
Pigment Red 14, C.I. 12 380	DUP.
Pigment Red 15, C.I. 12 465	DUP.
*Pigment Red 17, C.I. 12 390	ACY, BLN, FCL, ICC, IMP, S, SNA, SW.
*Pigment Red 18, C.I. 12 350	HAR, HSH, IMP, SW.
Pigment Red 19, C.I. 12 400	HAR.
*Pigment Red 22, C.I. 12 315	ACY, DUP, FCL, HAR, IMP, MRX, SNA, SW.
*Pigment Red 23, C.I. 12 355	ACY, BUC, DUP, FCL, HAR, HSC, ICC, IMP, S, SDH, SNA, SW.
Pigment Red 31, C.I. 12 360	SNA, SW.
All other naphthol reds	BUC, ICC, IMP, KCW, ROM, S, SDH, SW.
*Pigment Red 1, C.I. 12 070, dark	ACY, AMS, APC, FCL, HAR, HSC, HSH, IMP, KON, LVY, PPG, SNA, SW, WDC.
*Pigment Red 1, C.I. 12 070, light	ACY, APC, CIK, EAK, FCL, HSC, HSH, IMP, KON, PPG, SDH, SW.
*Pigment Red 3, C.I. 12 120	ACY, APC, BLN, CIK, DUP, EAK, FCL, HAR, HSC, HSH, IMP, KCW, KON, PPG, SDH, SNA, SW, UHL, WDC.
*Pigment Red 4, C.I. 12 085	ACY, AMS, FCL, G, HSC, IMP, KON, MRX, SDH, SNA, SW, WDC.
Pigment Red 5	IMP.
Pigment Red 6, C.I. 12 090	DUP, HSC, SW.
*Pigment Red 38, C.I. 21 120	DUP, G, HAR, ICC, SNA, SW.
Pigment Red 41, C.I. 21 200	G, HAR.
*Pigment Red 48, C.I. 15 865	ACY, AMS, BLN, DUP, FCL, G, HAR, HSC, HSH, IMP, KON, LVY, MRX, S, SNA, SW, WDC.
Pigment Red 49, C.I. 15 630:	
*Barium toner	ACY, AMS, CIK, FCL, HSC, IMP, LVY, SDH, SNA, SW, UHL, WDC.
*Calcium toner	ACY, AMS, EAK, FCL, HSC, IMP, LVY, PPG, SDH, SNA, SW.
*Sodium toner	ACY, AMS, CIK, FCL, HSC, SDH, SW.
*Pigment Red 52, C.I. 15 860	AMS, FCL, HSC, HSH, IMP, SNA, SW.
*Pigment Red 53, C.I. 15 585, barium toner	ACY, ADC, AMS, CIK, FCL, HSC, IMP, KON, LVY, MRX, SDH, SNA, SW, WDC.
Pigment Red 54, C.I. 14 830, calcium toner	IMP, MRX, SDH.
Pigment Red 55, C.I. 15 820	DUP, HAR.
*Pigment Red 57, C.I. 15 850, calcium toner	ADC, AMS, BLN, CIK, DUP, FCL, HAR, HSC, HSH, IMP, KON, LVY, SDH, SNA, SW, WDC.
Pigment Red 58, C.I. 15 825	DUP, G, IMP.
*Pigment Red 63, C.I. 15 880	FCL, HAR, HSH, IMP, SNA, SW.
Pigment Red 64, C.I. 15 800	HAR.
Pigment Red 77, C.I. 15 826	SW.
Pigment Red 78	DUP.
Pigment Red 81, C.I. 45 160, fugitive	BLN, KCW, SNA.
*Pigment Red 81, C.I. 45 160, PMA	BLN, CPC, DUP, FCL, G, IMP, KON, LVR, LVY, MGR, MRX, NYC, SNA.
*Pigment Red 81, C.I. 45 160, PTA	ACY, AMS, BLN, DUP, FCL, G, HSC, IMP, KCW, KON, MGR, MRX, S, SDH, SNA.
Pigment Red 87, C.I. 73 310	HAR.
Pigment Red 88	HAR.
*Pigment Red 90, C.I. 45 380	ACY, AMS, FCL, ICC, IMP, LVR, LVY, NYC, SDH, SNA, WDC.
Pigment Red 117, C.I. 15 603	SW.
Pigment Red 122	HAR.

See note at end of table for definition of abbreviations.

TABLE 11B.--*Benzenoid pigments for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Pigment	Manufacturers' identification codes (according to list in table 22)
TONERS--Continued	
*Red toners--Continued	
Pigment Red 123	HAR.
(Vat Red 10), C.I. 67 000	HAR.
(Vat Red 23)	HAR.
(Vat Red 29), C.I. 71 140	HAR.
All other	DUP, G, HAM, HSC, SW, TRC, x.
*Violet toners:	
Pigment Violet 1, C.I. 45 170, fugitive	BLN, UHL.
*Pigment Violet 1, C.I. 45 170, PMA	BLN, G, IMP, LVR, MRX.
*Pigment Violet 1, C.I. 45 170, PTA	ACY, AMS, BLN, DUP, FCL, G, HSC, IMP, KON, MRX, S, SNA.
*Pigment Violet 3, C.I. 42 535, fugitive	ACY, ADC, AMS, BLN, HSC, IMP, LVY, MGR, SDH, UHL.
*Pigment Violet 3, C.I. 42 535, PMA	ADC, AMS, BLN, CIK, DUP, EAK, G, HSC, IMP, KON, LVR, LVY, MGR, MRX, NYC, PPG, SDH, SNA, SW, UHL.
*Pigment Violet 3, C.I. 42 535, PTA	ACY, AMS, G, IMP, KON, MRX, SNA, SW.
Pigment Violet 19	HAR.
Pigment Violet 23	G.
(Vat Violet 1), C.I. 60 010	DUP.
(Vat Violet 2), C.I. 73 385	HAR.
(Vat Violet 3), C.I. 73 395	HAR.
(Vat Violet 23)	TRC.
All other	ACY, HST, ICC, ROM.
*Blue toners:	
*Pigment Blue 1, C.I. 42 595, PMA	ADC, BLN, DUP, EAK, FCL, G, HSC, IMP, KON, LVR, LVY, MGR, MRX, NYC, SDH, SNA, SW, UHL.
*Pigment Blue 1, C.I. 42 595, PTA	AMS, G, HAM, HAR, IMP, MGR, SNA, SW, UHL.
Pigment Blue 2, C.I. 44 045, fugitive	BLN.
Pigment Blue 2, C.I. 44 045, PMA	CIK, G, LVR.
Pigment Blue 2, C.I. 44 045, PTA	G, HAM, MGR.
Pigment Blue 3, C.I. 42 140, PMA	MGR.
Pigment Blue 3, C.I. 42 140, PTA	MGR.
Pigment Blue 5, C.I. 42 600	G.
*Pigment Blue 9, C.I. 42 025, PMA	LVR, MRX, NYC, UHL.
*Pigment Blue 9, C.I. 42 025, PTA	BLN, G, IMP, MGR, MRX, SDH.
Pigment Blue 10, C.I. 44 040, PMA	IMP, SDH.
Pigment Blue 10, C.I. 44 040, PTA	IMP.
*Pigment Blue 14, C.I. 42 600, PMA	DUP, G, IMP, NYC.
Pigment Blue 14, C.I. 42 600, PTA	DUP, G, NYC.
*Pigment Blue 15, C.I. 74 160, alpha form	ACY, DUP, G, HAR, HSC, ICC, ICI, IMP, SNA, SW, TMS, TRC.
*Pigment Blue 15, C.I. 74 160, beta form	ACY, DUP, FCL, HSC, IMP, KON, LVY, SNA, SUC, SW, TMS, TRC.
*Pigment Blue 19, C.I. 42 750A	ACY, AMS, HSC, NYC, SW.
Pigment Blue 22, C.I. 69 810	DUP, IMP.
*Pigment Blue 25, C.I. 21 180	DUP, G, HAR, ICC.
(Basic Blue 7), C.I. 42 595, PTA	DUP.
(Vat Blue 4), C.I. 69 800	G.
(Vat Blue 6), C.I. 69 825	ICI, TRC.
(Vat Blue 14), C.I. 69 810	HAR, TRC.
All other	ICC, IMP, MGR, S, SDH.
*Green toners:	
*Pigment Green 1, C.I. 42 040, PMA	BLN, G, IMP, MGR, MRX, SNA, UHL.
*Pigment Green 1, C.I. 42 040, PTA	BLN, IMP, MGR, S, SDH.
*Pigment Green 2, C.I. 42 040 and 49 005, PMA	ADC, G, IMP, LVY, MGR, MRX, S, SDH, UHL.
*Pigment Green 2, C.I. 42 040 and 49 005, PTA	ACY, AMS, BLN, DUP, IMP, KON, LVY, MGR, MRX, S, SDH, UHL.
Pigment Green 4, C.I. 42 000, fugitive	BLN, G.
Pigment Green 4, C.I. 42 000, PMA	ADC, BLN.
*Pigment Green 4, C.I. 42 000, PTA	ACY, AMS, HAM, MGR.
*Pigment Green 7, C.I. 74 260	ACY, DUP, FCL, G, HAR, HSC, IMP, SNA, SW, TMS, TRC.

See note at end of table for definition of abbreviations.

TABLE 11B.--*Benzenoid pigments for which U.S. production or sales were reported, identified by manufacturer, 1964*-- Continued

Pigment	Manufacturers' identification codes (according to list in table 22)
TONERS--Continued	
*Green toners--Continued	
*Pigment Green 8, C.I. 10 006	DUP, G, HSH, KCW, LVY, SW.
Pigment Green 10, C.I. 12 775	DUP.
Pigment Green 36	G.
Pigment Green 38	HAR.
All other	ACY.
*Brown toners:	
Pigment Brown 1, C.I. 12 480	ICI.
Pigment Brown 2, C.I. 12 071	SDH.
Pigment Brown 3, C.I. 21 010, PMA	BLN, KCW.
*Pigment Brown 5, C.I. 15 800	BUC, HAR, ROM, SNA.
(Vat Brown 3), C.I. 69 015	G, HAR.
All other	ICC, SDH, SW.
*Black toners:	
Pigment Black 1	SNA.
All other	BLN, DUP, G, MGR, SNA, SW, UHL.
LAKES	
Yellow lakes:	
(Acid Yellow 1), C.I. 10 316	IMP.
(Acid Yellow 3), C.I. 47 005	IMP.
(Acid Yellow 23), C.I. 19 140	KON, MGR, MRX.
All other	IMP.
Orange lakes:	
Pigment Orange 17, C.I. 15 510	CIK, CPC, IMP, KCW, MGR.
All other	HAM.
*Red lakes:	
*Pigment Red 60, C.I. 16 105	BLN, DUP, HSH, KON, MRX, SNA, SW.
*Pigment Red 83, C.I. 58 000	IMP, KON, MRX, SW, UHL.
(Acid Red 17), C.I. 16 180	IMP, KCW, WDC.
(Acid Red 25), C.I. 16 050	KON.
*(Acid Red 26), C.I. 16 150	CPC, EAK, HAM, IMP, KCW, UHL.
(Acid Red 27)	KON.
(Natural Red 4), C.I. 75 470	KON.
(Natural Red 24), C.I. 75 280	IMP.
All other	APC, G, HAM, IMP.
*Violet lakes:	
*Pigment Violet 5, C.I. 58 055	BLN, DUP, HAR, IMP.
Pigment Violet 20, C.I. 58 225	SW.
(Acid Violet 17), C.I. 42 650	BLN.
All other	HAM, HSC.
*Blue lakes:	
Pigment Blue 17, C.I. 74 180	BLN, CPC.
*Pigment Blue 24, C.I. 42 090	ADC, AMS, BLN, CIK, ICC, KON, LVY, MGR, SDH.
(Acid Blue 93), C.I. 42 780	LVR.
(Acid Blue 104), C.I. 42 735	CPC, KCW.
Green lakes: (Acid Green 3), C.I. 42 085	BLN, CPC.
Brown lakes	HAM, KON.
Black lakes:	
*(Natural Black 3), C.I. 75 291	CPC, KON, NYC.
All other	HAM.

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

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

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

Medicinal Chemicals

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Medicinal chemicals for which separate statistics are given in table 13A in pt. II are marked below with an asterisk (*); medicinal chemicals not so marked do not appear in table 13A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
MEDICINAL CHEMICALS, ANTIBIOTICS	
*Antibiotics for human or veterinary use:	
Amphotericin B	OMS.
*Bacitracin	COM, PFZ, PMP, x.
Cephalothin, sodium	LIL.
Chloramphenicol	PD.
Chlortetracycline	ACY.
Cycloserine	COM.
Dactinomycin	MRK.
Demethylchlortetracycline	ACY.
*Dihydrostreptomycin	MRK, OMS, PFZ.
Erythromycin	ABB, LIL.
Fumagillin	ABB.
Gentamicin	SCH.
Gramicidin	BAX, PEN.
Kanamycin	BRS.
Lincomycin	x.
*Neomycin	ACY, OMS, PEN, PFZ, UPJ.
Novobiocin	MRK, UPJ.
Nystatin	OMS.
Oleandomycin	PFZ.
Oxytetracycline	PFZ.
Paromomycin	MRK.
*Penicillins:	
Ampicillin	BRS.
Cloxacillin, sodium	BRS.
Methicillin, sodium	BRS.
Nafcillin, sodium	WYT.
Oxacillin, sodium	BRS.
*Penicillin G, potassium	LIL, MRK, OMS, PFZ, WYT.
*Penicillin G, procaine	ABB, LIL, MRK, OMS, PFZ, WYT.
*Penicillin G, other:	
Penicillin G, benzathine	PFZ, WYT.
Penicillin G, sodium	MRK, OMS, PFZ.
Penicillin O, chloroprocaine	UPJ.
Penicillin O, sodium	UPJ.
Penicillin V	LIL.
Penicillin V, benzathine	WYT.
Penicillin V, hydrabamine	ABB.
Penicillin V, potassium	ABB, LIL.
*Phenethicillin and potassium salt:	
Phenethicillin	OMS, PFZ.
Phenethicillin, potassium	BRS, WYT.
Polymyxin B	PFZ.
Ristocetin	ABB.
Streptomycin	LIL, MRK, OMS, PFZ.
*Tetracycline	ACY, BRS, PFZ, RLS.
Thiostrepton	OMS.
Triacetyloleandomycin	PFZ.
Tyrothricin	BAX, PEN.
Vancomycin	LIL.
Viomycin	PFZ.
*Antibiotics for animal feed supplements, food preservation, and crop spraying:	
*Bacitracin	COM, DLI, GPR, PMP, x.
Chlortetracycline	ACY.
Hygromycin B	LIL.
Oxytetracycline	PFZ.
*Penicillin G, procaine	LIL, MRK, OMS, PFZ, WYT.
Streptomycin	MRK, PFZ.
Tylosin	LIL.

TABLE 13B.-- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID	
*Alkaloids, except those affecting the autonomic or central nervous system:	
Berberine hydrochloride	PEN.
Ergonovine maleate	LIL.
Hydrastine	PEN.
Hydrastine hydrochloride	PEN.
Lobeline sulfate	ABB.
Papaverine hydrochloride, synthetic	LIL.
Quinidine gluconate	HEX.
Quinidine sulfate	HEX.
Rauwolfia serpentina fraction (Alseroxylon)	RIK.
Rescinnamine	CBP.
Reserpine	PEN.
Theobromine sodium salicylate	CLC.
Vinblastine sulfate	LIL.
*Antihistamines:	
*Antinauseants:	
N-Benzhydryl-N^1-methylpiperazine (Cyclizine) base and hydrochloride.	BUR.
2-(Benzhydryloxy)-N,N-dimethylethylamine 8-chloro-theophyllinate (Dimenhydrinate).	SRL.
1-(p-Chlorobenzhydryl)-4-(3-methylbenzyl)piperazine (Meclizine) dihydrochloride.	PFZ.
4-(2-Dimethylaminoethoxy)-N-(3,4,5-trimethoxybenzoyl)-benzylamine (Trimethobenzamide) hydrochloride.	HOF.
2-(Benzhydryloxy)-N,N-dimethylethylamine (Diphenhydramine) hydrochloride.	PD.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (Tripelenamine).	CBP.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (Tripelenamine) citrate.	CBP.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (Tripelenamine) hydrochloride.	CBP.
2-[p-Bromo-α-(2-dimethylaminoethyl)benzyl]pyridine (Brompheniramine) maleate.	SCH.
d-2-[p-Bromo-α-(2-dimethylaminoethyl)benzyl]pyridine (Dexbrompheniramine) maleate.	SCH.
Bromodiphenhydramine hydrochloride	PD.
1-(4-Chlorobenzhydryl)-4-methylpiperazine (Chlorcyclizine) hydrochloride.	ABB, BUR.
2-[p-Chloro-α-(2-dimethylaminoethoxy)benzyl]pyridine (Carbinoxamine).	SCH.
l-2-[p-Chloro-α-(2-dimethylaminoethoxy)benzyl]pyridine (Rotoxamine).	SCH.
*2-[p-Chloro-α-(2-dimethylaminoethyl)benzyl]pyridine (Chlorpheniramine) maleate.	HEX, LEM, PYL, SCH, SK, x.
d-2-[p-Chloro-α-(2-dimethylaminoethyl)benzyl]pyridine (Dexchlorpheniramine) maleate.	SCH.
1-(p-Chlorophenyl)-2-phenyl-4-pyrrolidyl-1-butene (Pyrrobutamine) diphosphate and hydrochloride.	LIL.
4-(5H-Dibenzo[a,d]cyclohepten-5-ylidene)-1-methylpiperidine (Cyproheptadine).	MRK.
2-[α-(2-Dimethylaminoethoxy)-α-methylbenzyl]pyridine (Doxylamine) succinate.	BKC.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Antihistamines--Continued	
*2-[α-(2-Dimethylaminoethyl)benzyl]pyridine (Pheniramine) maleate.	HEX, SCH, x.
2-[1-[2-(2-Dimethylaminoethyl)inden-3-yl]ethyl]pyridine (Dimethindene) maleate.	CBP.
*2-[(2-Dimethylaminoethyl)(p-methoxybenzyl)amino]pyridine (Pyrilamine) maleate.	HEX, MRK, PYL, RSA.
2-[(2-Dimethylaminoethyl)(p-methoxybenzyl)amino]pyrimidine (Thonzylamine) hydrochloride.	NEP.
2-[(2-Dimethylaminoethyl)-2-thenylamino]pyridine (Methapyrilene) fumarate.	ABB.
2-[(2-Dimethylaminoethyl)-2-thenylamino]pyridine (Methapyrilene) hydrochloride.	ABB.
2-[(2-Dimethylaminoethyl)-2-thenylamino]pyridine (Methapyrilene) o-(p-hydroxybenzoyl)benzoate.	LIL.
2-[(2-Dimethylaminoethyl)-3-thenylamino]pyridine (Thenyldiamine) hydrochloride.	SDW.
N,N-Dimethyl-2-[(α-phenyl-o-tolyl)oxy]ethylamine (Phenyltoloxamine) dihydrogen citrate.	BRS.
2,3,4,9-Tetrahydro-2-methyl-9-phenyl-1H-indeno[2,1-c]pyridine (Phenindamine) hydrogen tartrate.	HOF.
*Anti-infective agents:	
*Antimony, arsenic, bismuth, and mercury compounds:	
Antimony, arsenic, and bismuth compounds:	
N-Acetyl-4-hydroxy-m-arsanilic acid (Acetarsone)	SDW.
Arsanilic acid	SAL, WHL.
Arsanilic acid, sodium salt	SAL, WHL.
Bismuth subsalicylate	MAL, NOR, PEN.
N-Carbamoylarsanilic acid (Carbarsone)	LIL, PYL, RSA, WHL.
2-(2-Hydroxy-3,5-disulfophenoxy)-1,3,2-benzodioxastibole-4,6-disulfonic acid, tetrasodium salt (Stibophen).	SDW.
4-Hydroxy-3-nitrobenzenearsonic acid	SAL.
4-Hydroxy-3-nitrobenzenearsonic acid, sodium salt	SAL.
p-Nitrobenzenearsonic acid	SAL.
1,2,5,6-Tetrahydro-1-methylnicotinic acid, methyl ester, N-acetyl-4-hydroxy-m-arsanilate (Drocarbil).	SDW.
Mercury compounds:	
o-Chloromercuriphenol (o-Hydroxyphenylmercuric chloride).	MTL.
Dibromohydroxymercurifluorescein, sodium salt (Merbromin).	HYN.
Ethylmercurithiosalicylic acid, sodium salt (Thimerosal).	LIL, PYL.
6-(Hydroxymercuri)-5-nitro-o-cresol, inner salt (Nitromersol).	ABB.
Mercuric salicylate	MAL, MTL.
Phenylmercuric acetate	WRC.
Phenylmercuric benzoate	MTL, WRC.
Phenylmercuric borate	MTL, WRC.
Phenylmercuric nitrate	MTL, WRC.
*1-Hexadecylpyridinium (Cetylpyridinium) chloride	BKL, FIN, GAN, HEX.
*Phenolic antiseptics and disinfectants:	
Chlorothymol	OPC.
2-Naphthol (β-Naphthol)	ACY.
Resorcinol	LEM.
Resorcinol monoacetate	KPT.
Thymol	GIV.
Thymol iodide	MAL.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Anti-infective agents--Continued	
*Quinoline derivatives:	
8-[(4-Amino-1-methylbutyl)amino]-6-methoxyquinoline (Primaquine).	SDW.
8-[(4-Amino-1-methylbutyl)amino]-6-methoxyquinoline (Primaquine) diphosphate.	PD.
7-Chloro-4-(4-diethylamino-1-methylbutylamino)quinoline (Chloroquine).	SDW.
7-Chloro-4-(4-[ethyl(2-hydroxyethyl)amino]-1-methylbutylamino)quinoline (Hydroxychloroquine) sulfate.	SDW.
*5-Chloro-7-iodo-8-quinolinol (Iodochlorhydroxyquin)----	CBP, MTL, PYL.
4-(7-Chloro-4-quinolylamino)-α-diethylamino-o-cresol (Amodiaquin).	PD.
4-(7-Chloro-4-quinolylamino)-α-diethylamino-o-cresol (Amodiaquin) hydrochloride.	PD.
*5,7-Diiodo-8-quinolinol (Diiodohydroxyquin)----------	LEM, PYL, RSA, SRL.
8-Hydroxyquinoline-5-sulfonic acid----------	MTL.
8-Quinolinol (Oxyquinoline)----------	GAM, LEM, MTL.
*8-Quinolinol (Oxyquinoline) benzoate----------	GAM, LEM, MTL.
8-Quinolinol (Oxyquinoline) citrate----------	GAM.
8-Quinolinol (Oxyquinoline) potassium sulfate----------	LEM.
*8-Quinolinol (Oxyquinoline) sulfate----------	GAM, LEM, MTL, PYL.
*Sulfonamides:	
6-Acetamido-4-hydroxy-3-(4-sulfamoylphenylazo)-2,7-naphthalenedisulfonic acid, disodium salt (Azosulfamide).	SDW.
N^1-Acetyl-N^1-(3,4-dimethyl-5-isoxazolyl)sulfanilamide (Acetylsulfisoxazole).	HOF.
N^1-Acetylsulfamethoxypyridazine----------	ACY.
4'-(Acetylsulfamoyl)phthalanilic acid (Phthalylsulfacetamide).	LEM.
N^4-Benzylsulfanilamide----------	SDW.
N,N'-Bis(3-nitrobenzenesulfonyl)ethylenediamine--------	SAL.
N^1-(6-Chloro-2-pyrazinyl)sulfanilamide (Sulfachloropyrazine), sodium derivative.	ACY.
N^1-(2,6-Dimethoxy-4-pyrimidinyl)sulfanilamide (Sulfadimethoxine).	HOF.
N^1-(3,4-Dimethyl-5-isoxazolyl)sulfanilamide (Sulfisoxazole).	HOF.
N^1-(5-Ethyl-1,3,4-thiadiazol-2-yl)sulfanilamide (Sulfaethidole).	ACY.
N^1-(5-Methyl-3-isoxazolyl)sulfanilamide (Sulfamethoxazole).	HOF.
N^1-(5-Methyl-3,4-thiadiazol-2-yl)sulfanilamide (Sulfamethizole).	ACY.
4'-(p-Nitrophenylsulfamoyl)acetanilide (Sulfanitran)---	SAL.
p-Nitrosulfathiazole----------	SDW.
Succinylsulfathiazole----------	LEM, MRK.
Sulfabromomethazine, sodium----------	MRK.
Sulfanilamide----------	MRK.
Sulfanilanilide----------	LEM, SAL.
N-Sulfanilylacetamide (Sulfacetamide)----------	LEM, SCH.
N-Sulfanilylacetamide, sodium derivative----------	LEM, SCH.
N-Sulfanilylbenzamide (Sulfabenzamide)----------	ACY.
N-Sulfanilylbenzamide, sodium derivative----------	ACY.
Sulfadiazine----------	ACY, LEM.
Sulfadiazine, sodium----------	ACY.

TABLE 13B. --*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Anti-infective agents--Continued	
*Sulfonamides--Continued	
Sulfaguanidine	ACY, LEM.
Sulfamerazine	ACY, LEM.
Sulfamerazine, sodium	ACY.
Sulfamethazine	ACY, LEM.
Sulfamethoxypyridazine	ACY.
Sulfapyridine	ACY, MRK.
Sulfapyridine, sodium	ACY.
Sulfaquinoxaline	MRK.
*Sulfathiazole	ACY, LEM, MRK.
Sulfathiazole, sodium	ACY, MRK.
4'-(2-Thiazolylsulfamoyl)phthalanilic acid (Phthalylsulfathiazole).	LEM, MRK.
*Other anti-infective agents:	
*Anthelmintic, antifungal, and antiprotozoan agents:	
1-[(4-Amino-2-propyl-5-pyrimidinyl)methyl]-2-picolinium chloride hydrochloride (Amprolium).	MRK.
Anthranilic acid, cadmium salt	MAL.
Benzoic acid	MON, PFZ.
Bis(3-nitrophenyl) disulfide (Nitrophenide)	ACY.
2-Chloro-4-nitrobenzamide (Aklomide)	SAL.
2,4-Diamino-5-(p-chlorophenyl)-6-ethylpyrimidine (Pyrimethamine).	BUR.
6-(2-Diethylaminoethoxy)-2-dimethylaminobenzothiazole (Diamthazole) dihydrochloride.	HOF.
Fuchsin, basic	NAC.
Gentian violet (Methylrosaniline chloride)	NAC, SDH.
Hexylresorcinol	HEX, MRK.
p-Hydroxybenzoic acid esters:	
n-Butyl p-hydroxybenzoate	HN, ICO.
Ethyl p-hydroxybenzoate	HN.
Methyl p-hydroxybenzoate	HN, ICO, LEM, PYL.
Propyl p-hydroxybenzoate	HN, ICO, LEM, PYL.
Phenothiazine	CLV.
Pyrvinium pamoate	x.
2-(4-Thiazolyl)benzimidazole (Thiabendazole)	MRK.
*All other anti-infective agents:	
Acriflavine	NAC.
Acriviolet	NAC.
Aminosalicylic acid and salts:	
4-Aminosalicylic acid	MLS.
Calcium 4-aminosalicylate	MLS.
Potassium 4-aminosalicylate	MLS.
Sodium 4-aminosalicylate	MLS.
Ammonium benzoate	PEN.
Calcium mandelate	MAL.
N-Chloro-p-toluenesulfonamide, sodium derivative (Chloramine T).	MON.
2,4-Diamino-4'-ethoxyazobenzene (Ethoxazene) hydrochloride.	KON.
2,6-Diamino-3-phenylazopyridine (Phenazopyridine) hydrochloride.	HOF, KON, NEP.
3,5-Dinitrobenzamide	SAL.
1-Ethyl-1,4-dihydro-7-methyl-4-oxo-1,8-naphthyridine-3-carboxylic (Nalidixic) acid.	SDW.
Hexamethylenetetramine (Methenamine) mandelate	LEM, NEP, PYL, TNC.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturera' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Anti-infective agents--Continued	
*Other anti-infective agents--Continued	
*All other anti-infective agents--Continued	
Isonicotinic acid hydrazide (Isoniazid)	RIL.
Magnesium salicylate	MAL.
Mandelic acid	MAL.
Methylene blue	ACY, NAC.
Pyrazine-2-carboxamide (Pyrazinamide)	MRK.
[Sulfonylbis(p-phenyleneimino)]dimethanesulfinic acid (Sulfoxone), disodium salt.	ABB.
3,4',5-Tribromosalicylanilide (Tribromsalan)	TRO.
*Autonomic drugs:	
*Parasymatholytic (anticholinergic) agents:	
Anisotropine methyl bromide	x.
(3-Carbamoyl-3,3-diphenylpropyl)diisopropylmethyl-ammonium (Isopropamide) iodide.	SK.
(3-Carbamoyl-3,3-diphenylpropyl)ethyldimethyl-ammonium (Ambutonium) bromide.	ICO.
1-Cyclohexyl-3-diethylamino-1-phenyl-1-propanol ethiodide (Tridihexethyl iodide).	ACY.
4-(β-Cyclohexyl-β-hydroxyphenethyl)-1,1-dimethyl-piperazinium (Hexocyclium) methyl sulfate.	ABB.
α-Cyclohexyl-α-phenyl-1-piperidinepropanol (Tri-hexyphenidyl).	SDW.
α-Cyclohexyl-α-phenyl-1-piperidinepropanol (Tri-hexyphenidyl) hydrochloride.	ACY.
β-Diethylaminoethyl diphenylthioacetate (Thiphenamil) hydrochloride.	x.
10-(2-Diethylaminopropyl)phenothiazine (Ethopropazine)-	NEP.
Diethyl(2-hydroxyethyl)methylammonium bromide, xanthene-9-carboxylate (Methantheline bromide).	SRL.
4-(Dimethylamino)-2,2-diphenylvaleramide (Aminopentamide) sulfate.	ICO.
N,N-Dimethyl-2-(o-methyl-α-phenylbenzyloxy)ethylamine (Orphenadrine) citrate.	RIK.
N,N-Dimethyl-2-(o-methyl-α-phenylbenzyloxy)ethylamine (Orphenadrine) hydrochloride.	RIK.
N,N-Dimethyl-4-piperidylidene-1,1-diphenylmethane (Diphemanil) methyl sulfate.	SCH.
Diphenylacetyldiethylaminoethanol (Adiphenine) hydrochloride.	CBP.
N-Ethyl-3-piperidyl benzilate methobromide (Pipenzolate bromide).	LKL.
N-Ethyl-3-piperidyl diphenylacetate (Piperidolate) hydrochloride.	LKL.
Fluorene-9-carboxylic acid, 2-(diethylamino)ethyl ester (Pavatrine) hydrochloride.	SRL.
Homatropine	CTN, HEX.
Homatropine hydrobromide	CTN.
Homatropine methyl bromide	CTN, EN, HEX.
4-Hydroxy-1,1-dimethylpiperidinium methyl sulfate, 3-methyl-2-phenylvalerate (Pentapiperide methyl sulfate).	x.
(2-Hydroxyethyl)diisopropylmethylammonium bromide, xanthene-9-carboxylate (Propantheline bromide).	SRL.
N-Methyl-3-piperidyl benzilate methobromide (Mepenzolate bromide).	LKL.

TABLE 13B. -- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Autonomic drugs--Continued	
*Parasympatholytic (anticholinergic) agents--Continued	
1-Phenylcyclohexaneglycolic acid, (1,4,5,6-tetrahydro-1-methyl-2-pyrimidinyl)methyl ester (Oxyphencyclimine) hydrochloride.	PFZ.
1-Phenylcyclopentanecarboxylic acid, 2-diethylaminoethyl ester (Caramiphen) ethanedisulfonate.	SK.
Tropine benzhydryl ether methanesulfonate (Benztropine mesylate).	x.
*Sympathomimetic (adrenergic) agents:	
*l-3,4-Dihydroxynorephedrine (Nordefrin) hydrochloride--	SDW.
*Epinephrine----------	DOD, SDW, VB.
1-(p-Hydroxyphenyl)-2-(1-methyl-3-phenylpropylamine)-propanol (Nylidrin) hydrochloride.	x.
*α-(Isopropylaminomethyl)protocatechuyl alcohol (Isoproterenol).	ABB, CTN, GAN.
o-Methoxy-N,α-dimethylphenethylamine (Methoxyphenamine) hydrochloride.	x.
α-(1-Methylaminoethyl)benzyl alcohol (Pseudoephedrine) hydrochloride.	BUR, GAN.
α-(1-Methylaminoethyl)benzyl alcohol (Pseudoephedrine) sulfate.	GAN.
α-[(α-Methyl-3,4-methylenedioxyphenethylamino)-methyl]protocatechuyl alcohol (Protokylol) hydrochloride.	LKL.
*Norephedrine (Phenylpropanolamine) hydrochloride-------	BKL, GAM, GAN, HEX, ICO, NEP, ORT.
1-Phenylephrine base----------	CTN, GAN.
*Phenylephrine hydrochloride----------	CTN, GAN, SDW.
2-(1,2,3,4-Tetrahydro-1-naphthyl)-2-imidazoline (Tetrahydrozoline) hydrochloride.	PFZ.
*All other autonomic drugs:	
2-Benzyl-2-imidazoline (Tolazoline) hydrochloride------	CTN.
1-Hydrazinophthalazine (Hydralazine) hydrochloride-----	CBP.
3-Hydroxy-1-methylpyridinium bromide, dimethylcarbamate (Pyridostigmine bromide).	HOF.
Neostigmine bromide----------	HEX.
Physostigmine----------	PEN.
*Benzothiadiazine derivatives:	
3-Benzyl-3,4-dihydro-6-(trifluoromethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Bendroflumethiazide).	CMS.
3-Benzylthiomethyl-6-chloro-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Benzthiazide).	PFZ.
6-Chloro-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Chlorothiazide).	MRK.
6-Chloro-2-chloromethyl-3,4-dihydro-2-methyl-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Methyclothiazide).	ABB.
6-Chloro-3-dichloromethyl-3,4-dihydro-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Trichlormethiazide).	SCH.
6-Chloro-3,4-dihydro-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Hydrochlorothiazide).	ABB, CBP, MRK.
6-Chloro-3,4-dihydro-2-methyl-3-(2,2,2-trifluoroethylthiomethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Polythiazide).	PFZ.
6-Chloro-3,4-dihydro-3-(5-norbornen-2-yl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Cyclothiazide).	LIL.

TABLE 13B. -- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Benzothiadiazine derivatives--Continued	
3,4-Dihydro-6-(trifluoromethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Hydroflumethiazide).	CMS.
6-(Trifluoromethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Flumethiazide).	CMS.
*Bismuth subgallate	BKC, MAL, PEN.
*Central depressants:	
*Dihydrocodeinone (Hydrocodone) bitartrate	EN, MAL, MRK, PEN.
*5-Ethyl-5-phenylbarbituric acid (Phenobarbital)	BPC, GAN, MAL, SDW.
*5-Ethyl-5-phenylbarbituric acid, sodium derivative	BPC, GAN, MAL, SDW.
*p-Hydroxyacetanilide (Acetaminophen)	ABB, ATP, MLS, NEP.
*Salicylates:	
Aluminum aspirin	ABB, SCH.
*Aspirin	CFC, DOW, MLS, MON, NOR, SDG.
Ethyl salicylate carbonate	PD.
Glycol monosalicylate	RDA.
Phenyl salicylate (Salol)	DOW, MAL, PEN.
Potassium salicylate	HST, PEN.
Salicylamide	CFC, x.
Salicylsalicylic acid	TNC.
*Sodium salicylate	DOW, HN, MON.
Strontium salicylate	MAL, TNC.
*Skeletal muscle relaxants and tranquilizers:	
*Phenothiazine derivatives:	
2-Chloro-10-(3-dimethylaminopropyl)phenothiazine (Chlorpromazine) hydrochloride.	SK.
2-Chloro-10-[3-(1-methyl-4-piperazinyl)propyl]-phenothiazine (Prochlorperazine) dimaleate.	SK.
2-Chloro-10-[3-(1-methyl-4-piperazinyl)propyl]-phenothiazine (Prochlorperazine) ethanedisulfonate.	SK.
4-[3-(2-Chlorophenothiazin-10-yl)propyl]-1-piperazineethanol (Perphenazine).	SCH.
10-(2-Dimethylaminopropyl)phenothiazine (Promethazine) hydrochloride.	WYT.
10-(3-Dimethylaminopropyl)phenothiazine (Promazine) hydrochloride.	WYT.
10-(3-Dimethylaminopropyl)-2-(trifluoromethyl)-phenothiazine (Triflupromazine) hydrochloride.	CMS, SK.
1-[10-(3-[4-(2-Hydroxyethyl)-1-piperazinyl]propyl)-phenothiazin-2-yl]-1-propanone (Carphenazine) base and maleate.	WYT.
10-[(1-Methyl-3-piperidyl)methyl]phenothiazine (Mepazine) hydrochloride hydrate.	NEP.
4-(3-[2-(Trifluoromethyl)phenothiazin-10-yl]propyl)-1-piperazineethanol (Fluphenazine) dihydrochloride.	CMS, SCH.
*3-o-Tolyloxy-1,2-propanediol (Mephenesin)	BKL, HEX, CMS.
*All other skeletal muscle relaxants and tranquilizers:	
2-(Butylaminomethyl)-8-ethoxy-1,4-benzodioxane (Ethoxybutamoxane) hydrochloride.	LIL.
1-(p-tert-Butylbenzyl)-4-(p-chloro-α-phenylbenzyl)-piperazine (Buclizine) dihydrochloride.	PFZ.
Carbamic acid, 2-hydroxy-2-phenylbutyl ester (Hydroxyphenamate).	ARP.
Carbamic acid, 2-hydroxy-2-phenylethyl ester (Styramate).	ARP.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Central depressants--Continued	
*Skeletal muscle relaxants and tranquilizers--Continued	
*All other skeletal muscle relaxants and tranquilizers--Continued	
1-(p-Chlorobenzhydryl)-4-[2-(2-hydroxyethoxy)ethyl]-piperazine (Hydroxyzine) dihydrochloride.	PFZ.
1-(p-Chlorobenzhydryl)-4-[2-(2-hydroxyethoxy)ethyl]-piperazine (Hydroxyzine) pamoate.	PFZ.
7-Chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepin-2-one (Diazepam).	HOF.
trans-2-Chloro-N,N-dimethylthioxanthene-$\Delta^{9,Y}$-propylamine (Chlorprothixene).	HOF.
7-Chloro-2-methylamino-5-phenyl-3H-1,4-benzodiazepine-4-oxide (Chlordiazepoxide) hydrochloride.	HOF.
2-(p-Chlorophenyl)-3-methyl-2,3-butanediol (Phenaglycodol).	LIL.
2-(4-Chlorophenyl)tetrahydro-3-methyl-4H-1,3-thiazin-4-one 1,1-dioxide (Chlormezanone).	SDW.
5-(o-Methoxyphenoxymethyl)-2-oxazolidinone (Mephenoxalone).	ACY.
2-Methyl-3-o-tolyl-4(3H)-quinazolinone (Methaqualone)	HEX.
α-(4-Piperidyl)benzhydrol (Azacyclonol) hydrochloride.	BKC.
3-o-Tolyloxy-1,2-propanediol 1-carbamate (Mephenesin carbamate).	CMS.
Tubocurarine	ABB, CMS.
*All other central depressants:	
Acetanilide	CTN.
Acetophenetidin (Phenacetin)	DOW, MON.
p-Aminobenzoic acid and salts:	
p-Aminobenzoic acid	LEM.
Calcium p-aminobenzoate	LEM.
Magnesium p-aminobenzoate	LEM.
Potassium p-aminobenzoate	GAN, LEM.
Sodium p-aminobenzoate	GAN, LEM.
1-(p-Aminophenethyl)-4-phenylisonipecotic acid, ethyl ester (Anileridine) dihydrochloride.	MRK.
2-(p-Aminophenyl)-2-ethylglutarimide (Aminoglutethimide.	CBP.
4-Butyl-2-p-hydroxyphenyl-1-phenyl-3,5-pyrazolidinedione (Oxyphenbutazone).	GGY.
Colchicine	PEN.
Dihydrohydroxycodeinone (Oxycodone) hydrochloride	EN.
α-d-4-Dimethylamino-1,2-diphenyl-3-methyl-2-propoxybutane (Propoxyphene) hydrochloride.	LIL.
([(2,3-Dimethyl-5-oxo-1-phenyl-3-pyrazolin-4-yl)-methyl]-amino)methanesulfonic acid, sodium salt (Dipyrone).	SDW.
N,2-Dimethyl-2-phenylsuccinimide (Methsuximide)	PD.
5,5-Diphenylhydantoin	PD.
5,5-Diphenylhydantoin, sodium salt	PD.
5-Ethyl-1-methyl-5-phenylbarbituric acid (Mephobarbital).	SDW.
Ethyl 1-methyl-4-phenylisonipecotate (Meperidine)	SDW, WYT.
Ethylmorphine hydrochloride	MAL, MRK.
5-Ethyl-5-phenylbarbituric acid (Phenobarbital), calcium derivative.	GAN.
2-Ethyl-2-phenylglutarimide (Glutethimide)	CBP.
3-Ethyl-5-phenylhydantoin (Ethotoin)	ABB.
Hexahydro-1-methyl-4-phenylazepine-4-carboxylic acid, ethyl ester (Ethoheptazine) citrate.	WYT.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Central depressants--Continued	
*All other central depressants--Continued	
Iodoantipyrine (Iodopyrine)	MAL.
d-3-Methoxy-N-methylmorphinan (Dextromethorphan) hydrobromide.	HOF.
ω-Methoxypoly(ethyleneoxy)ethyl p-butylaminobenzoate (Benzonatate).	CBP.
N-Methyl-2-phenylsuccinimide (Phensuximide)	PD.
10-Phenothiazinecarboxylic acid, 2-(2-dimethylaminoethoxy)ethyl ester (Dimethoxanate) hydrochloride.	x.
Phenylacetylurea (Phenacemide)	ABB.
1-Phenylcyclopentanecarboxylic acid, 2-(2-diethylaminoethoxy)ethyl ester (Carbetapentane) citrate.	PFZ.
α-(2-Pyridylaminomethyl)benzyl alcohol (Phenyramidol) hydrochloride.	OTC.
*Central stimulants:	
*Amphetamines:	
*Amphetamine, dextroamphetamine, and levamphetamine base and salts:	
d-α-Methylphenethylamine (Dextroamphetamine) base	HEX.
d-α-Methylphenethylamine, carboxymethylcellulose salt	OTC.
d-α-Methylphenethylamine hydrochloride	HEX.
d-α-Methylphenethylamine phosphate	OTC.
d-α-Methylphenethylamine sulfate	HEX, SK.
d-α-Methylphenethylamine tannate	OTC.
dl-α-Methylphenethylamine (Amphetamine) base	HEX, ORT.
dl-α-Methylphenethylamine hydrochloride	HEX.
dl-α-Methylphenethylamine sulfate	HEX, SK.
l-α-Methylphenethylamine (Levamphetamine) succinate	OTC.
*Methamphetamine base and hydrochloride:	
d-N,α-Dimethylphenethylamine (Methamphetamine) hydrochloride.	ABB, GAN, HEX.
dl-N,α-Dimethylphenethylamine (Methamphetamine) base	HEX, OTC.
dl-N,α-Dimethylphenethylamine (Methamphetamine) hydrochloride.	GAN, HEX.
l-N,α-Dimethylphenethylamine (Methamphetamine) base	ABB.
*Antidepressants:	
1-[2-(Benzylcarbamoyl)ethyl]-2-isonicotinoylhydrazine (Nialamide).	PFZ.
10,11-Dihydro-N,N-dimethyl-5H-dibenzo[a,d]cycloheptene-$\Delta^{5,\gamma}$-propylamine (Amitriptyline).	MRK.
10,11-Dihydro-N-methyl-5H-dibenzo[a,d]cycloheptene-$\Delta^{5,\gamma}$-propylamine (Nortriptyline).	LIL.
Phenethylhydrazine (Phenelzine) sulfate	NEP.
trans-2-Phenylcyclopropylamine (Tranylcypromine) sulfate	x.
*All other central stimulants:	
d-N-Benzyl-N,α-dimethylphenethylamine (Benzphetamine) hydrochloride.	x.
Caffeine sodium benzoate	GAN, MAL.
p-Chloro-α,α-dimethylphenethylamine (Chlorphentermine) hydrochloride.	NEP.
Diethylaminopropiophenone (Diethylpropion)	BKC, GAN.
2-(Dimethylamino)ethanol, p-acetamidobenzoic acid salt (Deanol acetamidobenzoate).	RIK.
α,α-Dimethylphenethylamine (Phentermine)	HEX.
3,4-Dimethyl-2-phenylmorpholine (Phendimetrazine)	x.
3-Methyl-2-phenylmorpholine (Phenmetrazine) hydrochloride.	GGY.
Nikethamide	CBP.

TABLE 13B. -- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*Guaiacol glyceryl ether	BKL, GAN, HEX, ICO, OTC.
*Salicylic acid	DOW, HN, HST, MON, SDH.
*Synthetic hypoglycemic agents:	
1-[(p-Acetylphenyl)sulfonyl]-3-cyclohexylurea (Acetohexamide).	LIL.
1-Butyl-3-p-tolylsulfonylurea (Tolbutamide)	HST, x.
1-(p-Chlorobenzenesulfonyl)-3-propylurea (Chlorpropamide)	PFZ.
1-(Hexahydro-1-azepinyl)-3-p-tolylsulfonylurea (Tolazamide).	UPJ.
1-Phenethylbiguanide (Phenformin) hydrochloride	x.
*Vitamins:	
*B_2 (Riboflavin):	
For animal and poultry consumption	GPR, HOF, MRK, PMP.
For human consumption	HOF, MRK.
*B_{12} (Cyanocobalamin):	
Feed grade	GPR, MRK, PMP.
Pharmaceutical	IMC, MRK.
U.S.P. Crystalline	MRK.
*Niacin (Nicotinic acid):	
Feed grade	ABB, CKL, MRK, NEP, RIL.
Medicinal grade	MRK, NOP, PD, RIL, SCR.
*Niacinamide (Nicotinamide)	MRK, NEP, PD, RIL, SCR.
*All other vitamins:	
Folic acid	ACY.
Magnesium nicotinate	NEP.
Menadione	ABB, HET, HFT.
Menadione sodium bisulfite	ABB, HET, WHL.
2-Methyl-3-phytyl-1,4-naphthoquinone (Phytonadione)	MRK.
Nicotinamide hydrochloride	NEP.
Pyridoxine	HOF, MRK.
Riboflavin-5'-phosphate, monosodium salt	HOF.
Sodium nicotinate	MRK, NEP.
α-Tocopherol	CW, HOF.
α-Tocopherol acetate	HOF.
*All other benzenoid medicinals:	
Amino acids:	
dl-Acetyltryptophane	SDW.
dl-Phenylalanine	SDW.
dl-Tryptophane	SDW.
p-Amino-N-(2-diethylaminoethyl)benzamide (Procainamide) hydrochloride.	OMS.
Benzaldehyde	HN.
3-(4-Chloro-3-sulfamoylphenyl)-3-hydroxyphthalimidine (Chlorthalidone).	GGY.
4,5-Dichloro-m-benzenedisulfonamide (Dichlorphenamide)	MRK.
1,1-Dichloro-2-(o-chlorophenyl)-2-(p-chlorophenyl)ethane-	EDC.
l-3-(3,4-Dihydroxyphenyl)-2-methylalanine (Methyldopa)	MRK.
6,7-Dimethoxy-1-(4-ethoxy-3-methoxybenzyl)-3-methylquinoline (Dioxyline) phosphate.	LIL.
p,α-Dimethylbenzyl camphorate, diethanolamine salt (Tocamphyl).	x.
p-(Di-n-propylsulfamoyl)benzoic acid (Probenecid)	MRK.
Estrogens:	
3,4-Bis(p-hydroxyphenyl)-2,4-hexadiene (Dienestrol) diacetate.	SCH.
α,α'-Diethyl-4,4'-stilbenediol (Diethylstilbestrol)	CTN, LIL.
Estrogenic substance	ORG.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*All other benzenoid medicinals--Continued	
N-Ethyl-3,3'-diphenyldipropylamine	CTN.
N-Ethyl-3,3'-diphenyldipropylamine citrate	CTN.
N-Ethyl-3,3'-diphenyldipropylamine hydrochloride	CTN.
2-Formyl-1-methylpyridinium chloride, oxime (Pralidoxime chloride).	NEP.
Guaiacol, liquid and crystalline	HN, MON.
Hesperidin methyl chalcone	SKG.
Indocyanine green	x.
Local anesthetics:	
Benzocaine (Ethyl p-aminobenzoate)	ABB, LEM.
2-Butoxy-N-(2-diethylaminoethyl)cinchoninamide (Dibucaine).	CBP.
4-[3-(p-Butoxyphenoxy)propyl]morpholine (Pramoxine) hydrochloride.	ABB.
n-Butyl p-aminobenzoate (Butesin)	ABB.
Di(n-butyl p-aminobenzoate) trinitrophenol (Butesin picrate).	ABB.
α-Diethylamino-2,6-acetoxylidide (Lidocaine)	AST.
2-Diethylaminoethyl 4-amino-2-propoxybenzoate (Propoxycaine).	SDW.
p-Ethoxybenzoic acid, 2-(diethylamino)ethyl ester (Parethoxycaine) hydrochloride.	ICO.
2,2'-(2-Hydroxyethylimino)bis[N-(α,α-dimethylphenethyl)-N-methylacetamide] (Oxethazaine).	WYT.
Isobutyl p-aminobenzoate (Cycloform)	ICO.
2-Methyl-1-piperidinepropanol benzoate (Piperocaine) hydrochloride.	LIL.
3-(2-Methyl-1-piperidyl)propyl p-cyclohexyloxybenzoate (Cyclomethycaine).	LIL.
Phenacaine [(Di-p-ethoxyphenyl)acetamidine] hydrochloride.	SDW.
Procaine base (2-Diethylaminoethyl p-aminobenzoate)	ABB.
Procaine hydrochloride	ABB, LEM.
Propyl p-aminobenzoate	ICO.
1-Pyrrolidineaceto-2',6'-xylidide (Pyrrocaine) hydrochloride.	EN.
Tetracaine (2-Dimethylaminoethyl p-butylaminobenzoate) base.	ICO.
Tetracaine hydrochloride	ICO, SDW.
2-(p-Methoxyphenyl)-1,3-indandione (Anisindione)	SCH.
2-Methyl-1,2-di-3-pyridyl-1-propanone (Metyrapone)	CBP.
3,3'-Methylenebis(4-hydroxycoumarin) (Bishydroxycoumarin)	ABB, FIN.
N-Methyl-N-(2-propynyl)benzylamine (Pargyline) hydrochloride.	ABB.
Phenolphthalein	MON.
Phenolphthalein, yellow	WLI.
Phenolsulfonic acid salts:	
Aluminum phenolsulfonate	MAL.
Ammonium phenolsulfonate	SAL.
Sodium phenolsulfonate	MAL, SAL.
Zinc phenolsulfonate	MAL.
2-Phenyl-1,3-indandione (Phenindione)	CTN, GAN.
Podophyllum resin	ABB.
2-Pyridinemethanol (Nicotinyl alcohol) tartrate	HOF.
Roentgenographic contrast media:	
3-Acetamido-2,4,6-triiodobenzoic acid and sodium salt (Sodium acetrizoate).	MAL.
3-(3-Amino-2,4,6-triiodophenyl)-2-ethylpropionic acid (Iopanoic acid).	SDW.

TABLE 13B. -- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, BENZENOID--Continued	
*All other benzenoid medicinals--Continued	
Roentgenographic contrast media--Continued	
3,5-Diacetamido-2,4,6-triiodobenzoic acid, N-methyl glucamine salt (Meglumine diatrizoate).	SDW.
3,5-Diacetamido-2,4,6-triiodobenzoic acid, sodium salt (Sodium diatrizoate).	SDW.
3,5-Dipropionamido-2,4,6-triiodobenzoic acid and sodium salt (Sodium diprotrizoate).	MAL.
Ethyl (iodophenyl)hendecanoate (Iophendylate)----------	x.
Meglumine iothalamate----------	MAL.
Sodium o-iodohippurate dihydrate----------	MAL.
Sodium iothalamate----------	MAL.
Rutin----------	PEN.
Scarlet red----------	NAC.
Sodium benzoate----------	PFZ.
8-Succinoylfluoranthene (Florantyrone)----------	SRL.
Sunscreens:	
Dipropylene glycol salicylate----------	SBC.
homo-Menthyl salicylate----------	ICO.
p-Methoxycinnamic acid, benzyl ester----------	GIV.
p-Methoxycinnamic acid, 2-ethoxyethyl ester----------	GIV.
2,4,7-Triamino-6-phenylpteridine (Triamterene)----------	SK.
MEDICINAL CHEMICALS, NONBENZENOID	
*Anti-infective agents:	
*Caprylates and undecylenates:	
Calcium undecylenate----------	WTL.
Sodium caprylate----------	TNC.
Sodium undecylenate----------	BAC.
Undecylenic acid----------	BAC.
Zinc undecylenate----------	BAC, LEM, MCO, TNC, WTL.
*Derivatives of 5-nitrofurane, 5-nitroimidazole, and 5-nitrothiazole:	
2-Acetamido-5-nitrothiazole (Acinitrazole)----------	ACY.
2-Amino-5-nitrothiazole----------	ACY.
1-Ethyl-3-(5-nitro-2-thiazolyl)urea (Nithiazide)-------	MRK.
1-(2-Hydroxyethyl)-2-methyl-5-nitroimidazole (Metronidazole).	RDA.
5-Nitro-2-furaldehyde acetylhydrazone (Nihydrazone)----	NOR.
5-Nitro-2-furaldehyde semicarbazone (Nitrofurazone)----	NOR.
N-(5-Nitro-2-furfurylidene)-1-aminohydantoin (Nitrofurantoin).	NOR.
3-(5-Nitro-2-furfurylideneamino)-2-oxazolidinone (Furazolidone).	NOR.
*Halogen compounds:	
Bromocamphor, mono- ----------	MAL, PEN.
Bromoform (Tribromomethane)----------	DOW.
Chlorobutanol (tert-Trichlorobutyl alcohol)----------	BPC, PD.
Iodoform----------	MAL, PEN.
1-Vinyl-2-pyrrolidinone iodine complex polymer (Povidone - iodine complex).	G.
*Piperazine and salts:	
*Piperazine----------	DOW, JCC, UCC, x.
Piperazine adipate----------	JCC, PYL, RDA.
Piperazine calcium edetate----------	EN.
Piperazine citrate----------	JCC, RDA.
Piperazine dihydrochloride----------	DOW, JCC, PYL, RDA, WHL.

TABLE 13B.-- *Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, NONBENZENOID--Continued	
*Anti-infective agents--Continued	
*Piperazine and salts--Continued	
Piperazine hexahydrate	JCC, RDA.
*Piperazine hydrochloride	DOW, JCC, RDA.
*Piperazine phosphate	BUR, JCC, PYL, RDA, WHL.
Piperazine sulfate	JCC, RDA.
Piperazine tartrate	PYL, RDA.
All other	PYL.
*All other anti-infective agents:	
1-Adamantanamine (Amantadine) hydrochloride	x.
1-Diethylcarbamoyl-4-methylpiperazine (Diethylcarbamazine) dihydrogen citrate.	ACY.
Hexamethylenetetramine (Methenamine)	HN.
β-(Hydroxymethoxy)tricarballylic acid, γ-lactone, hexamethylenetetramine salt (Citramin).	SDW.
4,5-Imidazoledicarboxamide (Glycarbylamide)	MRK.
2-Propylvaleric acid and bismuth salt	x.
Sodium bismuth triglycollamate	x.
*Autonomic drugs:	
Acetylcholine chloride	MRK.
Acetyl-β-methylcholine (Methacholine) chloride	MRK, RSA.
1-Cyclopentyl-2-methylpropylamine (Cyclopentamine) hydrochloride.	LIL.
Diethylaminocarbethoxybicyclohexyl (Dicyclomine) hydrochloride.	BKC.
Diethyl(2-hydroxyethyl)methylammonium bromide, α-cyclopentyl-2-thiopheneglycolate (Penthienate bromide).	SDW.
N,α-Dimethylcyclohexaneethylamine (1-Cyclohexyl-2-methylaminopropane) (Propylhexedrine).	SK.
Hexamethylenebis(trimethylammonium chloride) (Hexamethonium chloride).	RSA.
trans-[4-(Hydroxydi-2-thienylmethyl)cyclohexyl]trimethylammonium bromide (Thihexinol methylbromide).	SCH.
Tetraethylammonium chloride	RSA.
*Central depressants and stimulants:	
*Barbiturates:	
5-Allyl-5-sec-butylbarbituric acid (Talbutal)	SDW.
5-Allyl-5-(2-cyclopenten-1-yl)barbituric acid and salt	GAN.
5-Allyl-5-isobutylbarbituric (Allylbarbituric) acid and salt.	GAN.
5-Allyl-5-(1-methylbutyl)barbituric acid (Secobarbital) and salt.	GAN.
5-Allyl-5-(1-methylbutyl)-5-thiobarbituric acid (Thiamylal), sodium derivative.	PD.
dl-5-Allyl-1-methyl-5-(1-methyl-2-pentynyl)barbituric acid (Methohexital), sodium derivative.	LIL.
*5-sec-Butyl-5-ethylbarbituric acid (Butabarbital)	ABB, BPC, GAN.
*5-sec-Butyl-5-ethylbarbituric acid, sodium derivative	ABB, BPC, GAN.
5-(1-Cyclohexen-1-yl)-1,5-dimethylbarbituric acid (Hexobarbital).	GAN.
5-(1-Cyclohexen-1-yl)-1,5-dimethylbarbituric acid, sodium derivative.	SDW.
5-(1-Cyclohexen-1-yl)-5-ethylbarbituric acid (Cyclobarbital) and salt.	GAN, SDW.
5,5-Diethylbarbituric acid (Barbital)	GAN.
5,5-Diethylbarbituric acid, sodium derivative	GAN.
5,5-Diethyl-1-methylbarbituric acid (Metharbital)	ABB.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, NONBENZENOID--Continued	
*Central depressants and stimulants--Continued	
*Barbiturates--Continued	
5-Ethyl-5-isoamylbarbituric acid (Amobarbital), sodium derivative.	BPC, GAN, LIL.
5-Ethyl-5-(1-methyl-1-butenyl)barbituric acid (Vinbarbital).	GAN.
*5-Ethyl-5-(1-methylbutyl)barbituric acid (Pentobarbital).	ABB, BPC, GAN.
5-Ethyl-5-(1-methylbutyl)barbituric acid, sodium derivative.	ABB, BPC, GAN.
5-Ethyl-5-(1-methylbutyl)-2-thiobarbituric acid (Thiopental) and sodium derivative.	ABB.
5-Ethyl-5-n-pentylbarbituric acid, sodium derivative---	BPC.
*Caffeine:	
Natural----------	GNF, MYW.
Synthetic----------	MON, PFZ.
*2-Methyl-2-propyl-1,3-propanediol dicarbamate (Meprobamate).	ABB, BKL, ICO, PEN, x.
*Succinylcholine chloride----------	ABB, BUR, SDW.
*All other central depressants and stimulants:	
Acetylcarbromal [1-Acetyl-3-(2-bromo-2-ethylbutyryl)-urea].	MLS.
Bis(2,2,2-trifluoroethyl)ether (Flurothyl)----------	TBK.
2-sec-Butyl-2-methyl-1,3-propanediol dicarbamate (Mebutamate).	x, x.
N-Butyl-2-methyl-2-propyl-1,3-propanediol dicarbamate (Tybamate).	x.
Caffeine citrate----------	MAL, MRK.
Calcium succinate----------	LEM, PEN.
Carbromal (Bromodiethylacetylcarbamide)----------	MLS, PD.
β-Chlorovinylethylethynylcarbinol (Ethchlorvynol)------	ABB.
3,3-Diethyl-5-methyl-2,4-piperidinedione (Methyprylon)-	HOF.
2-(Dimethylamino)ethanol (Deanol) bitartrate----------	x.
Divinyl ether----------	MRK.
2-Ethyl-cis-crotonylurea (Ectylurea)----------	MLS.
5-Ethyl-3,5-dimethyl-2,4-oxazolidinedione (Parametha-dione).	ABB.
2-Ethyl-2-methylsuccinimide (Ethosuximide)----------	PD.
Ethynylcyclohexyl carbamate (Ethinamate)----------	LIL.
N-Isopropyl-2-methyl-2-propyl-1,3-propanediol dicarbamate (Carisoprodol).	x.
Sodium hydroxydione succinate----------	PFZ.
Sodium succinate----------	PEN.
2,2,2-Tribromoethanol----------	SDW.
3,5,5-Trimethyl-2,4-oxazolidinedione (Trimethadione)---	ABB.
*Digestants and lipotropic agents:	
*Betaine base, hydrate, and hydrochloride:	
Betaine base----------	MAL.
Betaine hydrate----------	HFT.
Betaine hydrochloride----------	HFT, LEM, TNC.
*Bile acids and salts:	
Bile acids, oxidized----------	MRK, SRL, WIL.
Dehydrocholic acid----------	WIL.
Dehydrocholic acid, sodium salt----------	WIL.
Iron bile salts----------	LIL.
Oxbile extract----------	ABB.
*Choline bitartrate----------	ACY, CFC, HFT.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, NONBENZENOID--Continued	
*Digestants and lipotropic agents--Continued	
*Choline chloride:	
Feed grade	COM, HFT.
Medicinal grade	CFC, HFT.
Technical grade	DLI, RH.
*Choline dihydrogen citrate	ACY, CFC, HFT.
*Methionine and hydroxy analogue:	
Methionine, feed grade	DOW.
dl-Methionine, medicinal grade	DOW, LEM.
Methionine, hydroxy analogue	DUP, MON.
*Tricholine citrate	ACY, CFC, HFT.
*All other digestants and lipotropic agents:	
Acetylmethionine	DOW.
Choline bicarbonate	COM, HFT.
Sitosterols	UPJ.
*Hormones:	
Corticotropin	ARP, ORG, WIL.
Dexamethasone	MRK, SCH.
Dexamethasone acetate	SCH.
Dexamethasone 21-phosphate	MRK.
9,11β-Dichloro-17,21-dihydroxypregna-1,4-diene-3,20-dione (Dichlorisone) 21-acetate.	SCH.
17α-Ethynyl-17β-hydroxy-5(10)-estrene-3-one (Norethynodrel).	SRL.
9α-Fluorohydrocortisone acetate (Fludrocortisone)	UPJ.
Fluorometholone	UPJ.
9-Fluoro-11β,17,21-trihydroxy-16β-methylpregna-1,4-diene-3,20-dione (Betamethasone).	SCH.
Fluoxymesterone	UPJ.
Fluprednisolone	UPJ.
*Hydrocortisone alcohol and acetate	MRK, PFZ, UPJ.
Hydrocortisone diethylaminoacetate (Hydrocortamate) hydrochloride.	PFZ.
Hydrocortisone phosphate	MRK.
17-Hydroxy-11-dehydrocorticosterone (Cortisone) and acetate.	MRK, UPJ.
17-Hydroxypregna-4-ene-3,20-dione (Hydroxyprogesterone)	SCH.
11α-Hydroxyprogesterone	UPJ.
Insulin (salt cake)	ARP.
Medroxyprogesterone acetate	x.
17-Methyl-5α-androstano[3,2-c]pyrazole-17β-ol (Stanozolol).	SDW.
Methylprednisolone	UPJ.
Prednisolone	MRK, SCH, UPJ.
*Prednisone	MRK, SCH, UPJ.
Progesterone	x.
Triamcinolone	ACY, OMS.
*Theobromine and theophylline derivatives:	
Theobromine, sodium acetate	MAL.
Theophylline aminoisobutanol (Ambuphylline)	GAN.
Theophylline cholinate (Oxtriphylline)	NEP.
Theophylline ethylenediamine (Aminophylline)	GAN, LEM, SRL.
Theophylline ethylenediamine, sodium biphosphate	GAN.
Theophylline monethanolamine	LIL.
*Therapeutic nutrients:	
*Amino acids:	
β-Alanine	BFG, NOP.
*Amino acid mixtures	ABB, CUT, STA.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, NONBENZENOID--Continued	
*Therapeutic nutrients--Continued	
*Amino acids--Continued	
*Aspartic acid and salts:	
dl-Aspartic acid	HEX, NAC.
Magnesium hydrogen aspartate	WYT.
Potassium hydrogen aspartate	WYT.
Glutamic acid and salts:	
*Glutamic acid	IMC, LEM, PFZ.
Glutamic acid, calcium salt	LEM.
Glutamic acid hydrochloride	IMC, LEM.
Glutamic acid, monoammonium salt	IMC.
Glutamic acid, monopotassium salt	IMC, LEM, PFZ.
Glycine (Aminoacetic acid)	BPC, DOW.
Lysine, feed grade	MRK.
Lysine hydrochloride	MRK.
*Calcium gluconate	MAL, PFZ, WHL.
*All other therapeutic nutrients:	
Calcium glucoheptonate	PFN.
Calcium glycerophosphate	SEL.
Calcium lactophosphate	MAL.
Calcium levulinate	SEL.
Calcium phytate	STA.
Copper gluconate	PFZ.
Fructose (Levulose)	DLI.
Iron (ferrous) gluconate	PFZ.
Lecithin, purified	ARP.
Magnesium gluconate	PFZ.
Manganese gluconate	PFZ.
Potassium gluconate	PFZ.
Sodium glycerophosphate	SEL.
*5-Ureidohydantoin (Allantoin)	CTN, FIN, HFT.
*Vitamins:	
*Ascorbic acid and derivatives:	
*Ascorbic acid	HOF, MRK, PFZ.
Ascorbic acid, calcium salt	PFZ.
Ascorbic acid, sodium salt	HOF, MRK, PFZ.
Ascorbyl palmitate	PFZ.
*Pantothenic acid and derivatives:	
d-Calcium pantothenate	ACY, DLI, MRK, x.
*dl-Calcium pantothenate:	
Feed grade	NOP.
Medicinal grade	ABB, CKL, HFT, MRK, NOP.
dl-Caldium pantothenate, calcium chloride complex	NOP.
d-Pantothenyl alcohol (Dexpanthenol)	HOF.
dl-Pantothenyl alcohol (Panthenol)	HOF.
Sodium pantothenate	PD.
*Vitamin A alcohol and esters:	
Vitamin A acetate (feed grade)	HOF.
Vitamin A acetate (medicinal grade)	HOF, PFZ.
Vitamin A alcohol	CW, HOF.
Vitamin A natural esters	CW.
Vitamin A palmitate (feed grade)	EK, HOF.
*Vitamin A palmitate (medicinal grade)	EK, HOF, PFZ.
*Vitamin D_2 (Ergocalciferol)	DLI, NOP, SCR, VTM.
*All other vitamins:	
Biotin	HOF.
β-Carotene	HOF.
Inositol	STA.
Thiamin hydrochloride	HOF, MRK.
Thiamin mononitrate	HOF, MRK.
Vitamin D_3 (Cholecalciferol)	DLI, VTM.

TABLE 13B.--*Medicinal chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MEDICINAL CHEMICALS, NONBENZENOID--Continued	
*All other nonbenzenoid medicinal chemicals:	
5-Acetamido-1,3,4-thiadiazole-2-sulfonamide (Acetazolamide).	ACY.
2-(2-Aminoethyl)-2-thiopseudourea dihydrobromide (AET)	SBR.
6-Aminohexanoic (Aminocaproic) acid	ACY.
Calcium camphosulfonate	FIN, PYL.
Cellulose, oxidized	EKT.
Dextran	PHR.
Digitoxin	BUR.
3,5-Diiodo-4-pyridone-N-acetic acid, diethanolamine salt (Iodopyracet).	SDW.
Ethyl carbamate (Urethane)	FMP.
Ethylenediamine dihydriodide	PYL, WHL.
Ethyl nitrite	MAL.
Galactose	PFN.
Gitalin	PEN.
Glyceryl trinitrate	APD.
Heparin, sodium	ABB, RIK.
17-Hydroxy-7α-mercapto-3-oxo-17α-pregn-4-ene-21-carboxylic acid, γ-lactone, 7-acetate (Spironolactone).	SRL.
2-Iodoethyl-1,3-dioxolane-4-methanol (Iodinated glycerol)	x.
Iodomethanesulfonic acid (Methiodal), sodium salt	SDW.
Isosorbide dinitrate	APD.
Magnesium citrate	MAL.
6-Mercaptopurine	BUR.
Mercury compounds:	
N-[3-(Carboxymethylthiomercuri)-2-methoxypropyl]-α-camphoramic acid, disodium salt (Mercaptomerin, sodium).	WYT.
[3-(Chloromercuri)-2-methoxypropyl]urea (Chlormerodrin).	LKL.
N-[3-(Hydroxymercuri)-2-methoxypropyl]-α-camphoramic acid, sodium salt and theophylline (Mercurophylline, sodium).	FIN.
1-[3-(Hydroxymercuri)-2-methoxypropyl]-3-succinylurea and theophylline (Meralluride).	LKL.
1-Methylimidazole-2-thiol (Methimazole)	LIL.
Polyacrylic acid (Polycarbophil)	WLI.
Polyacrylic acid, calcium salt	WLI.
6-Propyl-2-thiouracil	PYL.
Sodium carboxymethylcellulose (medicinal grade)	CBP.
Sodium tartrate	MAL.
Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt (Dioctyl sodium sulfosuccinate).	ACY.
Terpinol hydrate	LEM, PEN.
Veratrum viride (Alkavervir)	PEN, RIK.

Flavor and Perfume Materials

TABLE 14B. --*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Flavor and perfume materials for which separate statistics are given in table 14A are marked below with an asterisk (*); those not so marked do not appear in table 14A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
Benzenoid and Naphthalenoid	
2'-Acetonaphthone (Methyl β-naphthyl ketone)	GIV, TBK.
Acetophenone	GIV, TBK.
7-Acetyl-6-ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydronaphthalene.	GIV.
p-Allylanisole	GIV.
Allyl phenoxyacetate	GIV.
*4-Allylveratrole (Eugenyl methyl ether)	FB, GIV, ICO, TBK.
p-tert-Amylcyclohexanone	IFF.
*Anethole (p-Propenylaniscle)	ARZ, GLD, HNW, HPC, UNG.
*p-Anisaldehyde (p-Methoxybenzaldehyde)	GIV, ICO, OPC, TBK, UNG.
Anisole (Methyl phenyl ether)	GIV.
Anisyl acetate	GIV, TBK.
Anisyl alcohol	GIV, TBK.
*Benzophenone	G, GIV, ICO, NEO, TBK.
*Benzyl acetate	GIV, OPC, RDA, SHL, TBK, TNP.
*Benzyl alcohol	BPC, GIV, OPC, SHL, TBK, TNP.
Benzyl benzoate	MON, TBK, TNP.
Benzyl butyrate	FB, TBK.
*Benzyl cinnamate	GIV, ICO, TBK.
*Benzyl ether	OPC, SHL, TNP.
Benzyl formate	TBK.
Benzyl glyceryl acetal	GIV.
Benzylidene acetone	FB.
Benzyl isoeugenyl ether	GIV, TBK.
Benzyl isopentyl ether	GIV.
Benzyl phenylacetate (Benzyl α-tcluate)	MYW, TBK.
*Benzyl propionate	FB, GIV, TBK.
*Benzyl salicylate	GIV, OPC, TBK, UNG.
α-Bromostyrene	TBK.
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 (α-Methyl-β-(p-tert-butylphenyl)propionaldehyde).	GIV, TBK.
5-tert-Butyl-1,2,3-trimethyl-4,6-dinitrobenzene (5-tert-Butyl-4,6-dinitrohemimellitene).	GIV.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)	GIV.
Carvacrol (2-p-Cymenol)	GIV.
*Cinnamaldehyde	FB, OPC, TBK.
Cinnamic acid	BPC.
Cinnamyl acetate	FB, GIV, TBK.
*Cinnamyl alcohol	FB, GIV, NEO, TBK.
Cinnamyl anthranilate	FEL, GIV, RT.
Cinnamyl cinnamate	TBK.
Cinnamyl formate	TBK.
Cinnamyl isovalerate	TBK.
Cinnamyl propionate	GIV.
trans-Decahydro-2-naphthol	IFF.
p,α-Dimethylbenzyl alcohol (p-Methylphenylmethylcarbinol)	GIV.
*α,α-Dimethylphenethyl acetate	GIV, IFF, RDA, TBK.
α,α-Dimethylphenethyl alcohol	IFF.
α,α-Dimethyl-3-phenyl-1-propanol	IFF, TBK.

TABLE 14B.--*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material	Manufacturers' identification codes (according to list in table 22)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
4,6-Dinitro-1,1,3,3,5-pentamethylindan	GIV.
Diphenylmethane	TBK.
1,3-Diphenyl-2-propanone (Dibenzyl ketone)	GIV.
6-Ethoxy-m-anol (Propenyl methylguaethol)	SHL.
2-Ethoxynaphthalene (Ethyl β-naphthyl ether)	GIV, TBK.
Ethyl anisate	ICO.
Ethyl anthranilate	FB, FMT.
Ethyl benzoate	TBK.
Ethyl cinnamate	GIV, TBK.
Ethyl α,β-epoxy-β-methylhydrocinnamate	GIV, TBK.
2-Ethylhexyl salicylate	FEL.
Ethyl 3-phenylglycidate	GIV, TBK.
Ethylvanillin	MON, RDA.
*Eugenol	FB, GIV, ICO, LUE, NEO, PEN, RT, SHL, TBK, UNG, VLY.
Eugenol acetate	GIV.
Geranyl benzoate	GIV.
Hexylcinnamaldehyde	GIV, IFF, TBK.
Hydratropaldehyde (α-Phenylpropionaldehyde)	GIV, IFF.
Hydratropaldehyde, dimethyl acetal	GIV, IFF.
Hydrocinnamaldehyde (3-Phenylpropionaldehyde)	TBK.
Hydroxycitronellal methyl anthranilate	GIV.
2-Hydroxypropyl p-N,N-bis(2-hydroxypropyl)aminobenzoate	SHL.
Isobutyl cinnamate	TBK.
*Isobutyl phenylacetate (Isobutyl α-toluate)	FB, GIV, MYW, TBK.
*Isobutyl salicylate	FB, GIV, TBK.
*Isoeugenol	FB, GIV, NEO, SHL, TBK, VLY.
Isoeugenyl acetate	TBK.
*Isopentyl salicylate (Amyl salicylate)	FB, GIV, ICO, OPC, RDA, TBK, UNG.
p-Isopropylbenzaldehyde (Cumaldehyde)	GIV.
p-Isopropylcyclohexanol	GIV.
p-Isopropyl-α-methylhydrocinnamaldehyde (Cyclamen aldehyde).	GIV, OPC, RDA.
p-Isopropyl-α-methylhydrocinnamyl alcohol	GIV.
Laevo carveol	FB.
*4'-Methoxyacetophenone	GIV, ICO, OPC.
2-Methoxynaphthalene (Methyl β-naphthyl ether)	GIV, TBK.
4-(α-Methoxyphenyl)butanone	TBK.
1-(p-Methoxyphenyl)-1-pentene-3-one	GIV.
4'-Methylacetophenone (Methyl p-tolyl ketone)	TBK.
Methyl anisate	ICO.
p-Methylanisole (p-Cresyl methyl ether)	GIV, TBK.
*Methyl anthranilate	DOW, FB, GIV, MEE, OPC, SHL, UNG.
Methyl benzoate	HN.
α-Methylbenzyl acetate	GIV, TBK.
p-Methylbenzyl acetate	ICO, IFF.
*α-Methylcinnamaldehyde	FB, GIV, VLY.
Methyl cinnamate	FB, ICO, TBK.
4-Methyl-7-ethoxy coumarin	GIV.
p-Methyl hydratropic aldehyde	GIV.
Methyl N-methylanthranilate (Dimethyl anthranilate)	GIV.
Methyl phenylacetate (Methyl α-toluate)	GIV, TBK.
Methyl phenylcarbinol acetate	VLY.
*Methyl salicylate (Synthetic wintergreen oil)	CFC, DOW, HN, MON, x.
*α-Pentylcinnamaldehyde (α-Amylcinnamaldehyde)	FB, GIV, IFF, NEO, RDA, TBK, VLY.
Phenethyl acetate	GIV, IFF.
Phenethyl alcohol	GIV, IFF, OPC.
Phenethyl formate	IFF.
*Phenethyl isobutyrate	GIV, IFF, TBK.
Phenethyl isovalerate	FB, GIV.
Phenethyl methacrylate	IFF.
*Phenethyl phenylacetate (Phenethyl α-toluate)	GIV, IFF, TBK.
Phenethyl propionate	IFF.
Phenethyl salicylate	IFF, TBK.
2-Phenoxyethyl isobutyrate	TBK.
Phenylacetaldehyde (α-Tolualdehyde)	GIV, TBK.

TABLE 14B.--*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material	Manufacturers' identification codes (according to list in table 22)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
Phenylacetaldehyde, dimethyl acetal	GIV, TBK.
Phenylacetaldehyde, ethylene acetal	GIV.
o-Phenylanisole (2-Methoxybiphenyl)	GIV.
Phenylethyl tiglate	FB.
*3-Phenyl-1-propanol (Hydrocinnamic alcohol)	FB, GIV, OPC, TBK.
3-Phenyl-1-propyl acetate	GIV.
5-Propenyl-2-ethoxyphenol (Propenylguaethol)	ICO.
*4-Propenylveratrole (Isoeugenyl methyl ether)	GIV, ICO, TBK.
p-Propylanisole	GIV.
n-Propyl phenethyl acetal	GIV.
Styrolyl acetate	FB.
1,2,3,6-Tetrahydro-2,3,5-trimethylbenzaldehyde	IFF.
p-Tolualdehyde (p-Methylbenzaldehyde)	GIV, HN.
p-Tolyl acetate (p-Cresyl acetate)	GIV, IFF.
p-Tolyl isobutyrate (p-Cresyl isobutyrate)	IFF.
p-Tolyl phenylacetate (p-Cresyl α-toluate)	GIV, TBK.
α-(Trichloromethyl)benzyl acetate (Rosetone)	GIV, ICO, TBK.
p-α,α-Trimethylphenethyl alcohol	IFF.
Trimethyltetrahydrobenzylidene acetone	TBK.
Vanillin	MON, SLV.
All other	PFW.
Terpenoid, Heterocyclic, and Alicyclic	
Allyl cyclohexyl propionate	GIV.
Allyl ionone	GIV, IFF.
Amyris acetate	GIV, TBK.
Bornyl acetate	FEL.
4-tert-Butylcyclohexanol	IFF.
4-tert-Butylcyclohexyl acetate	DOW, IFF.
Cadinene	FB.
Carvone (Carvol)	FB, FRM, OPC.
Caryophyllene	FB, GIV.
Cedranone	TBK.
Cedrenol	GIV.
Cedrol	GIV, IFF, NEO, TBK.
*Cedryl acetate	GIV, IFF, NEO, TBK, UNG.
*Citral (Geranial)	FB, FEL, GIV, LUE, MYW, NEO, RT, TBK, UNG.
Citral dimethyl acetal	GIV.
Citronellal	FB, GIV, IFF, TBK.
*Citronellol	FB, GIV, GLD, IFF, NEO, OPC, TBK, VLY.
*Citronellyl acetate	GIV, IFF, TBK, VLY.
Citronellyl butyrate	GIV.
*Citronellyl formate	FB, GIV, IFF, TBK.
Citronellyl isobutyrate	GIV, IFF, TBK.
Citronellyl oxyacetaldehyde	IFF, TBK.
Citronellyl propionate	IFF.
*Coumarin	DOW, MON, NEO, RDA, TBK.
Cyclohexadecanolide	IFF.
Cyclohexylcyclohexanone	GIV.
Cyclopentanone	ARA.
Dihydrogeraniol	ICO.
Dihydronordicyclopentadienyl acetate	GIV.
Dihydroterpinyl acetate	GIV.
*Essential oils, chemically modified:	
Cedarwood, terpeneless	TBK.
Citronella oil, acetone condensation product	CP.
Citronella oil, acetylated	IFF.
Clove leaf oil terpenes	SHL.
Ethyl oxyhydrate	FEL, FLO, LUE, RT, VND.
Guaiacwood acetate	FB, GIV, TBK.
Hexene-2-al-1	OPC.
Lavandin, acetylated	FEL, IFF, UNG.
Oil clove stem, acetylated	FB.
Sassafras oil, hydrogenated	GIV.
α-Furfural mercaptan	RT.

TABLE 14B.--*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material	Manufacturers' identification codes (according to list in table 22)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*Geraniol	FB, FEL, GIV, GLD, IFF, MYW, NEO, TBK, UNG, VLY.
Geranoxy acetaldehyde	IFF.
*Geranyl acetate	FEL, GIV, IFF, NEO, TBK, UNG, VLY.
Geranyl butyrate	GIV.
*Geranyl formate	GIV, TBK, VLY.
Geranyl isobutyrate	IFF.
Geranyl isovalerate	FB.
Geranyl phenylacetate (Geranyl α-toluate)	GIV, TBK.
2-Hexyl-2-cyclopenten-1-one	IFF.
*Hydrocoumarin (3,4-Dihydrocoumarin)	GIV, ICO, OPC, TBK.
*Hydroxycitronellal	GIV, GLD, IFF, OPC, TBK, VLY.
Hydroxycitronellal, dimethyl acetal	GIV, TBK.
4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde.	IFF.
Indole	DOW, GIV.
*Ionones:	
α-Ionone	GIV, IFF, MYW, TBK.
β-Ionone	MYW, NEO, TBK.
Ionone (α- and β-)	GIV, LUE, MYW, TBK.
Isoborneol (Isobornyl alcohol)	RDA.
*Isobornyl acetate	FB, GIV, OPC, RDA, TBK, UNG.
Isobutylquinoline	FMT, IFF.
Isomenthone	GIV, TBK.
Isopropylquinoline	FMT.
Isopulegol	GIV.
Isosafrole	GIV.
d-Limonene	RT, SKG.
Linalool	FB, FEL, GIV, GLD, HOF, LUE, NEO, SHL, TBK, UNG.
*Linalyl acetate	DOW, FB, GIV, GLD, HOF, LUE, SHL, TBK, UNG.
Linalyl anthranilate	FMT.
Linalyl cinnamate	TBK.
Linalyl isobutyrate	GIV, TBK.
Linalyl propionate	GIV.
*Menthol, synthetic:	
Tech	GIV, ICO, NEO.
U.S.P	GIV, GLD, HNW, NEO.
*Menthone	GIV, HNW, NEO.
Menthyl acetate	FB, GIV.
6-Methylcoumarin	GIV.
*Methylionones:	
*Methyl-α-ionone	GIV, IFF, MYW, NEO.
*Methyl-β-ionone	TBK.
*Methylionone (α- and β-)	GIV, LUE, MYW, TBK, UNG, VLY.
*Methyl-γ-ionone	TBK.
*Methyl-δ-ionone	TBK.
*Nerol	GLD, IFF, TBK, VLY.
Nopyl acetate	MYW, SHL, VLY.
Phellandrene	ICO.
*Piperonal (Heliotropin)	GIV, NEO, SHL, TBK.
Piperonal, sodium bisulfite complex	SHL.
Piperonal terpenes	SHL.
Pseudolinalyl acetate (Myrcenyl acetate, principally)	IFF.
*Rhodinol	FB, FEL, GIV, IFF, LUE, NEO, SHL, VLY.
Rhodinyl acetate	GIV, IFF.
Rhodinyl formate	GIV.
Safrole	GIV.
Santalol	GIV, IFF.
Santalyl acetate	GIV.

TABLE 14B.--*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material	Manufacturers' identification codes (according to list in table 22)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*Sweeteners, synthetic:	
Cyclamic acid	NRS.
Cyclohexanesulfamic acid	ABB.
Cyclohexanesulfamic acid, calcium salt	ABB, DRW, NRS, PBY, PFZ.
Cyclohexanesulfamic acid, sodium salt	ABB, NRS, PBY, PFZ, UNS.
Saccharin	MEE, MON, NRS.
Saccharin, calcium salt	MEE, MON, NRS, PBY.
Saccharin, sodium salt	MEE, MON, NRS.
All other	VLY.
*Terpineols:	
α-Terpineol	GLD, HNW, HPC.
β-Terpineol	HNW.
Terpineol (α- and β-)	GIV, NEO.
Terpinol hydrate (Terpin hydrate), tech	HPC.
*Terpinyl acetate	GIV, HNW, OPC, RDA, TBK, UNG.
Terpinyl propionate	GIV, TBK.
Tetrahydro alloocimenol	IFF.
3,5,5-Trimethylcyclohexanol	ICO.
Vertofix (Acetyl cedrene, principally)	IFF.
Vetivenol	GIV, TBK.
*Vetivenyl acetate	GIV, IFF, NEO, TBK, UNG.
All other	FB, OPC, TBK.
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
Allyl heptanoate (Allyl enanthate)	DOW, TBK.
*Allyl hexanoate (Allyl caproate)	DOW, FB, GIV, TBK, UNG.
Allyl isothiocyanate (Synthetic mustard oil)	ICO, MRT.
Allyl sulfide (Diallyl sulfide)	DOW, RT.
Amyl propionate	GIV.
Butyl butyrate	TBK.
Butyl isovalerate	TBK.
Butyrone (Di-n-propyl ketone)	TBK.
Butyroyl butyl lactate	ICO.
*Decanal (Capraldehyde) (C_{10})	GIV, IFF, OPC, TBK.
Diallyl disulfide	RT.
Diethyl sebacate (Ethyl sebacate)	FEL, TBK.
Diethyl succinate	UCC.
Diethyl tridecanedioate (Ethylene brassylate)	RDA.
2,6-Dimethyl-5-hepten-1-al	GIV.
3,6-Dimethyl-3-octanol	AIR.
3,7-Dimethyl-1-octanol	GIV, TBK.
3,7-Dimethyl-3-octanol	GIV.
Dimethyl succinate	ICO.
*Ethyl butyrate	FB, NW, RT, TBK.
Ethyl decanoate	TBK.
Ethylene brassylate	VLY.
Ethyl heptanoate (Ethyl enanthate)	FEL, TBK.
*Ethyl hexanoate (Ethyl caproate)	FB, NW, TBK.
Ethyl isovalerate	FB, TBK.
Ethyl laurate	FB.
Ethyl levulinate	FMT.
*Ethyl nonanoate (Ethyl pelargonate)	FB, FEL, TBK.
Ethyl octanoate (Ethyl caprylate)	FB.
*Glutamic acid, monosodium salt (Monosodium glutamate)	COM, GRW, HPC, IMC, MRK.
Heptanal (Enanthaldehyde) (C_7)	BAC.
Heptyl alcohol (Heptanol)	BAC, UCC.
Heptyl ether (Enanthic ether)	TBK.
cis-3-Hexen-1-ol	x.
Hexyl octanoate (Hexyl caprylate)	TBK.
cis-3-Hexyn-1-ol	x.
3-Hydroxy-2-butanone (Acetoin)	FMT.

TABLE 14B.--*Flavor and perfume materials for which U.S. production or sales were reported, identified by manufacturer, 1964*-- Continued

Material	Manufacturers' identification codes (according to list in table 22)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
4-Hydroxynonanoic acid, γ-lactone (γ-Nonalactone)	GIV, TBK.
4-Hydroxyoctanoic acid, γ-lactone (γ-Octalactone)	GIV, TBK.
*4-Hydroxyundecanoic acid, γ-lactone (γ-Undecalactone)	FB, GIV, TBK.
*Isopentyl butyrate (Amyl butyrate)	FB, GIV, ICO, NW, RT, TBK.
Isopentyl formate (Amyl formate)	FEL, TBK.
Isopentyl geranate	FB.
Isopentyl heptanoate (Amyl caproate)	FEL.
Isopentyl isovalerate (Amyl isovalerate)	FB, TBK.
*Lauraldehyde (Dodecyl aldehyde) (C_{12})	GIV, IFF, TBK.
6-Methyl-5-hepten-2-one	GIV.
Methyl isovalerate	FB.
Methyl-β-methylthiopropionate	RT.
Methyl-3-thiopropionaldehyde	RT.
2-Methylundecanal (2-Methylnonylacetaldehyde)	GIV, TBK.
Myristic aldehyde	GIV.
Nonanal (Pelargonaldehyde) (C_9)	GIV, TBK.
Nonanediol monoacetate	GIV.
Nonanol	TBK.
Nonyl acetate	TBK.
Nonynol acetate, isomeric (Tepyl acetate)	IFF.
Octanal (Caprylaldehyde) (C_8)	GIV, IFF, OPC, TBK.
n-Octyl acetate	FB, TBK.
n-Octyl isobutyrate	FB, ICO.
Omega decenol	IFF.
n-Propyl acetal	GIV.
d-Pulegone	GIV.
Tepyl acetate	TBK.
2,6,10-Trimethyl-9-undecen-1-ol	GIV.
Undecanal (Hendecanaldehyde) (C_{11})	GIV, IFF, TBK.
2-Undecanone (Methyl nonyl ketone)	GIV.
Undecenal (Hendecenaldehyde)	GIV, TBK.
10-Undecen-1-ol	GIV.
Valerolactone	GIV.
All other	GIV, SHL.

Plastics and Resin Materials

TABLE 15B. -- *Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Plastics and resin materials for which separate statistics are given in table 15A are marked below with an asterisk (*); chemicals not so marked do not appear in table 15A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. An x signifies that the manufacturer did not consent to his identification with the designated product]

Material and use	Manufacturers' identification codes (according to list in table 22)
THERMOSETTING RESINS	
*Alkyd resins:	
Protective coatings:	
*Phthalic anhydride type	AAI, ACP, ACY, ADM, AMF, APV, ARD, BAL, BEN, BOY, BRU, CGL, CIK, CM, COM, CPV, DAV, DEG, DSO, DUN, DUP, EW, FAR, FBR, FCD, FLW, FOC, FRE, FSH, GEI, GIL, GLD, GRV, HAN, HPC, HRS, ICF, JAM, JOB, JOD, JWL, KEL, KMC, KMP, KPS, KYN, LON, MCC, MID, MNP, MR, NCI, NFV, NTL, ORO, OSB, PER, PFP, PPG, PRT, RCI, RED, REL, RH, RMC, SCF, SCN, SED, SIP, SPP, SRR, SVC, SW, SYV, TV, VTV, WAS, WPC.
*Polybasic acid type	ACP, AMF, APT, APV, ARD, BEN, CGL, CM, COM, CPV, DSO, DUN, DUP, EW, FAR, FBR, FCD, FLW, FOC, FSH, GEI, GLD, GRG, GRV, HPC, ICF, LON, MID, NCI, NON, NFV, ORO, OSB, PPG, PRT, RCI, RED, REL, RH, RMC, SHA, SPP, SRR, TV, VTV.
*All other uses	ACP, ACY, AMR, CIK, DUP, FAR, FLW, GLD, HPC, JSC, KPS, MCC, MMM, MOB, NOP, ORO, PPG, QCP, RCI, RH, SIP, SNW.
*Coumarone-indene and petroleum polymer resins:	
*Floor tile	ACC, ACP, NEV, NSP, PAI, VEL.
*Rubber compounding	ACC, ACP, NEV, NSP, PAI, VEL, WTC.
*All other uses	ACC, ACP, CM, DSO, DUP, ENJ, ICF, MCA, NEV, PAI, PPG, VEL, x.
Epoxy resins:	
*Unmodified:	
*Bonding and adhesives	CBA, DOW, JOD, SHC, UCP.
*Protective coatings	CBA, DOW, JOD, RCI, SHC, UCP.
*Reinforced plastics	CBA, DOW, RCI, SHC, UCP.
*All other uses	CBA, DOW, SHC, UCP.
*Modified	ACP, AMF, BEN, DSO, FMP, GLD, HAP, ICF, ISO, KPI, KPT, LEF, MID, MNP, MRB, NON, ORO, OSB, PPG, PYR, REZ, RMC, SPP, SRR, WAS.
*Polyester resins:	
Reinforced plastics:	
*Sheets, flat and corrugated	ACP, ACY, ADM, DA, EW, FRE, GLD, HKD, ICF, LAS, MFG, ORO, PPG, RCI, RH, SW, USR.
*All other	AAI, ACP, ACY, ADM, APD, CAP, CPV, DA, DSO, FRE, GLD, GRV, HKD, ICF, IPC, KPS, LAS, MFG, MRO, PLU, PPG, RCI, SIC, SPP, SW, USR.
*Surface coatings	ACP, ACY, APD, COM, CPV, DA, GLD, GYR, ICF, PPG, SW, USR.
*All other uses	ACP, ACR, ACY, AMR, APD, DA, DAV, DSO, EKT, EPC, EW, FMP, FRE, GEI, GLD, GNT, GRG, GYR, HKD, HYC, LAS, MID, OCF, PLU, PPG, RCI, RH, SCN, SW, USR, UTR, VAL.
*Silicone resins	ACP, BOR, DCC, GLD, SPD, UCS.
*Phenolic and other tar acid resins:	
*Molding materials	ACP, BOR, DUR, FRL, GE, HER, HKD, HVG, IRC, MRB, PLS, RCI, RGC, SYR, UCP, VAR, VSV.
Bonding and adhesive resins for--	
*Laminating	ACP, AMR, BOR, CAT, CBR, CD, DRL, EW, FOM, GE, HKD, IRI, MCA, MON, NPI, NPP, NTC, NVF, PGU, PYZ, RCD, RCI, SCN, SPL, SYR, TAY, TKL, UCP, VAR.
*Coated and bonded abrasives	BME, BOR, CAT, CBM, CBR, HKD, MMM, MON, PYZ, SYR, UCP, VAR.
*Friction materials	ABS, BME, BOR, FRL, GE, HKD, MON, PYZ, RAB, SCN, SYR, SYV, UCP, VAR.

TABLE 15B.--*Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material and use	Manufacturers' identification codes (according to list in table 22)
THERMOSETTING RESINS--Continued	
*Phenolic and other tar acid resins--Continued	
Bonding and adhesive resins for--Continued	
*Thermal insulation	ACP, AMR, CAT, GE, HKD, ICF, MON, OCF, PYZ, RCI, SYV, UCP.
*Foundry or shell molding	ACP, ACR, ARM, BOR, GE, HKD, MON, PYZ, RCI, SCN, UCP, UNO, VAR, WOD.
*Plywood	ACP, AMR, BGC, BOR, CAT, CBC, CBD, DA, MON, PGU, PYZ, RCI, RH, SIM, WCA, WRD.
*Fibrous and granulated wood	AMR, BOR, CBD, HKD, MCA, MON, PYZ, RCI, SIM, UCP.
*All other bonding and adhesive uses	ACP, AMR, BME, BOR, CAT, GE, HKD, IRI, KPT, MON, MRB, NPI, PYZ, RPC, SCN, SHA, SNC, SPP, SYR, UCP, USR, VAR.
*Protective coatings	ACP, ADM, AMF, AMR, CIK, CPV, DSO, EW, FCD, FRE, GE, GEI, GRG, GRV, HER, HKD, ICF, INL, KRM, MID, MON, NCI, ORO, OXR, PFP, PYZ, RCI, RH, RMC, SCN, SHA, SNC, SW, UCP, VAR, WAS.
*All other uses	ACP, ACR, AMR, BOR, CAT, EW, FRL, GEI, HER, HKD, IOC, IRC, KND, MMM, MON, MRB, NPI, PLS, PYR, PYZ, RAB, RCI, REZ, RGC, RH, SCN, SNC, UCP, USR, VAR, VSV.
*Polyurethane and diisocyanate resins	ACB, ADM, APV, ARK, BFG, BKL, DUP, GPM, HOU, IPI, MCC, MID, NOP, NPV, PEL, PFP, QUN, RCI, SCN, SW, TRN, UPC.
*Rosin modifications:	
*Rosin and rosin esters, unmodified (ester gums)	ADM, APV, CBY, DPP, FAR, FCD, FRP, HPC, KRM, MCC, RCI, RH, SRR.
*All other	ADM, APV, CBY, CPT, DPP, FAR, FCD, FLW, FRP, HPC, JNS, KRM, MCC, RCI, SCF, SRR.
Styrene and alkyd polyesters	ADM, DEG, FLW, RCI.
*Urea and melamine resins:	
*Textile treating and coating resins	ACY, APX, BRY, CAT, CIB, CKM, CRC, DAN, DEP, DUP, ECC, HNC, HRT, JSC, MON, MRA, ONX, PC, QCP, RCI, RH, RPC, RTX, S, SBC, SEY, SNW, SYN, TV, USO, VAL, WIC, x.
*Paper treating and coating resins	ACY, AMR, BME, BOR, CBD, CBR, DEP, DUP, HPC, MMM, MON, RCI, RH, x.
Molding materials	ACP, ACY, BOR, CAP, FMP, GDN, PMC.
Bonding and adhesive resins for--	
*Laminating	ACY, BOR, CAT, FOM, GE, MON, NPP, NTC, PGU, PPL, SAC.
*Plywood	ACY, BGC, BOR, CAT, CBC, CBD, MON, NPI, NTC, PGU, RCI, RH, SAC, SIM, SOR, WRD.
*Fibrous and granulated wood	ACY, BGC, BOR, IPR, MON, NTC, PGU, RCI, SAC, SOR, SYV, UPL, WOD.
*All other bonding and adhesive uses	ACP, ACY, AMR, BOR, GEO, MON, RCI, SWP, TXT, UNO.
*Protective coatings	ACP, ACY, APV, CPV, DUP, FRP, GLD, GRV, JOD, KPS, MON, OXR, PPG, RCI, REL, RH, SW.
All other uses	ACP, ACY, AMR, BOR, CMP, DUP, EFH, FMP, GEO, GGY, HPC, MID, MMM, MON, RCI, RH, STC, SWR, VAL, VAR, WON.
All other thermosetting resins	ACP, ACY, CEM, G, GGY, HPC, HVG, JNS, MON, SNW, SWR, UNO, WTC, x.
THERMOPLASTIC RESINS	
Acrylic resins	ACO, ACY, CAT, CIB, CMG, DUP, FLH, GLC, GLX, HCO, JNS, JSC, PII, PPG, QUN, RCI, RH, RPC, SAR, SEY, USP, VAL, VPC, WIC.
*Cellulose plastics materials:	
Sheets, continuous:	
*Under 0.003 gage	CEL, DOW, DUP, EKT.
*0.003 gage and over	CEL, DOW, EKT, MON, MPP, NIX, PDJ, SPY.
*All other sheets, rods, and tubes	CEL, MPP, NIX, PDJ, RSB, SPY.
*Molding and extrusion materials	CEL, DOW, EKT, MON, PMA, RPI, RSB.
*Polyamide resins	ALF, BCM, DUP, EMR, FG, GNM, HN, JNS, KRM, POL, SNW, SPN.

TABLE 15B.--*Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material and use	Manufacturers' identification codes (according to list in table 22)
THERMOPLASTIC RESINS--Continued	
*Styrene type plastics materials:	
*Molding	BFG, BKC, BPL, CSD, DOW, FBF, FG, FIR, GOR, GRP, GYR, KPP, MON, MPL, PLA, RCC, SHC, SOL, TIC, UCP, USR, x.
*Textile and paper treating and coating	BOR, DOW, FIR, FLH, GNT, GYR, ILC, KPP, MON, MRT, USR, WAS, WIC.
*Emulsion paint	BOR, DOW, FIR, GLD, GNT, GYR, KPP, MON, USR.
*Extrusion	BFG, BKC, CSD, DOW, FIR, GRP, KPP, MON, PMA, RCC, UCP, USR, x.
*All other uses	ACC, ARD, BCN, BFG, BOR, CSD, DOW, DSO, DUP, FIR, GNT, GRD, GRP, GYR, ICC, JNS, KPP, MON, MRT, ONX, PAI, POI, PVI, RCC, RH, SEK, SHC, SPI, UBS, UCP, UNC, USR, WAS, WIC, x.
Vinyl resins:	
*Polyvinyl acetate resins:	
*Emulsion paint	ACP, AIR, AML, APV, BAL, BEN, BOR, CEL, DAV, DSO, DUP, FAR, FLH, GLD, GRD, HAN, JOD, KMC, KMP, MCC, MR, NPV, NSC, PPG, RCI, REL, SED, SPC, SRC, SW, UCP, WAS, WIC.
*Adhesives	ACP, AIR, BAL, BOR, CEL, DUP, FC, FLH, GLC, GRD, HNC, MRN, NSC, NTC, PII, RCI, SH, SRC, SYR, UCP, WIC.
*Bonding and sizing	AIR, AML, CAT, CEL, CST, DUP, GLC, GRD, PII, QCP, RPC, SEY, SRC, WIC.
*All other uses	AML, BAL, BLS, BOR, CEL, DAN, DUP, FC, GRD, HRT, JNT, JSC, NEP, NSC, OCF, RPC, SCO, SED, SRC, UCP, WIC.
*Polyvinyl chloride and copolymer resins:	
*Film, under 6 mils	ATU, BFG, BOR, CRY, DOW, ESC, FCP, FIR, GNT, GYR, MON, PNT, THC, UCP.
*Sheet, 6 mils and over	ATU, BFG, BOR, CRY, DA, DOW, ESC, FCP, FIR, GNT, GYR, MON, PNT, THC, UCP, USR.
*Flooring	AME, BFG, BOR, CRY, CUC, DA, ESC, FCP, FIR, GNT, GYR, KYS, MON, THC, UCP, USR.
*Paper and textile coating	ATU, BFG, BOR, CRY, DA, DOW, ESC, FCP, MON, ONX, PNT, UCP, USR.
Extrusion:	
*Wire and cable	BFG, BOR, CRY, DA, DOW, ESC, FIR, MON, PNT, THC, UCP, USR.
*Garden hose	ATU, BFG, BOR, CRY, DA, DOW, ESC, FIR, MON, THC.
*All other extrusions	BFG, BOR, CRY, DA, DOW, ESC, FCP, FIR, GNT, GYR, LAS, MON, THC, UCP, USR.
Molding:	
*Records	BFG, BOR, CRY, CUC, DA, ESC, KYS, MON, PNT, THC, UCP, USR.
*Slush and rotational molding	BFG, BOR, CRY, DA, ESC, FIR, MON, UCP, USR.
*All other moldings	ATU, BFG, BOR, CRY, DA, DOW, ESC, GYR, MON, UCP.
*All other uses	ATU, BFG, BOR, CBR, CRY, CUC, DA, DOW, ESC, FCP, FIR, GNT, GRA, GYR, MON, PNT, PYR, UCP, USR.
*All other vinyl resins	ADM, AIR, BOR, BOY, DOW, DSO, DUP, FC, G, JOD, MCC, NSC, SNW, SRC, SW, UCP.
Polyolefin plastics materials:	
*Polyethylene, density 0.940 and below:	
*Injection molding	CEL, DOW, DUP, EKX, ENJ, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCP, USI.
*Blow molding	CEL, DOW, DUP, EKX, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCP, USI.
Extrusions:	
*Film and sheet	CEL, DOW, DUP, EKX, ENJ, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCP, USI, x.
*Wire and cable coating	CEL, DOW, DUP, EKX, GRP, KPP, MON, PLC, SHC, SPN, UCP, USI.
*Extrusion coating on paper and other substrates	CEL, DOW, DUP, EKX, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCP, USI.

TABLE 15B.-- *Plastics and resin materials for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Material and use	Manufacturers' identification codes (according to list in table 22)
THERMOPLASTIC RESINS--Continued	
Polyolefin plastics materials--Continued	
*Polyethylene, density 0.940 and below--Continued	
Extrusions--Continued	
*Pipe	CEL, DOW, DUP, EKX, GRP, KPP, MON, PLC, SHC, SPN, UCP, USI.
*All other extrusions	DOW, DUP, EKX, GRP, KPP, PLC, UCP.
*All other uses	ACP, CEL, DOW, DUP, EKX, ENJ, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCP, USI.
*Polyethylene, density over 0.940:	
*Injection molding	CEL, DOW, DUP, EKX, GRP, HPC, KPP, PLC, RCC, SHC, UCP, USI.
*Blow molding	CEL, DOW, DUP, EKX, GGC, GRP, HPC, KPP, MON, PLC, SHC, UCP, USI.
Extrusions:	
*Film and sheet	CEL, DOW, DUP, EKX, GGC, GRP, HPC, KPP, PLC, SHC, UCP, USI.
*Wire and cable coating	CEL, DUP, EKX, GGC, GRP, HPC, PLC, UCP, USI.
*Pipe	ACP, CEL, DUP, EKX, GGC, GRP, HPC, KPP, PLC, SHC, UCP.
*All other extrusions	CEL, DOW, DUP, EKX, GGC, GRP, HPC, KPP, PLC, SHC, UCP, USI.
*All other uses	ACP, CEL, DOW, DUP, EKX, GGC, GRP, HPC, KPP, MON, PLC, RCC, UCP, USI.
*Polypropylene:	
*Molding	AVS, DOW, EKX, ENJ, GRP, HPC, NVT, ORO, PLC, RCC, SHC, SPN, UCP, USI.
*Extrusion	AVS, EKX, ENJ, GRP, HPC, ORO, PLC, SHC, UCP, USI, x.
*All other uses	AVS, DOW, EKX, ENJ, GRP, HPC, ORO, PLC, RCC, SHC, UCP, USI, x.
All other thermoplastic resins	ACG, ACO, ACP, ACY, CAT, CBY, CIB, CMG, DEP, DUP, ECC, FLH, GE, GLC, GLX, HCO, JNS, JSC, KRM, MCC, MMM, MOB, PAI, PII, PPG, QUN, RCI, RH, RPC, SAR, SBC, SCN, SEY, SNW, USP, VAL, VPC, WIC.

Rubber-Processing Chemicals

TABLE 16B.--*Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Rubber-processing chemicals for which separate statistics are given in table 16A are marked below with an asterisk (*); chemicals not so marked do not appear in table 16A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
RUBBER-PROCESSING CHEMICALS, CYCLIC	
*Accelerators:	
*Aldehyde-amines:	
Acetaldehyde-aniline	USR.
n-Butyraldehyde-aniline	DUP, USR.
Butyraldehyde-butylidene-aniline	MON.
4,4'-Dithiodimorpholine	MON.
α-Ethyl-β-propylacrylanilide	CCO.
Heptaldehyde-aniline	USR.
Triethyltrimethylenetriamine	USR.
p-Benzoquinone dioxime	CTA, DUP.
Dibenzoyl-p-quinonedioxime	CTA, USR.
Dibenzylamine	MLS, USR.
Di-N-pentamethylenethiuram tetrasulfide	DUP, VNC.
*Dithiocarbamic acid derivatives:	
Dibenzyldithiocarbamic acid, sodium salt	USR.
Dibenzyldithiocarbamic acid, zinc salt	USR.
Dibutyldithiocarbamic acid, N,N-dimethylcyclohexyl-amine salt.	MON.
Dibutyldithiocarbamic acid, diphenylguanidine salt	CCO.
Dimethylethylene diphenyldithiocarbamic acid, lead salt	CCO.
2,4-Dinitrophenyl dimethyldithiocarbamate	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts.	DUP.
Guanidines:	
Dicatechol borate, di-o-tolylguanidine salt	DUP.
Diphenylguanidine	ACY.
Diphenylguanidine phthalate	MON.
Di-o-tolylguanidine	ACY, DUP.
1,2,3-Triphenylguanidine	NAC.
2-Imidazoline-2-thiol	DUP, RBC.
Poly-p-dinitrosobenzene	DUP.
*Thiazole derivatives:	
2-Benzothiazyl N,N-diethylthiocarbamoyl sulfide	PAS.
1,3-Bis(2-benzothiazolylmercaptomethyl)urea	MON.
N-tert-Butyl-2-benzothiazolesulfenamide	MON.
*N-Cyclohexyl-2-benzothiazolesulfenamide	ACY, BFG, MON, USR.
N,N-Diisopropyl-2-benzothiazolesulfenamide	ACY.
N-(2,6-Dimethylmorpholino)-2-benzothiazolesulfenamide	MON.
*2,2'-Dithiobis(benzothiazole)	ACY, BFG, GYR, MON, USR.
*2-Mercaptobenzothiazole	ACY, BFG, GYR, MON, USR.
2-Mercaptobenzothiazole, sodium salt	ACY, GYR, MON.
2-Mercaptobenzothiazole, zinc chloride	DUP.
2-Mercaptobenzothiazole, zinc salt	ACY, GYR, USR.
4-Morpholinyl-2-benzothiazyl disulfide	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide	ACY, MON.
Thiazoline-2-thiol	ACY.
All other cyclic accelerators	DUP, VNC.
Antioxidants:	
Aldehyde- and acetone-amines:	
Acetaldehyde-aniline hydrochloride	USR.
Aldol-α-naphthylamine condensate	BFG, CLY.
Diphenylamine-acetone	ACY, BFG, USR.
Phenyl-2-naphthylamine-acetone	USR.

TABLE 16B.--*Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
Antioxidants--Continued	
*Amino and hydroxy compounds:	
*Amino compounds:	
p-Anilinophenol	BFG.
N-sec-Butyl-N'-phenyl-p-phenylenediamine	USR.
N-Butyroyl-p-aminophenol	MLS.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine	USR.
Diarylarylene diamines, mixed	GYR.
N,N'-Di(1-ethyl-3-methylpentyl)-p-phenylenediamine	EKT, MON, UPM.
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.
p,p'-Dimethoxydiphenylamine	DUP.
N,N'-Di(1-methylheptyl)-p-phenylenediamine	EKT, MON, UPM.
N,N'-Di-2-naphthyl-p-phenylenediamine	BFG.
4,4'-Dioctyldiphenylamine	BFG.
N,N'-Di-2-octyl-p-phenylenediamine	BFG.
N,N'-Diphenylethylenediamine	CCO, NOP, x.
*N,N'-Diphenyl-p-phenylenediamine	BFG, DUP, USR.
N,N'-Diphenyl-1,3-propanediamine	CCO.
N,N'-Di-o-tolylethylenediamine	CCO.
p-Isopropoxydiphenylamine	BFG.
N-Isopropyl-N'-phenyl-p-phenylenediamine	MON, USR.
4,4'-Methylenedianiline	USR.
N-(1-Methylheptyl)-N'-phenyl-p-phenylenediamine	UPM.
Octyldiphenylamine	ACY, PAS, USR.
Octyldiphenylamine mixture (mono-, nonyl-, and di-)	BFG.
N-Phenyl-1-naphthylamine	DUP.
N-Phenyl-2-naphthylamine	BFG, DUP.
p-(p-Toluenesulfonamido)diphenylamine	USR.
All other amino antioxidants	EKT, NOP, x.
*Hydroxy compounds:	
p-Benzyloxyphenol	BFG.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)	MON.
2,5-Di(1,1-dimethylpropyl)hydroquinone	MON.
N-Lauroyl-p-aminophenol	MLS.
2,2'-Methylenebis(6-tert-butyl-p-cresol)	ACY, CAT.
2,2'-Methylenebis(6-tert-butyl-4-ethylphenol)	ACY.
2,2'-Methylenebis(6-tert-octyl-p-cresol)	ACY.
*Phenol, alkylated	ACY, BFG, CCO, GYR, PAS, PIT, USR.
Phenol, hindered	DUP, GYR, PIT.
Phenol, styrenated	BFG, GYR.
Polyphenolic phosphite, polyalkylated	BFG.
N-Stearoyl-p-aminophenol	MLS.
4,4'-Thiobis(6-tert-butyl-m-cresol)	MON.
2,2'-Thiobis(4,6-di-sec-amylphenol)	MON.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane	ICI.
Blowing agents:	
N,N'-Dimethyl-N,N'-dinitrosoterephthalamide	DUP.
Dinitrosopentamethylenetetramine	DUP, NPI.
p,p'-Oxybis(benzenesulfonhydrazide)	USR.
Inhibitors, modifiers, and stabilizers:	
Alkylated o-cresol	PIT.
Dicresyl disulfide	USR.
N,4-Dinitroso-N-methylaniline	CTA, MON.
*N-Nitrosodiphenylamine	BFG, CTA, GYR, USR.
Nonylphenylphosphites, mixed	USR.

TABLE 16B.--*Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Peptizers:	
Aryl mercaptans	PIT.
2-Benzamidothiophene, zinc salt	ACY.
2',2'''-Dithiobis(benzanilide)	ACY.
Dixylyl disulfides, mixed	DUP, PIT.
2-Naphthalenethiol	DUP.
Pentachlorobenzenethiol	DUP.
Pentachlorobenzenethiol, zinc salt	DUP.
Thiocresol	PIT.
Thiophenol	PIT.
Xylenethiol	DUP.
Tackifiers: p-tert-Amylphenol sulfide	PAS.
RUBBER-PROCESSING CHEMICALS, ACYCLIC	
*Accelerators:	
n-Butyraldehyde-butylamine	DUP.
Di-n-butylammonium oleate	DUP.
*Dithiocarbamic acid derivatives:	
Dibutyldithiocarbamic acid, potassium salt	VNC.
*Dibutyldithiocarbamic acid, sodium salt	DUP, PAS, USR, VNC.
*Dibutyldithiocarbamic acid, zinc salt	ALC, DUP, GYR, PAS, RBC, USR, VNC.
Diethyldithiocarbamic acid, cadmium salt and bis(diethylthiocarbamoyl) disulfide mixture.	VNC.
Diethyldithiocarbamic acid, selenium salt	VNC.
Diethyldithiocarbamic acid, sodium salt	ALC, PAS.
Diethyldithiocarbamic acid, tellurium salt	VNC.
*Diethyldithiocarbamic acid, zinc salt	ALC, GYR, RBC, USR, VNC.
Dimethyldithiocarbamic acid, bismuth salt	VNC.
Dimethyldithiocarbamic acid, copper salt	VNC.
Dimethyldithiocarbamic acid, lead salt	VNC.
*Dimethyldithiocarbamic acid, potassium salt	GYR, PAS, USR.
Dimethyldithiocarbamic acid, selenium salt	VNC.
*Dimethyldithiocarbamic acid, sodium salt	ALC, BFG, DUP, GYR, PAS, USR.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide.	BFG, GNT.
*Dimethyldithiocarbamic acid, zinc salt	ALC, DUP, FMN, GYR, PAS, RBC, USR, WRC.
All other	PAS.
*Thiurams:	
Bis(dibutylthiocarbamoyl) sulfide	USR.
Bis(diethylthiocarbamoyl) disulfide	DUP, GYR, PAS.
*Bis(dimethylthiocarbamoyl) disulfide	BFG, DUP, GNT, GYR, PAS, RBC, USR, VNC.
*Bis(dimethylthiocarbamoyl) sulfide	DUP, GYR, USR.
Bis(ethylmethylthiocarbamoyl) sulfide	VNC.
Thiuram blend	DUP, VNC.
Xanthates and sulfides:	
Di-n-butylxantho disulfide	USR.
Di-isopropylxantho disulfide	BFG.
Zinc dibutylxanthate	USR.
All other acyclic accelerators:	
3-Ethyl-1,1-dimethyl-2-thiourea	VNC.
Ethylenediamine carbamate	DUP.
Polyoxyalkylene tetrasulfide	TKL.
1,1,3-Trimethyl-2-thiourea	VNC.
Blowing agents:	
Urea-biuret mixture	SW.
All other blowing agents	DUP.

TABLE 16B.--*Rubber-processing chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964--Continued*

Chemical	Manufacturers' identification codes (according to list in table 22)
RUBBER-PROCESSING CHEMICALS, ACYCLIC--Continued	
Conditioning and lubricating agents:	
Methyl stearyl-10-sulfonic acid, sodium salt	DUP.
Mono- and dialkyl acid phosphates, mixed	DUP.
Mono- and dialkyl phosphate ammonium salts, mixed	DUP.
Peptizers and modifiers:	
Alkyl mercaptans, mixed	PAS, PLC.
*Dodecyl mercaptans	HK, PAS, PLC.
Tetradecyl mercaptan	PAS.
Zinc laurate	USR.
All other	ACY, TKL, USR.

Elastomers (Synthetic Rubbers)

TABLE 17B.--*Elastomers (synthetic rubbers) for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Elastomers (synthetic rubbers) for which separate statistics are given in table 17A are marked below with an asterisk (*); products not so marked do not appear in table 17A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
ELASTOMERS, CYCLIC	
*Polybutadiene-styrene type (S-type)	ASY, BFG, CPY, FIR, FRS, GGC, GNT, GYR, ILC, MCB, PLC, RUB, SEP, SHC, TUS, URC, USR, WIC.
*Polybutadiene-styrene-vinylpyridine type	BFG, FIR, FRS, GNT, GYR, PLC, USR.
*Polyurethane type	ACY, BFG, DUP, GNT, MOB, ORU, PRC, TKL, USR.
ELASTOMERS, ACYCLIC	
Polyacrylate ester type	ACY, BFG, TKL, WIC.
Polyalkalene sulfide type	TKL.
Polybutadiene type	BFG, FRS, GYR, MCB, TKL, TUS.
*Polybutadiene-acrylonitrile type (N-type)	BFG, FRS, GYR, ILC, USR, WIC.
*Polychloroprene type (Neoprene)	DUP.
*Polyisobutylene-isoprene type (Butyl)	CBN, ENJ.
Reaction products of natural rubber	GYR, HPC.
*Silicone elastomers	DCC, SPD, UCS.
*Stereo elastomers	ASY, DUP, ENJ, FRS, GGC, GNT, GYR, PLC, SHC, TUS.
All other	DUP, ENJ, x.

Plasticizers

TABLE 18B.--*Plasticizers for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Plasticizers for which separate statistics are given in table 18A are marked below with an asterisk (*); products not so marked do not appear in table 18A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
PLASTICIZERS, CYCLIC	
Coumarone-indene plasticizer	NEV.
N-Cyclohexyl-p-toluenesulfonamide	MON.
Diethylene glycol dibenzoate	TNP.
Di-tert-octylphenyl ether	DOW.
Diphenyl cyclohexane, o-, m-, p-	MON.
Dipropanediol dibenzoate	TNP.
N-Ethyl-p-toluenesulfonamide	MON.
Isopropylidenediphenoxypropanol	DOW.
Naphthalene, alkylated	ACC.
Phosphoric acid esters:	
*Cresyl diphenyl phosphate	CEL, FMP, MON, MTR, SF, SPP.
Dibutyl phenyl phosphate	MON.
Diphenyl mono-o-xenyl phosphate	DOW.
Diphenyl octyl phosphate	MON.
Methyl diphenyl phosphate	FMP, MON.
*Tricresyl phosphate	CEL, FMP, FRO, MON, MTR, SF.
*Triphenyl phosphate	CEL, DOW, EK, MON, SF.
All other phosphoric acid esters	SF.
*Phthalic anhydride esters:	
Alkyl benzyl phthalates	MON.
Butyl benzyl phthalate	GRH, MON.
Butyl cyclohexyl phthalate	ACP.
Butyl decyl phthalate	ACP, PCC.
Butyl 2-ethyl hexyl phthalate	ACP, MON, PFZ, UCC.
n-Butyl isodecyl phthalate	GRH, PCC, THC.
*Butyl octyl phthalate	GRH, PCC, RCI, RUB.
Butyl phthalyl butyl glycolate	MON.
Di(2-butoxyethyl) phthalate	FMP, GRH, KES, WM.
*Dibutyl phthalate	ACP, AIR, COM, DUP, EKT, GRD, GRH, HAL, LAS, MON, PCC, PFZ, RCI, RUB, SW, WTH, UCC.
Dicarbitol phthalate	FMP.
*Dicyclohexyl phthalate	ACP, DUP, FMP, MON, PFZ.
Diethylene glycol phthalate	ARK.
*Diethyl phthalate	DUP, EKT, KF, MON, PFZ.
*Dihexyl phthalate	ACP, CCA, ENJ, GRH.
Diisobutyl phthalate	EKT, MON.
*Diisodecyl phthalate	ACP, BFG, EKT, ENJ, GRH, LEH, MON, PCC, PFZ, RCI, RUB, THC, UCC, WTH.
*Di(2-methoxyethyl) phthalate	CEL, DUP, EKT, FMP, RCI, SF.
Dimethyl cyclohexyl phthalate	DUP.
Dimethyl isophthalate	PFZ.
*Dimethyl phthalate	ACP, EKT, FRO, KF, MON.
Dinonyl phthalate	RCI.
*Dioctyl phthalates:	
Dicapryl phthalate	GRH, WTH.
Di(ethylhexyl)isophthalate	UCC.
*Di(2-ethylhexyl) phthalate	ACP, BFG, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RUB, SW, THC, UCC, WTH.
*Diiso-octyl and mixed dioctyl phthalates	ACP, BFG, EKT, ENJ, GRH, LEH, MON, PCC, PFZ, RCI, RUB, THC, UCC.
Di-n-octyl phthalate	ADM.
All other dioctyl phthalates	EKT, THC.
Diphenyl isophthalate	BJL.
Diphenyl phthalate	MON.
*Ditridecyl phthalate	ACP, ENJ, GRH, MON, PCC, PFZ, RCI, RUB, THC, UCC.
2-(Ethyl hexyl)isodecyl phthalate	UCC.
Ethyl (and methyl) phthalyl ethyl glycolate	MON.
Glycol phthalate fatty acid esters	HPC.
Glycol phthalic esters	ARG, UCC.
Hexyl isodecyl phthalate	PFZ.
Hexyl iso-octyl phthalate	PFZ.
Hydrogenated castor oil phthalate	DUP.
Octyl decyl fatty acid phthalates	PFZ.

TABLE 18B.--*Plasticizers for which U.S. production or sales were reported, identified by manufacturer, 1964* --Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PLASTICIZERS, CYCLIC--Continued	
*Phthalic anhydride esters--Continued	
*Octyl decyl phthalates:	
Iso-octyl isodecyl phthalate	ACP, PCC, PFZ.
n-Octyl n-decyl phthalate	ACP, GRH, HPC, MON, PCC, PFZ, RCI, RUB, THC, UCC.
All other phthalic anhydride esters	BRG, FMP, PCC, PFZ, UCC.
Polyethylene glycol dibenzoate	TNP.
Tetrahydrofurfuryl oleate	CCW, EMR.
Toluenesulfonamide, o-, p- mixtures	ACY, MON.
Triethylene glycol dibenzoate	TNP.
*Trimellitic acid esters	ACC, PCC, PFZ, RUB.
All other cyclic plasticizers	CCW, EKT, WTH.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters:	
*Di(2-(2-butoxyethoxy)ethyl) adipate	CCW, FMP, GRH, PCC, TKL.
*Di(2-ethylhexyl) adipate	EKT, HAL, MON, PCC, PFZ, RCI, RUB, THC, UCC, WTH.
*Diisobutyl adipate	FMP, GRH, HAL, PCC, RCI, WTH.
*Diisodecyl adipate	ACP, EKT, GRH, LEH, MON, PCC, PFZ, RCI, RH, RUB, THC, UCC.
*Diisc-octyl adipate	GRH, HAL, LEH, PCC, RCI, RH, RUB.
Iso-octyl isodecyl adipate	BFG, GRH, MON, PCC, RCI.
*Octyl decyl adipate	ACP, GRH, LEH, PCC, RCI, RUB, THC, TKL, UCC.
All other adipic acid esters	ACP, EKX, KES, LEH, PCC, PFZ, THC.
*Azelaic acid esters:	
Di(2-ethylhexyl) azelate	DUP, EKT, EMR, PFZ, RCI, RUB, UCC.
Diisobutyl azelate	HAL, RCI.
Diisc-octyl azelate	EMR, MON.
All other azelaic acid esters	ACP, EMR, LEH, PFZ, UCC.
Citric and acetylcitric acid esters	PFZ.
*Complex linear polyesters and polymeric plasticizers	ADM, EKT, EMR, GLY, HAL, HPC, LEH, MON, PFZ, RH, RUB, WM, WTC.
Di(2-(2-butoxyethoxy)ethyl)methane	GRD.
Diethylene glycol dinonanoate	EMR, RUB.
Diiso-octyl diglycolate	CCA, FMP.
*Epoxidized esters:	
Butyl epoxytallate	ADM.
*Epoxidized soya oils	ADM, ARG, CCW, RCI, RH, SWT, THC, UCC.
2-Ethylhexyl epoxytallates	ADM, UCC.
Octyl epoxystearates	ARG.
*Octyl epoxytallates	ARG, CCW, RH, THC, UCC.
All other epoxidized esters	ADM, BAC, EMR, RCI, RH, SWT, THC.
Glycerol pelargonate	EMR.
Glyceryl tributyrate and tripropionate	EKT.
Glycol pelargonate	EMR.
Isodecyl nonanoate (Isodecyl pelargonate)	EMR, LEH.
Lauric acid esters	HAL.
Myristic acid esters:	
Butyl myristate	ICI, KES.
*Isopropyl myristate	DRW, EMR, ICI, KES, NOP, PCS, PRP.
*Oleic acid esters:	
*Butyl oleate	CIN, HAL, ICI, KES, LAS, NOP, RUB, SWT, WM, WTH.
*Glycerol tricleate (Triolein)	DRW, EMR, SWT, WM.
*Isopropyl oleate	CRT, ICI, KES, WM.
*Methyl oleate	EMR, ICI, NOP, SWT.
*n-Propyl oleate	CHL, EMR, WM.
*All other oleic acid esters	HAL, ICI, KES, RH.
Palmitic acid esters:	
*Isopropyl palmitate	DRW, EMR, ICI, KES, PRP, WM.
All other palmitic acid esters	DRW, EKT, KES, RUB.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate	FMP.
Triethyl phosphate	EKT.
Tricctyl phosphate	UCC.
All other phosphoric acid esters	VC.

TABLE 18B.--*Plasticizers for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PLASTICIZERS, ACYCLIC--Continued	
Polyethylene glycol di-2-ethylhexanoate	UCC.
Ricinoleic and acetylricinoleic acid esters:	
*Glycerol monoricinoleate	BAC, GLY, HAL, NOP.
All other ricinoleic and acetylricinoleic acid esters	BAC, KES, RCI, WTH.
Sebacic acid esters:	
*Dibutyl sebacate	EKT, GRH, HAL, PFZ, RCI, RH, WTH.
*Di(2-ethylhexyl) sebacate	GRD, GRH, HAL, PCC, PFZ, RCI, RH, RUB, WTH.
All other sebacic acid esters	KES, LEH, NOP, PCC, RCI, RH, RUB.
*Stearic acid esters:	
*n-Butyl stearate	EMR, HAL, ICI, KES, LAS, RUB, SCP, SWT, WTH.
All other stearic acid esters	BAC, CHL, DRW, FMP, HK, HPC, ICI, ICO, KES, RCI, RH, WM.
Sucrose acetate isobutyrate	EKT.
Triethylene glycol di(caprylate-caprate)	DRW, FOR, HAL, RUB.
Triethylene glycol di-2-ethylbutyrate	UCC.
All other acyclic plasticizers	DRW, EKT, EKX, EMR, HAL, ICI, JNS, KES, LEH, PFZ, RH, RUB, TKL, UCC, x.

Surface-Active Agents

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Surface-active agents for which separate statistics are given in table 19A are marked below with an asterisk (*); products not so marked do not appear in table 19A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
BENZENOID SURFACE-ACTIVE AGENTS	
Not Sulfated or Sulfonated	
*Amides, amines, and quaternary ammonium salts:	
*Benzyl(coconut oil alkyl)dimethylammonium chloride	BC, CRT, FIN, TXT.
*Benzyldimethyl(mixed alkyl)ammonium chloride	BC, CUL, FIN, ONX, PCS, RH, TXT, VAC.
*Benzyldimethyloctadecylammonium chloride	ONX, PCS, RET, WSN.
*Benzyldodecyldimethylammonium chloride	DEP, ONX, SDH, WSN.
*(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride	ONX, VAC, WSN.
*(Dodecylbenzyl)trimethylammonium chloride	BC, CUL, RCD, VIS, WSN, WTC.
*Heterocyclic compounds:	
1-Benzyl-2-(coconut oil alkyl)-1-(2-hydroxyethyl)-2-imidazolinium chloride.	NLC.
1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium chloride.	PCS, UVC.
1-Benzyl-1-(2-hydroxyethyl)-2-(tall oil alkyl)-2-imidazolinium chloride.	NLC.
1-Benzyl-3-methyl-2-undecylimidazolium bromide	LIL.
1-Benzyl-2-picolinium bromide	FIN.
2-Dodecylisoquinolinium bromide	ONX.
1-Dodecylpyridinium chloride	BC, HK.
2-(2-Lauroyloxyethyl)carbamoyl-1-methylpyridinium chloride.	WTC.
1-Methyl-2-(2-stearoyloxyethyl)carbamoylpyridinium chloride.	WTC.
*Oxygen-containing compounds:	
Benzylbis(2-hydroxyethyl)(2-stearamidomethoxyethyl)-ammonium chloride.	CIB.
Benzyl(cocoamido ethyl)dimethylammonium chloride	TXT.
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)ammonium chloride.	CIB.
Benzyl(ethoxylated coconut oil alkyl)dimethylammonium chloride.	G.
(Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride	RH.
(Ethoxybenzyl)dimethyl(octyltolyloxy)ammonium chloride	RH.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	APX.
(Tridecylbenzyl)diethyl(2-hydroxyethyl)ammonium chloride.	ORO.
*All other:	
Benzyldimethyltetradecylammonium chloride	SNW, WSN.
Benzylhexadecyldimethylammonium chloride	FIN, ONX, RH, SDW.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ARC, GNM, ONX, PCS.
Benzyltrimethylammonium chloride	COM.
(Dodecylbenzyl)dimethyloctadecylammonium chloride	AML.
(Dodecylbenzyl)triethylammonium chloride	PC.
(Dodecylmethylbenzyl)trimethylammonium chloride	RH.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride	ONX.
*Carboxylic acid esters and ethers:	
*Dodecylphenol, ethoxylated	G, MON, PCS, UCC.
*Iso-octylphenol, ethoxylated	APX, CIB, DRW, NOP, OMC.
*Nonylphenol, ethoxylated	APD, CIB, DOW, DRW, G, HPC, JCC, MON, OMC, PCS, RH, RTF, STP, UCC, VIS.
*Phenol, ethoxylated	APD, CLY, G, JCC, NOP, UCC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
BENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Carboxylic acid esters and ethers--Continued	
*Other carboxylic acid esters and ethers:	
Alkylphenol - formaldehyde, alkoxylated:	
(Mixed alkyl)phenol - formaldehyde, alkoxylated	RTF, VIS.
Nonylphenol - formaldehyde, alkoxylated	RTF.
t-Octylphenol - formaldehyde, ethoxylated	SDW.
Pentylphenol - formaldehyde, alkoxylated	RTF.
Diisobutylphenol, ethoxylated	G, RH.
Dinonylphenol, ethoxylated	G, JCC, STP.
(Mixed alkyl)phenol, ethoxylated	G, PCS, STP.
(Mixed alkyl)phenol, ethoxylated, butyl ether	RH.
Nonylphenoxypoly(ethyleneoxy)ethyl iodide	G.
n-Octylphenol, ethoxylated	ICI.
Phthalic acid, octadecyl ester, potassium salt	CIB.
Tetradecylphenol, ethoxylated	ORO.
Tridecylphenol, ethoxylated	PCS.
Xylenol, ethoxylated	VIS.
All other	RH.
*Phosphoric and polyphosphoric acid esters and salts:	
*Nonyl- and dinonylphenol, ethoxylated and phosphated:	
Dinonylphenol, ethoxylated and phosphated	G.
Nonylphenol, ethoxylated and phosphated	CIN, G, RZL, SEY, TCC, TXT, UVC, WAY, WTC.
Nonylphenol, ethoxylated and phosphated, barium salt	G.
Other phosphoric and polyphosphoric acid esters and salts:	
Dodecylphenol, ethoxylated and phosphated	TCI.
Octylphenol, ethoxylated and phosphated, magnesium salt.	SMC.
Phenol, ethoxylated and phosphated	G.
Sulfated and Sulfonated	
*Alkylphenols, ethoxylated and sulfated:	
Dodecylphenol, ethoxylated and sulfated	G, LEV, STP.
(Mixed alkyl)phenol, ethoxylated and sulfated	G.
*Nonylphenol, ethoxylated and sulfated	CRT, G, OMC, STP, TXT, WTC.
Nonylphenol, ethoxylated and sulfated, ammonium salt	CIB, MYW.
Nonylphenol, ethoxylated and sulfated, triethanolamine salt.	x.
n-Octylphenol, ethoxylated and sulfated	RH.
*Benzenesulfonates:	
Benzene-, toluene-, and xylenesulfonates:	
Benzenesulfonic acid, sodium salt	NES, UPF.
2,4-Dinitrobenzenesulfonic acid, sodium salt	NES.
Ethylene glycol dibenzenesulfonate	NES.
p-Toluenesulfonic acid, hexadecyltrimethylammonium salt.	FIN.
Toluenesulfonic acid, potassium salt	MYW, NES, RCD, STP, WTC.
*Toluenesulfonic acid, sodium salt	CO, NES, PIL, RCD, STP, WTC.
*Xylenesulfonic acid, ammonium salt	CO, NES, RCD, STP, WTC.
*Xylenesulfonic acid, potassium salt	MYW, NES, STP, WTC.
*Xylenesulfonic acid, sodium salt	ATR, CO, MYW, NES, PIL, RCD, STP, WTC.
*Branched chain dodecyl- and tridecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid	ARD, CIN, CO, CRT, HLI, LEV, MON, MYW, NAC, PCI, PIL, PRX, RCD, SEY, STP, TCI, TDC, TN, TXT, WON, WTC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
BENZENOID SURFACE-ACTIVE AGENTS--Continued	
Sulfated and Sulfonated--Continued	
*Benzenesulfonates--Continued	
*Branched chain dodecyl- and tridecylbenzenesulfonates--Continued	
*Dodecylbenzenesulfonic acid, ammonium salt	ARL, CTL, MYW, PRX, RCD, TXT.
*Dodecylbenzenesulfonic acid, calcium salt	APD, RCD, RH, SMC, STP, VIS, WTC.
*Dodecylbenzenesulfonic acid, diethanolamine salt	PCS, VAL, WON.
*Dodecylbenzenesulfonic acid, isopropylamine salt	APD, ARD, CIN, CTL, RCD, SNW, STP, WTC.
*Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt	PCS, STP, TXT, WTC.
*Dodecylbenzenesulfonic acid, sodium salt	AAC, ARD, ARL, ATR, CO, CP, CTL, DEP, EFH, EMK, HLI, HRT, ICI, LEV, MON, NAC, NOP, PCI, PG, PIL, PRX, RCD, SEY, STP, SWT, TN, TXT, VAL, WIC, WTC.
*Dodecylbenzenesulfonic acid, triethanolamine salt	AML, APX, ARD, ARL, ATR, CIN, CO, CTL, HLI, NAC, PCS, PEK, PIL, RCD, RZL, SOS, STP, SWT, TXT, VAC, WTC.
*Tridecylbenzenesulfonic acid, sodium salt	BLA, CO, CP, PRX, RCD, TXT, WTC.
*Other branched chain dodecyl- and tridecylbenzenesulfonates:	
Dodecylbenzenesulfonic acid, butylamine salt	WTC.
Dodecylbenzenesulfonic acid, diethanolamine condensate, fatty acid monoester.	MAH.
Dodecylbenzenesulfonic acid, ethylenediamine salt	APD.
Dodecylbenzenesulfonic acid, isopropanolamine salt	SMC, WON.
Dodecylbenzenesulfonic acid, potassium salt	VAL.
Dodecylbenzenesulfonic acid, propoxylated ethylenediamine salt.	PCS.
Tridecylbenzenesulfonic acid, ammonium salt	PRX, TXT.
Straight chain dodecyl- and tridecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid	ARD, HLI, LEV, MON, NAC, PIL, RCD, RZL, TCI.
*Dodecylbenzenesulfonic acid, sodium salt	ATR, CP, LEV, MON, PG, PIL, PRX, RCD, UNP.
*Dodecylbenzenesulfonic acid, triethanolamine salt	ATR, RZL, TXT.
Tridecylbenzenesulfonic acid, sodium salt	CP, NAC.
Other benzenesulfonates:	
Decylbenzenesulfonic acid, sodium salt	MON.
Didodecylbenzenesulfonic acid	CO.
Nonylbenzenesulfonic acid, sodium salt	WTC.
Pentadecylbenzenesulfonic acid, sodium salt	CP.
Pentylbenzenesulfonic acid, sodium salt	MON.
All other	SWT.
*Lignosulfonates:	
Lignosulfonic acid, aluminum salt	MAR.
Lignosulfonic acid, ammonium salt	CRZ.
*Lignosulfonic acid, calcium salt	CRZ, CWP, INP, LKY, LPC, MAR, PSP.
Lignosulfonic acid, chromium salt	MAR.
Lignosulfonic acid, iron salt	CRZ.
Lignosulfonic acid, magnesium salt	LPC, MAR.
Lignosulfonic acid, sodium salt	CRZ, CWP, INP, MAR, WVA.
*Naphthalenesulfonates:	
Benzylnaphthalenesulfonic acid	G.
Butylnaphthalenesulfonic acid	SCP.
Butylnaphthalenesulfonic acid, sodium salt	CLD, CMG, GGY, PFZ.
Dibutylnapnthalenesulfonic acid	G, MRA, S.
Didodecylnaphthalenesulfonic acid, sodium salt	PFZ.
*Diisopropylnaphthalenesulfonic acid	DUP, G, GRD.
Diisopropylnaphthalenesulfonic acid, sodium salt	G, PFZ.
Dipentylnaphthalenesulfonic acid	GGY.
Dipentylnaphthalenesulfonic acid, ammonium salt	VIS.
*Isopropylnaphthalenesulfonic acid	DUP, NAC, NOP, ONX.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
BENZENOID SURFACE-ACTIVE AGENTS--Continued	
Sulfated and Sulfonated--Continued	
*Naphthalenesulfonates--Continued	
Methylenebis(2-naphthalenesulfonic acid)	DUP.
6,6'-Methylenebis(2-naphthalenesulfonic acid), calcium salt.	DUP.
Methylnaphthalenesulfonic acid, sodium salt	UDI.
Methylnonylnaphthalenesulfonic acid, sodium salt	UDI.
Tetrahydronaphthalenesulfonic acid, sodium salt	DUP.
*Other benzenoid surface-active agents:	
Butylhydroxybiphenylsulfonic acid	ICO, RBC.
Dodecyldiphenyloxidedisulfonic acid, sodium salt	DOW.
Heptadecylmethylbenzimidazolinesulfonic acid, sodium salt	CIB.
n-Octylphenol, ethoxylated and sulfonated	RH.
Petroleumsulfonic acid, water soluble (acid layer), sodium salt.	SIN, SON.
Trichlorophenol sulfate, ethanolamine salt	G.
NONBENZENOID SURFACE-ACTIVE AGENTS	
Not Sulfated or Sulfonated	
*Amides, amines, and quaternary ammonium salts:	
*Acyclic quaternary ammonium salts:	
*Bis(hydrogenated tallow alkyl)dimethylammonium chloride.	ADM, ARC, FOR, GNM, VAC.
*Hexadecyltrimethylammonium salts:	
Hexadecyltrimethylammonium bromide	DUP, FIN, ICI.
Hexadecyltrimethylammonium chloride	ARC, WSN.
Hexadecyltrimethylammonium stearate	FIN.
*Other acyclic quaternary ammonium salts:	
Alkylethyldimethylammonium salts:	
Ethyldimethyl(9-octadecenyl)ammonium bromide	ONX.
Ethyldimethyl(soybean oil alkyl)ammonium bromide	BC.
Ethylhexadecyldimethylammonium bromide	FIN.
Alkyltrimethylammonium salts:	
(Coconut oil alkyl)trimethylammonium chloride	ARC, GNM.
Dodecyltrimethylammonium bromide	DUP.
Dodecyltrimethylammonium chloride	ARC.
(Hydrogenated tallow alkyl)trimethylammonium chloride.	ARC.
Trimethyl(mixed alkyl)ammonium chloride	GNM.
Trimethyloctadecylammonium chloride	ARC.
Trimethyl(soybean oil alkyl)ammonium chloride	ARC.
Trimethyl(tallow alkyl)ammonium chloride	ARC, GNM.
Trimethyl(tetradecyl)ammonium bromide	FIN.
Dialkyldimethylammonium salts:	
Bis(coconut oil alkyl)dimethylammonium chloride	ARC, GNM.
Didodecyldimethylammonium bromide	ONX.
Dimethyldioctadecylammonium chloride	PG.
Oxygen-containing compounds:	
(Carboxymethyl)(coconut oil amidopropyl)dimethyl-ammonium chloride, sodium salt.	JRG.
(Coconut oil alkyl)betaine	CUL.
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated) methylammonium chloride.	ARC, VAC.
Decylbetaine	DUP.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Amides, amines, and quaternary ammonium salts--Continued	
*Acyclic quaternary ammonium salts--Continued	
*Other acyclic quaternary ammonium salts--Continued	
Oxygen-containing compounds--Continued	
Hexadecylbetaine	DUP.
(2-Hydroxyethyl)dimethyl(stearamidopropyl)-ammonium dihydrogen phosphate.	ACY.
(2-Hydroxyethyl)dimethyl(stearamidopropyl)-ammonium nitrate.	ACY.
2-Hydroxy-1,3-propylenebis[(coconut oil alkyl)-dimethylammonium chloride].	CIB.
Mixed fatty betaines	TXT.
Octadecylbetaine	DUP.
Triethyloctadecyloxymethylammonium chloride	DAN.
Trialkylmethylammonium salts:	
Methyltrioctylammonium chloride	GNM.
Methyltris(mixed alkyl)ammonium chloride	ADM, VAC.
*Amine acetates:	
(Coconut oil alkyl)amine acetate	ADM, ARC.
(Coconut oil alkyl)amine, ethoxylated, acetate	RPC.
*(Hydrogenated tallow alkyl)amine acetate	ADM, ARC, CIN, WAY.
(9-Octadecenyl)amine acetate	GNM.
Octadecylamine acetate	ACY, ARC.
Octylamine acetate	ARC.
(Tallow alkyl)amine acetate	ADM, ARC, GNM.
N-(Tallow alkyl)diethanolamine acetate	PG.
*Amine salts, anionic:	
Oleic acid, diethylamine salt	WTC.
*Oleic acid, triethanolamine salt	DOM, HAL, NOP, TCC.
Rosin acids, triethanolamine salt	RTF.
Stearic acid, N,N,N',N'-tetrakis(2-hydroxyethyl)ethylenediamine salt.	ICI.
Stearic acid, triethanolamine salt	AML, TCC.
All other	PCS.
*Amines, alkoxylated:	
N,N-Bis(2-hydroxyethyl)dodecylamine	FIN.
N,N-Bis(2-hydroxyethyl)octadecylamine	FIN.
N,N-Bis(2-hydroxyethyl)-2-(stearamidomethoxy)ethylamine.	CIB.
N,N-Bis(2-hydroxyethyl)-2-(stearamidomethoxy)ethylamine - melamine ether condensate.	CIB.
N,N-Bis(2-hydroxyethyl)(tallow alkyl amine)	FIN.
(Coconut oil alkyl)amine, ethoxylated	APD, ARC, VAC, VIS.
(Hydrogenated tallow alkyl)amine, ethoxylated	CIB, TCH.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)ethylenediamine.	VIS.
*(Mixed alkyl)amine, ethoxylated	APD, CIB, G, NOP, RH.
(9-Octadecenyl)amine, ethoxylated	ARC, PCS.
Octadecylamine, ethoxylated	ARC, ICI.
Polyethylenepolyamine, alkoxylated	VIS.
Rosin amine, ethoxylated	HPC, PCS, RTF, VIS.
(Soybean oil alkyl)amine, ethoxylated	ARC, VAC.
*(Tallow alkyl)amine, ethoxylated	ADM, ARC, CIB, DUP.
N-(Tallow alkyl)-1,3-propylenediamine, ethoxylated	ARC.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	VIS.

TABLE 19B. -- *Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Amides, amines, and quaternary ammonium salts--Continued	
*Amines, alkoxylated--Continued	
N,N,N′,N′-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated.	WYN.
Triethanolamine, ethoxylated----------	JCC.
*Fatty acid - alkanolamine condensates:	
*Diethanolamine condensates:	
Capric acid - diethanolamine condensate----------	GGY, ONX, PCS, RZL.
*Castor oil acids - diethanolamine condensate--------	PCS, VAL, VND.
Coconut oil acids - diethanolamine condensates:	
*(Amine/acid ratio = 2/1)----------	AML, ARD, BSC, CIB, CIN, CLI, CRT, CTL, DEP, DRW, EFH, HLI, HRT, JOR, KNP, LEV, LUR, MOA, NOP, ONX, PC, PCS, PG, PNX, RCD, RZL, SBC, SEY, SWT, TCC, TXC, TXT, UNN, UVC, VAC, VAL, VND, WTC.
*(Amine/acid ratio = 1/1)----------	APX, ARD, ARL, CLI, CTL, DRW, EMK, GGY, HLI, MOA, MRV, NOP, ONX, PCS, PEK, QCP, SBC, SEY, STP, TXT, VAC.
All other ratios----------	JRG, PCS.
*Lauric acid - diethanolamine condensate----------	ARD, CLI, CTL, HLI, ICI, MOA, ONX, PCS, PG, RZL, SBC, TXT, WON, WTC.
Linoleic acid - diethanolamine condensate----------	VND.
Myristic acid - diethanolamine condensate----------	CLI.
Oleic acid - diethanolamine condensates:	
*(Amine/acid ratio = 2/1)----------	CCW, CLI, HLI, MRA, ONX, SEY, STP, WTC.
*(Amine/acid ratio = 1/1)----------	CUL, GGY, NOP, SBC, SCP, SEY, STP, SWT, TXT.
*Stearic acid - diethanolamine condensate----------	AML, APX, ARD, BSC, CLI, DEP, EMR, GGY, GLY, JOR, MRA, NOP, ONX, RPC, SCO, SEY, TXC, UVC, VAL, WTC.
*Tall oil acids - diethanolamine condensate----------	EFH, MRA, MRV, SEY, WTC.
Tallow acids - diethanolamine condensate----------	PCS, PG, RPC.
Other diethanolamine condensates----------	BSC, HLI, RCD, WTC,
Other alkanolamine condensates:	
Coconut oil acids - ethanolamine condensate---------	APX, CCL, HRT, MOA, PCS, PG, RCD, TXT, VND, WIC, WTC.
Coconut oil acids - isopropanolamine condensate-----	LEV, STP, TXT.
Lauric acid - ethanolamine condensate----------	RCD, WTC.
*Lauric acid - isopropanolamine condensate----------	ARC, ARD, CLI, MOA, PCS, TXT, WTC.
Myristic acid - ethanolamine condensate----------	WTC.
Myristic acid - isopropanolamine condensate---------	ARD, TXT.
Oleic acid - ethanolamine condensate----------	ARD.
Oleic acid - isopropanolamine condensate----------	WTC.
*Stearic acid - ethanolamine condensates:	
(Amine/acid ratio = 1/1)----------	ARD, CIN, KES, MOA, STP, VND.
(Amine/acid ratio = 1/2)----------	GLY, WTC.
All other ratios----------	CLI.
All other fatty acid - alkanolamine condensates-----	CLI, GLY.
*Fatty acid - polyamine condensates:	
Adipic and stearic acids - diethylenetriamine condensate.	APX.
Coconut oil acids - diethylenetriamine condensate-----	APX, NOP, SEY.
Coconut oil acids - N,N-dimethyl-1,3-propylenediamine condensate.	JRG.
Coconut oil acids - propylenediamine condensate-------	TXT.
Mixed fatty acids - polyalkylenepolyamine condensate--	VIS.
Oleic acid - aminoethylpiperazine condensate----------	PCS.
*Oleic acid - diethylenetriamine condensate----------	HDG, PCS, SEY.
Oleic acid - diethylenetriamine condensate, acetic acid salt.	PCS, UVC.
Oleic acid - N,N-dimethyl-1,3-propylenediamine condensate.	CCW, SNW.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Amides, amines, and quaternary ammonium salts--Continued	
*Fatty acid - polyamine condensates--Continued	
Oleic acid - ethylenediamine condensate (amine/acid ratio = 1/2).	CCW, GLY, HDG.
Pelargonic acid - tetraethylenepentamine condensate----	ICI.
*Stearic acid - diethylenetriamine condensate----------	APX, CRT, CST, DEP, HRT, ONX, QCP, S.
Stearic acid - N,N-diethylethylenediamine condensate---	CBP.
Stearic acid - N,N'-diethylethylenediamine condensate (amine/acid ratio = 1/2).	SNW.
Stearic acid - dipropylenetriamine condensate----------	JOR.
Stearic acid - ethylenediamine condensate (amine/acid ratio = 1/2).	CCW, GLY, ICI.
Stearic acid - tetraethylenepentamine condensate-------	ICI, ONX.
Tall oil acids - diethylenetriamine condensate---------	NCW.
Tall oil acids - polyamine condensate-----------------	TXT.
All other---	EMR, VAL, VND, WM.
*Fatty acid - polyamine condensates, ethoxylated:	
Coconut oil acids - diethylenetriamine condensate, polyethoxylated.	TCC.
Coconut oil acids - ethylenediamine condensate, monoethoxylated.	NOP, RPC.
Mixed fatty acids - alkylenediamine condensate, polyethoxylated.	VIS.
*Oleic acid - ethylenediamine condensate, monoethoxylated.	CLD, CST, DEX, NOP, SOC, TNA.
Palm oil acids - ethylenediamine condensate, monoethoxylated.	APX.
Stearic acid - diethylenetriamine condensate, polyethoxylated.	TCC.
Stearic acid - ethylenediamine condensate, diethoxylated.	TCC.
*Stearic acid - ethylenediamine condensate, monoethoxylated.	AML, CLD, CST, DEP, DEX, ICI, MRA, NOP, S, SNW.
Stearic acid - ethylenediamine condensate, polyethoxylated.	APD, GLY, TCC.
*Heterocyclic compounds:	
Imidazole derivatives:	
1-(2-Aminoethyl)-2-(tall oil alkyl)-2-imidazoline----	NLC.
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium chloride, disodium salt.	PCS.
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium hydroxide, disodium salt.	MIR.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium chloride, sodium salt.	PCS.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium bromide.	BC.
2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline--	GGY, NLC, PCS, UVC.
*2-Heptadecyl-1-(2-hydroxyethyl)-2-imidazoline--------	GGY, HDG, ONX, UVC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Amides, amines, and quaternary ammonium salts--Continued	
*Heterocyclic compounds--Continued	
Imidazole derivatives--Continued	
2-Heptadecyl-2-imidazoline	RZL, SCO.
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	PCS.
1-(2-Hydroxyethyl)-2-(tall oil alkyl)-2-imidazoline	NLC.
1-(2-Hydroxyethyl)-2-tridecyl-2-imidazolinium chloride.	GGY.
1-(2-Hydroxyethyl)-2-undecyl-2-imidazoline	GGY, UVC.
2-(Mixed alkyl)-2-imidazoline	TXT.
*Rosinpolyamidoimidazoline	GRD, PCS, UVC.
Oxazole derivatives:	
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline.	COM.
2-(8-Heptadecenyl)-4-hydroxymethyl-4-methyl-2-oxazoline.	COM, UVC.
*N-Substituted amino acids and polypeptides:	
N-[2-(Carboxymethylamino)ethyl]-N-(2-hydroxyethyl)-coconut oil amide, sodium salt.	TCC.
N-(Coconut oil acyl)sarcosine	GGY.
N-(Coconut oil alkyl)-β-alanine	GNM.
N-Dodecyl-3-iminodipropionic acid	GNM.
N-(2-Hydroxyethyl)-N-(2-stearamidoethyl)glycine	G.
N-Lauroylpolypeptide	MYW.
N-Lauroylsarcosine, sodium salt	CP, GGY, HMP, ONX.
N-Oleoylpolypeptide	MYW.
N-Oleoylsarcosine, sodium salt	G, GGY.
Polypeptide	MYW.
N-Stearoylsarcosine, sodium salt	GGY.
N-(Tallow alkyl)-3-iminodipropionic acid, sodium salt	GNM.
*Other amides, amines, and quaternary ammonium salts:	
Fatty acid - alkanolamine condensates, ethoxylated:	
Hydrogenated tallow acids - ethanolamine condensate, ethoxylated.	ARC.
Oleic acid - ethanolamine condensate, ethoxylated	ARC, G.
Oleic acid - methanolamine condensate, ethoxylated	G.
Tall oil acids - ethanolamine condensate, ethoxylated.	JCC.
All other amides, amines, and quaternary ammonium salts:	
*N-(Coconut oil alkyl)-1,3-propylenediamine	ARC, FOR, GNM.
(Cottonseed oil alkyl)amine	GNM.
N-Dodecyldiethylenetriamine	FIN.
N-(Mixed alkyl)polyethylenepolyamine	CCW.
*N-(9-Octadecenyl)-1,3-propylenediamine	ARC, FOR, GNM.
N-(Soybean oil alkyl)-1,3-propylenediamine	ARC.
Stearic acid - N-(2-cyanoethyl)diethylenetriamine condensate (amine/acid ratio = 1/2).	CIB.
*N-(Tallow alkyl)-1,3-propylenediamine	ARC, FOR, GNM.
All other	CIB, G, ONX, x.
*Carboxylic acid esters:	
*Ethylene glycol and diethylene glycol esters:	
*Diethylene glycol di- and sesquistearate:	
Diethylene glycol distearate	KES.
Diethylene glycol sesquistearate	GLY, WM.
*Diethylene glycol monolaurate	CCW, DRW, EMR, GLY, HAL, HDG, KAL, KES, NOP, WTC.
*Diethylene glycol mono-oleate	HAL, KES, WTC.
*Diethylene glycol monostearate	CCW, CIN, CLI, HAL, KES, NOP, PCS, QCP, VAL, VND, WTC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Carboxylic acid esters--Continued	
*Ethylene glycol and diethylene glycol esters--Continued	
*Ethylene glycol distearate	EMR, HAL, HDG, KES.
*Ethylene glycol monostearate	CCW, CLI, DRW, EFH, GLY, HAL, HDG, KES, KNP, PCS, VND, WM.
*Other ethylene glycol and diethylene glycol esters:	
Diethylene glycol mono(coconut oil)ester	DRW.
Diethylene glycol monoricinoleate	GLY.
Diethylene glycol sesquilaurate	GLY.
Diethylene glycol sesquioleate	GLY.
Diethylene glycol tall oil ester	HDG, QCP, SEY, WTC.
Ethylene glycol mono-oleate	EFH.
Ethylene glycol sesquistearate	WM.
*Glycerol esters:	
*Complex glycerol esters:	
Glycerol diacetyltartrate mono-oleate	DRW.
Glycerol diacetyltartrate monostearate	DRW, PCS, WTC.
Glycerol lactate laurate	APD.
Glycerol lactate palmitate	DRW, GLD.
Glycerol lactate stearate	APD, GLD.
Glycerol maleate mono-oleate	NOP, WTC.
Glycerol mono-oleate, acetylated	x.
All other	EK.
*Glycerol esters of chemically defined fatty acids:	
Glycerol dioleate	HAL, KES.
Glycerol distearate	APX, KES, PCS.
Glycerol monocaprylate	KES.
Glycerol monolaurate	GLY, KES, KNP.
*Glycerol mono-oleate	APD, CCW, DRW, EFH, EK, EMR, GLY, HAL, HDG, KES, SWT, VND, WM.
Glycerol monoricinoleate	CCW.
*Glycerol monostearate	CCW, CHL, CRT, DRW, EK, EMR, GLY, HAL, HDG, JRG, KES, LUR, MRA, NOP, NW, PCS, PG, SNW, SWT, TCC, VND, WM, WTC, x.
*Glycerol esters of mixed fatty acids:	
Glycerol diester of lard	PCS.
*Glycerol monoester of coconut oil acids	DRW, GLY, HAL, HDG, SWT, WM.
*Glycerol monoester of cottonseed oil acids	DRW, EK, GLD, PCS.
Glycerol monoester of hydrogenated cottonseed oil acids.	LEV.
Glycerol monoester of hydrogenated soybean oil acids	DRW.
Glycerol monoester of lard	EK, GLD.
Glycerol monoester of peanut oil acids	DRW.
All other	APD, EFH, EK, GLD, GLY, HDG, LEV, PCS, SWT, WTC.
*Polyethylene glycol esters:	
*Polyethylene glycol esters of chemically defined fatty acids:	
*Polyethylene glycol dilaurate	DEX, EFH, GLY, HDG, JOR, KES, PCS, UVC, WM.
*Polyethylene glycol dioleate	CLD, EFH, GGY, GLY, HAL, HDG, KES, NOP, PCS, SPP, UVC, VND, WM.
*Polyethylene glycol distearate	GLY, HAL, KES, PCS, QCP.
Polyethylene glycol methylcarbitol maleate	CCA.
*Polyethylene glycol monolaurate	AAC, ARC, BSC, CCA, DEX, DRW, GGY, GLY, HAL, ICI, JOR, KES, KNP, NOP, SYC, TCH, UVC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Carboxylic acid esters--Continued	
*Polyethylene glycol esters--Continued	
*Polyethylene glycol esters of chemically defined fatty acids--Continued	
*Polyethylene glycol mono-oleate	AAC, ARC, CCA, CLD, CRC, CRT, DEX, DRW, EMR, G, GGY, GLY, HAL, ICI, KES, NOP, ONX, PCS, QCP, SPP, SWT, SYC, TCH, UVC, VAC, WM, WTC.
Polyethylene glycol monopalmitate	APD.
Polyethylene glycol monoricinoleate	AAC, HAL, KES, NOP.
*Polyethylene glycol monostearate	AML, APD, ARC, CCW, CIN, CRT, DEP, DEX, DRW, G, GGY, GLY, HAL, HDG, ICI, JOR, KES, KNP, NOP, ONX, PC, PCS, PD, RH, TCC, TCH, UVC, VND, WTC.
*Polyethylene glycol esters of mixed fatty acids:	
Polyethylene glycol castor oil ester	G, GGY, GLY, NOP, UVC, WTC.
*Polyethylene glycol coconut oil ester	APX, ARL, GLY, HAL, NOP, PCS, PG, VND.
*Polyethylene glycol rosin ester	APD, HPC, QCP, VIS.
*Polyethylene glycol tall oil ester	AML, APD, APX, ARC, DRW, GLY, HAL, HDG, KES, MON, NOP, OMC, PCS, SOS, TCH, UVC, WTC.
Polyethylene glycol tallow ester	ONX, SOS.
All other	GLY, HDG, PCS, SYC.
*Other carboxylic acid esters:	
Anhydrosorbitol esters:	
Anhydrosorbitol dioleate	APD.
Anhydrosorbitol mixed fatty acid ester	GLY.
Anhydrosorbitol monolaurate	AAC, APD, GLY, HDG, PCS.
Anhydrosorbitol mono-oleate	AAC, APD, DRW, GLY, HDG, PCS.
Anhydrosorbitol monopalmitate	AAC, APD, GLY.
Anhydrosorbitol monostearate	AAC, APD, DRW, GLY, HDG, PCS.
Anhydrosorbitol sesquioleate	GLY.
*Anhydrosorbitol tall oil ester	APD, GLY, HDG.
Anhydrosorbitol tetrastearate	AAC, APD.
Anhydrosorbitol trioleate	AAC, APD, GLY.
Anhydrosorbitol tristearate	APD, GLY.
Ethoxylated anhydrosorbitol esters:	
Ethoxylated anhydrosorbitol castor oil ester	APD.
*Ethoxylated anhydrosorbitol monolaurate	AAC, APD, DRW, GLY, HDG, PCS, TCH.
*Ethoxylated anhydrosorbitol mono-oleate	AAC, APD, DRW, GLY, HDG, PCS, TCH.
Ethoxylated anhydrosorbitol monopalmitate	AAC, APD, GLY, TCH.
*Ethoxylated anhydrosorbitol monostearate	AAC, APD, DRW, GLY, HDG, PCS, TCH.
Ethoxylated anhydrosorbitol tall oil ester	APD, TCH.
*Ethoxylated anhydrosorbitol trioleate	AAC, APD, GLY, TCH.
*Ethoxylated anhydrosorbitol tristearate	AAC, APD, DRW, GLY, PCS, TCH.
Ethoxylated sorbitol esters:	
Ethoxylated sorbitol beeswax ester	APD.
Ethoxylated sorbitol distearate	APD.
Ethoxylated sorbitol hexaoleate	APD.
Ethoxylated sorbitol hexa(tall oil)ester	APD.
Ethoxylated sorbitol lanolin ester	APD.
Ethoxylated sorbitol mono-oleate	APD.
Ethoxylated sorbitol oleate stearate	APD.
Ethoxylated sorbitol pentalaurate	APD.
Ethoxylated sorbitol pentaoleate, acetylated	APD.
Ethoxylated sorbitol penta(tall oil)ester	APD.
Ethoxylated sorbitol tetra(laurate, oleate)	APD.
Ethoxylated sorbitol tetra(tall oil)ester	APD.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Carboxylic acid esters--Continued	
*Other carboxylic acid esters--Continued	
All other carboxylic acid esters:	
Anhydrosorbitol glycerol monolaurate	APD.
Calcium stearolactate	GLY.
Coconut oil acids, ethoxylated methanol ester	JOR.
Diisobutylene maleate	RH.
Ethoxylated glycerol mono- and diester of mixed fatty acids.	APD.
Ethoxylated 1,2-propanediol mono-oleate	APD.
Ethoxylated 1,2-propanediol stearate	APD.
Mannitol dioleate, propoxylated	APD.
Methyl glucoside laurate	HDG.
Methyl glucoside oleate	HDG.
Pentaerythritol distearate	VAL.
Polyalkylene glycol adipate	PFZ.
Polyalkylene glycol diglycolate	VIS.
Polyalkylene glycol dimaleate	VIS.
Polyalkylene glycol naphthenate	APD.
Polyglycerol lactate oleate	DRW.
Polyglycerol monoester of cottonseed oil acids	DRW.
Polyglycerol oleate	DRW, WTC.
Polyglycerol stearate	PCS.
1,2-Propanediol distearate	PCS.
1,3-Propanediol mono(coconut oil)ester	DRW.
*1,2-Propanediol monolaurate	HAL, KES, SBC, WM.
1,2-Propanediol mono-oleate	KES.
*1,2-Propanediol monostearate	APD, CCW, EK, GLY, HAL, HDG, JRG, KES, PCS, PG, WTC.
Propylene glycol mono esters	GLD.
Sucrose esters of fatty acids	SUG.
All other	WM.
*Ethers:	
*Castor oil, ethoxylated	AAC, APD, BAC, DRW, ICI, NOP, PCS, RTF, TCH, VAC, VIS.
Coconut oil alcohols, ethoxylated	G.
n-Decyl alcohol, ethoxylated	G, ICI, PCS.
n-Decyl alcohol, ethoxylated and chlorinated	G.
*n-Dodecyl alcohol, ethoxylated	AAC, APD, DRW, G, GLY, JCC, NAC, OMC, PCS, UCC.
n-Hexadecyl alcohol, ethoxylated	ADM, APD, CIB, ICI.
Hydrogenated castor oil, ethoxylated	AAC, APD.
Iso-octyl alcohol, ethoxylated	G.
Lanolin, ethoxylated	APD.
*Mixed primary straight chain alcohols, ethoxylated	CO, JCC, RH, RTF, TCH, VIS, WYN.
*9-Octadecenyl alcohol, ethoxylated	AAC, ADM, APD, CIB, DUP, G, ICI, NOP, TCH.
n-Octadecyl alcohol, ethoxylated	ACC, APD, CIB.
Polyethylene glycol tert-dodecyl thioether	MON, PAS.
Poly(mixed ethylene, propylene)glycol	UCC, VIS.
Polypropylene glycol, ethoxylated	PCS, VIS, WYN.
Rosin alcohol, ethoxylated	HPC.
Sorbitol, alkoxylated	VAC.
Soybean oil, ethoxylated	CGL.
Sperm oil alcohol, ethoxylated	DUP.
Tallow alcohol, ethoxylated	G.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated	AIR.
*Tridecyl alcohol, ethoxylated	AAC, APD, DRW, EFH, G, ICI, JCC, MON, OMC, PCS, RTF, TCH, UCC, VIS.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Ethers--Continued	
Tridecyl alcohol, ethoxylated and carbonated, sodium salt.	S.
Tridecyl alcohol, ethoxylated and chlorinated	G.
Tridecyl alcohol, propoxylated and ethoxylated	JCC, PCS.
Trimethylheptanol, ethoxylated	PCS.
Trimethylnonyl alcohol, ethoxylated	UCC.
Trimethylolpropane, alkoxylated	RTF.
All other	JCC, VPC.
Fatty acids, potassium and sodium salts:	
Castor oil acids, potassium salt	BAC, SEA.
Castor oil acids, sodium salt	MRV, SEA.
*Coconut oil acids, potassium and sodium salts:	
Coconut oil acids, potassium salt	ARL, LUR, PCH, SWT.
Coconut oil acids, sodium salt	CON.
Corn oil acids, potassium salt	PCH.
Corn oil acids, sodium salt	LUR.
*Lauric acid, potassium salt	BSC, DRW, NOP, VAL.
*Mixed vegetable fatty acids, potassium salt	AML, ARL, PCH, SWT.
*Oleic acid, potassium salt	AML, BSC, CIB, DAN, DEX, EFH, NOP, QCP, S, SHP, WTC, x.
*Oleic acid, sodium salt	LUR, MRV, NOP, SEA, SWT, WTC, x.
Olive oil acids, sodium salt	LUR.
Palm oil acids, sodium salt	LUR.
Peanut oil acids, potassium salt	KAL, SLC.
*Rosin acids, sodium salt	CRT, MRA, QCP.
Soybean oil acids, potassium salt	CON, DRW.
Stearic acid, potassium salt	VAL.
*Stearic acid, sodium salt	LEV, MAL, NOP, SLC, WTC.
*Tall oil acids, potassium salt	BSC, CIN, CON, DRW, LUR, PNX, QCP, VAL.
*Tall oil acids, sodium salt	DEX, PCS, QCP, UNP.
Tallow acids, potassium salt	SWT.
Tallow acids, sodium salt	CON, LUR, NOP, QCP, SWT.
All other	SLC, VAL.
*Phosphoric and polyphosphoric acid esters:	
*Alcohols, phosphated and polyphosphated:	
Decyl, octyl phosphate	UVC.
Decyl phosphate, ethanolamine salt	RCD.
Decyl polyphosphate, sodium salt	SEY.
*2-Ethylhexyl phosphate, sodium salt	SEY, TCI, UCC, UVC.
2-Ethylhexyl polyphosphate	UVC.
Hexyl polyphosphate, potassium salt	CST, DEX.
Mixed alkyl phosphate, diethanolamine salt	DUP.
Mixed decyl, dodecyl, and octyl phosphate, morpholine salt.	DUP.
*Mixed mono- and dialkyl phosphate	CST, DUP, UVC.
9-Octadecenyl phosphate	DUP.
Octadecyl phosphate, ethanolamine salt	RCD.
Octyl phosphate, alkylamine salt	DUP, TXT.
*Octyl polyphosphate	BCN, DEX, TXT.
Octyl polyphosphate, potassium salt	x.
Octyl polyphosphate, sodium salt	VIC.
Tri(castor oil alkyl)phosphate	GLY.
Tri(mixed alkyl)phosphate	VIC.
*Other phosphoric and polyphosphoric acid esters:	
Dodecyl alcohol, ethoxylated and phosphated	G.
Dodecyl alcohol, ethoxylated and polyphosphated	VIC.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Not Sulfated or Sulfonated--Continued	
*Phosphoric and polyphosphoric acid esters--Continued	
*Other phosphoric and polyphosphoric acid esters--Con.	
2-Ethylhexanol, ethoxylated and phosphated	WAY.
Mixed primary straight chain alcohols, ethoxylated and phosphated.	G.
9-Octadecenyl alcohol, ethoxylated and phosphated	G.
Octyl phosphate, ethoxylated	DUP.
Propylene glycol, propoxylated and phosphated	APD.
Tridecyl alcohol, ethoxylated and phosphated	G, LUR.
All other	VIC, WTC.
Other nonbenzenoid surface-active agents, not sulfated or sulfonated:	
3,5-Dimethyl-1-hexyn-3-ol	AIR.
3,6-Dimethyl-4-octyne-3,6-diol	AIR.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol	AIR.
All other	GLY, JCC, LMI, STC.
Sulfated and Sulfonated	
*Dicarboxylic acid amides, sulfated and sulfonated:	
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt.	ACY.
N-(2-Hydroxyethyl)-N-(tallow alkyl)sulfosuccinamide	SCP.
N-Octadecylsulfosuccinamide, disodium salt	ACY.
N-(Oleoyloxyisopropyl)sulfosuccinamide	WTC.
*Dicarboxylic acid esters, sulfated and sulfonated:	
*Sulfosuccinic acid, bis(2-ethylhexyl)ester	ACY, CIN, CRC, CRT, CST, DAN, EFH, EMK, GGY, HRT, ICI, MOA, MRA, PC, SBC, TCI.
Sulfosuccinic acid, bis(tallow monoglyceride)ester	ACY.
Sulfosuccinic acid, dihexyl ester	ACY, MOA.
Sulfosuccinic acid, dioctyl ester, sodium salt	RH.
Sulfosuccinic acid, dipentyl ester, sodium salt	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt	ACY, MOA, WTC.
All other	G.
*n-Dodecyl sulfate salts:	
n-Dodecyl sulfate, 2-amino-2-methylpropanol salt	DUP.
*n-Dodecyl sulfate, ammonium salt	AAC, DUP, ONX, PCS, STP.
n-Dodecyl sulfate, diethanolamine salt	AAC, CUL, DUP, HLI, JRG, ONX, STP.
n-Dodecyl sulfate, N,N-diethylcyclohexylamine salt	DUP.
n-Dodecyl sulfate, isopropanolamine salt	JRG, PCS.
n-Dodecyl sulfate, magnesium salt	AAC, HLI.
n-Dodecyl sulfate, potassium salt	HLI, PG.
*n-Dodecyl sulfate, sodium salt	AAC, DUP, HLI, JRG, MYW, ONX, PCI, PCS, PG, RCD, RET, STP, TXT.
*n-Dodecyl sulfate, triethanolamine salt	AAC, CUL, DUP, HLI, MYW, ONX, PCS, PG, RCD, RET, STP, TXT.
*Fats, oils, and waxes, sulfated and sulfonated:	
*Castor oil, sulfonated	AAE, ACT, ACY, AML, APX, BAO, BRY, BSC, CRT, DEX, DRW, DUP, EFH, G, HRT, ICI, KAL, KNG, LEA, LUR, MRA, MRD, MRV, NOP, ONX, PC, PCI, S, SCO, SCP, SEA, SLC, WHI, WHW.
*Coconut oil, sulfonated	ACY, BAO, MRD, NOP, RTC, SEA, WHW.
*Cod oil, sulfonated	ACT, BAO, CRT, DRW, LEA, MRD, NOP, S, SEA, WAW, WHI, WHW.
Cottonseed oil, sulfonated	NOP, RTC.
*Grease, other than wool, sulfonated	CRT, NOP, SEA, WHI, WHW.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Sulfated and Sulfonated--Continued	
*Fats, oils, and waxes, sulfated and sulfonated--Continued	
Lard, sulfonated	WAW.
Mixed fish oils, sulfonated	AML, EFH, SCO.
Mixed vegetable oils, sulfonated	LEA.
Mustard seed oil, sulfonated	LUR, NOP.
*Neat's-foot oil, sulfonated	ACT, BAO, CRT, KAL, LUR, MRD, NOP, PC, SEA, WHW.
Oleostearin, sulfonated	SEA.
*Peanut oil, sulfonated	ACY, CRT, ICI, LEA, LUR, NOP, SCP, SEY, SLC, SOS.
Red fish oil, sulfonated	WHI.
*Rice-bran oil, sulfonated	HRT, KNG, LUR, NOP.
*Soybean oil, sulfonated	APX, CRT, DRW, HRT, KAL, LEA, MRD, ONX.
*Sperm oil, sulfonated	ACT, BAO, CLD, CRT, DRW, HRT, KAL, KNG, LEA, MRD, NOP, ONX, RTC, S, SEA, WHI, WHW.
*Tall oil, sulfonated	ACY, APX, BAO, CRT, ICI, QCP, SEA, WHW.
*Tallow, sulfonated	ACT, ACY, BRY, DRW, EFH, ICI, KAL, LEA, LUR, MRA, MRD, NOP, ONX, PC, PCI, SCP, SID, SOS, SNW, WHI.
Whale oil, sulfonated	KNG.
All other	EFH.
*Other nonbenzenoid surface-active agents, sulfated and sulfonated:	
Alcohols, except dodecyl, sulfated and sulfonated:	
Branched hexadecyl sulfate, sodium salt	APX.
n-Decyl sulfate, sodium salt	DUP, ONX, PCS.
n-Decyl sulfate, triethanolamine salt	DUP.
3,9-Diethyl-6-tridecyl sulfate	UCC.
2-Ethylhexyl sulfate, sodium salt	AAC, UCC, WTC.
7-Ethyl-2-methyl-4-undecyl sulfate	UCC.
n-Hexadecyl sulfate	AAC, DUP.
Hexyl sulfate, potassium salt	DEX.
Mixed coconut oil alkyl and sperm oil alkyl sulfate, sodium salt.	DUP.
Nonyl sulfate	TN.
n-Octadecyl sulfate	DUP, EMK, PG.
n-Octadecyl sulfate, sodium salt	ONX.
n-Octadecyl sulfate, triethanolamine salt	DUP.
n-Octyl sulfate, sodium salt	DUP, PCS.
n-Tetradecyl sulfate, sodium salt	ONX.
Tridecyl sulfate, sodium salt	AAC.
Alkanes, sulfated and sulfonated:	
Mixed alkanesulfonic acids	VPC.
Mixed alkanesulfonic acids, sodium salt	DUP, WSN.
Amines, fatty acid amides, and quaternary ammonium salts, sulfated and sulfonated:	
Fatty acid - alkanolamine condensates, sulfated:	
*Coconut oil acids - ethanolamine condensate, sulfated, potassium salt.	DEX, EMK, HRT, ONX.
Coconut oil acids - ethanolamine condensate, sulfated, sodium salt.	DEP.
Lauric acid - isopropanolamine condensate, sulfated-	PCS.
Neat's-foot oil acids - ethanolamine condensate, sulfated, ammonium salt.	APX.
Oleic acid - ethanolamine condensate, sulfated	SCP.
Stearic acid - diethanolamine condensate, methyl sulfate.	DUP.
All other	EMR.

TABLE 19B. --*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Sulfated and Sulfonated--Continued	
*Other nonbenzenoid surface-active agents, sulfated and sulfonated--Continued	
Amines, fatty acid amides, and quaternary ammonium salts, sulfated and sulfonated--Continued	
Quaternary ammonium salts, sulfated and sulfonated:	
N-Alkyl dimethyl ethyl ammonium ethyl sulfate-------	JOR.
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate.	LUR.
Bis(hydrogenated tallow alkyl)dimethylammonium methylsulfate.	x.
Dimethyldioctadecylammonium methyl sulfate----------	ONX.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium ethyl sulfate.	APD.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate-------	APD.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate.	APD.
2-Heptadecyl-1-(2-stearamidoethyl)-2-imadazolinium methyl sulfate.	CUL.
(3-Lauramidopropyl)trimethylammonium methyl sulfate-	ACY.
Mixed alkyl sulfobetaines----------	TXT.
Trimethyl(3-oleamidopropyl)ammonium methyl sulfate--	CIB.
Taurine derivatives:	
N-Cyclohexyl-N-palmitoyltaurine----------	G.
N-Methyl-N-(coconut oil acyl)taurine----------	G.
*N-Methyl-N-oleoyltaurine----------	CRC, CRT, DEP, DRW, G, HRT, MRA, NOP, VAL.
N-Methyl-N-palmitoyltaurine----------	G.
N-Methyl-N-(tall oil acyl)taurine, sodium salt------	G.
N-Methyl-N-(tallow acyl)taurine----------	G.
Other amines, fatty acid amides, and quaternary ammonium salts, sulfated and sulfonated:	
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine, distearate methyl sulfate.	DUP.
Lauric acid, 2-sulfoacetamidoethyl ester, potassium salt.	WTC.
N-(Mixed alkyl sulfonyl)glycine, sodium salt--------	G.
Mixed primary amines, ethoxylated and sulfated------	RH.
Oleic acid - ethylenediamine condensate, propoxylated and sulfated, sodium salt.	S.
Stearic acid - ethylenediamine condensate, monoethoxylated, ethyl sulfate.	WTC.
Tall oil acids - polyalkylenepolyamine condensate, sulfated.	VIS.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine dioleate methyl sulfate.	DUP.
Ethers, sulfated and sulfonated:	
n-Dodecyl alcohol, ethoxylated and sulfated, ammonium salt.	AAC, ONX.
*n-Dodecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, DUP, ONX, PCS, RCD, RET, TXT.
n-Dodecyl alcohol, ethoxylated and sulfated, triethanolamine salt.	PG.
Hexyloxypropyl sulfate, sodium salt----------	S.
Mixed primary straight chain alcohols, ethoxylated and sulfated.	CO.
Mixed primary straight chain alcohols, ethoxylated and sulfated, ammonium salt.	VIS.
Sperm oil alcohol, ethoxylated and sulfated----------	DUP.

TABLE 19B.--*Surface-active agents for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
Sulfated and Sulfonated--Continued	
*Other nonbenzenoid surface-active agents, sulfated and sulfonated--Continued	
Ethers, sulfated and sulfonated--Continued	
Tridecyl alcohol, ethoxylated and sulfated, ammonium salt.	LEV.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ARL, RCD.
All other	APX, PG.
Fatty acids, sulfated and sulfonated:	
Acetyloleic acid, sulfonated	DUP.
*Oleic acid, sulfonated	ACT, ACY, BRY, CRT, DRW, EMR, G, ICI, LEA, LUR, MRV, NOP, PCI, QCP, SCO, TN, WHI, WHW.
Ricinoleic acid, sulfonated	NOP.
Fatty acid esters, sulfated and sulfonated:	
2-Butoxyethyl sulfo-oleate	S.
*Butyl sulfo-oleate	AML, CIN, ICI, NOP, ONX, PC.
Butyl sulforicinoleate	NOP.
Coconut oil isethionate	DRW.
Coconut oil isethionate, sodium salt	G, LEV.
Dodecyl sulfoacetate	NAC.
Ethyl sulfo-oleate	G, KAL.
Glycerol mono(coconut oil) ester, sulfated, ammonium salt.	CP.
Glycerol mono(coconut oil) ester, sulfated, sodium salt.	CP.
Glycerol monostearate sulfoacetate	WTC.
Glycerol tri(sulfo-oleate)	ACT, MRV, SCP.
*Isopropyl sulfo-oleate	BRY, DEX, EMR, HRT, ICI, LEA, LUR.
2-Lauroyloxy-1-propanesulfonic acid	SDH.
Methyl sulfo-oleate	ICI.
*Propyl sulfo-oleate	ACY, BSC, CHL, EFH, MRV, WM.
All other	EMR.

Pesticides and Other Organic Agricultural Chemicals

TABLE 20B.--*Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Pesticides and other organic agricultural chemicals for which separate statistics are given in table 20A are marked below with an asterisk (*); products not so marked do not appear in table 20A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC	
*Fungicides:	
2,6-Bis(dimethylaminomethyl)cyclohexanone	MTL.
5-Chloro-2-mercaptobenzothiazole, laurylpyridium salt	VNC.
2,4-Dichloro-6-o-chloroanilino-s-triazine	CHG.
2,3-Dichloro-1,4-naphthoquinone (Dichlone)	USR.
Diphenylammonium propionate	MTL.
3,3'-Ethylenebis(tetrahydro-4,6-dimethyl-2H-1,3,5,5-thiadiazine-2-thione).	DUP.
2-Heptadecyl-2-imidazoline acetate (Glyodin)	UCC.
2-Mercaptobenzothiazole, monoethanolamine salt	VNC.
*Mercury fungicides:	
2-Chloro-4-(hydroxymercuri)phenol	DUP.
Chloromethoxypropylmercuric acetate	TRC.
N-(Ethylmercuri)-p-toluenesulfonanilide	DUP.
1,4,5,6,7,7-Hexachloro-N-(ethylmercuri)-5-norbornene-2,3-dicarboximide.	RBC.
4-(Hydroxymercuri)-2-nitrophenol	DUP.
8-(Methylmercurioxy)quinoline	MTL.
2-(Phenylmercuriamino)ethyl acetate	CLY.
Phenylmercuriammonium acetate	GUA, TRO.
N-Phenylmercuriformamide	VLN.
Phenylmercury hydroxide	WRC.
Phenylmercury lactate	WRC.
Phenylmercury naphthenate	MTL.
Phenylmercury oleate	CLY, HNX, MTL, TRO, WRC.
Phenylmercury propionate	MTL.
Tris(2-hydroxyethyl)(phenylmercuri)ammonium lactate	CLY.
2-(1-Methylheptyl)-4,6-dinitrophenyl crotonate	RH.
*Naphthenic acid, copper salt	CCA, FER, HNX, MCI, MLD, SM, SOC, SRR, TGL, TRO, WTC.
Pentachloronitrobenzene	MON, OMC.
*Pentachlorophenol (PCP)	BXT, DOW, FRO, MON, RCI.
Pentachlorophenol, sodium salt	DOW, MON, RCI.
8-Quinolinol (8-Hydroxyquinoline), copper salt	GAM, HNX, MTL.
Tetrachloro-p-benzoquinone (Chloranil)	USR.
2,3,4,6-Tetrachlorophenol	DOW.
Tetrahydro-3,5-dimethyl-2H,1,3,5-thiadiazine-2-thione	CLY, MTL, SF.
N-(Trichloromethylthio)-4-cyclohexene-1,2-dicarboximide (Captan).	CHO.
N-(Trichloromethylthio)phthalimide (Folpet)	CHO.
*2,4,5-Trichlorophenol	DA, DOW, HK.
*2,4,5-Trichlorophenol, ethanolamine salt	G.
*2,4,5-Trichlorophenol, sodium salt	DOW.
2,4,6-Trichlorophenol	DOW.
*Herbicides and plant hormones:	
5-Bromo-3-sec-butyl-6-methyluracil	DUP.
5-Bromo-3-isopropyl-6-methyluracil	DUP.
1-Butyl-3-(3,4-dichlorophenyl)-1-methylurea (Neburon)	DUP.
*2-sec-Butyl-4,6-dinitrophenol (DNBP)	CIS, DOW, FMN, TNA.
*2-sec-Butyl-4,6-dinitrophenol, ammonium salt	CIS, DOW, FMN.
2-sec-Butyl-4,6-dinitrophenol, triethanolamine salt	CIS, DOW, FMN.
2-sec-Butyl-4,6-dinitrophenyl-3,3-dimethylacrylate	FMP.
2-sec-Butyl-4,6-dinitrophenyl-3-methyl-2-butenoate (Binapacryl).	FMN.
2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)	GGY.
4-Chloro-2-butynyl m-chlorocarbanilate (Barban)	SPN.
2-Chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine).	GGY.
N-(3-Chloro-4-methylphenyl)-2-methylpentanamide (Solan)-	FMN.

TABLE 20B.--*Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
3-(p-Chlorophenyl)-1,1-dimethylurea (Monuron)	DUP.
3-(p-Chlorophenyl)-1,1-dimethylurea trichloroacetate	ACG.
Chlorophenyl-N-methylcarbamate	x.
2,5-Dichloro-3-aminobenzoic acid, ammonium salt	G.
3,6-Dichloro-2-anisic acid	VEL.
2,5-Dichloro-3-nitrobenzoic acid	G.
2-(2,4-Dichlorophenoxy)ethanol sulfate, sodium salt	G.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	DUP.
N-(3,4-Dichlorophenyl) methacrylamide (Dicryl)	FMN.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	DUP.
2,4-Dichlorophenyl-4-nitrophenyl ether	x.
3,4-Dichloropropionanilide	MON, x.
1,2-Dihydro-3,6-pyridazinedione (Maleic hydrazide)	ACY, USR.
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamide)	LIL.
1,1-Dimethyl-3-phenylurea (Fenuron)	DUP.
1,1-Dimethyl-3-phenylurea trichloroacetate	ACG.
Dimethyl tetrachloroterephthalate	DA.
4,6-Dinitro-o-cresol (DNOC)	CIS, FMN.
4,6-Dinitro-o-cresol, sodium salt	CIS, FMN.
Diphenylacetonitrile	LIL.
N,N-Dipropyl-2,6-dinitro-4-trifluoromethyl aniline	x.
Gibberellic acid	ABB, MRK.
3-(Hexahydro-4,7-methanoindan-5-yl)-1,1-dimethylurea (Norea).	HPC.
Indolebutyric acid	ARA.
Isopropyl carbanilate (Isopropyl N-phenylcarbamate) (IPC).	PPG.
Isopropyl 3-chlorocarbanilate (Isopropyl N-(3-chlorophenyl)carbamate) (CIPC).	PPG.
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetamide	AMC.
1-Naphthaleneacetic acid	AMC, COK.
1-Naphthaleneacetic acid, methyl ester	AMC.
1-Naphthaleneacetic acid, sodium salt	AMC, BKL.
2-Naphthyloxyacetic acid	BKL.
2-Naphthyloxyacetic acid, sodium salt	BKL.
N-1-Naphthylphthalamic acid (NPA)	USR.
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, disodium salt (Endothal).	PAS.
Phenoxyacetic acid derivatives:	
(4-Chloro-o-tolyloxy)acetic acid (MCPA)	CHC, DOW.
(4-Chloro-o-tolyloxy)acetic acid, potassium salt	GTH.
*(2,4-Dichlorophenoxy)acetic acid (2,4-D)	CHC, DA, DOW, HPC, MON.
*(2,4-Dichlorophenoxy)acetic acid esters and salts:	
(2,4-Dichlorophenoxy)acetic acid, 2-butoxyethyl ester.	AMC.
(2,4-Dichlorophenoxy)acetic acid, butoxypolypropyleneglycol ester.	DOW.
*(2,4-Dichlorophenoxy)acetic acid, n-butyl ester	AMC, DA, DOW, HPC, IMR, MON, RIV.
(2,4-Dichlorophenoxy)acetic acid, sec-butyl ester	CHC.
*(2,4-Dichlorophenoxy)acetic acid, dimethylamine salt	ALC, AMC, CHC, DA, DOW, HPC, RIV, TMH.
(2,4-Dichlorophenoxy)acetic acid, ethanolamine and isopropanolamine salt.	CHC, DOW.
*(2,4-Dichlorophenoxy)acetic acid, ethyl ester	AMC, DOW, MON.
(2,4-Dichlorophenoxy)acetic acid, 2-ethylhexyl ester	DA, HPC.
*(2,4-Dichlorophenoxy)acetic acid, iso-octyl ester	CHC, DOW, MON, RIV, TMH.
*(2,4-Dichlorophenoxy)acetic acid, isopropyl ester	AMC, CHC, DA, DOW, HPC, MON, RIV.
(2,4-Dichlorophenoxy)acetic acid, lithium salt	GTH.
(2,4-Dichlorophenoxy)acetic acid, sodium salt	DOW.
All other (2,4-Dichlorophenoxy)acetic acid esters and salts.	CWN.

TABLE 20B.-- *Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
Phenoxyacetic acid derivatives--Continued	
4-(2,4-Dichlorophenoxy)butyric acid, dimethylamine salt.	TMH.
*(2,4,5-Trichlorophenoxy)acetic acid (2,4,5-T)--------	DA, DOW, HPC, MON.
*(2,4,5-Trichlorophenoxy)acetic acid esters and salts:	
(2,4,5-Trichlorophenoxy)acetic acid, amyl ester-----	HPC.
(2,4,5-Trichlorophenoxy)acetic acid, 2-butoxyethyl ester.	AMC.
(2,4,5-Trichlorophenoxy)acetic acid, butoxypoly-propyleneglycol ester.	DOW.
*(2,4,5-Trichlorophenoxy)acetic acid, n-butyl ester--	DA, DOW, HPC, MON, RIV.
(2,4,5-Trichlorophenoxy)acetic acid, sec-butyl ester	MON.
(2,4,5-Trichlorophenoxy)acetic acid, 2-ethylhexyl ester.	DA, HPC.
*(2,4,5-Trichlorophenoxy)acetic acid, iso-octyl ester	DOW, MON, RIV, TMH.
(2,4,5-Trichlorophenoxy)acetic acid, isopropyl ester	DA, MON.
*(2,4,5-Trichlorophenoxy)acetic acid, triethylamine salt.	CIS, DOW, HPC, RIV.
All other phenoxyacetic acid derivatives----------	TMH.
*Phenylmercury acetate (PMA)----------	BKM, CLY, GUA, MTL, TRO, WRC.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclo-pentadiene) isomers.	VEL.
N-Tolylphthalamic acid----------	USR.
Tributyl(2,4-dichlorobenzyl)phosphonium chloride--------	VC.
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)-------	DOW, HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-ethylhexyl ester.	HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid, triethenol-amine salt.	BKL.
Tris[2-(2,4-dichlorophenoxy)ethyl]phosphite (2,4-DEP)---	USR.
All other cyclic herbicides and plant hormones----------	ARA, DUP, HPC, SF.
Insect attractants:	
4-(p-Acetoxyphenyl)-2-butanone----------	TBK.
tert-Butyl 4(and 5)-chloro-2-methylcyclohexane-carboxylate.	TBK.
*Insecticides:	
Allethrin (Allyl homolog of Cinerin I)----------	BPC.
Benzyl thiocyanate----------	HK.
Chlorinated insecticides:	
*Aldrin-toxaphene group:	
Heptachloro-tetrahydro-methanoindene (Heptachlor)---	VEL.
Hexachloro-epoxy-octahydro-endo, endo-dimethano-naphthalene (Endrin).	SHC, VEL.
Hexachloro-epoxy-octahydro-endo, exo-dimethano-naphthalene (Dieldrin).	SHC.
Hexachloro-hexahydro-endo, exo-dimethanonaphthalene (Aldrin).	SHC.
Octahydro-tetrahydro-methanoindan (Chlordan)--------	VEL.
Terpene polychlorinates----------	HN.
Toxaphene (Chlorinated camphene)----------	HPC.
1,1-Bis(p-chlorophenyl)-2-nitrobutane----------	COM.
1,1-Bis(p-chlorophenyl)-2-nitropropane----------	COM.
2-(p-tert-Butylphenoxy)-1-methylethyl 2-chloroethyl sulfite.	USR.
p-Chlorophenyl p-chlorobenzenesulfonate (Ovex)--------	CIS, DOW.
p-Chlorophenyl 2,4,5-trichlorophenyl sulfone----------	FMN, FMP.
4,4'-Dichlorobenzilate----------	GGY.
1,1-Dichloro-2,2-bis(p-chlorophenyl)ethane (DDD) (TDE)	ACG, RH.
1,1-Dichloro-2,2-bis(p-ethylphenyl)ethane----------	RH.
4,4'-Dichloro-α-(trichloromethyl)benzhydrol----------	RH.
*Hexachlorocyclohexane (Benzene hexachloride)----------	DA, FRO, HK, PPG.
*Hexachlorocyclohexane, 100% γ-isomer (Lindane)--------	HK.
Hexachloro-hexahydro-methano-benzodioxathiepinoxide (Endosulfan).	HK.

TABLE 20B.--*Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC--Continued	
*Insecticides--Continued	
*Chlorinated insecticides--Continued	
*1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane (DDT)---	ACG, DA, GGY, LEB, MTO, OMC, RBC.
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor).	DUP.
All other chlorinated insecticides----------	LIL, USR.
N,N-Diethyltoluamide----------	HPC, PFZ.
Isobornyl thiocyanatoacetate----------	BKC, CIS, HPC.
1-Naphthyl methylcarbamate----------	UCC.
*Organophosphorus insecticides:	
4-tert-Butyl-2-chlorophenyl methyl methylphosphoramidate.	DOW.
2-Chloro-1-(2,4-dichlorophenyl)vinyl diethyl phosphate	SHC.
O-(3-Chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl) O,O-diethyl phosphorothioate.	CHG.
S-(p-Chlorophenylthio)methyl O,O-diethyl phosphorodithioate (Carbophenothion).	SF.
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl phosphorothioate (Diazinon).	GGY.
*O,O-Diethyl O-(p-nitrophenyl) phosphorothioate (Parathion).	ACY, AMP, MON, SHC, VIC.
O,O-Dimethyl O-[4-(methylthio)-m-tolyl] phosphorothioate.	CHG.
*O,O-Dimethyl O-(p-nitrophenyl) phosphorothioate (Methyl parathion).	AMP, MON, SHC, VIC.
O,O-Dimethyl S-(4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl) phosphorodithioate.	CHG.
O,O-Dimethyl O-(2,4,5-trichlorophenyl) phosphorothioate (Ronnel).	DOW.
p-Dioxane-2,3-diyl ethyl phosphorodithioate----------	HPC.
O-Ethyl O-(p-nitrophenyl) phenylphosphonothioate------	VIC.
α-Methylbenzyl 3-hydroxycrotonate, dimethyl phosphate ester.	SHC.
All other organophosphorus insecticides----------	SF.
Nematocides: O-2,4-Dichlorophenyl O,O-diethyl phosphorothioate.	VC.
*Rodenticides:	
3-(Acetonylbenzyl)-4-hydroxycoumarin----------	ABB, PEN.
2-Isovaleryl-1,3-indandione, calcium salt----------	MOT.
2-Pivaloyl-1,3-indandione----------	MOT, PIC.
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC	
*Fungicides:	
Bis-1,4-bromoacetoxy-2-butene----------	VIN.
Bis(trichloromethyl)sulfone----------	SF.
Cadmium succinate----------	MAL.
1-Chloro-2-nitropropane (Korax)----------	FMN.
3,3-Diacetoxypropene-1----------	SHC.
Disodium cyanodithioimidocarbonate----------	BKM.
Dithiocarbamic acid fungicides:	
*Dimethyldithiocarbamic acid, ferric salt (Ferbam)-----	DUP, FMN, RBC, WRC.
Dimethyldithiocarbamic acid, manganese salt----------	FMN.
Ethylene bis(dithiocarbamic acid), diammonium salt----	CIS, RBC.
*Ethylene bis(dithiocarbamic acid), disodium salt (Nabam).	CIS, DUP, FMN, RBC, RH.

TABLE 20B.--*Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC--Continued	
*Fungicides--Continued	
Dithiocarbamic acid fungicides--Continued	
Ethylene bis(dithiocarbamic acid), manganese salt (Maneb).	CIS, DUP, RH.
*Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)--	CIS, DUP, FMN, RH.
Polyethylenethiuram disulfide (PETD)----------	FMN.
Dodecylguanidine acetate (Dodine)----------	ACY.
Mercury fungicides:	
3-Ethyl(mercurithio)-1,2-propanediol----------	DUP.
Ethylmercury acetate----------	DUP.
Ethylmercury chloride----------	DUP.
Ethylmercury phosphate----------	DUP.
Hydroxyethylmercury acetate----------	WRC.
3-Methyl(mercurithio)-1,2-propanediol----------	DUP.
Methylmercury acetate----------	DUP.
Methylmercury hydroxide----------	MRT.
Methylmercury nitrile----------	WRC.
All other acyclic fungicides----------	MLD.
*Herbicides and plant hormones:	
Cacodylic acid----------	ASL.
2-Chloroallyl diethyldithiocarbamate (CDEC)----------	MON.
N,N-Diallyl-2-chloroacetamide (CDAA)----------	MON.
2,3-Dichloroallyl diisopropylthiocarbamate----------	MON.
2,2-Dichloropropionic acid, sodium salt----------	DOW.
Diethyl dithiobis(thionoformate)----------	RBC.
S-Ethyl dipropylthiocarbamate (EPTC)----------	SF.
Hexachloroacetone----------	ACG.
*Methanearsonic acid, disodium salt----------	ASL, CLY, VIN.
Methanearsonic acid, dodecyl- and octylammonium salts---	CLY, VIN.
Methanearsonic acid, monosodium salt----------	ASL.
Methanearsonic acid, sodium salt----------	VIN.
S-Propyl butylethylthiocarbamate----------	SF.
S,S,S-Tributyl phosphorotrithioate----------	CHG.
Tributyl phosphorotrithioite----------	VC.
Trichloroacetic acid, sodium salt (TCA)----------	DOW.
2,3,3-Trichloroallyl diisopropylthiocarbamate----------	MON.
All other acyclic herbicides and plant hormones---------	LIL, SF, UCC, USR, VIN.
*Insecticides:	
2-(2-Butoxyethoxy)ethyl thiocyanate----------	x.
Butoxypolypropylene glycol (Fly repellent)----------	UCC.
Metaldehyde----------	COM.
*Organophosphorus insecticides:	
Bis(dialkoxyphosphinothioyl) disulfides----------	FMN.
S-[1,2-Bis(ethoxycarbonyl)ethyl] O,O-dimethyl phosphorodithioate (Malathion).	ACY.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled).	SHC.
2,2-Dichlorovinyl dimethyl phosphate (DDVP)----------	SHC.
O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate-	CHG.
O,O-Diethyl O-[2-(ethylthio)ethyl] phosphorothioate---	CHG.
O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorothioate---	CHG.
O,O-Diethyl S-[(ethylthio)methyl] phosphorodithioate--	ACY.
O,O-Diethyl phosphorochloridothioate----------	MON.
Diethyl phosphorochloridothionate----------	VIC.
Dimethyl 3-hydroxycrotonate, dimethyl phosphate ester-	SHC.
O,O-Dimethyl phosphorochloridothioate----------	MON.

TABLE 20B.--*Pesticides and other organic agricultural chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC--Continued	
*Insecticides--Continued	
*Organophosphorus insecticides--Continued	
Dimethyl phosphorochloridothionate	VIC.
Ethyl methylene phosphorodithioate (Ethion)	FMN, FMP.
*Ethyl pyrophosphate (Tetraethyl pyrophosphate) (TEPP)	ALC, AMP, OTH.
S-2-(Ethylsulfinyl)ethyl O,O-dimethyl phosphorodithioate.	CHG.
Methyl 3-hydroxycrotonate, dimethyl phosphate ester	SHC.
All other organophosphorus insecticides	ACY.
2-Thiocyanatoethyl laurate	x.
*Rodenticides: Sodium fluoroacetate	RBC.
*Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium salt.	ACY.
*Soil fumigants:	
*Bromomethane (Methyl bromide)	AMP, DOW, FRO, GTL, MCH.
Chloropicrin (Trichloronitromethane)	DOW, IMC.
*1,2-Dibromo-3-chloropropane	AMP, DOW, SHC.
1,3-Dichloropropene	DOW.
1,3-Dichloropropene, 1,2-dichloropropane	DOW, SHC.
N-Methyldithiocarbamic acid, sodium salt	DUP, SF, x.

Miscellaneous Chemicals

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*

[Miscellaneous chemicals for which separate statistics are given in table 21A are marked with an asterisk (*); chemicals not so marked do not appear in table 21A because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from table 22. 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 22)
MISCELLANEOUS CHEMICALS, CYCLIC	
6-Acetoxy-2,4-dimethyl-m-dioxane	GIV.
Adenine	KF.
Adenosine derivatives	PLB, SBR.
Alkylpiperazine quaternary ammonium compounds	HOU.
2-Aminobenzothiazole	FMT.
1-(2-Aminoethyl)piperazine	JCC.
Aminopropylmorpholine	JCC.
Aryldiamines, mixed	DA.
Barium octylphenate	CCA.
Benzoic acid salts:	
Aluminum benzoate	G.
Ammonium benzoate	GAM.
Barium benzoate	CCW.
Cadmium benzoate	CCW.
Calcium benzoate	OTC.
*Sodium benzoate, tech	HN.
*Sodium benzoate, U.S.P	HK, HN, MON, TNP.
Zinc benzoate	CCW.
All other	PLB.
p-Benzoquinone (p-Quinone)	EKT.
Benzothiazole	ACY.
*Benzoyl peroxide	AZT, CAD, NOC, OXY, RCI, SDH, UPR, WTL.
Benzoylresorcinol	BKL, G.
Bibenzyl (Dibenzyl)	GIV.
Biological stains	HLC, NAC.
2,6-Bis(C5-C20 alkyl)-p-cresol	EKT.
Bis(2,4-dichlorobenzoyl) peroxide	CAD, OXY.
Bis[1-(2-methyl)aziridinyl]phenyl phosphine oxide	ICO.
1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene	ARA.
1,4-Bis[2-(5-phenyloxazolyl)] benzene	ARA.
Boron fluoride-phenol complex	ACG.
α-[2-(2-Butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide).	FMN, FMP.
*Butyl benzoate	CIN, FRO, TNP.
p-tert-Butylbenzoic acid, barium bis-salt	CCA.
(n-Butylcyclopentadienyl-cyclopentadienyl) iron	ARA.
2(and 3)-tert-Butyl-4-methoxyphenol	EKT, UPM.
p-tert-Butyl-α-methylcinnamaldehyde	GIV.
tert-Butyl peroxybenzoate	WTL.
4-tert-Butylpyrocatechol	BKL, DOW.
Camphene	GLD, HPC.
d-Camphor-β-sulfonic acid	ARA.
Catecholdisulfonic acid, disodium salt	ICO.
Cellulose acetate phthalate	x.
Centralite-1 (N,N'-Diethyl-N,N'-diphenylurea)	OTC, PAS.
Chemical indicators	EK, HLC, LAM, NAC.
Chemical reagents	ACG, EK, GFS, HLC, LAM, NAC, PIC.
Chloramine B (Sodium derivative of N-chlorobenzenesulfonamide).	NES.
Chlorinated terphenyls	KPT.
o-Chlorobenzylidenemalononitrile	GAM.
Chlorophyllin, sodium-potassium-copper	KCH.
Cobalt phthalocyaninedisulfonic acid	NAC.
Copper phthalocyaninedisulfonic acid	NAC.
Cumene hydroperoxide	HPC.
Cyanuric acid	FMB.
Cyclohexanone peroxide	NOC, UPR, WTL.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid) disubstituted, polyester salts: Barium and cadmium salts.	RCI.
1,4-Cyclohexylenedimethanol	EKT.
*Cyclopropane	MAL, OH, OMS, TAE.
Cytidine and derivatives	PLB, SBR.
Decahydronaphthalene (Decalin)	DUP.
Decyl diphenyl phosphite	HK.
2,5-Di-tert-amylhydroquinone	EKT.
1,4-Diazabicyclo[2.2.2]octane (Triethylenediamine)	HOU.
Diazodinitrophenol	HPC.
1,3-Dibromo-5,5-dimethylhydantoin	ARA.
3,5-Dibromo(and 3,4',5-tribromo)salicylanilide	FIN.
4',5-Dibromo(and 3,4',5-tribromo)salicylic acid	FIN.
2,6-Di-tert-butyl-p-cresol:	
*Food grade	CAT, EKT, HPC, KPT, SHC.
*Tech	CAT, EKT, HPC, KPT, PIT, SHC.
2,5-Di-tert-butylhydroquinone	EKT.
2,5-Di-tert-butylquinone	EKT.
Dibutyltinbis(cyclohexyl maleate)	x.
2,6-Dichlorobenzaldehyde oxime	OTC.
1,3-Dichloro-5,5-dimethylhydantoin	GLY.
Dichloro-s-triazine-2,4,6(1H,3H,5H)trione (Dichloroisocyanuric acid).	FMB, MON.
Dichloro-s-triazine-2,4,6(1H,3H,5H)trione, potassium salt	FMB, MON.
Dichloro-s-triazine-2,4,6(1H,3H,5H)trione, sodium salt	FMB.
Dicyclohexylammonium nitrite	OMC.
Dicyclopentadienylcobalt	ARA.
Dicyclopentadienyliron	ARA, TNA.
Didecyl phenyl phosphite	HK.
Digitonin	PEN.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone	G.
2,6-Dihydroxyisonicotinic acid (2,6-Dihydroxy-4-carboxypyridine).	EK.
2,2'-Dihydroxy-4-methoxybenzophenone	ACY.
2,2'-Dihydroxy-4-(octadecyloxy)benzophenone	ACY.
3,4-Dihydroxyphenylacetic acid	LIL.
3,5-Diiodosalicylic acid	MRT.
Diisopropylbenzene hydroperoxide, mixed isomers	HPC.
Diisopropyl-m,p-cresols	GIV.
Diisopropyl-m,p-cresols, mixed	GIV.
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	ASL, ICO.
2,5-Dimethyl-2,5-di(peroxyphenyl)hexane	WTL.
2,5-Dimethylhexane-2,5-di(peroxybenzoate)	UPR.
Dimethylmorpholine	DOW.
4,4-Dinitrocarbanilide-4,6-dimethyl-2-pyrimidinol	MRK.
Dioxane (1,4-Diethylene oxide)	DOW, UCC.
2,5-Diphenyl-p-benzoquinone	EKT.
Diphenyloxazole	ARA.
Diphenyl phosphite	HK.
1,3-Di-o-tolylthiourea	RBC.
4-Dodecyloxy-2-hydroxybenzophenone	EKT.
Enzymes:	
Hydrolytic:	
Amylases	BAX, CRN, OMS, PMP, RH, WBC.
Proteases	BAX, PMP, RH, WBC.
Other	RH, WBC.
Nonhydrolytic	FMO, MLS, WBC.
Other	PLB.
1,2-Epoxy-3-phenoxypropane (Glycidyl phenyl ether)	SHC.
6-Ethoxy-m-anol (Propenylmethylguaethol)	ICO.
5-Ethyl-10,10-diphenylphenylphenazasiline	MRK.
Ethylenediaminebis[o-hydroxyphenylacetic acid], monosodium ferric salt.	GGY.
Ethylglucosyl p-aminobenzoate	VND.
2-Ethylhexyl octylphenyl phosphite	VC.
2-Ethylhexyl salicylate	ICO.
2-Ethylhexyl tallate	UCC.
Ethyl hydrocaffeate	ICO.
*Ethylmorpholine	BC, JCC, UCC.
Fenchone	HNW.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Flotation reagents:	
Benzoylthiono-l-ethylpropyl carbamate (Benzamate)	DOW.
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt	ACY.
Dicresylphosphorodithioic acid, sodium salt	KCU.
2,2'-Dimethylthiocarbanilide (Di-o-tolylthiourea)	ACY, DUP.
Rosin amines	HPC.
Thiocarbanilide (Diphenylthiourea)	ACY, NAC.
Furan derivatives:	
2-Furaldehyde (Furfural)	QKO.
Tetrahydrofurfuryl alcohol	QKO.
Gallic acid, all grades	MAL.
*Gasoline additives:	
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	EKT.
2,6-Di-tert-butylphenol	TNA.
*N,N'-Di-sec-butyl-p-phenylenediamine	DUP, EKT, UPM.
N,N'-Diisopropyl-p-phenylenediamine	DUP, EKT.
Di(nonylphenol) salt of triethylenetetramine	SPP.
*N,N'-Disalicylidene-1,2-propanediamine	DUP, EKT, SOI, SPP, TNA, TX, UPM.
Methylcyclopentadienylmanganese tricarbonyl	TNA.
2,2'-Thiobis[6-tert-butyl-4-methylphenol]	CAT.
All other	EKT, UPM.
Glyceryl p-aminobenzoate	VND.
Guanosine phosphates	PLB, SBR.
Hesperidin	SKG.
Hexa(2-methylaziridinyl)-1,3,5-phosphotriazine	ICO.
*Hexamethylenetetramine, tech	BOR, DUP, HKD, HMP, HN, PLS, UCP.
Humic acids, sodium salts	NLC.
Hydrocinnamic acid	ICO.
o-(2-Hydroxy-p-anisoyl)benzoic acid	ACY.
N-(2-Hydroxyethyl)gentisamide	ICO.
2-Hydroxy-4-methoxybenzophenone	ACY.
2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate	ACY.
Hydroxymethyl-5,5-dimethylhydantoin	GLY.
2-(2'-Hydroxy-5'-methylphenyl)benzotriazole	GGY.
2-Hydroxy-4-n-octoxybenzophenone	ACY.
2-(2-Hydroxyphenyl)-4(3)-quinazolone	x.
1-Hydroxy-2-pyridine (Omadine)	OMC.
2-Imidazolidinethione (1,3-Ethylene-2-thiourea)	PAS.
Inosine and phosphates	PLB, SBR.
Isoamyl p-dimethylaminobenzoate	VND.
Isocyanuric acid	MON.
Isocyanuric acid, sodium salt (Sodium isocyanurate)	FMB.
Isopropyl-o-cresol	CP.
Isopropyl-p-cresol	GIV.
p-Isopropyl-α-methylcinnamaldehyde	GIV.
Isopropyl tallate	DEX.
Isosorbide	APD.
Ketene, dimer	EKT.
Laurylmorpholine	BC.
Lemon biflavonoid	SKG.
*Lubricating oil and grease additives:	
Chlorosulfurized and sulfurized compounds:	
Alicyclic compounds, sulfurized	G, SOI.
Heterocyclic compounds, sulfurized	ORO.
Liquid disulfide	HK.
Tall oil ester, sulfurized	LUB.
Terpenes, sulfurized	LUB.
Oil-soluble petroleum sulfonates:	
Oil-soluble petroleum sulfonate, ammonium salt	SIN.
*Oil-soluble petroleum sulfonate, barium salt	ATR, LUB, TX, WTC.
*Oil-soluble petroleum sulfonate, calcium salt	LUB, ORO, SHO, SOI, SON, WTC, x.
*Oil-soluble petroleum sulfonate, sodium salt	ENJ, MOR, NOP, PAR, SHO, SOC, SOI, SON, TX, WTC.
All other	CO.
Phenol salts:	
Barium salt of dodecylphenol	TX.
Barium salt of nonylphenol	CCA.
Calcium salt of octylphenol-formaldehyde	SHC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* -- Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Lubricating oil and grease additives--Continued	
Phenol salts--Continued	
Calcium salt of polypropylphenol	ORO.
All other phenol salts	ENJ, LUB, MON, ORO, SIN, x.
All other	ENJ, LUB, MON, ORO, SIN, SPP, TNA, TX.
p-Menthane	HPC.
8-p-Menthyl hydroperoxide	HNW, HPC.
4-Methoxyphenol	ASL, EKT, ICO.
N-Methylanthranilic acid	GIV.
2-Methylaziridine	ICO.
Methylcentralite (N,N'-Dimethylcarbanilide)	OTC.
2,2'-Methylenebis[4-chlorophenol] (Dichlorophene)	GIV.
4,4'-Methylenebis[2,6-di-tert-butylphenol]	SHC.
Methylenebis[5,5-dimethylhydantoin]	GLY.
2,2'-Methylenebis[3,4,6-trichlorophenol] (Hexachlorophene)	GIV.
2,2'-Methylenedi-p-cresol (Bis(5-methyl-2-hydroxyphenyl) methane).	GIV.
Methylglucoside	CRN.
4-Methylmorpholine	JCC, UCC.
Methylnorbornene-2,3-dicarboxylic anhydride (Methylbicyclo-(2.2.1)heptene-2,3-carboxylic anhydride).	ICO.
Methyl phenyl phosphates	TNA.
5-Methyl-5-n-propyl-m-dioxan-2-one	x.
1-Methyl-2-pyrrolidone, monomer	G.
*Morpholine	DOW, JCC, UCC.
Morpholine salt of p-toluenesulfonic acid	AMB.
*Naphthenic acid salts:	
Aluminum naphthenate	HSH, WTC.
Barium naphthenate	CCA, QCP.
Cadmium naphthenate	CCA, HSH.
*Calcium naphthenate	CCA, FER, HNX, HSH, MCI, MLD, MR, SHP, SOC, SPP, SRR, SW, TRO, WTC.
Cobalt lead manganese naphthenate	HNX, HSH.
*Cobalt naphthenate	CCA, CCC, FER, HNX, HSH, MCI, MLD, MON, MR, SHP, SOC, SPP, SRR, SW, TRO, WTC.
*Iron naphthenate	CCA, HNX, HSH, MCI, MLD, SOC, WTC.
Lead manganese naphthenate	CCA.
*Lead naphthenate	CCA, CCC, CCW, FER, HNX, HSH, MCI, MLD, MR, QCP, SHP, SOC, SPP, SRR, SW, TRO, WTC.
Lithium naphthenate	CCA.
*Manganese naphthenate	CCA, CCC, FER, HNX, HSH, MCI, MLD, SHP, SOC, SPP, SRR, SW, TRO, WTC.
Nickel naphthenate	CCA.
Rare earths naphthenate	CCA, HNX.
Sodium naphthenate	CCA.
Strontium naphthenate	CCA.
*Zinc naphthenate	CCA, CCC, FER, HNX, HSH, MCI, MLD, SHP, SOC, SRR, SW, TRO, WTC.
o-Nitrobenzoic acid and sodium salt	WAY.
5-Norbornene-2-methanol (Bicyclo[2.2.1]hept-5-ene-2-methanol) and acrylate ester.	ICO.
Octylphenyl acid phosphate	VC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Organic mercury compounds:	
Phenyl mercuric borate	WRC.
Pyridyl mercuric acetate	MAL.
Pentachloronitrobenzene	OTC.
Pentaerythrityl tetra(diphenyl phosphite)	HK.
o-Phenanthroline	COK.
Phenolthiosulfonic acid	G.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	DOW, JCC.
2-(2-Phenoxyethoxy)ethanol (Diethylene glycol phenyl ether).	DOW.
2-Phenoxy-1-propanol	ICO.
Phenyl acid phosphate	VC.
Phenyl benzoate	CIN.
2,2'-(p-Phenylene)diethanol	EKT.
Phenyltrimethylammonium chloride	BKL.
Photographic chemicals:	
N-(o-Acetamidophenethyl)-1-hydroxy-2-naphthamide	EKT.
2-(4-Amino-N-ethyl-m-toluidino)ethyl sulfate	EKT.
4-Amino-6-methylguaiacol (2-Methyl-6-methoxy-4-amino-phenol hydrochloride).	x.
3-Amino-1,2,4-triazole (5-Amino-1,3,4-triazole)	FMT.
*Benzotriazole	EK, FMT, MEE, MRT.
p-Benzylaminophenol hydrochloride	EK.
2,2',4,4'-Biphenyltetrol	FMT.
Catechol (Pyrocatechin)	KPT.
3-Chloro-4-diethylaminobenzenediazonium chloride (p-Diazo-2-chloro-N,N-diethylaniline) - zinc chloride.	FMT.
2,4-Diaminophenol dihydrochloride (Amidol)	VPC.
N-(4-Diazo-2,5-dibutoxyphenyl)morpholine	IDC.
N-(4-Diazo-2,5-diethoxyphenyl)morpholine	IDC.
4-Diazo-1-morpholine benzene	FMT.
2,5-Diethoxy-4-morphinyldiazonium chloride - zinc chloride.	G.
*p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline) - zinc chloride.	FMT, G, IDC, MRT.
p-Diethylaminobenzenediazonium (p-Diazo-N,N-diethyl-aniline) fluoroborate.	IDC.
N,N-Diethyl-p-phenylenediamine hydrochloride	EKT, FMT.
N,N-Diethyltoluene-2,5-diamine, monohydrochloride	EKT, FMT.
2,5-Dihydroxy-p-benzenedisulfonic acid, dipotassium salt	x.
2,5-Dihydroxybenzenesulfonic acid	EK.
2,7-Dihydroxy-3,6-naphthalene sulfonate	FMT.
*p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline) - zinc chloride.	FMT, G, IDC.
4-(2',6'-Dimethylmorpholinyl)benzenediazonium chloride - zinc chloride.	IDC.
p-Diphenylaminediazonium sulfate	FMT.
p-(N-Ethylbenzimido)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylaniline) - zinc chloride.	FMT, MRT.
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride (p-Diazo-N-ethyl-N-hydroxyethylaniline) - zinc chloride.	FMT, IDC.
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	IDC.
N-Ethyl-N-(β-methanesulfonamidoethyl)toluene-2,5-diamine sulfate.	EKT.
Hydroquinone (Hydroquinol)	EKT.
p-[(2-Hydroxyethyl)methylamino]benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline) - zinc chloride.	FMT, IDC.
3-Hydroxy-N-(2-hydroxyethyl)-2-naphthamide (β-Oxynaphthoicmonoethanolamide).	FMT.
N-(p-Hydroxyphenyl)glycine	IDC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Photographic chemicals--Continued	
1-(3-Hydroxyphenyl)urea	FMT.
4-Methoxy-1-naphthol	x.
p-Methylaminophenol sulfate (Metol)	EK.
5-Methylbenzotriazole	EK, FMT.
4-Morpholinylbenzenediazonium chloride - zinc chloride salt.	IDC.
4-Morpholinylbenzenediazonium fluoroborate	IDC.
6-Nitrobenzimidazole	EK, FMT.
Octylphenyl salicylate	EKT.
Phenylmercaptotetrazole	TNC.
1-Phenyl-3-pyrazolidinone	GGY, WAY.
4-Phenylpyrocatechol	x.
2-Resorcylic monoethanolamide	FMT.
4,4'-Thiodiresorcinol (Diresorcyl sulfide)	BKC.
1-(2,4,6-Trichlorophenyl)-3-(4-nitroanilino)-2-pyrazolin-5-one.	EKT.
All other	EK, EKT, FMT, G.
Phthalic acid, lead salt, dibasic	NTL.
*Pinene	CBY, GLD, HNW, HPC.
Polyethylene terephthalate	DUP.
Poly-2-hydroxy-4-methacryloxybenzophenone	DUP.
Polyvinyl phthalate	EK.
Propyl gallate	EKT, HN, HSH.
Pyrogallol (Pyrogallic acid)	MAL.
Resorcinol monobenzoate	EKT.
Ribonucleic acid and derivatives	SBR.
Rosin acid salts:	
Aluminum resinate	JMS.
Calcium resinate	JMS, SW.
Copper resinate	JMS.
Iron resinate	HSH, JMS.
Lead resinate	JMS, MCI.
Manganese resinate	JMS.
Zinc resinate	JMS, SW.
Salicylanilide	DUP, FIN, MEE.
Salicylic acid, lead salt	NTL.
Silicones	DCC.
Sodium cresoxide (Cresylic acid, sodium salt)	DEX, GOC.
Sucrose benzoate	TNP.
Sulfosalicylic acid	MCN, MRK.
Tall oil fatty acid chloride	G.
*Tall oil salts (Linoleic-rosin acid salts):	
*Calcium tallate	CCA, HNX, HSH, MCI, MLD, TRO, WTC.
*Cobalt tallate	CCA, CCC, FER, HNX, MCI, MLD, SHP, SRR, TRO, WTC.
Copper tallate	CCA, MCI, MLD, SHP, SRR.
*Iron tallate	CCA, MCA, MCI, MLD, SRR, WTC.
Lead manganese tallate	HSH, MCI.
*Lead tallate	CCA, CCC, FER, HNX, HSH, MCI, MLD, SHP, SPP, SRR, TRO, WTC.
*Manganese tallate	CCA, CCC, FER, HNX, HSH, MCI, MLD, SHP, SRR, TRO, WTC.
Zinc glyceryl tallate	CCA.
*Zinc tallate	CCA, HSH, MCI.
Tannic acid	HSH, MAL.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Tanning materials, synthetic:	
Hydroxytoluenesulfonic acid, formaldehyde condensate (Cresol-formaldehyde sulfonate), sodium salt.	GGY.
*2-Naphthalenesulfonic acid, formaldehyde condensate and salts.	AKS, GRD, NOP, NYC, RH.
*1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated).	NAC, NOP, RH.
Styrene maleic anhydride interpolymer, partial sodium salt.	DUP.
Sulfonyldiphenolsulfonic acid, formaldehyde condensate--	G.
All other--	AKS.
Tetra(n-butyl)ammonium picrate--	MED.
1,2,3,4-Tetrahydronaphthalene (Tetralin)--	DUP.
Tetrahydrothiophene--	CRO, PAS.
Tetraphenyltin--	x.
*Textile chemicals, other than surface-active agents:	
1,3-Bis(hydroxymethyl)-2-imidazolidone (Dimethylol ethylene urea).	ACY, AKS, x.
N',N'-Diphenyl-1,2-propanediamine--	SNW.
1-[(Octadecyloxy)methyl]pyridinium chloride--	DUP.
Phenol, sulfurated--	G.
Tetrahydro-3,5-bis(methoxymethyl)-4H-1,3,5-oxadiazin-4-one.	DEX.
2,2',4,4'-Tetrahydroxybenzophenone--	G.
2-Thenoyltrifluoroacetone--	CLB.
2,2'-Thiobis[4-chlorophenol]--	GIV.
2,2'-Thiobis[4,6-dichlorophenol]--	MON, SDH.
[2,2'-Thiobis(4-octylphenolate)]-n-butylamine nickel--	ACY.
Thymidine and phosphates--	SBR.
o-Toluidine-formaldehyde hydrochloride--	RBC.
o-Tolylbiguanide--	MON.
3,4',5-Tribromosalicylanilide--	FIN.
3,4,4'-Trichlorocarbanilide--	MON.
Trichloromelamine--	WTH.
1,3,5-Trichloro-s-triazine-2,4,6(1H,3H,5H)trione (Trichloroisocyanuric acid).	FMB, MON.
Tri-(m,p)-cresyl borate--	USB.
Triethanolamine salicylate--	ICO.
s-Trioxane--	CEL.
Triphenyl phosphite--	HK, MON.
Triphenylphosphorus--	x.
Triphenyltin hydroxide--	x.
Tris(1-aziridinyl)phosphine oxide--	CEM.
2,4,6-Tris(2-hydroxy-4-octyloxyphenyl)-s-triazine--	x.
Tris[1-(2-methylaziridinyl)]phosphine oxide--	ICO.
Tris(2-methylaziridinyl)-1,3,5-triazine--	ICO.
Uridine and derivatives--	PLB, SBR.
1-Vinyl-2-pyrrolidinone, monomer and polymer--	G.
1-Vinyl-2-pyrrolidinone - vinyl acetate copolymer--	G.
MISCELLANEOUS CHEMICALS, ACYCLIC	
Acetacetamidoacetamide--	RBC.
*Acetaldehyde--	BFG, CEL, COM, DUP, EKT, HPC, MON, PUB, SHC, UCC.
Acetamide--	ACG.
Acetamidine hydrochloride--	MRK.
2-Acetamidoethanol (N-Acetylethanolamine)--	RBC.
*Acetic acid, synthetic, 100%--	CEL, EKT, HPC, PUB, UCC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Acetic acid salts:	
Aluminum acetate	ACY, UCC.
Aluminum subacetate	MAL.
Ammonium acetate	ACG, BKC, MAL, WSN.
Barium acetate	ACG, BKC, MAL.
Cadmium acetate	HSH, MAL.
Calcium acetate	ACG, BKC, MAL, WSN.
Chromium acetate	ACY.
Cobalt acetate	BKC, HSH, SHP.
*Copper acetate	ACG, BKC, UCC.
Lead acetate	ACG, BKC, MAL, SRR, SW.
Lead subacetate	ACG, BKC, MAL.
Lead tetraacetate	ARA.
Magnesium acetate	ACG, BKC.
Manganese acetate	HSH, SHP.
Mercuric acetate	BKC, MAL.
Methylmercury acetate	DUP.
Nickel acetate	BKC, HSH, SHP.
*Potassium acetate	ACG, BKC, CWL, MAL, UCC, WSN.
Silver acetate	MAL.
*Sodium acetate	ACG, BKC, CEL, DAN, EKT, MAL, UCC.
Sodium diacetate	UCC, WSN.
Strontium acetate	BKC.
Uranyl acetate	BKC.
*Zinc acetate	ACG, BKC, HSH, MAL, SNW, UCC.
Zirconium acetate	NTL, SNW.
*Acetic anhydride, 100%:	
From acetaldehyde	HPC.
From acetic acid, other than recovered, by the vapor-phase process.	CEL, EKT.
From acetic acid, recovered, by the vapor-phase process	CEL.
From ethylene	UCC.
Acetin:	
Mono	KES.
Tri	EKT, WM.
*Acetone:	
From cumene	ACP, CLK, HPC, MON, SHC, SKO, SOC.
*From isopropyl alcohol	EKT, ENJ, SHC, UCC.
All other	CEL, HPC.
Acetone, dimethyl acetal (2,2-Dimethoxypropanone)	DOW.
Acetone semicarbazone	NOR.
Acetonitrile	EKX, UCC.
Acetyl chloride	TBK.
Acetyl peroxide	WTL.
Aconitic acid	PCW.
Acrolein (Acrylaldehyde)	SHC, UCC.
*Acrylic acid	BFG, CEL, DBC, MMM, RH, UCC.
Acrylic monomers	RH.
*Acrylonitrile	ACY, BFG, DUP, MON, SOH, UCC.
*Adipic acid	DUP, MON, NAC, RH.
Adiponitrile	DUP, MON.
Adipoyl chloride	TBK.
*Alcohols, monohydric, unsubstituted:	
*Alcohols C_9 or lower:	
Allyl alcohol	DOW, SHC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Alcohols, monohydric, unsubstituted--Continued	
*Alcohols C_9 or lower--Continued	
*Amyl alcohols:	
Unmixed:	
2-Methyl-2-butanol (tert-Amyl alcohol)	PAS, UCC.
1-Pentanol	PAS, UCC.
2-Pentanol	UCC.
3-Pentanol	EK.
Mixed:	
Fusel oil, refined	PUB.
Other than fusel oil:	
Primary mixed	PAS.
Secondary mixed	PAS.
Other	CEL, PAS, UCC.
*Butyl alcohols:	
Primary:	
Iso (Isopropylcarbinol)	CEL, DBC, EKX, ENJ, SHC, UCC.
*Normal (n-Propylcarbinol)	CEL, CO, DBC, EKX, ENJ, SHC, UCC.
Secondary (Methylethylcarbinol)	ENJ, SHC.
Tertiary (Trimethylcarbinol)	SHC.
Mixed	CEL, DBC, EKX.
*Ethyl alcohol, synthetic	DUP, EKX, ENJ, HPC, PSP, SHC, UCC, USI.
2-Ethyl-1-butanol (sec-Hexyl alcohol)	UCC.
2-Ethyl-1-hexanol	CEL, EKX, ENJ, SHC, UCC.
2-Ethyl-4-methyl-1-pentanol	EKX.
4-Ethyl-1-octyn-3-ol	AIR.
*Hexyl alcohol	EKX, ENJ, UCC.
1-Hexyn-3-ol	AIR.
*Iso-octyl alcohols	EKX, ENJ, GOC, HOU, OXO, SOI, TID, UCC.
*Isopropyl alcohol	ENJ, SHC, UCC.
*Methanol, synthetic	ACN, BCR, CEL, COM, DUP, ESC, GYR, HPC, MON, RH, SPN, UCC.
2-Methyl-3-buten-2-ol	AIR.
2-Methyl-3-butyn-2-ol	AIR.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	ENJ, SHC, UCC.
3-Methyl-1-pentyn-3-ol (Methylparafynol)	AIR.
1-Octanol	DUP.
2-Octanol	PG, RH, WTH.
Pinacolyl alcohol (3,3-Dimethyl-2-butanol)	KF.
Propyl alcohol (Propanol)	CEL, UCC.
2-Propyn-1-ol	G.
All other	CEL, EKX.
*Alcohols C_{10} or higher:	
*Decyl alcohols	DUP, ENJ, GOC, HOU, PG, TID, UCC.
3,9-Diethyl-6-tridecanol	UCC.
*Dodecyl alcohol (Lauryl alcohol) (95%)	DUP, PG, RH.
7-Ethyl-2-methyl-4-hendecanol	UCC.
*1-Hexadecanol (Cetyl alcohol) (95%)	ADM, DUP, ENJ, GIV, RH.
*1-Octadecanol (Stearyl alcohol) (95%)	ADM, DUP, PG, RH.
cis-9-Octadecen-1-ol (Oleyl alcohol)	ADM, DUP.
Tallow alcohol	ADM.
1-Tridecanol	ENJ, GOC.
2,6,8-Trimethyl-4-nonanol	UCC.
All other	CO, PG, RH.
Aldol (Acetaldol)	UCC.
Alkyl and alkylene hydrocarbons	ADM, GOC, HMY.
Alkyl mercaptoacetic acid	ENJ.
Alkyl sulfides, mixed	ORO.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
1-Allyl-3-(2-hydroxyethyl)-2-thiourea (N-β-Hydroxyethyl-N'-allylthiourea).	FMT, IDC.
Allyl isocyanate	CTN.
Allyl isothiocyanate, nonflavoring grade	ICO.
Allyl methacrylate	SAR.
Allyl nitrile (Allyl cyanide)	KF, RBC.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)	DOW, SHC.
3-(Allyloxy)-1,2-propanediol (Allyl glyceryl ether)	SHC.
2-Allyl-4-pentenoic acid (Diallylacetic acid)	x.
Allylpseudoionone	GIV.
Aluminum isopropoxide (Aluminum isopropylate)	CHT.
Amidinourea (Guanylurea) phosphate and sulfate	ACY.
*Amines:	
Butylamine	EKT, PAS, UCC.
tert-Butylamine	MON, RH.
Butylethylamine	PAS, UCC.
Butylmethylamine	PAS.
Cetyl dimethylamine	BC.
*Coconut oil amine	ADM, ARC, CGL, FOR, GNM.
Cottonseed oil amines	FOR.
Diallylamine	SHC.
Dibutylamine	PAS, UCC.
*Diethylamine	DUP, PAS, UCC.
Diethylamine hydrochloride	x.
2,2'-Diethyldihexylamine	VGC.
Diethylenetriamine	DOW, UCC.
N,N-Diethylethylenediamine	COK.
N^1,N^2-Diethyl-1,4-pentanediamine (Novoldiamine)	SDH.
N,N-Diethyl-1,3-propanediamine	UCC.
Diisobutylamine	PAS.
Diisopropylamine	PAS, UCC.
Dilaurylamine	GNM.
*Dimethylamine	COM, DUP, PAS, RH.
Dimethylamine hydrochloride	ICO, TNC.
Dimethylamine sulfate	RH.
Dimethylmyrystylamine	BC.
N,N-Dimethyloctadecylamine (Stearyldimethylamine)	ARC.
N,N-Dimethyl-1,3-propanediamine	JCC, UCC.
Dipentylamine (Diamylamine)	PAS.
Dipropylamine	PAS, UCC.
Dipropylenetriamine	UCC.
Dodecylamine	ARC, FOR, GNM.
Ethylamine	ESC, PAS, UCC.
Ethylenediamine	DOW, JCC, UCC.
Ethylenediamine dihydrochloride	BKC.
Ethylenediamine sulfate	EK.
Hexadecylamine	ADM, ARC.
1,6-Hexanediamine (Hexamethylenediamine)	DUP, MON.
3,3'-Iminobispropylamine	JCC, UCC.
Isobutylamine	PAS.
*Isopropylamine	ESC, PAS, UCC, VGC.
Lauryl dimethylamine	BC.
Methylamine hydrochloride	RBC.
*Methylamine, mono-	COM, DUP, ESC, PAS, RH.
Methyltriethylenediamine	JCC.
*Octadecylamine	ADM, ARC, CGL, FOR, GNM.
Octylamine	ADM, ARC, RH, UCC.
*Oleylamine	ARC, CGL, FOR, GNM.
Pentylamine (Monoamylamine)	ALB, EK, PAS.
Primary alkylamines, mixed	RH.
1,2-Propanediamine (Propylenediamine)	UCC.
1,3-Propanediamine	UCC.
Propylamine	PAS, UCC.
Soybean oil amine	ARC, CGL.
Tall oil amine	CGL, GNM.
*Tallow amine	ADM, ARC, CGL, FOR, GNM.
Tallow amine, dihydrogenated	ARC, FOR.
*Tallow amine, hydrogenated	ADM, ARC, CGL, FOR, GNM, HUM.

TABLE 21B. -- *Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964* -- Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Amines--Continued	
Tallow methylamines, dihydrogenated	ARC, FOR.
Tetraethylenepentamine	DOW, UCC.
N,N,N',N'-Tetramethyl-1,3-butanediamine	UCC.
Tetramethylethylenediamine	RH.
Tributylamine	PAS.
Tricaprylylamine	GNM.
Tridodecylamine	GNM.
Triethylamine	PAS, UCC.
Triethylenetetramine	CCW, DOW, UCC.
Trimethylamine	COM, DUP, PAS, RH.
Tripentylamine	PAS.
All other	ALB, ARC, BRD, CGL, DUP, GNM, ONX, RH, SDH.
2-Amino-1-butanol	COM.
1-Aminoethanol (Acetaldehyde ammonia)	PAS.
Aminoethoxyethanol	JCC.
Aminoethoxypropylsilane	UCS.
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	DOW, UCC.
2-Amino-2-ethyl-1,3-propanediol	COM.
2-Aminoethyl vinyl ether	MEE.
Aminoguanidine bicarbonate	TRJ.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris(hydroxymethyl)aminomethane).	COM.
2-Amino-2-methyl-1,3-propanediol	COM.
2-Amino-2-methyl-1-propanol	COM.
2-Amino-2-methyl-1-propanol hydrochloride	SNW.
*Amyl acetates, 90%:	
Amyl acetate (n-Pentyl acetate)	PUB, TBK.
Isopentyl acetate (Isoamyl acetate)	FB, NW.
Mixed	CEL, PAS, UCC.
Azelaic acid	EMR.
1,1'-Azobisformamide (Azodicarbonamide)	FMT, NPI, USR.
2,2'-Azobis[2-methylpropionitrile] (α,α'-Azodiisobutyronitrile).	DUP.
Behenamide (Docosanamide)	HUM.
Behenic acid	ADM.
Bis[2-(2-butoxyethoxy)ethyl] ether (Tetraethylene glycol dibutyl ether).	RBC.
Bis(2-butoxyethyl) ether (Diethylene glycol di-n-butyl ether).	DOW, UCC.
Bis(2-chloroethoxy)methane (Dichloroethylformal)	TKL.
*Bis(2-chloroethyl) ether (Dichlorodiethyl ether)	DOW, JCC, OMC, UCC, WYN.
Bis(2-chloro-1-methylethyl) ether (Dichloroisopropyl ether).	DOW, WYN.
Bis(2,6-dimethyl-4-heptyl) maleate	G.
Bis(2-ethoxyethyl) ether (Diethylene glycol diethyl ether).	UCC.
Bis(hydroxyethyl) ether butynediol	G.
1,3-Bis(hydroxymethyl)urea (Dimethylolurea)	DEX, GLY, x.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether).	ASL.
Bis(2-methoxyethyl) ether (Diethylene glycol dimethyl ether).	ASL.
Bis(perfluoroalkyl) phosphate diethanolamine salt	DUP.
Bis(tributyltin) oxide	x.
Biuret	SW.
Boron organic compounds:	
Boron alcoholate	SFA.
Boron fluoride ethyl ether complex	ACG.
Boron trifluoride monoethylamine complex	ACG.
Triethylborane	CAL, TNA.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Boron organic compounds--Continued	
Triethyl borate	USB.
Trimethoxyboroxine	CAL.
All other	CAL, USB.
N-Bromoacetamide	ARA.
2-Bromo-N,N-dimethylethylamine (Dimethylaminoethyl bromide) hydrobromide.	BKL.
N-Bromosuccinimide (Succinibromimide)	ARA.
1,2(and 1,3)-Butanediol (Butylene glycol)	CEL.
1,4-Butanediol	G.
2,3-Butanedione 2-oxime	EK.
1,2,4-Butanetriol	G.
*2-Butanone (Methyl ethyl ketone)	ENJ, SHC, SPI, UCC.
Butanone mixture	CEL.
*2-Butanone oxime	ALB, CCA, MLD, NAC, TRO.
*2-Butanone peroxide	CAD, NOC, RCI, UPR, WTL.
2-Butene-1,4-diol	G.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	DOW, SHC.
2-Butoxyethanol (Ethylene glycol monobutyl ether)	JCC, QMC, UCC.
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether).	JCC, QMC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether).	DOW, QMC.
2-(2-Butoxyethoxy)ethyl acetate	UCC.
1-Butoxyethoxy-2-propanol	UCC.
2-Butoxyethyl acetate	UCC.
*Butyl acetates:	
Iso	CEL, EKT, ENJ, PAS, UCC.
*Normal	CEL, EKT, ENJ, PUB, UCC.
Secondary	ENJ, HPC, PUB, SHC.
Tertiary	ENJ.
Mixed	CEL.
Butyl acrylate	CEL, DBC, UCC.
Butylene oxide	DOW, UCC.
Butyl ether (Di-n-butyl ether)	UCC.
Butylethylthiouren	PAS.
*tert-Butyl hydroperoxide	AZT, CAD, UPR, WTL.
2,2'-(Butylimino)diethanol (N,N-Bis(2-hydroxyethyl)butylamine).	PAS.
Butyl lactate	COM, CWN, UPC.
n-Butyllithium	FTE.
Butyl maleate, mono-	RUB.
*tert-Butyl peroxide (Di-tert-butyl peroxide)	AZT, CAD, RCI, SHC, UPR, WTL.
tert-Butyl peroxyacetate	WTL.
tert-Butyl peroxyisobutyrate	WTL.
tert-Butyl peroxypivalate	WTL.
Butyl vinyl ether	UCC.
1-Butyne (Ethylacetylene)	AIR.
2-Butyne-1,4-diol	G.
Butyraldehyde	CEL, EKX, UCC.
Butyraldehyde oxime	NAC.
*Butyric acid	CEL, EKT, UCC.
Butyric anhydride	EKT, UCC.
Butyrolactone	G.
Butyronitrile	EKX, UCC.
Butyryl chloride	HK.
*Caprolactam (Hexahydro-2H-azepin-2-one)	DBC, DUP, NAC.
Caprolactone	UCC.
*Carbon disulfide	ACG, BKT, FMB, OLH, PAS, PPG, SF.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Cellulose esters:	
Cellulose acetate butyrate	EKT.
Cellulose acetate propionate	EKT.
Nitrocellulose (Cellulose nitrate)	DUP, HPC.
*Cellulose ethers:	
Ethylcellulose	DOW, HPC.
Ethylhydroxyethylcellulose	HPC.
Hydroxyethylcellulose	HPC, UCC.
Methylcellulose	DOW.
*Sodium carboxymethylcellulose, 100%	BUK, DUP, HPC, KON, WYN.
Sodium carboxymethylhydroxyethylcellulose	HPC.
Cetyl chloride	BC.
Cetyl lactate	VND.
*Chloral (Trichloroacetaldehyde)	DA, FMB, GGY, MTO.
Chloroacetamide	BPC, DOW.
*Chloroacetic acid, mono-	BUK, DOW, HPC, MON.
Chloroacetic acid, mono-, derivatives:	
Butyl chloroacetate	MON.
*Ethyl chloroacetate	DOW, KF, MON.
Methyl chloroacetate	BPC, DOW, KF.
Sodium chloroacetate	DOW.
Chloroacetonitrile	BPC.
Chloroacetyl chloride	DOW, DUP.
Chlorocholine chloride	ACY.
2-Chloro-1,1-dimethoxyethane (Dimethyl chloroacetal)	LIL.
*2-Chloro-N,N-dimethylethylamine (Dimethylaminoethyl chloride) hydrochloride.	ABB, GAM, HEX, MCH, NES, PAS.
2-Chloro-N,N-dimethylpropylamine	SK.
2-Chloro-N,N-dimethylpropylamine hydrochloride	NES.
3-Chloro-N,N-dimethylpropylamine hydrochloride	MCH.
Chlorodimethylvinylsilane	DCC.
2-Chloroethanol (Ethylene chlorohydrin)	OMC, UCC.
2-(2-Chloroethoxy)ethyl 2-chloroethyl ether (Triethylene glycol dichloride).	UCC.
2-Chloroethylamine	ICI.
2-Chloroethyl vinyl ether	UCC.
4-Chloro-3-hydroxybutyronitrile	x.
Chloromaleic anhydride	RBC.
β-Chloro-N-methylallylamine	LIL.
Chloromethyl methyl ether	HK, x.
1-Chloro-1-penten-3-one (β-Chlorovinyl ethyl ketone)	ABB.
3-Chloro-1,2-propanediol (Glycerol α-chlorohydrin)	BKL, ICO, OTC.
1-Chloro-2-propanone (Chloroacetone)	EK, MRK.
N-Chlorosuccinimide (Succinichlorimide)	NAC.
*2-Chlorotriethylamine hydrochloride	HEX, MCH, NES, PAS, x.
Chlorotrimethylsilane	DCC, UCS.
Citric acid	MLS, PFZ.
Citric acid salts:	
Ammonium citrate	MAL, PFZ.
Barium citrate	SW.
Calcium citrate	PFZ.
Ferric ammonium citrate	MAL, PFZ.
Ferric citrate	MAL.
Ferrous calcium citrate	x.
Potassium citrate	MLS, PFZ.
Sodium citrate	MLS, PFZ.
All other	MLS.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Coconitrile	FOR.
Coconut oil amide	ARC, CRT, KES, PG.
Cottonseed oil acids, ammonium salt	GLY.
Cottonseed oil nitrile	FOR.
Creatine and creatinine	PFN.
Crotonaldehyde	CEL, EKT, UCC.
Crotonic acid (2-Butenoic acid)	EKT.
Crotononitrile	KF.
2-Cyanoacetamide	KF.
Cyanoacethydrazide	KF.
Cyanoacetic acid	KF.
Cyanogen bromide	EK.
3-Cyanopropylamine	EKT.
1,10-Decanediol	NEP.
Decanoyl chloride	TBK.
*Decanoyl peroxide	CAD, UPR, WTL.
Dialdehyde starch	MLS.
Diallylcyanamide	ACY.
1,2-Dibutoxyethane (Ethylene glycol di-n-butyl ether)	DOW.
2-Dibutylaminoethanol	AAC, PAS.
*Dibutyl fumarate	MON, PCC, PFZ, RCI, RUB.
*Dibutyl maleate	AIR, DUP, MON, PCC, RCI, RUB.
1,3-Dibutyl-2-thiourea	PAS, RBC.
Dibutyltin compounds:	
Dibutylmethoxytin (Dibutyltin methoxide)	CCA.
Dibutyltin bis(lauryl mercaptide)	x.
Dibutyltin dichloride	CCW, x.
Dibutyltin dilaurate	CCA, x.
Dibutyltin maleate	CCA, GRH, x.
Dibutyltin mercaptopropionate	CCA, x.
Dibutyltin oxide	x.
All other	x.
Dichloroacetaldehyde	FMB.
Dichloroacetic acid	KF.
2,2-Dichloro-1,1-difluorcethyl methyl ether	DOW.
Dichlorodimethylsilane	DCC, UCS.
Dichlorohydrogenmethylsilane	UCS.
Dichloromethylsilane	DCC.
Dichloromethylvinylsilane	DCC.
1,3-Dichloro-2-propanol	EK.
2,3-Dichloro-1-propanol	UCC.
Dicyanobutene	x.
Diethoxydimethylsilane	UCS.
Diethyl acetylsuccinate	BPC.
Diethyl allyl(1-methylbutyl)malonate	BPC.
Diethylaluminum chloride	TNA, TSA.
Diethylaluminum iodide	TSA.
*2-Diethylaminoethanol	AAC, PAS, UCC.
2-(2-Diethylaminoethoxy)ethanol	PAS.
2-Diethylaminoethyl methacrylate	DUP.
Diethylaminopropionamide	x.
Diethyl sec-butylethylmalonate	ABB.
Diethyl butylmalonate	BPC.
Diethyl sec-butylmalonate	ABB.
Diethylcarbamoyl chloride	GAM.
Diethyl carbonate (Ethyl carbonate)	CTN, FMP.
Diethyl diethylmalonate (Diethyl malonic ester)	BPC, LIL.
*Diethylene glycol	ACN, CAU, DOW, G, HCH, JCC, OMC, UCC, WYN.
Diethylene glycol, borated	GLY.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Diethylene glycol chloroformate	PPG.
Diethyl (ethoxymethylene)malonate	KF.
Diethyl ethylisopentylmalonate	LIL.
Diethyl ethylmalonate (Ethyl malonic ester)	LIL.
Diethyl ethyl(1-methylbutyl)malonate	ABB, BPC.
Diethyl ethyl(1-methylpropyl)malonate	BPC.
Di-2-ethyl-1-hexyl fumarate	RUB.
Di-2-ethyl-1-hexyl maleate	CIN, RUB.
N,N-Diethylhydroxylamine sulfate	EK.
Diethyl maleate	ACY, ICO, UCC.
*Diethyl malonate (Malonic ester)	ABB, KF, LIL.
Diethyl (1-methylbutyl)malonate	ABB, BPC, LIL.
Diethyl (3-methylbutyl)malonate	BPC.
Diethyl methylmalonate	BPC.
Diethyl (1-methylpropyl)malonate	BPC.
Diethyl oxalate (Ethyl oxalate)	FMP.
Diethyl succinate	ICO.
Diethylthiophosphoryl chloride	ACY.
1,3-Diethyl-2-thiourea	PAS, RBC.
Diethylzinc	TNA.
Diglycolic acid	DUP.
Dihexyl fumarate	FB.
Dihydropseudoionone	GIV.
1,3-Dihydroxy-2-propanone (Dihydroxy acetone)	BAX, PFZ.
Diisobutylaluminum	TSA.
Diisobutylaluminum chloride	TSA.
Diisononyl maleate	RUB.
Diisopropyl adipate	VND.
2-Diisopropylaminoethanol (N,N-Diisopropylethanolamine)	PAS, UCC.
Diisopropylammonium nitrite	CMC.
Diisopropylcarbodiimide	G.
O,O-Diisopropyl dithiobis(thioformate)	DUP.
Diisopropyl peroxydicarbonate (Isopropyl percarbonate)	PPG.
1,3-Diisopropyl-2-thiourea	G, PAS.
*Dilauryl 3,3'-thiodipropionate (Didodecyl thiodipropionate).	ACY, CCW, EVN, HAB.
Dimethoxyethane (Ethylene glycol dimethyl ether)	ASL, CMC.
N,N-Dimethylacetamide	DUP.
N,N-Dimethylacetoacetamide	EKT.
*2-Dimethylaminoethanol	AAC, PAS, RH, UCC.
Dimethylamino-2-propanol	CCM, PAS.
3-Dimethylaminopropionitrile	ACY.
N-(3-Dimethylaminopropyl)oleamide	DUP.
Dimethylcarbamoyl chloride	GAM, OTC.
Dimethyl carbonate	FMP.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	WTL.
N,N-Dimethylformamide	DUP.
Dimethylglyoxime	EK.
2,6-Dimethyl-4-heptanol (Diisobutylcarbinol)	UCC.
2,5-Dimethyl-2,5-hexanediol	AIR.
2,5-Dimethyl-3-hexyne-2,5-diol	AIR.
1,1-Dimethylhydrazine	FMP.
Dimethyl malonate	KF.
2,3-Dimethylpentaldehyde	UCC.
Di(4-methyl-2-pentyl) maleate	RUB.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	EKX.
Dimethyltin dichloride	x.
1,3-Dimethylurea	PAS.
Dioctanoyl peroxide (Caprylyl peroxide)	x.
Dioctyl fumarate	MON.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Dioctyl maleate	CRT, MON, PCC, RUB.
1,3-Dioctyl-2-thiourea	PAS.
*Dipropylene glycol	CEL, DOW, JCC, OMC, UCC.
Distearyl 3,3'-thiodipropionate	CCW.
Dithiooxamide	MAL.
Ditridecyl maleate	RUB.
n-Dodecane	HMY.
*Dodecenylsuccinic anhydride	HMY, MON, NAC.
n-Eicosane	HMY.
*Epichlorohydrin	DOW, SHC, UCC.
*Erucamide	ADM, FIN, HUM.
Erucic acid	ADM.
Ethanedithiol	RBC.
*Ethanolamines:	
*2-Aminoethanol (Monoethanolamine)	ACN, DOW, JCC, UCC.
*2,2'-Iminodiethanol (Diethanolamine)	ACN, DOW, JCC, UCC.
*2,2',2''-Nitrilotriethanol (Triethanolamine)	ACN, DOW, JCC, UCC.
Ethanolamine hydrochloride	WSN.
Ethanolamine sulfite	EVN, SUM.
*2-Ethoxyethanol (Ethylene glycol monoethyl ether)	DOW, JCC, OMC, UCC.
*2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether).	DOW, OMC, UCC.
*2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether).	DOW, OMC, UCC.
2-(2-Ethoxyethoxy)ethyl acetate	UCC.
2-Ethoxyethyl acetate	EKT, UCC.
Ethoxymethylene malononitrile	KF.
3-Ethoxypropionitrile	ACY.
1-Ethoxy-1,3,3-trimethoxypropane	KF.
*Ethyl acetate, 85%	CEL, EKT, ENJ, HPC, PUB, SRC, UCC.
*Ethyl acetoacetate	EKT, FMP, UCC.
*Ethyl acrylate	CEL, DBC, RH, UCC.
Ethylaluminum dichloride	TNA, TSA.
Ethylaluminum sesquichloride	TNA, TSA.
2-Ethylaminoethanol (Ethylmonoethanolamine)	PAS.
2-Ethylbutyraldehyde	UCC.
2-Ethylbutyric acid (Diethylacetic acid)	UCC.
Ethyl carbamate	BKL, FMP.
Ethyl carbethoxyacetimidate	KF.
Ethyl carbodiimide	OTC.
Ethyl 4-chlorobutyrate	ABB.
Ethyl chloroformate	FMP.
Ethyl 3-(chloroformyl)propionate (β-Carbethoxypropionyl chloride).	ABB.
Ethyl cyanoacetate	KF.
Ethylene, from ethyl alcohol	OH.
Ethylene carbonate	DOW, JCC.
*Ethylene glycol	ACN, APD, CAU, CEL, DOW, DUP, G, GOC, HCH, JCC, OMC, UCC, WYN.
Ethylene glycol diacetate	UCC.
Ethylene glycol dimercaptoacetate	EVN.
Ethylene glycol dimethacrylate	SAR.
*Ethylene oxide	ACN, CAU, DOW, G, HCH, JCC, OMC, SNO, UCC, WYN.
*Ethyl ether:	
Absolute	MAL.
Tech	ENJ, HPC, UCC, USI.
U.S.P	MAL, OMS.
*Ethyl formate	COM, FB, TBK, UCC.
2-Ethylhexanal (α-Ethylcaproaldehyde)	EKX, UCC.
2-Ethyl-1,3-hexanediol	UCC.
2-Ethylhexanoic acid (α-Ethylcaproic acid)	EKT, UCC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964--Continued*

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*2-Ethylhexanoic acid (α-Ethylcaproic acid) salts:	
Aluminum 2-ethylhexanoate	WTC.
Barium 2-ethylhexanoate	CCA.
Cadmium 2-ethylhexanoate	CCA.
*Calcium 2-ethylhexanoate	CCA, FER, HNX, HSH, MCI, MLD, SRR, SW, WTC.
*Cobalt 2-ethylhexanoate	CCA, FER, HNX, HSH, MCI, MLD, SHP, SRR, SW, WTC.
Copper 2-ethylhexanoate	CCA, SRR.
Dibutyltin di-2-ethylhexanoate	x.
Iron 2-ethylhexanoate	CCA.
*Lead 2-ethylhexanoate	CCA, HNX, HSH, MCI, MLD, NTL, SHP, SRR, SW, WTC.
*Manganese 2-ethylhexanoate	CCA, HNX, MCI, MLD, SHP, SRR.
Nickel 2-ethylhexanoate	MCI.
Potassium 2-ethylhexanoate	CCA.
Rare earths 2-ethylhexanoate	CCA.
Stannous 2-ethylhexanoate	WTC, x.
Strontium 2-ethylhexanoate	CCA.
*Zinc 2-ethylhexanoate	CCA, HNX, HSH, MCI, SRR, WTC, x.
Zirconium 2-ethylhexanoate	CCA, HNX, WTC.
All other	SW.
2-Ethyl-1-hexyl acetate	CEL, EKT, UCC.
*2-Ethyl-1-hexyl acrylate	CEL, DBC, RH, UCC.
2-Ethylhexyl cyanoacetate	KF.
2-Ethylhexyl methacrylate	DUP.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane).	CEL.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol allyl ethers	CEL.
Ethylidine diacetate	CEL.
Ethyl isocyanate	OTC.
2-(Ethylmercapto)ethanol	PAS.
Ethylmercuric chloride	LIL.
Ethyl 2-methyllactate (Ethyl α-hydroxyisobutyrate)	RH.
Ethyl (1-methyl-2-pentynyl)cyanoacetate	LIL.
*Ethyl propionate	FB, NW, TBK.
*Ethyl silicate (Tetraethoxysilane)	MTR, SFA, UCC.
Ethyl sulfate (Diethyl sulfate)	UCC.
N-Ethylurea	MED.
Ethyl vinyl ether	UCC.
Fats and oils, chemically modified:	
Lard oil, nitrated	SPP.
Vegetable oils, brominated	DOM, RT.
Other	CHL.
Fatty acids, chemically modified:	
α-Bromo(lauric-stearic) acids	DUP.
Castor oil fatty acids, dehydrated	BAC.
All other	ABB, RH, RT.
Fatty acid esters, not included with plasticizers or surface-active agents:	
Decyl oleate	VND.
Ethyl stearate	ICO.
Isopropyl linoleate	VND.
Isopropyl palmyristate	PCS.
Methyl esters of tallow	BFR, CHL.
All other	ADM, EMR, ENJ, PG, RT, x.
Fish oil fatty acid amide	ADM.
Flotation reagents:	
Isopropyl ethylthionocarbamate	DOW.
Phosphorodithioates (Dithiophosphates):	
Potassium dihexyl phosphorodithioate	ACY.
Sodium di-sec-butyl diethyl phosphorodithioate	ACY.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Flotation reagents--Continued	
Phosphorodithioates (Dithiophosphates)--Continued	
Sodium di-sec-butyl phosphorodithioate	ACY.
Sodium diethyl phosphorodithioate	ACY.
Sodium dihexyl phosphorodithioate	ACY.
Sodium diisopropyl phosphorodithioate	ACY.
Other	ACY.
Xanthates:	
Potassium n-butylxanthate	USR.
Potassium ethylxanthate	ACY, DOW.
Potassium hexylxanthate	DOW.
Potassium isopropylxanthate	DOW.
Potassium pentylxanthates	ACY, DOW.
Potassium sec-pentylxanthate	DOW.
Sodium n-butylxanthate	KCC, USR.
Sodium sec-butylxanthate	ACY, DOW.
Sodium ethylxanthate	ACY, DOW.
Sodium isobutylxanthate	DOW.
Sodium isopropylxanthate	ACY, DOW.
All other	ACY.
*Formaldehyde, 37% by weight	ACN, BOR, CBC, CEL, COM, DUP, HKD, HN, HPC, MON, RCI, RH, SPN, TRJ, UCP.
Formamide	DUP.
*Formic acid, 90%	DUP, HN, VIC.
*Formic acid salts:	
Aluminum formate	SNW, UCC, VIC.
Ammonium formate	ACG, WSN.
Calcium formate	TRJ.
Chromic formate	G.
Copper formate	CTN.
Lead formate	NTL.
Nickel formate	HSH.
Potassium formate	TNC.
Sodium formate, refined	ACG, BKC.
Sodium formate, tech	DCI, HN, HPC.
Thallous formate	EK.
Fumarate polymer	ENJ.
*Fumaric acid	HN, MON, NAC, NTL, PCC, PFZ, PTT, SOC.
Geranyl crotonate	FB.
*Gluconic acid, tech	CWL, DLI, IBI, PFZ.
Gluconic acid, ammonium salt	PFZ.
*Gluconic acid, sodium salt, tech	CWL, DLI, IBI, PFZ.
Glucono-delta-lactone	DLI, PFZ.
Glucosamine hydrochloride	PFZ.
Glucose pentaacetate	BKL.
Glutaraldehyde	UCC.
Glutaraldehyde bis(potassium metabisulfite)	RZL.
Glutaraldehyde bis[sodium bisulfite]	IDC, RZL.
Glutaric acid	MON.
Glycerol, synthetic	APD, DOW, RH, SHC, UCC.
Glycidol (2,3-Epoxy-1-propanol)	OTC.
Glycine (Aminoacetic acid), tech	BPC.
Glycine, cupric salt	BPC.
Glycine ethyl ester hydrochloride	BPC.
Glycolic acid (Hydroxyacetic acid)	DUP.
Glycolic acid salts:	
Aluminum glycolate	CIB.
Sodium glycolate	MED, TNC.
Glycolonitrile	ACY.
Glyoxal	UCC.
Guanidine hydrochloride	ACY.
4-Guanyl-1-isonitrosoguanyl-1-tetrazene	REM.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Halogenated hydrocarbons:	
*1-Bromobutane (n-Butyl bromide)	ABB, BPC, DOW, MCH.
2-Bromobutane (sec-Butyl bromide)	ABB, BPC.
Bromochloromethane	DOW.
1-Bromo-3-chloropropane (Trimethylenechlorobromide)	DOW, MCH.
2-Bromo-2-chloro-1,1,1-trifluoroethane	ICI.
Bromoethane (Ethyl bromide)	DOW, MCH.
1-Bromohexadecane (Cetyl bromide)	EK.
1-Bromohexane (n-Hexyl bromide)	BPC.
1-Bromo-2-methylbutane	LIL.
1-Bromo-3-methylbutane	BPC.
1-Bromo-octadecane	DUP, G.
1-Bromopentane (n-Amyl bromide)	CLB, EK.
2-Bromopentane (1-Methylbutyl bromide)	ABB, BPC, LIL.
1-Bromopropane (n-Propyl bromide)	BPC, EK.
3-Bromopropene (Allyl bromide)	CLB, DOW.
3-Bromopropyne	G.
Bromotrifluoromethane	DUP.
*Carbon tetrachloride	ACG, ACS, DA, DOW, FMB, FRO, PPG, SF.
*Chlorinated paraffins:	
Less than 35% chlorine	HK.
*35%-64% chlorine	CCH, DA, DVC, HK, HPC, KPT, WOI.
65% or more chlorine	DA, DVC, WOI.
1-Chlorobutane (n-Butyl chloride)	PUB, UCC.
2-Chlorobutane (sec-Butyl chloride)	ICO, PLC.
1-Chloro-1,1-difluoroethane	ACG, DUP.
*Chlorodifluoromethane	ACG, DUP, KAI, PAS, UCC.
*Chloroethane (Ethyl chloride):	
Tech	AME, DOW, DUP, HPC, TNA, USI.
U.S.P	DOW, SHC.
*Chloroform:	
Tech	ACS, DA, DOW, DUP, FRO, SF.
U.S.P	ACS, DA, DOW.
2-Chloro-3-hexyne	LIL.
*Chloromethane (Methyl chloride):	
Crude	ANM, DOW, TNA.
Refined (refrigerant grade)	ACS, DA, DCC, DOW, DUP, FRO.
2-Chloro-2-methylpropane (tert-Butyl chloride)	DUP, EK, RBC.
3-Chloro-2-methylpropene (Methallyl chloride)	FMP.
Chloropentafluoroethane	DUP.
Chloropentanes, mixed isomers	PAS.
2-Chloropropane (Isopropyl chloride)	DOW.
3-Chloropropene (Allyl chloride)	DOW, SHC.
Chlorotrifluoroethylene (Trifluorovinyl chloride)	ACG, MMM.
Chlorotrifluoroethylene, polymerized	HK, MMM.
Chlorotrifluoromethane	ACG, DUP, PAS.
1,2-Dibromo-1,1-dichloroethane	DOW.
Dibromodifluoromethane	DOW.
1,2-Dibromoethane (Ethylene dibromide)	AMP, DOW, ETD, HCH, MCH.
Dibromomethane (Methylene bromide)	DOW.
1,3-Dibromopropane	EK.
1,2-Dibromo-1,1,2,2-tetrafluoroethane	DUP.
Dichlorobutadiene	DUP.
1,4-Dichlorobutene	DUP, RBC.
*Dichlorodifluoromethane	ACG, DUP, KAI, PAS, UCC.
*1,2-Dichloroethane (Ethylene dichloride)	AME, DA, DOW, DUP, JCC, MON, OMC, PPG, TNA, UCC, WYN.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Halogenated hydrocarbons--Continued	
*Dichloromethane (Methylene chloride)	ACS, DA, DOW, DUP, FRO, SF.
Dichloropentanes, mixed isomers	PAS.
*1,2-Dichloropropane (Propylene dichloride)	DOW, JCC, UCC, WYN.
2,3-Dichloropropene	DOW.
*Dichlorotetrafluoroethane	ACG, DUP, PAS.
1,1-Difluoroethane	ACG, DUP.
Difluorotetrachloroethane	DUP.
Diiodomethane (Methylene iodide)	NTB, SDW, x.
Hexachloroethane	NES.
Hexafluoropropylene, monomer	DUP.
Iodoethane (Ethyl iodide), tech	EK, FMT.
*Iodomethane (Methyl iodide)	CLB, EK, FMT, NTB, RSA.
Iodotrifluoromethane	CLB.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	DOW.
Tetrabromomethane	DOW.
1,1,2,2-Tetrachloroethane (Acetylene tetrachloride)	DUP, PPG.
*Tetrachloroethylene (Perchloroethylene)	DA, DOW, DUP, FRO, HK, PPG, SF, TTX.
Tetrafluoroethylene, monomer	DUP.
Tetrafluoroethylene, polymer	DUP.
Tetrafluoromethane	DUP.
1,1,1-Trichloroethane (Methyl chloroform)	DOW, PPG, TNA.
1,1,2-Trichloroethane (Vinyl trichloride)	DOW, TNA, UCC.
*Trichloroethylene	DOW, DUP, HK, PPG, TTX.
*Trichlorofluoromethane	ACG, DUP, KAI, PAS, UCC.
1,2,3-Trichloropropane	DOW, SHC.
1,2,3-Trichloropropene	DOW.
Trichlorotrifluoroethane	ACG, DUP, PAS.
*Vinyl chloride, monomer (Chloroethylene)	ACS, AME, BFG, BOR, CUC, DA, DOW, GNT, GYR, MNO, MON, TNA, UCC.
Vinyl fluoride	x.
Vinylidene chloride, monomer (1,1-Dichloroethylene)	DOW, TNA.
Vinylidene fluoride	x.
All other	DUP, KPT, SDH.
Heptafluorobutanol	CLB.
2-Heptanone (Methyl amyl ketone)	UCC.
3-Heptanone (Ethyl butyl ketone)	UCC.
Heptanoyl chloride	EK.
9H-Hexadecafluorononanoic acid, ammonium salt	DUP.
Hexadecane	HMY.
Hexadecenyl succinic anhydride	HMY.
n-Hexadecyl disulfide	PAS.
Hexa(2-ethylbutoxy)disiloxane	UCC.
Hexamethylenediamine dicarbamate	BKL.
Hexamethylenediammonium adipate	MON.
Hexamethylene diisocyanate	OTC.
2,5-Hexanedione (Acetonylacetone)	RBC.
1,2,6-Hexanetriol	UCC.
1,2,6-Hexanetriol octoate	KES.
Hexanoic acid (Caproic acid)	FB, TBK.
Hexyl acetate	ENJ.
2-[2-(Hexyloxy)ethoxy]ethanol	UCC.
Hydracrylonitrile (Ethylene cyanohydrin)	UCC.
Hydrazine and salts	FMT, OMC.
2-Hydrazinoethanol	NOR.
Hydrocarbon polymer	ENJ.
N-[3-(Hydroxymercuri)-2-methoxypropyl]carbamoylsuccinamic acid (Methoxyoximercuripropylsuccinyl urea).	LKL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylol ethane).	TRJ.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris(hydroxymethyl)nitromethane).	COM.
N-(Hydroxymethyl)octadecanamide (N-Hydroxymethylstearamide).	DUP.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*-- Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	CEL, LIL, SHC, UCC.
(Hydroxymethyl)urea (Methylol-urea)	DUP.
Hydroxypropyl methacrylate	JCC.
3,3'-Iminodipropionitrile	ACY.
Iodoacetic acid, sodium salt	RSA.
Iodomethylmercury iodide	NTB.
Isethionic acid (2-Hydroxyethanesulfonic acid)	G.
Isoascorbic acid	MRK, PFZ.
*Isoascorbic acid, sodium salt	BAX, MRK, PFZ.
Isobutoxyethanol	UCC.
Isobutyl acrylate	DBC.
Isobutyl isobutyrate	EKX.
Isobutyl vinyl ether	G, UCC.
Isobutyraldehyde	EKX, UCC.
Isobutyric acid and anhydride	EKT.
Isobutyronitrile	EKX.
Isodecaldehyde, mixed isomers	UCC.
Isodecanoic acid, mixed isomers	UCC.
Isodecyl acrylate	UCC.
Iso-octanoic acid, mixed isomers	UCC.
Isopentanoic acid	UCC.
Isopentyl ether (Isoamyl ether)	GIV.
Isoprenylaluminum	TSA.
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.
*Isopropyl acetate	EKT, ENJ, HPC, UCC.
2-Isopropylaminoethanol	PAS.
Isopropyl chloroformate	CTN, PPG.
*Isopropyl ether	ENJ, SHC, UCC.
Isopropyl isocyanate	OTC.
Isovalerone (Diisobutyl ketone)	EKT, UCC.
Itaconic acid (Methylenesuccinic acid)	PFZ.
α-Ketoglutaric acid	PIC.
*Lactic acid, 100%:	
Edible	CLN, DUP, MON.
Medicinal	DUP.
Technical	CLN, DUP, MON.
Lactic acid salts:	
Aluminum lactate	TNC.
Aluminum sodium chlorohydroxylactate	REH.
Aluminum sodium lactate	REH.
Calcium lactate	SHF.
Sodium lactate	PFN.
Lactic anhydride	FB.
Lactide (3,6-Dimethyl-2,5-p-dioxanedione)	CLN.
Lactonitrile	MON.
Lauric acid salts	CCW.
Lauronitrile	FOR.
Lauroyl bromide	DOW.
*Lauroyl chloride	BC, G, HK, MON, TBK.
*Lauroyl peroxide	AZT, CAD, UPR, WTL.
Lauryl lactate	VND.
Levulinic acid	CRZ.
*Linoleic acid salts:	
*Calcium linoleate	CCA, LEF, SHP, SRR.
*Cobalt linoleate	HSH, SHP, SRR.
Copper linoleate	WTC.
Iron linoleate	HSH.
Lead linoleate	SHP, SRR.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Linoleic acid salts--Continued	
Lead manganese linoleate	SDH, SRR.
Manganese linoleate	SHP, SRR.
*Lubricating oil additives:	
Chloronaphtha xanthate	MON.
Chlorosulfurized hydrocarbon	ENJ.
Chlorosulfurized lard oil	CCW.
Chlorosulfurized sperm oil	CCW.
High-molecular-weight hydrocarbons and their phosphorus derivatives.	SOI.
Oxidized hydrocarbons	ALX.
*Phosphorodithioates (Dithiophosphates):	
Barium alkyl phosphorodithioates	LUB.
Zinc alkyl phosphorodithioates	ENJ, LUB.
Zinc di(butylhexyl) phosphorodithioate	ORO.
Zinc dihexyl phosphorodithioate	MON, SIN.
Zinc hexyl isopropyl phosphorodithioate	TX.
All other	ACY, LUB, MON, SIN, TX.
Sulfurized butenes	LUB.
Sulfurized lard oil	CCW, GOC, SIN, SOI.
Sulfurized methyl oleate	SIN.
*Sulfurized sperm oil	CCW, LUB, QCP, SIN, SOI, x.
Tetradecyl selenide	ORO.
All other	CCW, ENJ, HK, LUB, MON, ORO, SIN, x.
Magnesium methylate	MRT, SFA.
Maleic acid	NAC, PFN.
Maleic acid, tribasic lead salt	NTL.
*Maleic anhydride	HN, KPS, MON, NAC, PCC, PTT, RCI.
Malic acid	EK, NAC, PFN.
Malonic acid	KF.
Malonic acid salts	EK, GIV.
Malononitrile	KF.
Mannitol	APD.
Mannitol hexanitrate	APD.
Mercaptoacetic acid (Thioglycolic acid)	EVN, HAB, RET.
*Mercaptoacetic acid (Thioglycolic acid) derivatives:	
*2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate).	EVN, HAB, RET.
*Ammonium mercaptoacetate (Ammonium thioglycolate)	EVN, HAB, RET, TNI.
Antimony mercaptoacetate	CCA.
Calcium mercaptoacetate	EVN.
Dibutyltin bis(iso-octylmercaptoacetate)	x.
Dibutyltin mercaptoacetate	CCA.
Iso-octyl mercaptoacetate	CCW, EVN.
Methyl mercaptoacetate	EVN.
Octadecyl mercaptoacetate	EVN.
Potassium mercaptoacetate	EVN.
Sodium mercaptoacetate	EVN.
3-Mercapto-1,2-propanediol (Thioglycerol)	EVN.
β-Mercaptopropionic acid	EVN.
Mercaptosuccinic acid (Thiomalic acid)	EVN.
Metal soaps of oxidized hydrocarbons	ALX.
Methacrylamide	RH, x.
Methacrylate copolymers	x.
Methacrylate monomers, above methyl	DUP, SAR.
Methacrylic acid	DUP, RH.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Methacryloyl chloride	DUP.
Methalylidene diacetate	UCC.
Methanesulfonic acid	EK, PAS.
*2-Methoxyethanol (Ethylene glycol monoethyl ether)	DOW, JCC, OMC, UCC.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol monoethyl ether).	DOW, JCC, OMC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether).	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl 2-methoxyethyl ether (Triethylene glycol dimethyl ether).	ASL.
2-Methoxyethyl acetate	UCC.
2-Methoxyethylamine	JCC, WYN.
4-Methoxy-4-methyl-2-pentanol	SHC.
4-Methoxy-4-methyl-2-pentanone	SHC.
Methoxypolyethylene glycol	JCC, UCC.
1-Methoxy-2-propanol	DOW, SHC.
3-Methoxypropionitrile	ACY.
3-(3-Methoxypropoxy)propanol (Dipropylene glycol methyl ether).	DOW.
3-[3-(3-Methoxypropoxy)propoxy]propanol (Tripropylene glycol methyl ether).	DOW.
3-Methoxypropylamine	DUP, EKT, JCC.
Methoxytriethyleneglycol acetate	RBC.
*Methyl acetate	BOR, EK, GRD, SRC, UCC.
Methyl acetoacetate	EKT, UCC.
Methyl acrylate, monomer	CEL, DBC, RH.
Methylal (Dimethoxymethane)	CEL.
Methylaluminum sesquichloride	TNA.
2-Methylaminoethanol (N-Methylethanolamine)	UCC.
Methyl borate	MHI, SFA.
3-Methyl-2-butenoic acid	UCC.
2-Methyl-1-buten-3-yne (Isopropenylacetylene)	AIR.
2-Methyl-2-(sec-butyl)-1,3-propanediol	BKL.
Methyl butynoxyethanol	AIR.
Methyl carbamate	BKL.
Methyl chloroformate	CTN.
Methyl cyanoacetate	KF.
Methyl 2-cyanoacrylate	EKT.
Methyl dichloroacetate	KF, PD.
Methyl disulfide (Dimethyl disulfide)	CRZ.
N,N'-Methylenebisacrylamide	ACY.
N,N'-Methylenebisoctadecanamide	ARC.
Methyl ether (Dimethyl ether)	COM, DUP.
Methyl formate	DUP.
N-Methylglucamine	ABB, DUP.
Methylglycerol	AFD.
5-Methyl-2-hexanone (Methyl isoamyl ketone)	EKT, UCC.
2,2'-(Methylimino)diethanol (Methyl diethanolamine)	DOW, UCC.
Methyl isocyanate	CTN, OTC.
2-Methyllactic acid (α-Hydroxyisobutyric acid)	EK.
2-Methyllactonitrile (Acetone cyanohydrin)	RH, x.
Methylmagnesium bromide	ARA.
Methylmagnesium chloride	ARA.
Methyl methacrylate, monomer	ACY, DUP, RH, USP.
7-Methyl-3-methylene-1,6-octadiene (Myrcene)	IFF.
2-Methyl-2-nitro-1,3-propanediol	COM.
2-Methyl-2-nitro-1-propanol	COM.
2-Methyl-2,4-pentanediol (Hexylene glycol)	CEL, EKT, ICO, SHC, UCC.
*4-Methyl-2-pentanone (Methyl isobutyl ketone)	EKT, ENJ, SHC, UCC.
4-Methyl-2-pentanone oxime (Methylisobutyl ketoxime)	ALB.
4-Methyl-3-penten-2-one (Mesityl oxide)	SHC, UCC.
4-Methyl-2-pentyl acetate	PUB, SHC, UCC.
Methylpolyethanolamine	G.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
2-Methyl-2-propyl-1,3-propanediol	ABB, BKL, DUP, ICO.
2-Methyl-2-n-propyl-1,3-propanediol monocarbamate	x.
Methylpseudoionone	GIV.
Methyl sulfate (Dimethyl sulfate)	DUP.
Methyl sulfide (Dimethyl sulfide)	CRZ, PAS.
Methyl sulfone	CRZ.
Methyl sulfoxide (Dimethyl sulfoxide)	CRZ.
N-Methyltaurine	G.
N-Methyltaurine, sodium salt	TNA.
2-Methylvaleraldehyde (2-Methylpentaldehyde)	UCC.
2-Methylvaleric acid	UCC.
Methyl vinyl ether	G, UCC.
Mucochloric acid (2,3-Dichloro-3-formylacrylic acid)	EKT.
Myristoyl chloride	BC, x.
Myristoyl lactate	VND.
Naringin	SKG.
Neodecanoic acid (Trialkylacetic acid) salts	MCI, MLD.
Nitriminobispropionic acid	ACY.
2-Nitro-1-butanol	COM.
Nitroethane	COM.
Nitromethane	COM.
1-Nitropropane	COM.
2-Nitropropane	COM.
Nonanoic acid (Pelargonic acid)	EMR.
Nonenylsuccinic anhydride	HMY.
Nylon	DUP, MON.
1-Octadecene	HMY.
Octadecyl isocyanate	CWN, ICO, MOB.
Octadecyl mercaptopropionate	EVN.
Octadecyl vinyl ether	G.
1-Octanethiol (n-Octyl mercaptan)	PAS.
Octanoic acid (Caprylic acid) salts:	
Aluminum octanoate	NOP.
Barium octanoate	CCW.
Cadmium octanoate	CCW.
Zinc octanoate	BKC.
2-Octanone (Hexyl methyl ketone)	EKT, TBK, WTH.
Octanoyl chloride	HK, TBK.
1-Octene	ADM.
1(and 2)-Octene	WTH.
2-Octene	HMY.
Octenylsuccinic anhydride	HMY.
Octyltins	x.
Oleamide (Octadecene amide)	ADM, ARC, FIN, HUM.
*Oleic acid salts:	
Aluminum oleate	WTC.
Ammonium oleate	MCI.
Barium zinc oleate	HSH, WTC.
*Copper oleate	LEF, MLD, SHP, WTC.
Lead oleate	SHP.
Stannous oleate	CCW, x.
Oleonitrile	ARC, FOR.
Oleoyl chloride	CRT, DEP, G.
Oleylpalmitamide	FIN.
*Oxalic acid	ACG, HK, MAL, PFZ, VIC.
*Oxalic acid salts:	
Ammonium oxalate	ACG, BKC, PFZ.
Calcium oxalate	VIC.
Copper oxalate	TNC.
Ferric ammonium oxalate	PFZ.
Ferric oxalate	PFZ.
Ferric sodium oxalate	PFZ.
Ferrous oxalate	BKL.
Potassium binoxalate	BKC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Oxalic acid salts--Continued	
Potassium oxalate	ACG, BKC, PFZ.
Sodium binoxalate	VIC.
Sodium oxalate	ACG, BKC, MAL, VIC.
Oxidized hydrocarbon mixtures, other than lubricating oil additives.	ALX.
*Palmitic acid salts:	
*Aluminum palmitate	ACY, NOP, WTC.
*Zinc palmitate	ACY, NOP, WTC.
*Palmitoyl chloride	G, HAL, OPC, TBK.
Pantolactone	CKL, NOP.
Paraformaldehyde	CEL, HN.
Paraldehyde (Paracetaldehyde)	UCC.
*Pentaerythritol	COM, DCI, HN, HPC, RCI, TRJ.
Pentaerithritol caprylate	DRW.
Pentaerythritol, di- and other	HPC.
Pentaerythritol, di- and tri-	HPC.
Pentaerythritol pelargonate	DRW.
*Pentaerythritol tetranitrate	APD, DUP, HPC, TRJ.
Pentafluoropropanol	CLB.
2,4-Pentanedione (Acetylacetone)	UCC.
2,4-Pentanedione, metallic complexes:	
Cobalt	MLD.
Ferric	MAK.
Other	MAK.
2-Pentanone (Methyl propyl ketone)	UCC.
3-Pentanone (Diethyl ketone)	DUP.
Pentyl nitrate (Amyl nitrate)	TNA.
Perchloromethanethiol (Perchloromethyl mercaptan)	CHO.
Peroxyacetic acid	FMB.
*Phosgene (Carbonyl chloride)	CTN, DUP, EKT, GE, MOB, NAC, OMC, PPG, SF, UCC, UPJ, VDM.
*Phosphorus acid esters, not elsewhere specified (*See also* Plasticizers, Surface-Active Agents, Pesticides, Flotation reagents, and Lubricating oil additives):	
Bis(2-chloroethyl) vinylphosphonate	VIC.
Bis(2-ethylhexyl) hydrogen phosphate	UCC.
Bis(2-ethylhexyl) hydrogen phosphite	VC.
Butyl phosphates (mono- and di-)	VIC.
Chloropropyl phosphorothioate	TNA.
Dibutyl butylphosphonate	VC.
Dibutyl hydrogen phosphite	VC.
Didodecyl hydrogen phosphate	DUP.
Diethyl hydrogen phosphite	VC.
Dimethyl hydrogen phosphite	VC.
Dimethyl methylphosphonate	VC.
Dioctyl hydrogen phosphate	VIC.
Dioctyl hydrogen phosphite	HK.
2-Ethylhexyl phosphates (mono- and di-)	VIC.
Ethyl phosphates (mono- and di-)	VIC.
Iso-octyl hydrogen phosphate	VC.
Isopentyl octyl hydrogen phosphate	VC.
Lauryl dihydrogen phosphate	VIC.
Methyl phosphates (mono- and di-)	HK, VIC.
Pentyl phosphates (Mono- and diamyl phosphates)	VIC.
Tributyl phosphate	CEL, COM.
Tributyl phosphite	VC.
Tridecyl phosphite	HK.
Triethyl phosphite	VC.
Triiso-octyl phosphite	VC.
Trimethyl phosphate	TNA.
Trimethyl phosphite	VC.
Tris(2-chloroethyl) phosphate	CEL, ENJ.
Tris(2-chloroethyl) phosphite	VC.
Tris(2,3-dibromopropyl) phosphate	DUP, MCH.
Tris(2-ethylhexyl) phosphite	HK, VC.
Tris(octadecyl) phosphite	VC.
All other	CEL, DUP, ENJ, MON, VC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Pine oil, synthetic	CBY.
Polyacrylamide	ACY, NLC.
Polyacrylic acid	BFG, NOP, RH.
Polyacrylic acid salts:	
Ammonium polyacrylate	BFG.
Sodium polyacrylate	ALC, BFG, JOR, RH.
All other	BFG.
Polyacrylonitrile	DUP.
Polychlorinated propyl ether	JCC.
Polyethoxyethylglycerol	GLY.
Polyethoxyethylsorbitol	APD, GLY, TCH.
*Polyethylene glycol	ACN, DOW, DUP, G, JCC, OMC, UCC, WYN.
Polyethylene glycol dimethacrylate	SAR.
Polyethylene polysulfide	BFG.
Polygalacturonic acid	SKG.
Polyglycerol	DRW, OMC.
Polyglycols, ethylene glycol and glycol ethers, mixtures	DOW.
Polyisobutyl succinic anhydride	ENJ.
Polymethacrylic acid esters	DUP.
Polymethacrylic acid, sodium salt	GRD.
Polymethyl vinyl ether	G.
*Polypropoxy ethers:	
*Glycerol tri(polyoxypropylene) ether	JCC, OMC, UCC, WYN.
Polypropoxysorbitol	APD.
Other	ACS, APD, UCC, WYN.
*Polypropylene glycol	DOW, JCC, UCC, VIS, WYN.
Polytetramethylene glycol ether	x.
Propanedithiol	RBC.
Propanone peroxide (Acetone peroxide)	SDH.
β-Propiolactone	CEL.
Propionaldehyde	EKX, UCC.
*Propionic acid	CEL, COM, DUP, EKT, UCC.
Propionic acid salts:	
*Calcium propionate	CEL, DUP, HFT, PFZ, UCC, WSN.
*Sodium propionate	CEL, DUP, PFZ, UCC, WSN.
Zinc propionate	BKC.
Propionic anhydride	CEL, EKT, UCC.
Propionyl chloride	ABB, TBK.
Propionyl peroxide	WTL.
2-[2-(Propoxy)ethoxy]ethanol (Diethyleneglycol monopropyl ether).	UCC.
Propyl acetate	CEL, EKT, ENJ, PUB, UCC.
Propylene carbonate	DOW, JCC.
*Propylene glycol (1,2-Propanediol)	APD, CEL, DOW, DUP, JCC, OMC, UCC, WYN.
Propylene glycol, mixed ethers	DOW.
*Propylene oxide	CEL, DOW, JCC, OMC, UCC, WYN.
n-Propyl isocyanate	CWN, UPC.
Propyl nitrate	TNA.
2-Propylvaleric acid (Di-n-propylacetic acid)	x.
Propyne (Methylacetylene)	AIR.
Pseudoionone	GIV.
Pyruvaldehyde	UCC.
Quaternary ammonium compounds (butyl and lower)	ASL, EK, PAS, RSA.
Rare sugars	PFN.
Ricinolamide	TKL.
Ricinoleic acid salts:	
Barium ricinoleate	BAC.
Calcium ricinoleate	BAC.
Lithium ricinoleate	BAC.
*Sarcosine (N-Methylaminoacetic acid)	ATL, G, HMP, VPC.
*Sarcosine, sodium salt	GGY.
Sebacic acid	WTH, x.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Sebacoyl chloride	EK, TBK.
Semicarbazide base and hydrochloride	FMT.
*Sequestering agents:	
(Diethylenetrinitrilo)pentaacetic acid	HMP.
(Diethylenetrinitrilo)pentaacetic acid, monosodium hydrogen ferric salt.	GGY.
*(Diethylenetrinitrilo)pentaacetic acid, sodium salt	DOW, GGY, HMP, RPC, TCC.
*N,N-Dihydroxyethylglycine, sodium salt	DOW, HMP, MOA.
*(Ethylenedinitrilo)tetraacetic acid (Ethylenediamine-tetraacetic acid).	DOW, GGY, HMP, MOA, VIC.
(Ethylenedinitrilo)tetraacetic acid, diammonium salt	DOW.
(Ethylenedinitrilo)tetraacetic acid, dipotassium salt	EK.
*(Ethylenedinitrilo)tetraacetic acid, disodium salt	DOW, EK, GGY, HMP, RPC.
(Ethylenedinitrilo)tetraacetic acid, disodium calcium salt.	DOW, GGY.
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt.	GGY.
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate.	GGY.
(Ethylenedinitrilo)tetraacetic acid, manganese salt	GGY.
(Ethylenedinitrilo)tetraacetic acid, monohydrogen trisodium salt.	GGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt.	DOW, GGY, HMP, RPC.
(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt	GGY.
*(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	CRT, CWL, DOW, G, GGY, HMP, HRT, IBI, NOP, RPC, TCC.
Hexahydroxyheptanoic acid, sodium salt	PCW.
(N-Hydroxyethylethylenedinitrilo)triacetic acid	GGY.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, iron sodium salt.	DOW.
*(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt.	CRT, CWL, DOW, GGY, HMP, IBI, MOA, RPC, TCC.
(N-Hydroxyethylethylenedinitrilo)triacetic acid, other salts.	HMP.
Nitrilotriacetic acid, tripotassium salt	GGY.
Nitrilotriacetic acid, trisodium salt	GGY.
All other	GGY, HMP, PFN.
Silicones	DCC, ORO.
Sodium ethoxide	FMP.
Sodium ethyl oxalacetate	FMP.
Sodium formaldehydebisulfite	EK, IDC.
*Sodium formaldehydesulfoxylate	NOP, RH, ROY.
*Sodium methoxide (Sodium methylate)	BRF, DA, DUP, HSH, KF, OMC, RBC, SFA.
Sodium polypectate	SKG.
Sodium sorbitol borate	APD.
Sorbaldehyde (Hexadienal)	UCC.
Sorbic acid (2,4-Hexadienoic acid), and potassium and sodium salts.	UCC.
Sorbitol	APD, BRD, MRK.
Stearamide (Octadecane amide)	ADM, DUP, FIN, HUM.
*Stearic acid salts:	
*Aluminum stearates:	
*Aluminum distearate	ACY, JTC, LEF, MAL, MCO, NOP, PRP, SYP, WTC.
*Aluminum monostearate	ACY, LEF, MAL, MCO, NOP, SYP, WTC.
*Aluminum tristearate	ACY, LEF, MAL, MCO, NOP, PRP, SYP.
Ammonium stearate	DEX, NOP, WTC.
Barium stearate	LEF, MCO, NOP, PRP, SYP, WTC.
Cadmium stearate	NOP, PRP, SYP, WTC.
*Calcium stearate	ACY, HNX, JTC, LEF, MAL, MCO, NOP, PRP, SYP, WTC.
Cobalt stearate	WTC.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Stearic acid salts--Continued	
Copper stearate	MCO, WTC.
Ferric and ferrous stearates	MCI, WTC.
*Lead stearate	HSH, LEF, NOP, NTL, PRP, WTC.
Lead stearate, dibasic	MCO, NOP, NTL.
*Lithium stearate	FTE, LEF, NOP, PRP, SYP, WTC.
*Magnesium stearate	ACY, JTC, MAL, MCO, NOP, PRP, SYP, WTC.
Nickel stearate	WTC.
*Zinc stearate	ACY, BCN, CCA, HNX, JTC, LEF, MAL, MCO, NOP, PRP, SYP, WTC.
All other	APD.
Stearonitrile (Octadecanenitrile)	FOR.
Stearoyl chloride	G.
Stearyl-2-lactic acid	x.
Succinic acid	BKC, MON, NAC.
Succinic acid, calcium salt	OTC.
Succinic acid, sodium salt	MAL.
Succinic anhydride	NAC.
Succinimide	NAC.
Succinonitrile	ACY, RSA.
Succinyl peroxide	ICO, WTL.
Sucrose octa-acetate	PD, UCC.
*Tallow amide, hydrogenated	ADM, ARC, CRT, HUM.
Tallow fatty acyl chloride	G.
Tallow nitrile	FOR, GNM.
Tallow nitrile, hydrogenated	FOR.
Tartaric acid salts:	
Antimony potassium tartrate	PFZ.
Potassium bitartrate	ATC.
Potassium sodium tartrate	PFZ.
Sodium bitartrate	PFZ.
All other	BKC.
Tetrabutylphosphonium hydroxide	RSA.
n-Tetradecane	HMY.
1,1,3,3-Tetraethoxypropane	KF.
Tetra(2-ethylbutyl) ortho-silicate	UCC.
Tetraethylene glycol	DOW, UCC.
Tetraethylene glycol dimethacrylate	SAR.
*Tetraethyllead	DUP, HCH, TNA.
Tetrahydropseudoionone	GIV.
Tetrahydroxysuccinic acid (Dioxytartaric acid)	ACY.
Tetrakis(hydroxymethyl)phosphonium chloride	HK.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine	WYN.
1,1,3,3-Tetramethoxypropane	KF.
Tetramethyl(and ethyl)lead	DUP.
Tetramethylguanidine	ACY.
Tetramethyllead	DUP, NLF, TNA.
Tetraoctyl orthosilicate	MON.
Tetrapropenylsuccinic acid	x.
Thioacetamide	BKC.
Thioacetic acid	EVN.
2,2'-Thiodiethanol (Thiodiethylene glycol)	UCC.
3,3'-Thiodipropionic acid	CCW, EVN.
3,3'-Thiodipropionitrile	ACY, HAB.
Thiosemicarbazide	ACY, FMT.
Titanic acid esters	DUP.
Triacetoxyvinylsilane	DCC.
Tributylphosphine	CCW, COK, x.
Tributyltin chloride	x.
Trichloroacetic acid	DOW.
Trichloroacetyl chloride	EK.
Trichloroethylsilane (Ethyl silicone trichloride)	UCS.
Trichloromethylsilane	DCC.
Trichloropentylsilane	UCS.
Trichloropropylsilane	DCC.
Trichlorovinylsilane	DCC, UCS.

TABLE 21B.--*Miscellaneous chemicals for which U.S. production or sales were reported, identified by manufacturer, 1964*--Continued

Chemical	Manufacturers' identification codes (according to list in table 22)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Triethoxyvinylsilane	UCS.
Triethylaluminum	TNA, TSA.
*Triethylene glycol	ACN, CAU, DOW, G, HCH, JCC, QMC, UCC.
Triethylene glycol dimethacrylate	SAR.
Triethyl orthoacetate	KF.
Triethyl orthoformate	KF.
Triethyl orthopropionate	KF.
Trifluoroacetaldehyde	CLB.
Trifluoroacetic anhydride	EK.
Tri(hexylene glycol) biborate	USB.
Triisobutylaluminum	TNA, TSA.
Triisodecyl orthoformate	KF.
Trimethoxyboroxine	SFA.
Trimethylaluminum	TNA.
Trimethylamine-sulfur trioxide	HEX.
2,6,8-Trimethyl-4-nonanone	UCC.
Trimethyl orthoformate	KF.
2,2,4-Trimethyl-1,3-pentanediol	EKX.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	EKX.
Trimethylpentanol	EKX.
Tripropylaluminum	TNA, TSA.
Tripropylene glycol	DOW, UCC.
2-Undecanone	TBK.
*Urea in compounds or mixtures, 100%:	
*In feed compounds	ACN, DUP, GCC, JDC, MON, MSC, SHC, SOH.
*In liquid fertilizer	ACN, ARM, CFA, CO, DUP, ESC, FCA, GCC, HKY, HPC, JDC, KET, MON, MSC, NIT, SHC, SNI, SOH, SPN.
*In solid fertilizer	ACN, DUP, GCC, HPC, JDC, MON, MSC, SHC, SNO, SOH, SPN.
In plastics	DUP, MON.
All other	ACN, DUP, HPC, MON, SHC, SOH.
Urea peroxide	FMB.
Urea urethane copolymer	DUP.
Valeraldehyde	UCC.
Valeric acid	UCC.
*Vinyl acetate, monomer	AIR, BOR, CEL, DUP, MON, NSC, UCC.
Vinyl crotonate	BKL.
*Zinc formaldehydesulfoxylate	NOP, RH, ROY.

Directory of Manufacturers

The Directory of Manufacturers lists the companies that report their production of synthetic organic chemicals to the U.S. Tariff Commission. The name of each manufacturer is preceded by an alphabetical identification symbol. These identification symbols consist of not more than three capital letters, and usually bear a relation to the company name.

For 1964, the Directory of Manufacturers lists 800 primary manufacturers (see table 22). Some of the companies that report production of synthetic organic chemicals do not sell the materials, but consume their entire output in further manufacturing.

The Directory of Manufacturers lists the reporting companies in two ways: Section 1 lists them in alphabetical order by identification symbols; section 2 lists the reporting companies in alphabetical order by company name, and gives the corresponding identification symbol and the company address. Company divisions are usually listed under the parent company's name.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*

SECTION 1. ALPHABETICAL DIRECTORY BY CODE

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1964 are listed below in the order of their identification codes as used in tables in pt. III. Sec. 2 of this table lists these manufacturers alphabetically and gives their office address]

Code	Name of company
AAC	Alcolac Chemical Corp.
AAE	American Aniline & Extract Co., Inc.
AAI	American Alkyd Industries
AAP	American Aniline Products, Inc.
ABB	Abbott Laboratories
ABS	American Brake Shoe Co., American Brakeblok Div.
ACB	Allied Chemical Corp., Barrett Div.
ACC	Amoco Chemicals Corp.
ACG	Allied Chemical Corp., General Chemical Div.
ACN	Allied Chemical Corp., Nitrogen Div.
ACO	Acralite Co., Inc.
ACP	Allied Chemical Corp., Plastics Div.
ACR	Acme Resin Corp.
ACS	Allied Chemical Corp., Solvay Process Div.
ACT	Arthur C. Trask Co.
ACU	Allied Chemical Corp., Union Texas Petroleum Div.
ACY	American Cyanamid Co.
ADC	Ad-Co Color Corp.
ADM	Archer-Daniels-Midland Co.
AIR	Air Reduction Co., Inc., Air Reduction Chemical & Carbide Co. Div.
AKS	Arkansas Co., Inc.
ALB	Ames Laboratories, Inc.
ALC	Alco Chemical Corp.
ALD	Aldrich Chemical Co., Inc.
ALF	Allied Chemical Corp., Fibers Div.
ALL	Alliance Color & Chemical Co.
ALO	Alamo Polymer Corp.
ALT	Crompton & Knowles Corp., Althouse Chemical Co. Div.
ALX	Alox Corp.
AMB	American Bio-Synthetics Corp.
AMC	Amchem Products, Inc.
AME	American Chemical Corp.
AMF	Mobil Finishes Co., Inc., Ferbert-Schorndorfer Div.
AML	Amalgamated Chemical Corp.
AMO	American Oil Co. (Texas)
AMP	American Potash & Chemical Corp.
AMR	Pacific Resins & Chemical Co.
AMS	Martin-Marietta Corp., Ridgway Color & Chemical Div.
ANM	Ancon Chemical Co.
APC	Appleton Coated Paper Co.
APD	Atlas Chemical Industries, Inc., Chemicals Div.
APR	Atlas Processing Co.
APT	American Petrochemical Corp.
APV	Armstrong Paint & Varnish Works, Inc.
APX	Apex Chemical Co., Inc.
ARA	Arapahoe Chemicals, Inc.
ARC	Armour & Co., Armour Industrial Chemical Co. Div.
ARD	Ardmore Chemical Co.
ARG	Argus Chemical Corp.
ARK	Armstrong Cork Co.
ARL	Arol Chemical Products Co.
ARM	Armour Agricultural Chemical Co.
ARO	Mobil Finishes Co., Inc., Arco Div.
ARP	Armour Pharmaceutical Co.
ARZ	Arizona Chemical Co.
ASH	Ashland Oil & Refining Co.
ASL	Ansul Chemical Co.
AST	Astra Pharmaceutical Products, Inc.
ASY	American Synthetic Rubber Corp.
ATC	American Tartars Corp.
ATL	Atlantic Chemical Corp.
ATP	Atco Chemical-Industrial Products, Inc.
ATR	Atlantic Refining Co.
ATU	Atlantic Tubing & Rubber Co.
AUG	Augusta Chemical Co.
AV	FMC Corp., American Viscose Div.
AVS	Avisun Corp.
AZT	Aztec Chemicals, Inc.
BAC	Baker Castor Oil Co.
BAL	Baltimore Paint & Chemical Corp.
BAO	Bayoil Co., Inc.
BAT	Bates Chemical Co.
BAX	Baxter Laboratories, Inc.
BC	Barlow Chemical Corp.
BCM	Belding Chemical Industries
BCN	Beacon Chemical Industries, Inc.
BEN	Bennett's
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
BFR	Branchflower Co.
BGC	Balfour Chemicals, Inc.
BJL	Burdick & Jackson Laboratories, Inc.
BKC	J. T. Baker Chemical Co.
BKL	Millmaster Onyx Corp., Berkeley Chemical Dept.
BKM	Buckman Laboratories, Inc.
BKS	Berkshire Color & Chemical Co.
BKT	J. T. Baker Chemical Co., Taylor Div.
BL	Belle Chemical Co., Inc.
BLA	Blue Arrow, Inc.
BLN	Brooklyn Color Works, Inc.
BLS	Beech-Nut Life Savers, Inc.
BME	Bendix Corp., Marshall-Eclipse Div.
BOR	Borden Co., Borden Chemical Co. Div.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
BOY	Walter N. Boysen Co.
BPC	Benzol Products Co.
BPL	Brand Plastics Co.
BRD	Baird Chemical Industries, Inc.
BRS	Bristol-Meyers Co., Bristol Laboratories Div.
BRU	M. A. Bruder & Sons, Inc.
BRY	Bryant Chemical Corp.
BSC	Burkart-Schier Chemical Co.
BUC	Blackman-Uhler Chemical Co.
BUK	Buckeye Cellulose Corp.
BUR	Burroughs-Wellcome & Co. (U.S.A.), Inc.
BXT	J. H. Baxter & Co.
CAD	Cadet Chemical Corp.
CAL	Callery Chemical Co.
CAP	Cap-Roc, Inc., Capital Plastics Div.
CAT	Catalin Corp. of America
CAU	Calcasieu Chemical Corp.
CBA	Ciba Corp., Ciba Products Co.
CBC	Georgia-Pacific Corp., Coos Bay Div.
CBD	Central Processing Co.
CBM	Carborundum Co., Coated Abrasives Div.
CBN	Columbian Carbon Co., Pigments & Elastomers Div.
CBP	Ciba Corp., Ciba Pharmaceutical Co. Div.
CBR	Colab Resin Corp.
CBT	Samuel Cabot, Inc.
CBY	Crosby Chemicals, Inc.
CCA	Carlisle Chemical Works, Inc., Advance Div.
CCC	Chase Chemical Corp.
CCH	Pearsall Chemical Co.
CCI	Checkmate Chemicals, Inc.
CCL	Charlotte Chemical Laboratories
CCO	Chemico, Inc.
CCP	Crown Central Petroleum Corp.
CCW	Carlisle Chemical Works, Inc.
CD	Budd Co., Polychem Div.
CEL	Celanese Corp. of America: Celanese Chemical Co. Div. Celanese Plastics Co. Div.
CEM	Chemirad Corp.
CFA	Cooperative Farm Chemicals Association
CFC	Rexall Chemical Co. - Kearny
CGL	Cargill, Inc.
CHC	Chipman Chemical Co., Inc.
CHG	Chemagro Corp.
CHL	Chemol, Inc.
CHO	Stauffer Chemical Co., Calhio Chemicals Div.
CHT	Chattanooga Medicine Co., Chattem Chemicals Div.
CIB	Ciba Chemical & Dye Co.
CIK	Cal/Ink Co., Inc.
CIN	Cindet Chemicals, Inc.
CIS	Chemical Insecticide Corp.
CKL	Chemlek Laboratories, Inc.
CLB	Columbia Organic Chemicals Co., Inc.
CLC	Charles L. Huisking & Co., Inc., Clintbrook Chemical Co. Div.
CLD	Colloids, Inc.
CLI	Clintwood Chemical Co.
CLK	Clark Oil & Refining Corp.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.
CLV	Clover Chemical Co.
CLY	W. A. Cleary Corp.
CM	Carpenter-Morton Co.
CMG	Nyanza, Inc.
CMP	Commercial Products Co., Inc.
CO	Continental Oil Co.
COK	Cockerille Chemicals, Inc.
COL	Collier Carbon & Chemical Corp.
COM	Commercial Solvents Corp.
CON	Concord Chemical Co., Inc.
COP	Coopers Creek Chemical Corp.
CP	Colgate-Palmolive Co.
CPC	Childs Pulp Colors, Inc.
CPD	Chemical Products Corp.
CPT	Consolidated Paint Co.
CPV	Cook Paint & Varnish Co.
CPY	Copolymer Rubber & Chemical Corp.
CRC	Crown Chemical Corp.
CRN	Corn Products Co.
CRS	Carus Chemical Co., Inc.
CRT	Crest Chemical Corp.
CRY	Tenneco Manufacturing Co., Tenneco Plastics Div.
CRZ	Crown Zellerbach Corp., Chemical Products Div.
CSD	Cosden Oil & Chemical Co.
CSO	Cities Service Oil Co.
CST	Charles S. Tanner Co.
CTA	Conestoga Chemical Corp.
CTL	Continental Chemical Co.
CTN	Chemetron Corp., Chemetron Chemicals, Organic Chemical Dept.
CUC	Cumberland Chemical Corp.
CUL	Culver Chemical Co.
CUT	Cutter Laboratories, Inc.
CW	General Mills, Inc., Chemical Div.
CWL	Cowles Chemical Co.
CWN	Upjohn Co., Carwin Co. Div.
CWP	Consolidated Papers, Inc.
DA	Diamond Alkali Co., and Western Div.
DAN	Dan River Mills, Inc.
DAV	Conchemco, Inc., H. B. Davis Co. Div.
DBC	Dow Badische Chemical Co.
DCC	Dow Corning Corp.
DCI	Delaware Chemicals, Inc.
DEG	Degen Oil & Chemical Co.
DEP	DePaul Chemical Co., Inc.
DEX	Dexter Chemical Corp.
DLH	Hess Oil & Chemical Corp.
DLI	Dawe's Laboratories, Inc.
DOD	Donald A. Dodd
DOM	Dominion Products, Inc.
DOW	Dow Chemical Co.
DPP	Dixie Pine Products Co., Inc.
DRL	Caradco, Inc., Durel Div.
DRW	Drew Chemical Corp.
DSC	Dye Specialties, Inc.
DSO	DeSoto Chemical Coatings, Inc.
DUN	Frank W. Dunne Co.
DUP	E. I. duPont de Nemours & Co., Inc.
DUR	Duraphene Corp.
DVC	Dover Chemical Co.
DXS	Sunray DX Oil Co.
EAK	J. S. & W. R. Eakins, Inc.
ECC	Eastern Color & Chemical Co.
EDC	Edcan Laboratories
EFH	E. F. Houghton & Co.
EK	Eastman Kodak Co.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.
EKX	Eastman Kodak Co., Texas Eastman Co. Div.
ELP	El Paso Natural Gas Products Co.
EMK	Emkay Chemical Co.
EMR	Emery Industries, Inc.
EN	Endo Laboratories, Inc.
ENJ	Enjay Chemical Co., Div. of Humble Oil & Refining Co.
EPC	Epoxylite Corp.
ESC	Escambia Chemical Corp.
ETD	Ethyl-Dow Chemical Co.
EVN	Evans Chemetics, Inc.
EW	Westinghouse Electric Corp., Micarta Div.
FAB	Fabricolor Manufacturing Corp.
FAR	Farnow, Inc.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
FB	Fritzsche Bros., Inc.
FBF	Fiberfil, Inc.
FBR	Fibreboard Paper Products Corp.
FC	Franklin Chemical Co.
FCA	Farmers Chemical Association, Inc.
FCD	France, Campbell & Darling, Inc.
FCL	Federal Color Laboratories, Inc.
FCP	J. P. Frank Chemical & Plastic Corp.
FEL	Felton Chemical Co., Inc.
FER	Ferro Corp., Ferro Chemical Div.
FG	Foster Grant Co., Inc.
FH	Foster-Heaton Co.
FIN	Fine Organics, Inc.
FIR	Firestone Tire & Rubber Co., Firestone Plastics Co. Div.
FLH	H. B. Fuller Co.
FLO	Florasynth Laboratories, Inc.
FLW	W. P. Fuller Paint Co.
FMB	FMC Corp., Inorganic Chemicals Div.
FMN	FMC Corp., Niagara Chemical Div.
FMO	Fermco Laboratories, Inc.
FMP	FMC Corp., Organic Chemicals Div.
FMT	Fairmount Chemical Co., Inc.
FOC	Farac Oil & Chemical Co.
FOM	Formica Corp.
FOR	Foremost Chemical Products Co.
FRE	Freeman Chemical Corp.
FRL	Firestone Tire & Rubber Co., Firestone Rubber & Latex Products Co. Div.
FRM	Farmers' Chemical Co.
FRO	Vulcan Materials Co., Frontier Chemical Co. Div.
FRP	Filtered Rosin Products Co.
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.
FSH	Frisch & Co., Inc.
FTE	Foote Mineral Co.
G	General Aniline & Film Corp.
GAM	Gamma Chemical Corp.
GAN	Gane's Chemical Works, Inc.
GCC	W. R. Grace & Co., Nitrogen Products Div.
GDN	Lancaster Chemical Corp., Gordon Chemicals Co. Div.
GE	General Electric Co., Chemical Materials Dept.
GEI	General Electric Co., Insulating Materials Dept.
GEO	Geolina Business, Inc.
GFS	G. Frederick Smith Chemical Co.
GGC	Goodrich-Gulf Chemicals, Inc.
GGY	Geigy Chemical Corp.
GIL	Gilman Paint & Varnish Co.
GIV	Givaudan Corp.
GLC	General Latex & Chemical Corp.
GLD	Glidden Co.
GLX	Glasflex, Inc.
GLY	Glyco Chemicals, Inc.
GNF	General Foods Corp., Maxwell House Div.
GNM	General Mills, Inc.
GNT	General Tire & Rubber Co., Chemical Div.
GOC	Gulf Oil Corp.
GOR	Gordon Chemical Co., Inc.
GPM	General Plastics Manufacturing Co.
GPR	Grain Processing Corp.
GRA	Great American Chemical Corp.
GRD	W. R. Grace & Co., Dewey & Almy Chemical Div.
GRG	P. D. George Co.
GRH	W. R. Grace & Co., Hatco Chemical Div.
GRP	W. R. Grace & Co., Polymer Chemicals Div.
GRS	Pontiac Refining Corp.
GRV	Guardsman Chemical Coatings, Inc.
GRW	Great Western Sugar Co.
GTH	Guth Chemical Co.
GTL	Great Lakes Chemical Corp.
GUA	Guard Chemical Co., Inc.
GYR	Goodyear Tire & Rubber Co.
HAB	Halby Products Co., Inc.
HAL	C. P. Hall Co. of Illinois
HAM	Hampden Color & Chemical Co.
HAN	Hanna Paint Manufacturing Co., Inc.
HAP	Applied Plastics Co., Inc.
HAR	Allied Chemical Corp., National Aniline Div., Harmon Color Works
HCH	Houston Chemical Corp.
HCO	Hamilton Chemical Corp.
HDG	Hodag Chemical Corp.
HER	Heresite & Chemical Corp.
HET	Heterochemical Corp.
HEX	Hexagon Laboratories, Inc.
HFT	Hoffman-Taff, Inc.
HK	Hooker Chemical Corp.
HKD	Hooker Chemical Corp., Durez Plastics Div.
HKY	Hawkeye Chemical Co.
HLC	Hartman-Leddon Co.
HLI	Haag Laboratories, Inc.
HMP	Hampshire Chemical Corp.
HMY	Humphrey Chemical Corp.
HN	Tenneco Chemicals, Inc.
HNC	H & N Chemical Co.
HNW	Tenneco Chemicals, Inc., Newport Div.
HNX	Tenneco Chemicals, Inc., Nuodex Div.
HOF	Hoffmann-LaRoche, Inc.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Co. Div.
HPC	Hercules Powder Co.
HRS	Bernz-o-Matic, Harris Paint Co. Div.
HRT	Hart Products Corp.
HSC	Holland-Suco Color Co.
HSH	Harshaw Chemical Co.
HST	Hoechst Chemical Corp.
HUM	National Dairy Products Corp., Humko Products Chemical Div.
HUS	Husky-Dominion Briquets
HVG	Haveg Industries, Inc., Resin & Compound Div.
HYC	Hysol Corp.
HYN	Hynson, Westcott & Dunning, Inc.
IBI	Industrial Biochemicals
ICC	Interchemical Corp., Color & Chemicals Div.
ICF	Interchemical Corp., Finishes Div.
ICI	I.C.I. (Organics), Inc.
ICO	Interchemical Corp., Organic Chemicals Dept.
IDC	Industrial Dyestuff Co.
IFF	International Flavors & Fragrances, Inc.
ILC	International Latex Corp.
IMC	International Minerals & Chemical Corp.
IMP	Hercules Powder Co., Imperial Color & Chemical Dept.
IMR	Imperial Chemical Co., Inc.
INL	Inland Steel Container Co.
INP	International Paper Co.
IOC	Pfaudler Permutit, Inc., Ionac Chemical Co. Div.
IPC	Interplastic Corp., Commercial Resins Div.
IPI	Isocyanate Products, Inc.
IPR	Inter-Pacific Resins, Inc.
IRC	International Resistance Co.
IRI	Ironsides Resins, Inc.
ISO	Isochem Resins Co.
JAM	Jamestown Paint & Varnish Co.
JCC	Jefferson Chemical Co., Inc.
JDC	John Deere Chemical Co.
JEN	Jennison-Wright Corp.
JMS	J. Meyer & Sons, Inc.
JNS	S. C. Johnson & Son, Inc.
JNT	Jennat Corp.
JOB	Jones-Blair Paint Co.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
JOD	Devoe & Reynolds Co., Inc., Jones-Dabney Div.
JOR	W. H. & F. Jordan, Jr. Manufacturing Co., Inc.
JRG	Andrew Jergens Co.
JSC	Jersey State Chemical Co.
JTC	Joseph Turner & Co.
JWL	Jewel Paint & Varnish Co.
KAI	Kaiser Aluminum & Chemical Corp.
KAL	Kali Manufacturing Co.
KCC	Kennecott Copper Corp., Chino Mines Div.
KCH	Keystone Chemurgic Corp.
KCU	Kennecott Copper Corp., Utah Copper Div.
KCW	Keystone Color Works, Inc.
KEL	Kelly-Pickering Chemical Corp.
KEN	Kendall Refining Co.
KES	Armour Industrial Chemical Co., Kessler Chemical Div.
KET	Ketona Chemical Corp.
KF	Kay-Fries Chemicals, Inc.
KLS	Kilsdonk Chemical Corp.
KMC	Kohler-McLister Paint Co.
KMP	Kelly-Moore Paint Co.
KND	Knoedler Chemical Co.
KNG	Far-Best Corp., O. L. King Div.
KNP	Knapp Products, Inc.
KON	H. Kohnstamm & Co., Inc.
KPI	Kenrich Petrochemicals, Inc.
KPP	Koppers Co., Inc., Plastics Div.
KPS	Koppers Pittsburgh Co.
KPT	Koppers Co., Inc., Tar & Chemical Div.
KRM	Lawter Chemicals, Inc., Krumbhaar Resin Div.
KYN	Kyanize Paints, Inc.
KYS	Keysor Chemical Co.
LAK	Lakeway Chemical Co.
LAM	LaMotte Chemical Products Co.
LAS	Lasco Industries, Inc.
LEA	Leatex Chemical Co.
LEB	Lebanon Chemical Corp.
LEF	Leffingwell Chemical Co.
LEH	Lehigh Chemical Co.
LEM	B. L. Lemke & Co., Inc.
LEN	Leonard Refineries, Inc.
LEV	Lever Brothers Co.
LIL	Eli Lilly & Co.
LKL	Lakeside Laboratories, Div. of Colgate-Palmolive Co.
LKY	St. Regis Paper Co., Lake States Yeast & Chemical Div.
LMI	Lawrence Mills, Inc.
LON	Mobil Finishes Co., Inc., American-Marietta Paint Div.
LPC	Lignin Products Co.
LUB	Lubrizol Corp.
LUE	George Lueders & Co.
LUR	Laurel Soap Manufacturing Co.
LVR	C. Lever Co., Inc.
LVY	Fred'k H. Levey Co., Inc.
MAH	Maher Color & Chemical Co.
MAK	MacKenzie Chemical Works, Inc.
MAL	Mallinckrodt Chemical Works
MAR	American Can Co., Marathon Div.
MAY	Otto B. May, Inc.
MCA	Masonite Corp., Alpine Chemical Div.
MCB	Borg-Warner Corp., Marbon Chemical Div.
MCC	McCloskey Varnish Co.
MCH	Michigan Chemical Corp.
MCI	Mooney Chemical Corp.
MCO	Mathe Chemical Co.
MED	Medical Chemicals Corp.
MEE	Maumee Chemical Co.
MER	Jefferson Lake Sulphur Co., Chemical Div.
MET	M & T Chemicals, Inc.
MFG	Molded Fiber Glass Body Co., Resin Div.
MGR	Magruder Color Co., Inc.
MHI	Metal Hydrides, Inc.
MID	Midland Industrial Finishes Co.
MIR	Miranol Chemical Co., Inc.
MLD	Metalead Products Corp.
MLS	Miles Laboratories, Inc., Miles Chemical Co. Div.
MMM	Minnesota Mining & Manufacturing Co.
MNO	Monochem, Inc.
MNP	Minnesota Paints, Inc.
MOA	Mona Industries, Inc.
MOB	Mobay Chemical Co.
MOC	Marathon Oil Co., Texas Refining Div.
MON	Monsanto Co.
MOR	Mineral Oil Refining Co.
MOT	Motomco, Inc.
MPL	Massachusetts Plastic Corp.
MPP	Midwest Plastic Products Co.
MR	Benjamin Moore & Co.
MRA	Metro-Atlantic, Inc.
MRB	Marblette Corp.
MRD	Marden-Wild Corp.
MRK	Merck & Co., Inc.
MRN	Morningstar Paisley, Inc.
MRO	Marco Chemical Corp.
MRT	Morton Salt Co., Morton Chemical Co. Div.
MRV	Marlowe-Van Loan Corp.
MRX	Max Marx Color & Chemical Co.
MSC	Mississippi Chemical Corp.
MTL	Metalsalts Corp.
MTO	Montrose Chemical Corp. of California
MTR	Baldwin-Montrose Chemical Co., Inc., Montrose Chemical Div.
MYW	Stepan Chemical Co., Maywood Div.
NAC	Allied Chemical Corp., National Aniline Div.
NCI	Union Bag-Camp Paper Corp., Nelio Chemical Div.
NCW	Nostrip Chemical Works, Inc.
NEO	Norda Essential Oil & Chemical Co., Inc.
NEP	Nepera Chemical Co., Inc.
NES	Nease Chemical Co., Inc.
NEV	Neville Chemical Co.
NIL	Nilok Chemicals, Inc.
NIT	Nitrin, Inc.
NIX	Nixon-Baldwin Chemicals, Inc.
NLC	Nalco Chemical Co.
NLF	Nalco Chemical Co., Freeport Div.
NOC	Norac Co., Inc.
NON	A. P. Nonweiler Co.
NOP	Nopco Chemical Co., Inc.
NOR	Norwich Pharmacal Co.
NPC	Northwest Petrochemical Corp.
NPI	National Polychemicals, Inc.
NPP	National Plastic Products Co., Inc.
NPV	Norris Paint & Varnish Co.
NRS	Norse Chemical Corp.
NSC	National Starch & Chemical Corp.
NSP	Alabama Binder & Chemical Corp.
NTB	National Biochemical Co.
NTC	National Casein Co.
NTL	National Lead Co.
NVF	National Vulcanized Fibre Co.
NVT	Novamont Corp.
NW	Northwestern Chemical Co.
NYC	American Dyewood Co., Inc., New York Color & Chemical Co. Div.
OCF	Owens-Corning Fiberglas Corp.
OH	Air Reduction Co., Inc., Ohio Chemical & Surgical Equipment Co. Div.
OLH	Old Hickory Chemical Co.
OMC	Olin Mathieson Chemical Corp.
OMS	Olin Mathieson Chemical Corp., E.R. Squibb & Sons Div.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
ONX	Millmaster Onyx Corp., Onyx Chemical Co. Div.
OPC	Orbis Products Corp.
ORG	Organics, Inc.
ORO	California Chemical Co., Oronite Div.
ORT	Roehr Chemicals, Inc.
ORU	Eagle-Picher Co., Ohio Rubber Co. Div.
OSB	C. J. Osborn Co.
OTA	Ottawa Chemical Co.
OTC	Ott Chemical Co.
OTH	California Chemical Co., Ortho Div.
OXO	Oxo Chemicals Co.
OXR	Onyx Oils & Resins, Inc.
OXY	Oxy Chemical Co.
PAI	Pennsylvania Industrial Chemical Corp.
PAN	Pan American Petroleum Corp.
PAR	Pennsylvania Refining Co.
PAS	Pennsalt Chemicals Corp.
PAT	Patent Chemicals, Inc.
PBY	Pillsbury Co., Chemical Div.
PC	Proctor Chemical Co., Inc.
PCC	Pittsburgh Chemical Co., Div. of U.S. Steel Co.
PCH	Peerless Chemical Co.
PCI	Pioneer Chemical Works, Inc.
PCS	Emery Industries, Inc., Western Div.
PCW	Pfister Chemical Works
PD	Park, Davis & Co.
PDC	Berncolors-Poughkeepsie, Inc.
PDJ	Joseph Davis Plastics Co.
PEK	Peck's Products Co.
PEL	Pelron Corp.
PEN	S. B. Penick & Co.
PER	Perry & Derrick Co.
PET	Petroleum Chemicals, Inc.
PFN	Pfanstiehl Laboratories, Inc.
PFP	Phelan-Faust Paint Manufacturing Co.
PFW	Polak's Frutal Works
PFZ	Chas. Pfizer & Co., Inc.
PG	Procter & Gamble Co., Procter & Gamble Manufacturing Co. Div.
PGU	Gulf Oil Corp., Spencer Chemical Div., Perkins Glue Branch
PHR	Pharmachem Corp.
PIC	Pierce Chemical Co.
PII	Polymer Industries, Inc.
PIL	Pilot Chemical Co.
PIT	Pitt-Consol Chemical Co.
PLA	Richardson Co., Richardson Polymers Div.
PLB	P-L Biochemicals, Inc.
PLC	Phillips Petroleum Co.
PLS	Plastics Engineering Co.
PLU	Plumb Chemical Corp.
PMA	Plastics Materials, Inc.
PMC	Plastics Manufacturing Co.
PMP	Premier Malt Products, Inc.
PNT	Pantasote Co.
PNX	Phoenix Oil Co.
POL	Polymer Corp.
PPG	Pittsburgh Plate Glass Co.
PPL	Pioneer Plastics Corp.
PRC	Products Research Co.
PRD	Productol Chemical Co.
PRO	Pure Oil Co.
PRP	S. B. Penick & Co., Parsons-Plymouth Div.
PRT	Pratt & Lambert, Inc.
PRX	Purex Corp., Ltd.
PSP	Georgia-Pacific Corp., Puget Sound Div.
PTT	Petro-Tex Chemical Corp.
PUB	Publicker Industries, Inc.
PVI	Polyvinyl Chemicals, Inc.
PYL	Polychemical Laboratories, Inc.
PYR	Poly Resins
PYZ	Polyrez Co., Inc.
QCP	Quaker Chemical Corp.
QKO	Quaker Oats Co.
QUN	K. J. Quinn & Co., Inc.
RAB	Raybestos-Manhattan, Inc., Raybestos Div.
RBC	Roberts Chemicals, Inc.
RCC	Rexall Chemical Co.
RCD	Richardson Co.
RCI	Reichhold Chemicals, Inc.
RDA	Rhodia, Inc.
RED	Red Spot Paint & Varnish Co., Inc.
REH	Reheis Chemical Co., Div. of Armour Pharmaceutical Co.
REL	Reliance Universal, Inc.
REM	Remington Arms Co., Inc.
RET	Rayette, Inc.
REZ	Rezolin, Inc.
RGC	Rogers Corp.
RH	Rohm & Haas Co.
RIC	Richfield Oil Corp.
RIK	Riker Laboratories, Inc.
RIL	Reilly Tar & Chemical Corp.
RIV	Riverdale Chemical Co.
RLS	Rachel Laboratories
RMC	Rinshed-Mason Co.
ROC	Rock Hill Printing & Finishing Co.
ROM	Roma Chemical Corp.
ROY	Royce Chemical Co.
RPC	Refined Products Co.
RPI	Rowland Products, Inc.
RSA	R. S. A. Corp.
RSB	Rosenberg Bros. & Co.
RT	F. Ritter & Co.
RTC	Ritter Chemical Co., Inc.
RTF	Retzloff Chemical Co.
RTX	Riegel Textile Corp.
RUB	Rubber Corp. of America
RUR	Ruberoid Co.
RZL	Rozilda Laboratories, Inc.
S	Sandoz, Inc.
SAC	Southeastern Adhesives Co.
SAL	Dr. Salsbury's Laboratories
SAR	Sartomer Resins, Inc.
SBC	Scher Bros., Inc.
SBR	Schwarz BioResearch, Inc.
SCC	Standard Chlorine Chemical Co., Inc.
SCF	Schaefer Varnish Co., Inc.
SCH	Schering Corp.
SCN	Schenectady Chemicals, Inc.
SCO	Scholler Bros., Inc.
SCP	Standard Chemical Products, Inc.
SCR	R. P. Scherer Corp.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
SDG	Sterling Drug, Inc., Glenbrook Laboratories Div.
SDH	Sterling Drug, Inc., Hilton-Davis Chemical Co. Div.
SDW	Sterling Drug, Inc., Winthrop Laboratories Div.
SEA	Seaboard Chemicals, Inc.
SED	Seidlitz Paint & Varnish Co.
SEK	Sekisui Plastics Corp.
SEL	Selney Co., Inc.
SEP	Southeast Polymers, Inc.
SEY	Seydel-Woolley & Co., Inc.
SF	Stauffer Chemical Co., Industrial Chemical Div.
SFA	Stauffer Chemical Co., Anderson Chemical Co. Div.
SH	Stein, Hall & Co., Inc.
SHA	Shanco Plastics & Chemicals, Inc.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHF	National Dairy Products Corp., Sheffield Chemical Co. Div.
SHL	Shulton, Inc., Fine Chemicals Div.
SHM	Shamrock Oil & Gas Corp.
SHO	Shell Oil Co.
SHP	Shepherd Chemical Co.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
SIC	Silmar Chemical Corp.
SID	George F. Siddall Co., Inc.
SIM	Simpson Timber Co.
SIN	Sinclair Refining Co.
SIO	Standard Oil Co. of Ohio
SIP	James P. Sipe & Co.
SK	Smith, Kline & French Laboratories
SKC	Sinclair Koppers Chemical Co.
SKG	Sunkist Growers, Inc.
SKO	Skelly Oil Co.
SLC	Soluol Chemical Co., Inc.
SLV	Sterling Drug, Inc., Salvo Chemical Div.
SM	Socony Mobil Oil Co., Inc.: Mobil Chemical Co. Div. Mobil Oil Co. Div.
SMC	Stamford Chemical Co.
SNA	Ansbacher-Siegle Corp., Div. of Sun Chemical Corp.
SNC	Sonoco Products Co.
SNI	Southern Nitrogen Co., Inc.
SNO	SunOlin Chemical Co.
SNT	Suntide Refining Co.
SNW	Sun Chemical Corp., Warwick Chemical Co. Div.
SOC	Standard Oil Co. of California, California Chemical Co. Div.
SOG	Signal Oil & Gas Co., Houston Div.
SOH	Sohio Chemical Co., Agent: Sohio Petroleum Co. Solar Nitrogen Chemicals, Inc.
SOI	American Oil Co. (Maryland)
SOL	Solar Chemical Corp.
SON	Witco Chemical Co., Inc., Sonneborn Div.
SOR	Thomason Industries, Inc., Southern Resin Div.
SOS	Southern Sizing Co.
SPC	Sinclair Paint Co.
SPD	General Electric Co., Silicone Products Dept.
SPI	Sinclair Petrochemicals, Inc.
SPL	Spaulding Fibre Co., Inc.
SPN	Gulf Oil Corp., Spencer Chemical Div.
SPP	Socony Paint Products Co.
SPY	Standard Pyroxoloid Corp.
SRC	Shawinigan Resins Corp.
SRL	G. D. Searle & Co.
SRR	Fred'k A. Stresen-Reuter, Inc.
STA	A. E. Staley Manufacturing Co.
STC	Sou-Tex Chemical Co., Inc.
STD	Standard Dyestuff Corp.
STG	Stange Co.
STP	Stepan Chemical Co.
SUG	Sucro-Chemical Div. of Colonial Sugars Co.
SUM	Summit Chemical Products Corp.
SUN	Sun Oil Co.
SVC	Sullivan Varnish Co.
SVT	Solvent Chemical Co., Inc.
SW	Sherwin-Williams Co.
SWP	Souhegan Wood Products, Inc.
SWR	Switzer Bros., Inc.
SWT	Swift & Co.
SYC	Synthetic Chemicals, Inc.
SYN	Synthron, Inc.
SYP	Synthetic Products Co.
SYR	Synco Resins, Inc.
SYV	Synvar Corp.
TAE	Thomas A. Edison Industries, McGraw-Edison Co., Medical Gas Div.
TAY	Taylor Corp.
TBK	Universal Oil Products Co., Trubek Chemical Co. Div.
TCC	Tanatex Chemical Corp.
TCH	Trylon Chemical Corp.
TCI	Texize Chemicals, Inc.
TDC	Diversey Corp.
TEN	Tennessee Copper Co.
TGL	Triangle Chemical Co.
THC	Thompson Chemical Co.
TIC	Ticonderoga Chemical Corp.
TID	Tidewater Oil Co.
TKL	Thiokol Chemical Corp.
TMH	Thompson-Hayward Chemical Co.
TMS	Sterling Drug, Inc., Thomasset Colors Div.
TNA	Ethyl Corp.
TNC	Tennant Development Corp., Chemical Div.
TNI	Toni Co.
TNP	Velsicol Chemical Corp., Tensyn Div.
TOC	Tenneco Oil Co.
TRC	Toms River Chemical Corp.
TRJ	Trojan Powder Co.
TRN	Trancoa Chemical Corp.
TRO	Troy Chemical Co.
TSA	Texas Alkyls, Inc.
TTX	Detrex Chemical Industries, Inc.
TUS	Texas-U.S. Chemical Co.
TV	Tousey Varnish Co.
TX	Texaco, Inc.
TXC	Tex Chem Co.
TXT	Textilana Corp.
UBS	A. E. Staley Manufacturing Co., U B S Chemical Co. Div.
UCC	Union Carbide Corp., Chemicals Div.
UCP	Union Carbide Corp., Plastics Div.
UCS	Union Carbide Corp., Silicones Div.
UDI	Universal Detergents, Inc. & Petrochemicals Co.
UHL	Paul Uhlich & Co., Inc.
UNC	United Cork Companies
UNG	Ungerer & Co.
UNN	United Chemical Corp. of Norwood
UNO	United Oil Manufacturing Co.
UNP	United Chemical Products Corp.
UNS	Union Starch & Refining Co., Inc.
UOC	Union Oil Co. of California
UPC	Upjohn Co., Polymer Chemicals Div.
UPF	United States Pipe & Foundry Co.
UPJ	Upjohn Co.
UPL	United States Plywood Corp., California Div., Shasta Operations
UPM	Universal Oil Products Co.
UPR	U.S. Peroxygen Corp.
URC	United Carbon Co.
USB	U.S. Borax Research Corp.
USI	National Distillers & Chemical Corp.: A-B Chemical Corp. Div. National Petro Chemical Corp. Div. U.S. Industrial Chemicals Co. Div.
USO	U.S. Oil Co.
USP	U.S. Plastic & Chemical Corp.
USR	Naugatuck Chemical Div. of U.S. Rubber Co.
UTR	Utah Resin Co., Inc.
UVC	Universal Chemicals Corp.
VAC	Varney Chemical Co.
VAL	Valchem
VAR	Reichhold Chemicals, Inc., Varcum Chemical Div.
VB	Vermilye-Bell
VC	Socony Mobil Oil Co., Inc., Virginia-Carolina Chemical Co. Div.
VDM	Van De Mark Chemical Co.
VEL	Velsicol Chemical Corp.
VGC	Virginia Chemicals, Inc.
VIC	Stauffer Chemical Co., Victor Chemical Works Div.
VIN	Vineland Chemical Co.
VIS	Nalco Chemical Co., Visco Div.
VLY	Chem-Fleur, Inc.
VNC	Vanderbilt Chemical Corp.
VND	Van Dyk & Co., Inc.
VPC	Verona-Pharma Chemical Corp.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company
VPT	Vickers Refining Co., Inc.
VSV	Valentine Sugars, Inc., Valite Div.
VTM	Vitamins, Inc.
VTV	Vita-Var Corp., Div. of Textron Industries, Inc.
WAS	Washburn-Purex Co.
WAW	W. A. Wood Co.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
WBC	Worthington Biochemical Corp.
WBG	White & Bagley Co.
WCA	West Coast Adhesives Co.
WDC	Western Dry Color Co.
WHI	White & Hodges, Inc.
WHL	Whitmoyer Laboratories, Inc.
WHW	Whittemore-Wright Co., Inc.
WIC	Wica Chemicals, Inc.
WIL	Wilson & Co., Inc., Wilson Laboratories Div.
WJ	Warner-Jenkinson Manufacturing Co.
WLI	White Laboratories, Inc.
WLM	Wilmot & Cassidy, Inc.
WM	Wilson & Co., Inc., Wilson-Martin Div.
WOD	Wood Chemicals, Inc.
WOI	Neville Chemical Co., Chlorinated Products Div.
WON	Woonsocket Color & Chemical Co.
WPC	Warren Paint & Color Co.
WRC	Wood Ridge Chemical Corp.
WRD	Weyerhaeuser Co., Wood Products Div.
WSN	Washine Chemical Corp.
WTC	Witco Chemical Co., Inc.
WTH	Wallace & Tiernan, Inc., Harchem Div.
WTL	Wallace & Tiernan, Inc., Lucidol Div.
WVA	West Virginia Pulp & Paper Co., Polychemicals Div.
WYN	Wyandotte Chemicals Corp.
WYT	American Home Products Corp., Wyeth Laboratories, Inc. Div.
YAW	Young Aniline Works, Inc.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

SECTION 2. ALPHABETICAL DIRECTORY BY COMPANY

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1964 are listed below alphabetically, together with their identification codes as used in tables in pt. III. Sec. 1 of this table lists these manufacturers in the order of their identification codes]

Code	Name of company	Office address
ABB	Abbott Laboratories	14th St. and Sheridan Rd., N. Chicago, Ill. 60664.
ACR	Acme Resin Corp	1401 Circle Ave., Forest Park, Ill. 60130.
ACO	Acralite Co., Inc	59 Kent St., Brooklyn, N.Y. 11222.
ADC	Ad-Co Color Corp	66 Lister Ave., Newark, N.J. 07105.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Co. Div.	Widener Bldg., 1339 Chestnut St., Philadelphia, Pa. 19107.
	Air Reduction Co., Inc.:	
AIR	Air Reduction Chemical & Carbide Co. Div	150 E. 42d St., New York, N.Y. 10017.
OH	Ohio Chemical & Surgical Equipment Co. Div	1400 E. Washington Ave., Madison, Wis. 53701.
NSP	Alabama Binder & Chemical Corp	P.O. Box 3179, Tuscaloosa, Ala. 35404.
ALO	Alamo Polymer Corp	Phillips Bldg., 16th Fl., Bartlesville, Okla. 74004.
ALC	Alco Chemical Corp	Trenton Ave. and William St., Philadelphia, Pa. 19134.
AAC	Alcolac Chemical Corp	3440 Fairfield Rd., Baltimore, Md. 21226.
ALD	Aldrich Chemical Co., Inc	2371 N. 30th St., Milwaukee, Wis. 53210.
ALL	Alliance Color & Chemical Co	33 Avenue P, Newark, N.J. 07105.
	Allied Chemical Corp.:	
ACB	Barrett Div	40 Rector St., New York, N.Y. 10006.
ALF	Fibers Div	40 Rector St., New York, N.Y. 10006.
ACG	General Chemical Div	P.O. Box 70, Morristown, N.J. 07960.
NAC	National Aniline Div	40 Rector St., New York, N.Y. 10006.
HAR	Harmon Color Works	40 Rector St., New York, N.Y. 10006.
ACN	Nitrogen Div	P.O. Drawer 61, Hopewell, Va. 23860.
ACP	Plastics Div	P.O. Box 365, Morristown, N.J. 07960.
ACS	Solvay Process Div	P.O. Box 271, Syracuse, N.Y. 13201.
ACU	Union Texas Petroleum Div	P.O. Box 2120, Houston, Tex. 77001.
ALX	Alox Corp	3943 Buffalo Ave., Niagara Falls, N.Y. 14302.
AML	Amalgamated Chemical Corp	Ontario and Rorer Sts., Philadelphia, Pa. 19134.
AMC	Amchem Products, Inc	Brookside Ave., Ambler, Pa. 19002.
AAI	American Alkyd Industries	Broad and 14th Sts., Carlstadt, N.J. 07072.
AAE	American Aniline & Extract Co., Inc	Venango and F Sts., Philadelphia, Pa. 19134.
AAP	American Aniline Products, Inc	P.O. Box 2086, Paterson, N.J. 07509.
AMB	American Bio-Synthetics Corp	710 W. National Ave., Milwaukee, Wis. 53204.
ABS	American Brake Shoe Co., American Brakeblok Div	900 W. Maple Rd., Troy, Mich. 48012.
MAR	American Can Co., Marathon Div	Neenah, Wis. 54957.
AME	American Chemical Corp	P.O. Box 9247, Long Beach, Calif. 90810.
ACY	American Cyanamid Co	Berdan Ave., Wayne, N.J. 07470.
NYC	American Dyewood Co., Inc., New York Color & Chemical Co. Div.	374 Main St., Belleville, N.J. 07109.
WYT	American Home Products Corp., Wyeth Laboratories, Inc. Div.	P.O. Box 8299, Philadelphia, Pa. 19101.
SOI	American Oil Co. (Maryland)	910 S. Michigan Ave., Chicago, Ill. 60680.
AMO	American Oil Co. (Texas)	910 S. Michigan Ave., Chicago, Ill. 60680.
APT	American Petrochemical Corp	3134 California St., N.E., Minneapolis, Minn. 55418.
AMP	American Potash & Chemical Corp	3000 W. 6th St., Los Angeles, Calif. 90054.
ASY	American Synthetic Rubber Corp	P.O. Box 360, Louisville, Ky. 40201.
ATC	American Tartars Corp	420 Lexington Ave., New York, N.Y. 10017.
ALB	Ames Laboratories, Inc	200 Rock Lane, Milford, Conn. 06463.
ACC	Amoco Chemicals Corp	130 E. Randolph Dr., Chicago, Ill. 60601.
ANM	Ancon Chemical Co	P.O. Drawer 37, Westlake, La. 70669.
SNA	Ansbacher-Siegle Corp., Div. of Sun Chemical Corp	441 Tompkins Ave., Staten Island, N.Y. 10305.
ASL	Ansul Chemical Co	1 Stanton St., Marinette, Wis. 54143.
APX	Apex Chemical Co., Inc	200 S. 1st St., Elizabethport, N.J. 07206.
APC	Appleton Coated Paper Co	825 E. Wisconsin Ave., Appleton, Wis. 54910.
HAP	Applied Plastics Co., Inc	130 Penn St., El Segundo, Calif. 90246.
ARA	Arapahoe Chemicals, Inc	2855 Walnut St., Boulder, Colo. 80301.
ADM	Archer-Daniels-Midland Co	733 Marquette Ave., P.O. Box 532, Minneapolis, Minn. 55440.
ARD	Ardmore Chemical Co	840 Valley Brook Ave., Lyndhurst, N.J. 07071.
ARG	Argus Chemical Corp	633 Court St., Brooklyn, N.Y. 11231.
ARZ	Arizona Chemical Co	111 W. 50th St., New York, N.Y. 10020.
AKS	Arkansas Co., Inc	185 Foundry St., P.O. Box 210, Newark, N.J. 07101.
ARM	Armour Agricultural Chemical Co	P.O. Box 1685, Atlanta, Ga. 30301.
	Armour & Co.:	
ARC	Armour Industrial Chemical Co. Div	110 N. Wacker Dr., Chicago, Ill. 60606.
KES	Kessler Chemical Div	State Rd. and Cottman Ave., Philadelphia, Pa. 19135.
ARP	Armour Pharmaceutical Co	P.O. Box 511, Kankakee, Ill. 60901.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
ARK	Armstrong Cork Co	W. Liberty St., Lancaster, Pa. 17604.
APV	Armstrong Paint & Varnish Works, Inc	1330 S. Kilbourn Ave., Chicago, Ill. 60623.
ARL	Arcl Chemical Products Co	371 Wayne St., Jersey City, N.J. 07302.
ASH	Ashland Oil & Refining Co	1401 Winchester Ave., Ashland, Ky. 41101.
AST	Astra Pharmaceutical Products, Inc	7 Neponset St., Worcester, Mass. 01606.
ATP	Atco Chemical-Industrial Products, Inc	1259 Route 46, Parsippany, N.J. 07054.
ATL	Atlantic Chemical Corp	P.O. Box 216, Nutley, N.J. 07110.
ATR	Atlantic Refining Co	260 S. Broad St., Philadelphia, Pa. 19101.
ATU	Atlantic Tubing & Rubber Co	Mill St., Cranston, R.I. 02905.
APD	Atlas Chemical Industries, Inc., Chemicals Div	New Murphy Rd. and Concord Pike, Wilmington, Del. 19899.
APR	Atlas Processing Co	P.O. Box 1786, Shreveport, La. 71102.
AUG	Augusta Chemical Co	P.O. Box 660, Augusta, Ga. 30903.
AVS	Avisun Corp	P.O. Box 312, New Castle, Del. 19720.
AZT	Aztec Chemicals, Inc	P.O. Box 756, Elyria, Ohio 44036.
BRD	Baird Chemical Industries, Inc	185 Madison Ave., New York, N.Y. 10016.
BAC	Baker Castor Oil Co	40 Avenue A, Bayonne, N.J. 07002.
BKC	J. T. Baker Chemical Co	600 N. Broad St., Phillipsburg, N.J. 08865.
BKT	Taylor Div	600 N. Broad St., Phillipsburg, N.J. 08865.
MTR	Baldwin-Montrose Chemical Co., Inc., Montrose Chemical Div.	100 Lister Ave., Newark, N.J. 07105.
BGC	Balfour Chemicals, Inc	1754 Thorne Rd., Tacoma, Wash. 98421.
BAL	Baltimore Paint & Chemical Corp	2325 Hollins Ferry Rd., Baltimore, Md. 21230.
BC	Barlow Chemical Corp	Barlow Lane, Cossining, N.Y. 10562.
BAT	Bates Chemical Co	Scottdale Rd., Lansdowne, Pa. 19050.
BXT	J. H. Baxter & Co	120 Montgomery St., San Francisco, Calif. 94104.
BAX	Baxter Laboratories, Inc	6301 N. Lincoln Ave., Morton Grove, Ill. 60053.
BAO	Bayoil Co., Inc	2 Union St., Peabody, Mass. 01961.
BCN	Beacon Chemical Industries, Inc	33 Richdale Ave., Cambridge, Mass. 02140.
BLS	Beech-Nut Life Savers, Inc	Canajoharie, N.Y. 13317.
BCM	Belding Chemical Industries	1407 Broadway, New York, N.Y. 10018.
BL	Belle Chemical Co., Inc	P.O. Box 848, Lowell, N.C. 28089.
BME	Bendix Corp., Marshall-Eclipse Div	P.O. Box 238, Troy, N.Y. 12180.
BEN	Bennett's	65 W. 1st S., Salt Lake City, Utah 84110.
BPC	Benzol Products Co	237 South St., Newark, N.J. 07114.
BKS	Berkshire Color & Chemical Co	12th and Bern Sts., Reading, Pa. 19603.
PDC	Berncolors-Poughkeepsie, Inc	45 Taylor Ave., Poughkeepsie, N.Y. 12602.
HRS	Bernz-o-Matic, Harris Paint Co. Div	1026 N. 19th St., Tampa, Fla. 33601.
BUC	Blackman-Uhler Chemical Co	P.O. Box 1869, Spartanburg, S.C. 29301.
BLA	Blue Arrow, Inc	P.O. Box B, Jacksonville, Fla. 32203.
BOR	Borden Co., Borden Chemical Co. Div	350 Madison Ave., New York, N.Y. 10017.
MCB	Borg-Warner Corp., Marbon Chemical Div	P.O. Box 68, Washington, W. Va. 26181.
BOY	Walter N. Boysen Co	1001 42d Sts., Oakland, Calif. 94608.
BFR	Branchflower Co	4501 Shilshole St. NW., Seattle, Wash. 98107.
BPL	Brand Plastics Co	8400 Willow Springs Rd., Willow Springs, Ill. 60480.
BRS	Bristol-Meyers Co., Bristol Laboratories Div	P.O. Box 657, Syracuse, N.Y. 13201.
BLN	Brooklyn Color Works, Inc	681 Morgan Ave., Brooklyn, N.Y. 11222.
BRU	M. A. Bruder & Sons, Inc	52d St. and Grays Ave., Philadelphia, Pa. 19143.
BRY	Bryant Chemical Corp	6 North St., N. Quincy, Mass. 02171.
BUK	Buckeye Cellulose Corp	2899 Jackson Ave., Memphis, Tenn. 38108.
BKM	Buckman Laboratories, Inc	1256 N. McLean Blvd., Memphis, Tenn. 38108.
CD	Budd Co., Polychem Div	70 S. Chapel St., Newark, Del. 19711.
BJL	Burdick & Jackson Laboratories, Inc	1953 S. Harvey St., Muskegon, Mich. 49442.
BSC	Burkart-Schier Chemical Co	1228 Chestnut St., Chattanooga, Tenn. 37402.
BUR	Burroughs-Wellcome & Co. (U.S.A.), Inc	1 Scarsdale Rd., Tuckahoe, N.Y. 10707.
CBT	Samuel Cabot, Inc	246 Summer St., Boston, Mass. 02210.
CAD	Cadet Chemical Corp	2153 Lockport-Olcott Rd., Burt, N.Y. 14028.
CAU	Calcasieu Chemical Corp	P.O. Box 1522, Lake Charles, La. 70604.
	California Chemical Co.:	
ORO	Oronite Div	200 Bush St., San Francisco, Calif. 94120.
OTH	Ortho Div	Lucas and Ortho Way, Richmond, Calif. 94800.
CIK	Cal/Ink Co., Inc	711 Camelia St., Berkeley, Calif. 94710.
CAL	Callery Chemical Co	Callery, Pa. 16024.
CAP	Cap-Roc, Inc., Capital Plastics Div	250 Mill St., Rochester, N.Y. 14614.
DRL	Caradco, Inc., Durel Div	1098 Jackson St., Dubuque, Iowa 52001.
CBM	Carborundum Co., Coated Abrasives Div	P.O. Box 477, Niagara Falls, N.Y. 14302.
CGL	Cargill, Inc	Room 2008, 3 Penn Center Plaza, Philadelphia, Pa. 19102, and Cargill Bldg., Minneapolis, Minn. 55402.
CCW	Carlisle Chemical Works, Inc	West St., Reading, Ohio 45215.
CCA	Advance Div	500 Jersey Ave., New Brunswick, N.J. 08903.
CM	Carpenter-Morton Co	376 3d St., Everett, Mass. 02149.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
CRS	Carus Chemical Co., Inc	1375 8th St., LaSalle, Ill. 61301.
CAT	Catalin Corp. of America	1 Park Ave., New York, N.Y. 10016.
CEL	Celanese Corp. of America:	
	Celanese Chemical Co. Div	522 5th Ave., New York, N.Y. 10036.
	Celanese Plastics Co. Div	744 Broad St., Newark, N.J. 07102.
CBD	Central Processing Co	P.O. Box 270, Springfield, Oreg. 97477.
CCL	Charlotte Chemical Laboratories	P.O. Box 948, Charlotte, N.C. 28201.
CCC	Chase Chemical Corp	3527 Smallman St., Pittsburgh, Pa. 15201.
CHT	Chattanooga Medicine Co., Chattem Chemicals Div	1717 W. 38th St., Chattanooga, Tenn. 37409.
CCI	Checkmate Chemicals, Inc	P.O. Box 2164, Greenville, S.C. 29602.
CHG	Chemagro Corp	P.O. Box 4913, Station "F", Kansas City, Mo. 64120.
CTN	Chemetron Corp., Chemetron Chemicals, Organic Chemical Dept.	386 Park Ave. S., New York, N.Y. 10016.
VLY	Chem-Fleur, Inc	200 Pulaski St., Newark, N.J. 07105.
CIS	Chemical Insecticide Corp	30 Whitman Ave., Metuchen, N.J. 08840.
CPD	Chemical Products Corp	P.O. Box 815, Cartersville, Ga. 30120.
CCO	Chemico, Inc	2508 E. Bailey Rd., Cuyahoga Falls, Ohio 44221.
CEM	Chemirad Corp	P.O. Box 187 (Ryders Lane), E. Brunswick, N.J. 08816.
CKL	Chemlek Laboratories, Inc	4040 W. 123d St., Alsip, Ill. 60658.
CHL	Chemol, Inc	P.O. Box 3227, Greensboro, N.C. 27402.
CPC	Childs Pulp Colors, Inc	43 Summit St., Brooklyn, N.Y. 11231.
CHC	Chipman Chemical Co., Inc	1801 Murchison Dr., Burlingame, Calif. 94011.
CIB	Ciba Chemical & Dye Co	Route 208, Fair Lawn, N.J. 07410.
	Ciba Corp.:	
CBP	Ciba Pharmaceutical Co. Div	556 Morris Ave., Summit, N.J. 07901.
CBA	Ciba Products Co	556 Morris Ave., Summit, N.J. 07901.
CIN	Cindet Chemicals, Inc	P.O. Box 907, Greensboro, N.C. 27402.
CSO	Cities Service Oil Co	P.O. Box 300, Tulsa, Okla. 74101.
CLK	Clark Oil & Refining Corp	131st St. and Kedzie Ave., Blue Island, Ill. 60406.
CLY	W. A. Cleary Corp	P.O. Box 749, New Brunswick, N.J. 08903.
CLI	Clintwood Chemical Co	1 N. LaSalle St., Chicago, Ill. 60602.
CLV	Clover Chemical Co	360 Regis Ave., Pittsburgh, Pa. 15236.
COK	Cockerille Chemicals, Inc	Greenwood, Va. 22943.
CBR	Colab Resin Corp	Main St., Tewksbury, Mass. 01876.
CP	Colgate-Palmolive Co	300 Park Ave., New York, N.Y. 10022.
COL	Collier Carbon & Chemical Corp	714 W. Olympic Blvd., Los Angeles, Calif. 90015.
CLD	Colloids, Inc	394 Frelinghuysen Ave., Newark, N.J. 07114.
CBN	Columbian Carbon Co., Pigments & Elastomers Div	380 Madison Ave., New York, N.Y. 10017.
CLB	Columbia Organic Chemicals Co., Inc	912 Drake St., Columbia, S.C. 29205.
CMP	Commercial Products Co., Inc	117 Ethel Ave., Hawthorne, N.J. 07641.
COM	Commercial Solvents Corp	260 Madison Ave., New York, N.Y. 10016.
DAV	Conchemco, Inc., H. B. Davis Co. Div	Bayard and Severn Sts., Baltimore, Md. 21230.
CON	Concord Chemical Co., Inc	205 S. 2d St., Camden, N.J. 08103.
CTA	Conestoga Chemical Corp	Wilmington Industrial Park, Wilmington, Del. 19801.
CPT	Consolidated Paint Co	3101 E. 11th St., Los Angeles, Calif. 90023.
CWP	Consolidated Papers, Inc	Wisconsin Rapids, Wis. 54494.
CTL	Continental Chemical Co	270 Clifton Blvd., Clifton, N.J. 07015.
CO	Continental Oil Co	1300 Main, Houston, Tex. 77001.
CPV	Cook Paint & Varnish Co	P.O. Box 389, N. Kansas City, Mo. 64141.
CFA	Cooperative Farm Chemicals Association	P.O. Box 80, Lawrence, Kans. 66044.
COP	Coopers Creek Chemical Corp	River Rd., W. Conshohocken, Pa. 19428.
CPY	Copolymer Rubber & Chemical Corp	P.O. Box 2591, Baton Rouge, La. 70821.
CRN	Corn Products Co	717 5th Ave., New York, N.Y. 10022.
CSD	Cosden Oil & Chemical Co	P.O. Box 1311, Big Spring, Tex. 79721.
CWL	Cowles Chemical Co	12000 Shaker Blvd., Cleveland, Ohio 44120.
CRT	Crest Chemical Corp	235 Emmet St., Newark, N.J. 07114.
ALT	Crompton & Knowles Corp., Althouse Chemical Co. Div.	500 Pear St., Reading, Pa. 19603.
CBY	Crosby Chemicals, Inc	P.O. Drawer 460, Picayune, Miss. 39466.
CCP	Crown Central Petroleum Corp	P.O. Box 1168, Baltimore, Md. 21203.
CRC	Crown Chemical Corp	12 Dudley St., Providence, R.I. 02901.
CRZ	Crown Zellerbach Corp., Chemical Products Div	Camas, Wash. 98607.
CUL	Culver Chemical Co	1502 N. 25th St., Melrose Park, Ill. 60160.
CUC	Cumberland Chemical Corp	150 E. 42d St., New York, N.Y. 10017.
CUT	Cutter Laboratories, Inc	4th and Parker Sts., Berkeley, Calif. 94710.
DAN	Dan River Mills, Inc	Danville, Va. 24540.
PDJ	Joseph Davis Plastics Co	450 Schuyler Ave., Kearny, N.J. 07032.
DLI	Dawe's Laboratories, Inc	4800 S. Richmond St., Chicago, Ill. 60632.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
JDC	John Deere Chemical Co	P.O. Box 1736, Tulsa, Okla. 74101.
DEG	Degen Oil & Chemical Co	200 Kellogg St., Jersey City, N.J. 07305.
DCI	Delaware Chemicals, Inc	726 King St., Wilmington, Del. 19801.
DEP	DePaul Chemical Co., Inc	44-27 Purvis St., Long Island City, N.Y. 11101.
DSO	DeSoto Chemical Coatings, Inc	1700 S. Mt. Prospect Ave., Des Plaines, Ill. 60018.
TTX	Detrex Chemical Industries, Inc	P.O. Box 501, Detroit, Mich. 48232.
JOD	Devoe & Reynolds Co., Inc., Jones-Dabney Div	1481 S. 11th St., Louisville, Ky. 40208.
DEX	Dexter Chemical Corp	845 Edgewater Rd., Bronx, N.Y. 10474.
DA	Diamond Alkali Co	300 Union Commerce Bldg., Cleveland, Ohio 44114.
	Western Div	300 Union Commerce Bldg., Cleveland, Ohio 44114.
TDC	Diversey Corp	212 W. Monroe St., Chicago, Ill. 60606.
DPP	Dixie Pine Products Co., Inc	P.O. Box 470, Hattiesburg, Miss. 39402.
DOD	Donald A. Dodd	8002 53d Ave. W., Everett, Wash. 98202.
DOM	Dominion Products, Inc	882 3d Ave., Brooklyn, N.Y. 11232.
DVC	Dover Chemical Co	15th and Davis Sts., Dover, Ohio 44622.
DBC	Dow Badische Chemical Co	P.O. Box 875, Freeport, Tex. 77541.
DOW	Dow Chemical Co	Main St., Midland, Mich. 48640.
DCC	Dow Corning Corp	P.O. Box 592, Midland, Mich. 48641.
DRW	Drew Chemical Corp	416 Division St., Boonton, N.J. 07005.
DUN	Frank W. Dunne Co	1007 41st St., Oakland, Calif. 94608.
DUP	E. I. duPont de Nemours & Co., Inc	1007 Market St., Wilmington, Del. 19898.
DUR	Duraphene Corp	Route 14, Sterling, Conn. 06377.
DSC	Dye Specialties, Inc	26 Journal Sq., Jersey City, N.J. 07306.
ORU	Eagle-Picher Co., Ohio Rubber Co. Div	Ben Hur Ave., Willoughby, Ohio 44094.
EAK	J. S. & W. R. Eakins, Inc	55 Berry St., Brooklyn, N.Y. 11211.
ECC	Eastern Color & Chemical Co	P.O. Box 6161, Providence, R.I. 02904.
EK	Eastman Kodak Co	343 State St., Rochester, N.Y. 14650.
EKT	Tennessee Eastman Co. Div	P.O. Box 511, Kingsport, Tenn. 37662.
EKX	Texas Eastman Co. Div	P.O. Box 2068, Longview, Tex. 75603.
EDC	Edcan Laboratories	10 Pine St., S. Norwalk, Conn. 06856.
TAE	Thomas A. Edison Industries, McGraw-Edison Co., Medical Gas Div.	Stuyvesant Falls, N.Y. 12174.
ELP	El Paso Natural Gas Products Co	P.O. Box 3986, Odessa, Tex. 79760.
EMR	Emery Industries, Inc	4300 Carew Tower, Cincinnati, Ohio 45202.
PCS	Western Div	8733 S. Dice Rd., Santa Fe Springs, Calif. 90670.
EMK	Emkay Chemical Co	319 2d St., Elizabeth, N.J. 07206.
EN	Endo Laboratories, Inc	1000 Stewart Ave., Garden City, N.Y. 11533.
ENJ	Enjay Chemical Co., Div. of Humble Oil & Refining Co.	60 W. 49th St., New York, N.Y. 10020.
EPC	Epoxylite Corp	P.O. Box 3397, 1428 N. Tyler Ave., S. El Monte, Calif. 91733.
ESC	Escambia Chemical Corp	P.O. Box 467, Pensacola, Fla. 32502.
TNA	Ethyl Corp	100 Park Ave., New York, N.Y. 10017.
ETD	Ethyl-Dow Chemical Co	Midland, Mich. 48640.
EVN	Evans Chemetics, Inc	250 E. 43d St., New York, N.Y. 10017.
FAB	Fabricolor Manufacturing Corp	24-1/2 Van Houten St., Paterson, N.J. 07505.
FMT	Fairmount Chemical Co., Inc	117 Blanchard St., Newark, N.J. 07105.
FOC	Farac Oil & Chemical Co	147th St. and Indiana Ave., Chicago, Ill. 60627.
KNG	Far-Best Corp., O. L. King Div	640 Gilman St., Berkeley, Calif. 94710.
FCA	Farmers Chemical Association, Inc	P.O. Box 67, Tyner, Tenn. 37392.
FRM	Farmers' Chemical Co	P.O. Box 591, Kalamazoo, Mich. 49005.
FAR	Farnow, Inc	77 Jacobus Ave., S. Kearny, N.J. 07032.
FCL	Federal Color Laboratories	4526 Chickering Ave., Cincinnati, Ohio 45232.
FEL	Felton Chemical Co., Inc	599 Johnson Ave., Brooklyn, N.Y. 11237.
FMO	Fermco Laboratories, Inc	4941 S. Racine Ave., Chicago, Ill. 60609.
FER	Ferro Corp., Ferro Chemical Div	P.O. Box 349, Bedford, Ohio 44014.
FBF	Fiberfil, Inc	1701 N. Heidelbach Ave., Evansville, Ind. 47711.
FBR	Fibreboard Paper Products Corp	1550 Powell St., Emeryville, Calif. 94608.
FRP	Filtered Rosin Products Co	P.O. Box 349, Baxley, Ga. 31513.
FIN	Fine Organics, Inc	205 Main St., Lodi, N.J. 07644.
	Firestone Tire & Rubber Co.:	
FIR	Firestone Plastics Co. Div	P.O. Box 699, Pottstown, Pa. 19464.
FRL	Firestone Rubber & Latex Products Co. Div	1 Firestone Ave., Fall River, Mass. 02722.
FRS	Firestone Synthetic Rubber & Latex Co. Div	381 W. Wilbeth Rd., Akron, Ohio 44301.
FLO	Florasynth Laboratories, Inc	900 Van Nest Ave., Bronx, N.Y. 10462.
	FMC Corp.:	
AV	American Viscose Div	1617 John F. Kennedy Blvd., Philadelphia, Pa. 19103.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
	FMC Corp.--Continued	
FMB	Inorganic Chemicals Div	Sawyer Ave. and River Rd., Tonawanda, N.Y. 14207, and 633 3d Ave., New York, N.Y. 10017.
FMN	Niagara Chemical Div	100 Niagara St., Middleport, N.Y. 14105.
FMP	Organic Chemicals Div	P.O. Box 1616, Baltimore, Md. 21203.
FTE	Foote Mineral Co	Route 100, Exton, Pa. 19341.
FOR	Foremost Chemical Products Co	P.O. Box 599, Oakland, Calif. 94604.
FOM	Formica Corp	4614 Spring Grove Ave., Cincinnati, Ohio 45232.
FG	Foster Grant Co., Inc	289 N. Main St., Leominster, Mass. 01453.
FH	Foster-Heaton Co	16 E. 5th St., Paterson, N.J. 07524.
FCD	France, Campbell & Darling, Inc	N. Michigan Ave., Kenilworth, N.J. 07033.
FCP	J. P. Frank Chemical & Plastic Corp	5410 Avenue U, Brooklyn, N.Y. 11234.
FC	Franklin Chemical Co	2020 Bruck St., Columbus, Ohio 43207.
FRE	Freeman Chemical Corp	222 E. Main St., Port Washington, Wis. 53074.
FSH	Frisch & Co., Inc	88 E. 11th St., Paterson, N.J. 07509.
FB	Fritzsche Bros., Inc	76 9th Ave., New York, N.Y. 10011.
FLH	H. B. Fuller Co	1150 Eustis St., St. Paul, Minn. 55108.
FLW	W. P. Fuller Paint Co	450 E. Grand Ave., S. San Francisco, Calif. 94080.
GAM	Gamma Chemical Corp	355 Lexington Ave., New York, N.Y. 10017.
GAN	Gane's Chemical Works, Inc	535 5th Ave., New York, N.Y. 10017.
GGY	Geigy Chemical Corp	P.O. Box 430, Yonkers, N.Y. 10704.
G	General Aniline & Film Corp	P.O. Box 12, Linden, N.J. 07036.
	General Electric Co.:	
GE	Chemical Materials Dept	1 Plastics Ave., Pittsfield, Mass. 01203.
GEI	Insulating Materials Dept	1 Campbell Rd., Schenectady, N.Y. 12306.
SPD	Silicone Products Dept	Waterford, N.Y. 12188.
GNF	General Foods Corp., Maxwell House Div	1125 Hudson St., Hoboken, N.J. 07030.
GLC	General Latex & Chemical Corp	666 Main St., Cambridge, Mass. 02139.
GNM	General Mills, Inc	S. Kensington Rd., Kankakee, Ill. 60901.
CW	Chemical Div	Quimby St., Ossining, N.Y. 10562.
GPM	General Plastics Manufacturing Co	3481 S. 35th St., Tacoma, Wash. 98409.
GNT	General Tire & Rubber Co., Chemical Div	1708 Englewood Ave., Akron, Ohio 44309.
GEO	Geolina Business, Inc	P.O. Box 1557, Savannah, Ga. 31402.
GRG	P. D. George Co	5200 N. 2d St., St. Louis, Mo. 63147.
	Georgia-Pacific Corp.:	
GBC	Coos Bay Div	P.O. Box 869, Coos Bay, Oreg. 97420.
PSP	Puget Sound Div	300 Laurel St., Bellingham, Wash. 98225.
GIL	Gilman Paint & Varnish Co	W. 8th and Pine Sts., Chattancoga, Tenn. 37401.
GIV	Givaudan Corp	109-201 Delawanna Ave., Delawanna, N.J. 07014.
GLX	Glasflex, Inc	Stirling, N.J. 07980.
GLD	Glidden Co	900 Union Commerce Bldg., Cleveland, Ohio 44115.
GLY	Glyco Chemicals, Inc	417 5th Ave., New York, N.Y. 10016.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	3135 Euclid Ave., Cleveland, Ohio 44115.
GGC	Goodrich-Gulf Chemicals, Inc	1717 E. 9th St., Cleveland, Ohio 44114.
GYR	Goodyear Tire & Rubber Co	1144 E. Market St., Akron, Ohio 44316.
GOR	Gordon Chemical Co., Inc	88 Webster St., Worcester, Mass. 01603.
	W. R. Grace & Co.:	
GRD	Dewey & Almy Chemical Div	62 Whittemore Ave., Cambridge, Mass. 02140.
GRH	Hatco Chemical Div	King George Post Rd., P.O. Box 27, Fords, N.J. 08863.
GCC	Nitrogen Products Div	P.O. Box 277, Memphis, Tenn. 38101.
GRP	Polymer Chemicals Div	225 Allwood Rd., Clifton, N.J. 07015.
GPR	Grain Processing Corp	1600 Oregon St., Muscatine, Iowa 52761.
GRA	Great American Chemical Corp	650 Water St., Fitchburg, Mass. 21420.
GTL	Great Lakes Chemical Corp	2024 Filer City Rd., Filer City, Mich. 49634.
GRW	Great Western Sugar Co	P.O. Box 5308, Terminal Annex, Denver, Colo. 80217.
GUA	Guard Chemical Co., Inc	N. Water St., Ossining, N.Y. 10563.
GRV	Guardsman Chemical Coatings, Inc	1350 Steele Ave. SW., Grand Rapids, Mich. 49502.
GOC	Gulf Oil Corp	P.O. Drawer 2100, Houston, Tex. 77001.
SPN	Spencer Chemical Div	610 Dwight Bldg., Kansas City, Mo. 64105.
PGU	Perkins Glue Branch	632 Cannon Ave., Lansdale, Pa. 19446.
GTH	Guth Chemical Co	1455 W. Congress Pkwy., Chicago, Ill. 60607.
HNC	H & N Chemical Co	Maltese Dr., Totowa, N.J. 07512.
HLI	Haag Laboratories, Inc	14010 S. Seeley, Blue Island, Ill. 60406.
HAB	Halby Products Co., Inc	P.O. Box 366, Wilmington, Del. 19899.
HAL	C. P. Hall Co. of Illinois	5245 W. 73d St., Chicago, Ill. 60638.
HCO	Hamilton Chemical Corp	45 Andrews St., Lowell, Mass. 01853.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
HAM	Hampden Color & Chemical Co	5 Albany St., Springfield, Mass. 01101.
HMP	Hampshire Chemical Corp	Poisson Ave., Nashua, N.H. 03060.
HAN	Hanna Paint Manufacturing Co., Inc	1313 Windsor Ave., Columbus, Ohio 43211.
HSH	Harshaw Chemical Co	1945 E. 97th St., Cleveland, Ohio 44106.
HLC	Hartman-Leddon Co	60th St. and Woodland Ave., Philadelphia, Pa. 19143.
HRT	Hart Products Corp	1440 Broadway, New York, N.Y. 10018.
HVG	Haveg Industries, Inc., Resin & Compound Div	900 Greenbank Rd., Wilmington, Del. 19808.
HKY	Hawkeye Chemical Co	P.O. Box 899, Clinton, Iowa 52733.
HPC	Hercules Powder Co	Hercules Tower, 910 Market St., Wilmington, Del. 19899.
IMP	Imperial Color & Chemical Dept	P.O. Box 231, Glens Falls, N.Y. 12803.
HER	Heresite & Chemical Co	822 S. 14th St., Manitowoc, Wis. 54221.
DLH	Hess Oil & Chemical Corp	State St., Perth Amboy, N.J. 08861.
HET	Heterochemical Corp	111 E. Hawthorne Ave., Valley Stream, N.Y. 11582.
HEX	Hexagon Laboratories, Inc	3536 Peartree Ave., Bronx, N.Y. 10469.
HDG	Hodag Chemical Corp	7247 N. Central Park Ave., Skokie, Ill. 60076.
HST	Hoechst Chemical Corp	129 Quidnick St., W. Warwick, R.I. 02893.
HOF	Hoffmann-LaRoche, Inc	324 Kingsland Rd., Nutley, N.J. 07110.
HFT	Hoffman-Taff, Inc	P.O. Box 1246 SSS, Springfield, Mo. 65805.
HSC	Holland-Suco Color Co	471 Howard Ave., Holland, Mich. 49424.
HK	Hooker Chemical Corp	Buffalo Ave. and 47th St., Niagara Falls, N.Y. 14302.
HKD	Durez Plastics Div	Walck Rd., N. Tonawanda, N.Y. 14121.
EFH	E. F. Houghton & Co	303 W. Lehigh Ave., Philadelphia, Pa. 19133.
HCH	Houston Chemical Corp	200 Madison Ave., New York, N.Y. 10016.
CLC	Charles L. Huisking & Co., Inc., Clintbrook Chemical Co. Div.	417 5th Ave., New York, N.Y. 10016.
HMY	Humphrey Chemical Co	Devine St., North Haven, Conn. 06473.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	Industrial Circle, Lincoln, R.I. 02865.
HUS	Husky-Dominion Briquets	P.O. Box 380, Cody, Wyo. 82414.
HYN	Hynson, Westcott & Dunning, Inc	Charles and Chase Sts., Baltimore, Md. 21201.
HYC	Hysol Corp	1100 Seneca Ave., Olean, N.Y. 14761.
ICI	I.C.I. (Organics), Inc	55 Canal St., Providence, R.I. 02901.
IMR	Imperial Chemical Co., Inc	W. 6th and Grass Sts., Shenandoah, Iowa 51601.
IBI	Industrial Biochemicals	Edison Industrial Center, Edison, N.J. 08817.
IDC	Industrial Dyestuff Co	Dexter Rd., E. Providence, R.I. 02914.
INL	Inland Steel Container Co	6532 S. Menard Ave., Chicago, Ill. 60638.
	Interchemical Corp.:	
ICC	Color & Chemicals Div	150 Wagaraw Rd., Hawthorne, N.J. 07506.
ICF	Finishes Div	1255 Broad St., Clifton, N.J. 07015.
ICO	Organic Chemicals Dept	P.O. Box 8, Route 17, Carlstadt, N.J. 07072.
IFF	International Flavors & Fragrances, Inc	521 W. 57th St., New York, N.Y. 10019.
ILC	International Latex Corp	Playtex Park, Dover, Del. 19901.
IMC	International Minerals & Chemical Corp	5401 Old Orchard Rd., Skokie, Ill. 60078.
INP	International Paper Co	220 E. 42d St., New York, N.Y. 10017.
IRC	International Resistance Co	401 N. Broad St., Philadelphia, Pa. 19108.
IPR	Inter-Pacific Resins, Inc	P.O. Box 445, Sweet Home, Oreg. 97386.
IPC	Interplastic Corp., Commercial Resins Div	102 W. Fairfield Ave., St. Paul, Minn. 55107.
IRI	Ironsides Resins, Inc	270 W. Mound St., Columbus, Ohio 43215.
ISO	Isochem Resins Co	Cook St., Lincoln, R.I. 02865.
IPI	Isocyanate Products, Inc	900 Wilmington Rd., New Castle, Del. 19720.
JAM	Jamestown Paint & Varnish Co	108 Main St., Jamestown, Pa. 16134.
JCC	Jefferson Chemical Co., Inc	P.O. Box 53300, Houston, Tex. 77052.
MER	Jefferson Lake Sulphur Co., Chemical Div	1914 Haden Rd., Houston, Tex. 77015.
JNT	Jennat Corp	137 W. 168th St., Gardena, Calif. 90247.
JEN	Jennison-Wright Corp	P.O. Box 4187, Station E, Toledo, Ohio 43609.
JRG	Andrew Jergens Co	2535 Spring Grove Ave., Cincinnati, Ohio 45214.
JSC	Jersey State Chemical Co	59 Lee Ave., Haledon, N.J. 07508.
JWL	Jewel Paint & Varnish Co	345 N. Western Ave., Chicago, Ill. 60612.
JNS	S. C. Johnson & Son, Inc	1525 Howe St., Racine, Wis. 53403.
JOB	Jones-Blair Paint Co	6969 Denton Dr., Dallas, Tex. 75235.
JOR	W. H. & F. Jordan, Jr. Manufacturing Co., Inc	Barclay Bldg., 1 Belmont Ave., Bala Cynwyd, Pa. 19004.
KAI	Kaiser Aluminum & Chemical Corp	P.O. Box 337, Gramercy, La. 70052.
KAL	Kali Manufacturing Co	427 E. Mayer St., Philadelphia, Pa. 19125.
KF	Kay-Fries Chemicals, Inc	360 Lexington Ave., New York, N.Y. 10017.
KMP	Kelly-Moore Paint Co	1015 Commercial St., San Carlos, Calif. 94070.
KEL	Kelly-Pickering Chemical Corp	956 Bransten Rd., San Carlos, Calif. 94070.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
KEN	Kendall Refining Co	1177 Kendall Ave., Bradford, Pa. 16701.
	Kennecott Copper Corp.:	
KCC	Chino Mines Div	Hurley, N. Mex. 88043.
KCU	Utah Copper Div	P.O. Box 1650, Salt Lake City, Utah 84110.
KPI	Kenrich Petrochemicals, Inc	Foot of E. 22d St., Bayonne, N.J. 07002.
KET	Ketona Chemical Corp	P.O. Box 6565, Tarrant Branch, Birmingham, Ala. 35217.
KYS	Keysor Chemical Co	26000 Bouquet Canyon Rd., Saugus, Calif. 91350.
KCH	Keystone Chemurgic Corp	R.D. #2, Bethlehem, Pa. 18017.
KCW	Keystone Color Works, Inc	151 W. Gay Ave., York, Pa. 17403.
KLS	Kilsdonk Chemical Corp	c/o Pfister Chemical Works, Ridgefield, N.J. 07657.
KNP	Knapp Products, Inc	180 Hamilton Ave., Lodi, N.J. 07644.
KND	Knoedler Chemical Co	651 High St., Lancaster, Pa. 17604.
KMC	Kohler-McIister Paint Co	P.O. Box 546, Denver, Colo. 80201.
KON	H. Kohnstamm & Co., Inc	161 Avenue of the Americas, New York, N.Y. 10013.
	Koppers Co., Inc.:	
KPP	Plastics Div	Koppers Bldg., Pittsburgh, Pa. 15219.
KPT	Tar & Chemical Div	Koppers Bldg., Pittsburgh, Pa. 15219.
KPS	Koppers Pittsburgh Co	Koppers Bldg., Pittsburgh, Pa. 15219.
KYN	Kyanize Paints, Inc	2d and Boston Sts., Everett, Mass. 02149.
LKL	Lakeside Laboratories, Div. of Colgate-Palmolive Co.	1707 E. North Ave., Milwaukee, Wis. 53201.
LAK	Lakeway Chemical Co	5025 Evanston Ave., Muskegon, Mich. 49443.
LAM	LaMotte Chemical Products Co	Chestertown, Md. 21620.
GDN	Lancaster Chemical Corp., Gordon Chemicals Co. Div.	Broad and 13th Sts., Carlstadt, N.J. 07071.
LAS	Lasco Industries, Inc	1561 Chapin Rd., Montebello, Calif. 90640.
LUR	Laurel Soap Manufacturing Co	Thompson and Tioga Sts., Philadelphia, Pa. 19134.
LMI	Lawrence Mills, Inc	19 S. Canal St., Lawrence, Mass. 01843.
KFM	Lawter Chemicals, Inc., Krumbhaar Resin Div	3550 Touhy Ave., Chicago, Ill. 60645.
LEA	Leatex Chemical Co	2722 N. Hancock St., Philadelphia, Pa. 19133.
LEB	Lebanon Chemical Corp	P.O. Box 693, Lebanon, Pa. 17042.
LEF	Leffingwell Chemical Co	P.O. Box 1187, Perry Annex, Whittier, Calif. 90604.
LEH	Lehigh Chemical Co	P.O. Box 120, Chestertown, Md. 21620.
LEM	B. L. Lemke & Co., Inc	199 Main St., Lodi, N.J. 07644.
LEN	Leonard Refineries, Inc	E. Superior St., Alma, Mich. 48801.
LEV	Lever Brothers Co	390 Park Ave., New York, N.Y. 10022.
LVR	C. Lever Co., Inc	Howard and Huntington Sts., Philadelphia, Pa. 19133.
LVY	Fred'k H. Levey Co., Inc	380 Madison Ave., New York, N.Y. 10017.
LPC	Lignin Products Co	P.O. Box 960, Erie, Pa. 16512.
LIL	Eli Lilly & Co	740 S. Alabama St., Indianapolis, Ind. 46206.
LUB	Lubrizol Corp	29400 Lakeland Blvd., Wickliffe, Ohio 44092.
LUE	George Lueders & Co	427 Washington St., New York, N.Y. 10013.
MET	M & T Chemicals, Inc	Woodbridge Rd. and Randolph Ave., Rahway, N.J. 07065.
MAK	MacKenzie Chemical Works, Inc	1 Cordello Ave., Central Islip, L.I., N.Y. 11722.
MGR	Magruder Color Co., Inc	2385 Richmond Terrace, Staten Island, N.Y. 10302.
MAH	Maher Color & Chemical Co	1700 N. Elston Ave., Chicago, Ill. 60622.
MAL	Mallinckrodt Chemical Works	P.O. Box 5439, St. Louis, Mo. 63160.
MOC	Marathon Oil Co., Texas Refining Div	P.O. Box 1191, Texas City, Tex. 77591.
MRB	Marblette Corp	37-31 30th St., Long Island City, N.Y. 11101.
MRO	Marco Chemical Corp	1711 W. Elizabeth Ave., Linden, N.J. 07036.
MRD	Marden-Wild Corp	500 Columbia St., Somerville, Mass. 02143.
MRV	Marlowe-Van Loan Corp	1508 Joshua Circle, High Point, N.C. 27261.
	Martin-Marietta Corp.:	
AMS	Ridgway Color & Chemical Div	75 Front St., Ridgway, Pa. 15853.
SDC	Southern Dyestuff Co. Div	P.O. Box 10098, Charlotte, N.C. 28201.
MRX	Max Marx Color & Chemical Co	192 Coit St., Irvington, N.J. 07111.
MCA	Masonite Corp., Alpine Chemical Div	P.O. Box 2392, Gulfport, Miss. 39503.
MPL	Massachusetts Plastic Corp	West Ave., Ludlow, Mass. 01056.
MCO	Mathe Chemical Co	169 Milbank St., Lodi, N.J. 07644.
MEE	Maumee Chemical Co	1310 Expressway Dr., Toledo, Ohio 43608.
MAY	Otto B. May, Inc	52 Amsterdam St., Newark, N.J. 07105.
MCC	McCloskey Varnish Co	7600 State Rd., Philadelphia, Pa. 19136.
MED	Medical Chemicals Corp	4122 W. Grand Ave., Chicago, Ill. 60639.
MRK	Merck & Co., Inc	126 E. Lincoln Ave., Rahway, N.J. 07065.
MLD	Metalead Products Corp	P.O. Box 11005, 2901 Park Blvd., Palo Alto, Calif. 94306.
MHI	Metal Hydrides, Inc	12-24 Congress St., Beverly, Mass. 01915.
MTL	Metalsalts Corp	200 Wagaraw Rd., Hawthorne, N.J. 07507.
MRA	Metro-Atlantic, Inc	2072 Smith St., Centerdale, R.I. 02911.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
JMS	J. Meyer & Sons, Inc	4321 N. 4th St., Philadelphia, Pa. 19140.
MCH	Michigan Chemical Corp	500 N. Bankson St., St. Louis, Mich. 48880.
MID	Midland Industrial Finishes Co	P.O. Box 620, E. Water St., Waukegan, Ill. 60086.
MPP	Midwest Plastic Products Co	3251 Chicago Rd., Steger, Ill. 64075.
MLS	Miles Laboratories, Inc., Miles Chemical Co. Div	1127 Myrtle St., Elkhart, Ind. 46514.
	Millmaster Onyx Corp.:	
BKL	Berkeley Chemical Dept	99 Park Ave., New York, N.Y. 10016.
ONX	Onyx Chemical Co. Div	190 Warren St., Jersey City, N.J. 07302.
MOR	Mineral Oil Refining Co	4401 Park Ave., Dickinson, Tex. 77539.
MMM	Minnesota Mining & Manufacturing Co	2501 Hudson Rd., St. Paul, Minn. 55119.
MNP	Minnesota Paints, Inc	1101 S. 3d St., Minneapolis, Minn. 55415.
MIR	Miranol Chemical Co., Inc	277 Coit St., Irvington, N.J. 07111.
MSC	Mississippi Chemical Corp	P.O. Box 388, Yazoo City, Miss. 39194.
MOB	Mobay Chemical Co	Penn Lincoln Parkway, W. Pittsburgh, Pa. 15205.
	Mobil Finishes Co., Inc.:	
LON	American-Marietta Paint Div	1630 West Hill St., Louisville, Ky. 40210.
ARO	Arco Div	7301 Bessemer Ave., Cleveland, Ohio 44127.
AMF	Ferbert-Schorndorfer Div	12815 Elmwood Ave., Cleveland, Ohio 44111.
MFG	Molded Fiber Glass Body Co., Resin Div	4501 Benefit Ave., Ashtabula, Ohio 44004.
MOA	Mona Industries, Inc	65 E. 23d St., Paterson, N.J. 07524.
MNO	Monochem, Inc	P.O. Box 488, Geismar, La. 70734.
MON	Monsanto Co.:	
	Chemstrand Co. Div	350 5th Ave., New York, N.Y. 10001.
	Chocolate Bayou Plant	P.O. Box 711, Alvin, Tex. 77511.
	Gering Plastics Dept	N. 7th St. and Monroe Ave., Kenilworth, N.J. 07033.
	Organic Chemical Div	800 N. Lindbergh Blvd., St. Louis, Mo. 63166.
	Plastics Div	812 Monsanto Ave., Springfield, Mass. 01102; P.O. Box 1311, Texas City, Tex. 77591; and River Rd., Addyston, Ohio 45001.
	Western Div	9229 E. Marginal Way S., Seattle, Wash. 98108.
MTO	Montrose Chemical Corp. of California	500 S. Virgil Ave., Los Angeles, Calif. 90005.
MCI	Mooney Chemical Corp	2303 Scranton Rd., Cleveland, Ohio 44113.
MR	Benjamin Moore & Co	548 5th Ave., New York, N.Y. 10036.
MRN	Morningstar Paisley, Inc	1770 Canalport Ave., Chicago, Ill. 60616.
MRT	Morton Salt Co., Morton Chemical Co. Div	110 N. Wacker Dr., Chicago, Ill. 60606.
MOT	Motomco, Inc	89 Terminal Ave., Clark, N.J. 07066.
NLC	Nalco Chemical Co	6216 W. 66th Place, Chicago, Ill. 60638.
NLF	Freeport Div	6216 W. 66th Place, Chicago, Ill. 60638.
VIS	Visco Div	P.O. Box 87, Sugar Land, Tex. 77478.
NTB	National Biochemical Co	3127 W. Lake St., Chicago, Ill. 60612.
NTC	National Casein Co	601 W. 80th St., Chicago, Ill. 60620.
	National Dairy Products Corp.:	
HUM	Humko Products Chemical Div	P.O. Box 398, Memphis, Tenn. 38101.
SHF	Sheffield Chemical Co. Div	P.O. Box 630, Norwich, N.Y. 13815.
USI	National Distillers & Chemical Corp.:	
	A-B Chemical Corp. Div	99 Park Ave., New York, N.Y. 10016.
	National Petro Chemical Corp. Div	99 Park Ave., New York, N.Y. 10016.
	U.S. Industrial Chemicals Co. Div	99 Park Ave., New York, N.Y. 10016.
NTL	National Lead Co	111 Broadway, New York, N.Y. 10006.
NPP	National Plastic Products Co., Inc	Odenton, Md. 21113.
NPI	National Polychemicals, Inc	51 Eames St., Wilmington, Mass. 01887.
NSC	National Starch & Chemical Corp	750 3d Ave., New York, N.Y. 10017.
NVF	National Vulcanized Fibre Co	Maryland Ave. and Beech St., Wilmington, Del. 19899.
USR	Naugatuck Chemical Div. of U.S. Rubber Co	Naugatuck, Conn. 06771.
NES	Nease Chemical Co., Inc	P.O. Box 221, State College, Pa. 16801.
NEP	Nepera Chemical Co., Inc	Route 17 and Averill Ave., Harriman, N.Y. 10926.
NEV	Neville Chemical Co	Neville Island P.O., Pittsburgh, Pa. 15225.
WOI	Chlorinated Products Div	Neville Island P.O., Pittsburgh, Pa. 15225.
NIL	Nilok Chemicals, Inc	Mill St. and N. Transit, Lockport, N.Y. 14094.
NIT	Nitrin, Inc	P.O. Box 233, Cordova, Ill. 61242.
NIX	Nixon-Baldwin Chemicals, Inc	Nixon, N.J. 08818.
NON	A. P. Nonweiler Co	P.O. Box 1007, Oshkosh, Wis. 54902.
NOP	Nopco Chemical Co., Inc	60 Park Pl., Newark, N.J. 07101.
NOC	Norac Co., Inc	405 S. Motor Ave., Azusa, Calif. 91703.
NEO	Norda Essential Oil & Chemical Co., Inc	475 10th Ave., New York, N.Y. 10001.
NPV	Norris Paint & Varnish Co	1710 Front St. NE., Salem, Oreg. 97303.
NRS	Norse Chemical Corp	2121 Norse Ave., Cudahy, Wis. 53110.
NW	Northwestern Chemical Co	120 N. Aurora St., W. Chicago, Ill. 60185.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
NPC	Northwest Petrochemical Corp	P.O. Box 99, Anacortes, Wash. 98221.
NOR	Norwich Pharmacal Co	17 Eaton Ave., Norwich, N.Y. 13815.
NCW	Nostrip Chemical Works, Inc	182 Liberty Ave., Jamaica, N.Y. 11412.
NVT	Novamont Corp	P.O. Box 189, Kenova, W. Va. 25530.
CMG	Nyanza, Inc	Magunco Rd., Ashland, Mass. 01721.
OLH	Old Hickory Chemical Co	c/o Stauffer Chemical Co., 380 Madison Ave., New York, N.Y. 10017.
OMC	Olin Mathieson Chemical Corp	445 W. 59th St., New York, N.Y. 10019.
OMS	E. R. Squibb & Sons Div	460 Park Ave., New York, N.Y. 10022.
OXR	Onyx Oils & Resins, Inc	95 Broad St., New York, N.Y. 10004.
OPC	Orbis Products Corp	475 10th Ave., New York, N.Y. 10018.
ORG	Organics, Inc	1724 Greenleaf Ave., Chicago, Ill. 60628.
OSB	C. J. Osborn Co	1301 W. Blancke St., Linden, N.J. 07036.
OTA	Ottawa Chemical Co	700 N. Wheeling St., Toledo, Ohio 43605.
OTC	Ott Chemical Co	500 Agard Rd., Muskegon, Mich. 49945.
OCF	Owens-Corning Fiberglas Corp	National Bank Bldg., Toledo, Ohio 43614.
OXO	Oxo Chemicals Co	130 E. Randolph Dr., Chicago, Ill. 60601.
OXY	Oxy Chemical Co	P.O. Box 28, Hackettstown, N.J. 07840.
PLB	P-L Biochemicals, Inc	1037 W. McKinley Ave., Milwaukee, Wis. 53205.
AMR	Pacific Resins & Chemical Co	3400 13th Ave. SW., Seattle, Wash. 98134.
PAN	Pan American Petroleum Corp	P.O. Box 591, Tulsa, Okla. 74102.
PNT	Pantasote Co	26 Jefferson St., Passaic, N.J. 07056.
PD	Parke, Davis & Co	Foot of Jos. Campau, Detroit, Mich. 48232.
PAT	Patent Chemicals, Inc	335 McLean Blvd., Paterson, N.J. 07504.
CCH	Pearsall Chemical Co	P.O. Box 108, Phillipsburg, N.J. 08865.
PEK	Peck's Products Co	P.O. Box 14508, St. Louis, Mo. 63178.
PCH	Peerless Chemical Co	3850 Oakman Blvd., Detroit, Mich. 48204.
PEL	Pelron Corp	7847 W. 47th St., Lyons, Ill. 60534.
PEN	S. B. Penick & Co	100 Church St., New York, N.Y. 10008.
PRP	Parsons-Plymouth Div	100 Church St., New York, N.Y. 10008.
PAS	Pennsalt Chemicals Corp	3 Penn Center, Philadelphia, Pa. 19102.
PAI	Pennsylvania Industrial Chemical Corp	120 State St., P.O. Box 240, Clairton, Pa. 15025.
PAR	Pennsylvania Refining Co	Union Bank Bldg., Butler, Pa. 16001.
PER	Perry & Derrick Co	2510 Highland Ave., Norwood, Ohio 45212.
PET	Petroleum Chemicals, Inc	P.O. Box 1522, Lake Charles, La. 70604.
PTT	Petro-Tex Chemical Corp	P.O. Box 2584, Houston, Tex. 77001.
PFN	Pfanstiehl Laboratories, Inc	1219 Glen Rock Ave., Waukegan, Ill. 60086.
IOC	Pfaudler Permutit, Inc., Ionac Chemical Co. Div	Birmingham, N.J. 08011.
PCW	Pfister Chemical Works	Linden Ave., Ridgefield, N.J. 07657.
PFZ	Chas. Pfizer & Co., Inc	235 E. 42d St., New York, N.Y. 10017.
PHR	Pharmachem Corp	Broad and Wood Sts., Bethlehem, Pa. 18015.
PFP	Phelan-Faust Paint Manufacturing Co	932 Loughborough Ave., St. Louis, Mo. 63111.
	Phelan's Resins & Plastics Div	Oak St. and Buff Rd., Burlington, Iowa 52602.
PLC	Phillips Petroleum Co	Bartlesville, Okla. 74004.
PNX	Phoenix Oil Co	9505 Cassius Ave., Cleveland, Ohio 44105.
PIC	Pierce Chemical Co	P.O. Box 117, Rockford, Ill. 61105.
PBY	Pillsbury Co., Chemical Div	1152 Pillsbury St., Minneapolis, Minn. 55402.
PIL	Pilot Chemical Co	11756 Burke St., Santa Fe Springs, Calif. 90670.
PCI	Pioneer Chemical Works, Inc	940 N. Delaware Ave., Philadelphia, Pa. 19123.
PPL	Pioneer Plastics Corp	Pioneer Ave., Sanford, Maine 04073.
PIT	Pitt-Consol Chemical Co	191 Doremus Ave., Newark, N.J. 07105.
PCC	Pittsburgh Chemical Co., Div. of U.S. Steel Co	Grant Bldg., Pittsburgh, Pa. 15219.
PPG	Pittsburgh Plate Glass Co	1 Gateway Center, Pittsburgh, Pa. 15222.
PLS	Plastics Engineering Co	1607 Geele Ave., Sheboygan, Wis. 53082.
PMC	Plastics Manufacturing Co	2700 S. Westmoreland, Dallas, Tex. 75224.
PMA	Plastics Materials, Inc	New South Rd., Hicksville, N.Y. 11801.
PLU	Plumb Chemical Corp	4837 James St., Philadelphia, Pa. 19137.
PFW	Polak's Frutal Works	33 Sprague Ave., Middletown, N.Y. 10941.
PYL	Polychemical Laboratories, Inc	490 Hunts Point Ave., New York, N.Y. 10059.
POL	Polymer Corp	2120 Fairmont Ave., Reading, Pa. 19603.
PII	Polymer Industries, Inc	Viaduct Rd., Springdale, Conn. 06879.
PYR	Poly Resins	11655 Wicks St., Sun Valley, Calif. 91352.
PYZ	Polyrez Co., Inc	P.O. Box 320, Woodbury, N.J. 08096.
PVI	Polyvinyl Chemicals, Inc	26 Howley St., Peabody, Mass. 01961.
GRS	Pontiac Refining Corp	P.O. Box 1581, Corpus Christi, Tex. 78403.
PRT	Pratt & Lambert, Inc	75 Tonawanda St., Buffalo, N.Y. 14207.
PMP	Premier Malt Products, Inc	917 W. Juneau Ave., Milwaukee, Wis. 53201.
PG	Procter & Gamble Co., Procter & Gamble Manufacturing Co. Div.	Ivorydale Technical Center, Cincinnati, Ohio 45217.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
PC	Proctor Chemical Co., Inc	P.O. Box 399, Salisbury, N.C. 28144.
PRD	Productol Chemical Co	615 S. Flower St., Los Angeles, Calif. 90017.
PRC	Products Research Co	2919 Empire Ave., Burbank, Calif. 91504.
PUB	Publicker Industries, Inc	1429 Walnut St., Philadelphia, Pa. 19102.
PRO	Pure Oil Co	200 E. Gulf Rd., Palatine, Ill. 60067.
PRX	Purex Corp., Ltd	5101 Clark Ave., Lakewood, Calif. 90712.
QCP	Quaker Chemical Corp	Elm, Lime, and Sandy Sts., Conshohocken, Pa. 19428.
QKO	Quaker Oats Co	Merchandise Mart Plaza, Chicago, Ill. 60654.
QUN	K. J. Quinn & Co., Inc	195 Canal St., Malden, Mass. 02148.
RSA	R. S. A. Corp	690 Saw Mill River Rd., Ardsley, N.Y. 10502.
RLS	Rachel Laboratories	P.O. Box 9095, 700 Henry Ford Ave., Long Beach, Calif. 90810.
RAB	Raybestos-Manhattan, Inc., Raybestos Div	75 E. Main St., Stratford, Conn. 06601.
RET	Rayette, Inc	261 E. 5th St., St. Paul, Minn. 55101.
RED	Red Spot Paint & Varnish Co., Inc	110 Main St., Evansville, Ind. 47711.
RPC	Refined Products Co	624 Schuyler Ave., Lyndhurst, N.J. 07071.
REH	Reheis Chemical Co., Div. of Armour Pharmaceutical Co.	325 Snyder Ave., Berkeley Heights, N.J. 07922.
RCI	Reichhold Chemicals, Inc	525 N. Broadway, White Plains, N.Y. 10602.
VAR	Varcum Chemical Div	Niagara Falls, N.Y. 14302.
RIL	Reilly Tar & Chemical Corp	1615 Merchants Bank Bldg., Indianapolis, Ind. 46204.
REL	Reliance Universal, Inc	4730 Crittenden Dr., Louisville, Ky. 40221, and P.O. Box 1113, Houston, Tex. 77001.
REM	Remington Arms Co., Inc	939 Barnum Ave., Bridgeport, Conn. 06602.
RTF	Retzloff Chemical Co	P.O. Box 45296, Houston, Tex. 77045.
RCC	Rexall Chemical Co	8480 Beverly Blvd., Los Angeles, Calif. 90054.
CFC	Rexall Chemical Co. - Kearny	1106 Harrison Ave., Kearny, N.J. 07029.
REZ	Rezolin, Inc	1651 18th St., Santa Monica, Calif. 90404.
RDA	Rhodia, Inc	60 E. 56th St., New York, N.Y. 08901.
RCD	Richardson Co	27th Ave. and Lake St., Melrose Park, Ill. 60160.
PLA	Richardson Polymers Div	345 Morgan Lane, West Haven, Conn. 06516.
RIC	Richfield Oil Corp	555 S. Flower St., Los Angeles, Calif. 90054.
RTX	Riegel Textile Corp	260 Madison Ave., New York, N.Y. 10016.
RIK	Riker Laboratories, Inc	19901 Nordhoff St., Northridge, Calif. 91326.
RMC	Rinshed-Mason Co	5935 Milford Ave., Detroit, Mich. 48210.
RT	F. Ritter & Co	4001 Goodwin Ave., Los Angeles, Calif. 90039.
RTC	Ritter Chemical Co., Inc	403 W. Main St., Amsterdam, N.Y. 12011.
RIV	Riverdale Chemical Co	220 E. 17th St., Chicago Heights, Ill. 60411.
RBC	Roberts Chemicals, Inc	P.O. Box 546, Nitro, W. Va. 25143.
ROC	Rock Hill Printing & Finishing Co	Rock Hill, S.C. 29731.
ORT	Roehr Chemicals, Inc	52-20 37th St., Long Island City, N.Y. 11101.
RGC	Rogers Corp	Main St., Rogers, Conn. 06263.
RH	Rohm & Haas Co	222 W. Washington Sq., Philadelphia, Pa. 19105.
ROM	Roma Chemical Corp	900 Passaic Ave., E. Newark, N.J. 07029.
RSB	Rosenberg Bros. & Co	100 Landing Ave., Smithtown, N.Y. 11787.
RPI	Rowland Products, Inc	Fairview Lane, Kensington, Conn. 06037.
ROY	Royce Chemical Co	Carlton Hill P.O., E. Rutherford, N.J. 07073.
RZL	Rozilda Laboratories, Inc	814 Madison St., Hoboken, N.J. 07030.
RUB	Rubber Corp. of America	New South Rd., Hicksville, N.Y. 11802.
RUR	Ruberoid Co	S. Bound Brook, N.J. 08880.
LKY	St. Regis Paper Co., Lake States Yeast & Chemical Div.	603 W. Davenport St., Rhinelander, Wis. 54501.
SAL	Dr. Salsbury's Laboratories	500 Gilbert St., Charles City, Iowa 50616.
S	Sandoz, Inc	P.O. Box 357, Fair Lawn, N.J. 07410.
	Dyestuff Div., Pigment Dept	61-63 Van Dam St., New York, N.Y. 10013.
SAR	Sartomer Resins, Inc	P.O. Box 56, Essington, Pa. 19029.
SCF	Schaefer Varnish Co., Inc	15th and Magnolia Sts., Louisville, Ky. 40210.
SCN	Schenectady Chemicals, Inc	Congress St. and 10th Ave., Schenectady, N.Y. 12301.
SBC	Scher Bros., Inc	P.O. Box 538, Allwood Station, Clifton, N.J. 07012.
SCR	R. P. Scherer Corp	9425 Grinnell Ave., Detroit, Mich. 48213.
SCH	Schering Corp	1011 Morris Ave., Union, N.J. 07083.
SCO	Scholler Bros., Inc	Collins and Westmoreland Sts., Philadelphia, Pa. 19134.
SBR	Schwarz BioResearch, Inc	Mountain View Ave., Orangeburg, N.Y. 10962.
SEA	Seaboard Chemicals, Inc	30 Foster St., Salem, Mass. 01971.
SRL	G. D. Searle & Co	P.O. Box 5110, Chicago, Ill. 60680.
SED	Seidlitz Paint & Varnish Co	18th and Garfield Sts., Kansas City, Mo. 64141.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
SEK	Sekisui Plastics Corp	666 Dietrich Ave., Hazelton, Pa. 18201.
SEL	Selney Co., Inc	65 9th St. Bldg. 15, Brooklyn, N.Y. 11215.
SEY	Seydel-Woolley & Co., Inc	748 Rice St. NW., Atlanta, Ga. 30318.
SHM	Shamrock Oil & Gas Corp	P.O. Box 631, Amarillo, Tex. 79105.
SHA	Shanco Plastics & Chemicals, Inc	2716 Kenmore Ave., Tonawanda, N.Y. 14150.
SRC	Shawinigan Resins Corp	644 Monsanto Ave., Springfield, Mass. 01101.
SHO	Shell Oil Co	50 W. 50th St., New York, N.Y. 10020.
SHC	Shell Chemical Co. Div	110 W. 51st St., New York, N.Y. 10020.
SHP	Shepherd Chemical Co	2803 Highland Ave., Cincinnati, Ohio 45212.
SW	Sherwin-Williams Co	101 Prospect Ave. NW., Cleveland, Ohio 44101.
SHL	Shulton, Inc., Fine Chemicals Div	697 Route 46, Clifton, N.J. 07015.
SID	George F. Siddall Co., Inc	P.O. Box 925, Spartanburg, S.C. 29301.
SOG	Signal Oil & Gas Co., Houston Div	P.O. Box 5008, Harrisburg Station, Houston, Tex. 77012.
SIC	Silmar Chemical Corp	12335 S. Van Ness Ave., Hawthorne, Calif. 90250.
SIM	Simpson Timber Co	2301 N. Columbia Blvd., Portland, Oreg. 97217.
SKC	Sinclair Koppers Chemical Co	P.O. Box 5536, Houston, Tex. 77012.
SPC	Sinclair Paint Co	3960 E. Washington Blvd., Los Angeles, Calif. 90023.
SPI	Sinclair Petrochemicals, Inc	600 5th Ave., New York, N.Y. 10020.
SIN	Sinclair Refining Co	600 5th Ave., New York, N.Y. 10020.
SIP	James B. Sipe & Co	P.O. Box 8010, Pittsburgh, Pa. 15216.
SKO	Skelly Oil Co	P.O. Box 1650, Tulsa, Okla. 74102.
GFS	G. Frederick Smith Chemical Co	867 McKinley Ave., Columbus, Ohio 43223.
SK	Smith, Kline & French Laboratories	1500 Spring Garden St., Philadelphia, Pa. 19101.
SM	Socony Mobil Oil Co., Inc.:	
	Mobil Chemical Co. Div	150 E. 42d St., New York, N.Y. 10017.
	Mobil Oil Co. Div	612 S. Flower St., Los Angeles, Calif. 90054, and P.O. Box 3311, Beaumont, Tex. 77704.
VC	Virginia-Carolina Chemical Co. Div	401 E. Main St., Richmond, Va. 23208.
SPP	Socony Paint Products Co	Metuchen, N.J. 08840.
SOH	Sohio Chemical Co., Agent:	
	Sohio Petroleum Co	621 Republic Bldg., Cleveland, Ohio 44115.
	Solar Nitrogen Chemicals, Inc	621 Republic Bldg., Cleveland, Ohio 44115.
SOL	Solar Chemical Corp	36 Monument Sq., Leominster, Mass. 01453.
SLC	Soluol Chemical Co., Inc	Green Hill and Market Sts., W. Warwick, R.I. 02893.
SVT	Solvent Chemical Co., Inc	341 Commercial St., Malden, Mass. 02148.
SNC	Sonoco Products Co	Hartsville, S.C. 29550.
SWP	Souhegan Wood Products, Inc	Wilton, N.H. 03086.
STC	Sou-Tex Chemical Co., Inc	E. Catawba Ave., Mount Holly, N.C. 28120.
SAC	Southeastern Adhesives Co	P.O. Box 791, Lenoir, N.C. 28645.
SEP	Southeast Polymers, Inc	P.O. Box 309, Chattanooga, Tenn. 37401.
SNI	Southern Nitrogen Co., Inc	P.O. Box 246, Savannah, Ga. 31402.
SOS	Southern Sizing Co	P.O. Box 391, East Point, Ga. 30044.
SPL	Spaulding Fibre Co., Inc	310 Wheeler St., Tonawanda, N.Y. 14152.
STA	A. E. Staley Manufacturing Co	N. 22d and Eldorado Sts., Decatur, Ill. 62525.
UBS	U B S Chemical Co. Div	491 Main St., Cambridge, Mass. 02142.
SMC	Stamford Chemical Co	45 Jefferson St., P.O. Box 1131, Stamford, Conn. 06940
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.	Clinton, Iowa 52733.
SCP	Standard Chemical Products, Inc	1301 Jefferson St., Hoboken, N.J. 07030.
SCC	Standard Chlorine Chemical Co., Inc	1015 Belleville Turnpike, Kearny, N.J. 07032.
STD	Standard Dyestuff Corp	19 E. 5th St., Paterson, N.J. 07524.
SOC	Standard Oil Co. of California, California Chemical Co. Div.	200 Bush St., San Francisco, Calif. 94120.
SIO	Standard Oil Co. of Ohio	Midland Bldg., Cleveland, Ohio 44115.
SPY	Standard Pyroxoloid Corp	85 Pleasant St., Leominster, Mass. 01453.
STG	Stange Co	342 N. Western Ave., Chicago, Ill. 60612.
	Stauffer Chemical Co.:	
SFA	Anderson Chemical Co. Div	380 Madison Ave., New York, N.Y. 10017.
CHO	Calhio Chemicals Div	380 Madison Ave., New York, N.Y. 10017.
SF	Industrial Chemical Div	380 Madison Ave., New York, N.Y. 10017.
VIC	Victor Chemical Works Div	380 Madison Ave., New York, N.Y. 10017.
SH	Stein, Hall & Co., Inc	605 3d Ave., New York, N.Y. 10016.
STP	Stepan Chemical Co	R.R. No. 1, Elwood, Ill. 60421.
MYW	Maywood Div	100 W. Hunter Ave., Maywood, N.J. 07607.
	Sterling Drug, Inc.:	
SDG	Glenbrook Laboratories Div	90 Park Ave., New York, N.Y. 10016.
SDH	Hilton-Davis Chemical Co. Div	2235 Langdon Farm Rd., Cincinnati, Ohio 45237.
SLV	Salvo Chemical Div	Military Rd., Rothschild, Wis. 54474.
TMS	Thomasset Colors Div	120 Lister Ave., Newark, N.J. 07105.
SDW	Winthrop Laboratories Div	90 Park Ave., New York, N.Y. 10016.

TABLE 22.--*Synthetic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
SRR	Fred'k A. Stresen-Reuter, Inc	400 W. Roosevelt Ave., Bensenville, Ill. 60106.
SUG	Sucro-Chemical Div. of Colonial Sugars Co	P.O. Drawer G, Gramercy, La. 70052.
SVC	Sullivan Varnish Co	410 N. Hart St., Chicago, Ill. 60622.
SUM	Summit Chemical Products Corp	11 William St., Belleville, N.J. 07109.
SNW	Sun Chemical Corp., Warwick Chemical Co. Div	Wood River Junction, R.I. 02894.
SKG	Sunkist Growers, Inc	707 W. 5th St., Los Angeles, Calif. 90054.
SUN	Sun Oil Co	1608 Walnut St., Philadelphia, Pa. 19103.
SNO	SunOlin Chemical Co	P.O. Box F, Claymont, Del. 19703.
DXS	Sunray DX Oil Co	P.O. Box 2039, Tulsa, Okla. 74102.
SNT	Suntide Refining Co	P.O. Box 658, Corpus Christi, Tex. 78403.
SWT	Swift & Co	115 W. Jackson Blvd., Chicago, Ill. 60604.
SWR	Switzer Bros., Inc	4732 St. Clair Ave., Cleveland, Ohio 44103.
SYR	Synco Resins, Inc	30 Henry St., Bethel, Conn. 06801.
SYC	Synthetic Chemicals, Inc	335 McLean Blvd., Paterson, N.J. 07504.
SYP	Synthetic Products Co	1636 Wayside Rd., Cleveland, Ohio 44112.
SYN	Synthron, Inc	Ryan Ave., Ashton, R.I. 02805.
SYV	Synvar Corp	726 King St., Wilmington, Del. 19801.
TCC	Tanatex Chemical Corp	P.O. Box 388, Lyndhurst, N.J. 07071.
CST	Charles S. Tanner Co	250 S. Water St., Providence, R.I. 02901.
TAY	Taylor Corp	Valley Forge, Pa. 19481.
TNC	Tennant Development Corp., Chemical Div	100 Park Ave., New York, N.Y. 10017.
HN	Tenneco Chemicals, Inc	300 E. 42d St., New York, N.Y. 10017.
HNW	Newport Div	P.O. Box 911, Pensacola, Fla. 32501.
HNX	Nuodex Div	830 Magnolia Ave., Elizabeth, N.J. 07114.
CRY	Tenneco Manufacturing Co., Tenneco Plastics Div	P.O. Box 38, East Brunswick, N.J. 08816.
TOC	Tenneco Oil Co	P.O. Box 2511, Houston, Tex. 77001.
TEN	Tennessee Copper Co	Copperhill, Tenn. 37317.
TX	Texaco, Inc	P.O. Box 52332, Houston, Tex. 77052.
TSA	Texas Alkyls, Inc	P.O. Box 988, Pasadena, Tex. 77501.
TUS	Texas-U.S. Chemical Co	P.O. Box 667, Port Neches, Tex. 77651.
TXC	Tex Chem Co	20-21 Wagaraw Rd., Fair Lawn, N.J. 07410.
TCI	Texize Chemicals, Inc	P.O. Box 368, Greenville, S.C. 29602.
TXT	Textilana Corp	12607 Cerise Ave., Hawthorne, Calif. 90250.
TKL	Thiokol Chemical Corp	P.O. Box 27, Bristol, Pa. 19007.
SOR	Thomason Industries, Inc., Southern Resin Div	P.O. Box 352, Fayetteville, N.C. 28302.
THC	Thompson Chemical Co	90 Mendor Ave., Pawtucket, R.I. 02862.
TMH	Thompson-Hayward Chemical Co	P.O. Box 768, Kansas City, Mo. 64141.
TIC	Ticonderoga Chemical Corp	P.O. Box 11, Leominster, Mass. 01453.
TID	Tidewater Oil Co	Delaware City, Del. 19706.
TRC	Toms River Chemical Corp	P.O. Box 71, Toms River, N.J. 08753.
TNI	Toni Co	456 Merchandise Mart, Chicago, Ill. 60654.
TV	Tousey Varnish Co	135 W. Lake St., North Lake, Ill. 60164.
TRN	Trancoa Chemical Corp	312 Ash St., Reading, Mass. 01867.
ACT	Arthur C. Trask Co	327 S. LaSalle St., Chicago, Ill. 60604.
TGL	Triangle Chemical Co	P.O. Box 4528, Macon, Ga. 31208.
TRJ	Trojan Powder Co	17 N. 7th St., Allentown, Pa. 18105.
TRO	Troy Chemical Co	338 Wilson Ave., Newark, N.J. 07105.
TCH	Trylon Chemical Corp	P.O. Box 5101, Station B, Greenville, S.C. 29606.
JTC	Joseph Turner & Co	P.O. Box 88, Ridgefield, N.J. 07451.
UHL	Paul Uhlich & Co., Inc	90 West St., New York, N.Y. 10006.
UNG	Ungerer & Co	161 Avenue of the Americas, New York, N.Y. 10013.
NCI	Union Bag-Camp Paper Corp., Nelio Chemical Div	P.O. Box 6170, Jacksonville, Fla. 32205.
	Union Carbide Corp.:	
UCC	Chemicals Div	270 Park Ave., New York, N.Y. 10017.
UCP	Plastics Div	270 Park Ave., New York, N.Y. 10017.
UCS	Silicones Div	270 Park Ave., New York, N.Y. 10017.
UOC	Union Oil Co. of California	461 S. Boylston St., Los Angeles, Calif. 90017.
UNS	Union Starch & Refining Co., Inc	301 Washington St., Columbus, Ind. 47201.
URC	United Carbon Co	P.O. Box 149, Baytown, Tex. 77520.
UNN	United Chemical Corp. of Norwood	P.O. Box 327, Endicott St., Norwood, Mass. 02062.
UNP	United Chemical Products Corp	York and Colgate Sts., Jersey City, N.J. 07302.
UNC	United Cork Companies	50 Central Ave., Kearny, N.J. 07032.
UNO	United Oil Manufacturing Co	2d and Cascade Sts., Erie, Pa. 16512.
USB	U.S. Borax Research Corp	3075 Wilshire Blvd., Los Angeles, Calif. 90005.
USO	U.S. Oil Co	P.O. Box 4228, E. Providence, R.I. 02914.

TABLE 22.--*Synethic organic chemicals: Directory of manufacturers, 1964*--Continued

Code	Name of company	Office address
UPR	U.S. Peroxygen Corp.	850 Morton Ave., Richmond, Calif. 94804.
UPF	United States Pipe & Foundry Co	3300 1st Ave. N., Birmingham, Ala. 35202.
USP	U.S. Plastic & Chemical Corp	122 E. Railroad Ave., W. Haverstraw, N.Y. 10927.
UPL	United States Plywood Corp., California Div., Shasta Operations.	P.O. Box 1688, Redding, Calif. 96002.
UVC	Universal Chemicals Corp	1224 Mundon Rd., P.O. Box 1224, Ashton, R.I. 02865.
UDI	Universal Detergents, Inc. & Petrochemicals Co	1825 E. Spring St., Long Beach, Calif. 90806.
UPM	Universal Oil Products Co	30 Algonquin Rd., Des Plaines, Ill. 60018.
TBK	Trubek Chemical Co. Div	State Highway 17, E. Rutherford, N.J. 07073.
UPJ	Upjohn Co	7000 Portage Rd., Kalamazoo, Mich. 49001.
CWN	Carwin Co. Div	Stiles Lane, North Haven, Conn. 06473.
UPC	Polymer Chemicals Div	Battle Ground Rd., Houston, Tex. 77001.
UTR	Utah Resin Co., Inc	418 Kearns Bldg., Salt Lake City, Utah 84101.
VAL	Valchem	1407 Broadway, New York, N.Y. 10018.
VSV	Valentine Sugars, Inc., Valite Div	726 Whitney Bldg., New Orleans, La. 70130.
VDM	Van De Mark Chemical Co	N. Transit Rd., Lockport, N.Y. 14094.
VNC	Vanderbilt Chemical Corp	33 Winfield St., E. Norwalk, Conn. 06855.
VND	Van Dyk & Co., Inc	11 William St., Belleville, N.J. 07109.
VAC	Varney Chemical Co	2001 Afton Rd., Janesville, Wis. 53545.
VEL	Velsicol Chemical Corp	330 E. Ohio St., Chicago, Ill. 60611.
TNP	Tensyn Div	4902 Central Ave., Chattanooga, Tenn. 37410.
VB	Vermilye-Bell	21707 Bothell Way, Bothell, Wash. 98011.
VPC	Verona-Pharma Chemical Corp	P.O. Box 385, Union, N.J. 07083.
VPT	Vickers Refining Co., Inc	P.O. Box 2240, Wichita, Kans. 67201.
VIN	Vineland Chemical Co	W. Wheat Rd., Vineland, N.J. 08360.
VGC	Virginia Chemicals, Inc	West Norfolk, Va. 23703.
VTM	Vitamins, Inc	809 W. 58th St., Chicago, Ill. 60621.
VTV	Vita-Var Corp., Div. of Textron Industries, Inc	177 Oakwood Ave., Orange, N.J. 07050.
FRO	Vulcan Materials Co., Frontier Chemical Co. Div	P.O. Box 545, Wichita, Kans. 67201.
	Wallace & Tiernan, Inc.:	
WTH	Harchem Div	25 Main St., Belleville, N.J. 07109.
WTL	Lucidol Div	1740 Military Rd., Buffalo, N.Y. 14240.
WJ	Warner-Jenkinson Manufacturing Co	2526 Baldwin St., St. Louis, Mo. 63106.
WPC	Warren Paint & Color Co	P.O. Box 1307, Nashville, Tenn. 37202.
WAS	Washburn-Purex Co	2244 Elston Ave., Chicago, Ill. 60614.
WSN	Washine Chemical Corp	165 Main St., Lodi, N.J. 07644.
WCA	West Coast Adhesives Co	11104 NW. Front Ave., Portland, Oreg. 97231.
WDC	Western Dry Color Co	600 W. 52d St., Chicago, Ill. 60609.
EW	Westinghouse Electric Corp., Micarta Div	Trafford, Pa. 15085.
WVA	West Virginia Pulp & Paper Co., Polychemicals Div.	P.O. Box 5207, N. Charleston, S.C. 29406.
WRD	Weyerhaeuser Co., Wood Products Div	118 S. Palmetto St., Marshfield, Wis. 54449.
WBG	White & Bagley Co	P.O. Box 1171, Worcester, Mass. 01601.
WHI	White & Hodges, Inc	576 Lawrence St., Lowell, Mass. 01852.
WLI	White Laboratories, Inc	Galloping Hill Rd., Kenilworth, N.J. 07033.
WHL	Whitmoyer Laboratories, Inc	19 N. Railroad St., Myerstown, Pa. 17067.
WHW	Whittemore-Wright Co. Inc	62 Alford St., Boston, Mass. 02129.
WIC	Wica Chemicals, Inc	P.O. Box 506, Charlotte, N.C. 28201.
WLM	Wilmot & Cassidy, Inc	108 Provost St., Brooklyn, N.Y. 11222.
	Wilson & Co., Inc.:	
WIL	Wilson Laboratories Div	4221 S. Western Blvd., Chicago, Ill. 60609.
WM	Wilson-Martin Div	Snyder Ave. and Swanson St., Philadelphia, Pa. 19148.
WTC	Witco Chemical Co., Inc	P.O. Box 305, Paramus, N.J. 07652.
SON	Sonneborn Div	277 Park Ave., New York, N.Y. 10017.
WAW	W. A. Wood Co	108 Spring St., Everett, Mass. 02149.
WOD	Wood Chemicals, Inc	P.O. Box 3545, Eugene, Oreg. 97401.
WRC	Wood Ridge Chemical Corp	Park Pl. E., Wood Ridge, N.J. 07075.
WON	Woonsocket Color & Chemical Co	176 Sunnyside Ave., Woonsocket, R.I. 02895.
WBC	Worthington Biochemical Corp	Freehold, N.J. 07728.
WYN	Wyandotte Chemicals Corp	1609 Biddle Ave., Wyandotte, Mich. 48193.
YAW	Young Aniline Works, Inc	2731 Boston St., Baltimore, Md. 21224.

APPENDIXES

A. U.S. Imports of Benzenoid Intermediates and Finished Benzenoid Products

Table 23 summarizes, for 1963 and 1964, U.S. imports of benzenoid chemicals and products entered in 1963 under paragraphs 27 and 28 of the Tariff Act of 1930[1] and entered in 1964 under the Tariff Schedules of the United States (TSUS), schedule 4, part 1, subparts B and C. The data, which were obtained by analyzing invoices covering imports through all U.S. customs districts, are given in detail in a separate report of the Tariff Commission.[2]

In 1964, general imports of benzenoid intermediates entered under schedule 4, part 1B, comprised 651 items with a total weight of 18.8 million pounds, and an invoice value of $14.4 million. In 1963, imports consisted of 778 items with a total weight of 25.2 million pounds, valued at $12.6 million. About half of the benzenoid intermediates imported in 1964 were declared to be competitive (duty based on "American selling price"). In terms of quantity, about 40 percent of the total imports of these products in 1964 came from West Germany; imports from that country amounted to 7.6 million pounds in 1964, compared with 8.3 million pounds in 1963. In 1964, imports from the United Kingdom amounted to 2.2 million pounds, compared with 2.5 million

TABLE 23. -- *Benzenoid intermediates and finished benzenoid products: U.S. general imports, classified by use, 1963 and 1964*

Product	1963		1964	
	Quantity	Invoice value	Quantity	Invoice value
	1,000 pounds	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*
Intermediates[1]	25,249	12,617	18,789	14,410
Finished benzenoid products, total	[2] 20,109	[2] 30,992	23,682	34,670
Dyes, total	8,917	12,552	10,096	16,261
Acid	1,712	...	2,093	...
Azoic dyes	13	...	14	...
Azoic components:				
Fast color bases	169	...	311	...
Fast color salts	118	...	113	...
Naphthol AS and its derivatives	1,004	...	901	...
Basic	456	...	1,018	...
Direct	950	...	1,015	...
Disperse	454	...	900	...
Fiber-reactive	395	...	416	...
Fluorescent brightening agents	82	...	151	...
Ingrain	5	...	...	...
Mordant	232	...	292	...
Solvent	112	...	128	...
Sulfur	29	...	11	...
Vat	3,163	...	2,713	...
All other	23	...	[3] 20	...
Benzenoid pigments (toners and lakes)	363	616	684	1,128
Medicinals and pharmaceuticals	2,961	10,150	3,127	9,764
Flavor and perfume materials	1,957	2,862	1,613	2,311
All other	[4] 5,911	4,812	8,162	5,206

[1] Includes small quantities of rubber-processing chemicals.
[2] Revised to include azoic dye components, formerly classified as intermediates.
[3] Includes ingrain dyes.
[4] Revised to include organic pesticides and agricultural chemicals, plasticizers, surface-active agents, and textile assistants, formerly classified as intermediates.

Source: Compiled from the records of the U.S. Bureau of Customs.

[1] The import statistics for 1963 have been revised to account for the transfer of such commodities as fast color bases, fast color salts, naphthol AS and derivatives, pesticides, and textile assistants to schedule 4, pt. 1C, TSUS.

[2] *Imports of Benzenoid Chemicals and Products, 1964*, TC Publication 159, 1965 [processed].

pounds in 1963. Imports from Japan amounted to 2.2 million pounds, compared with 2.1 million pounds in 1963. Imports from Canada totaled 2.0 million pounds in 1964, compared with 7.3 million pounds in 1963; and imports from Italy amounted to 1.6 million pounds in 1964, compared with 2.4 million pounds in 1963. In 1964, sizable quantities of intermediates also were imported from France (1,049,000 pounds), Switzerland (1,043,000 pounds), Sweden (629,000 pounds), and the Netherlands (254,000 pounds). Smaller quantities came from Belgium (120,000 pounds), and Czechoslovakia (55,000 pounds).

The most important intermediates imported in 1964 were adipic acid; refined anthracene; p-nitrotoluene; 1,6-hexanediamine; polyalkylbenzene; cyclohexanesulfamic acid, calcium salt; acetoacetanilide; 3-hydroxy-2-naphthoic acid (B.O.N.); and p-toluenesulfonamide. In 1964, imports of adipic acid, which amounted to 1.9 million pounds, were principally from Canada; imports of refined anthracene, which totaled 900,000 pounds, all came from West Germany; imports of p-nitrotoluene, which came from Sweden and West Germany, totaled 748,000 pounds; imports of 1,6-hexanediamine, which came from France, Italy, and West Germany, amounted to 741,000 pounds; imports of polyalkylbenzene (725,000 pounds) all came from Italy; imports of cyclohexanesulfamic acid, calcium salt (714,000 pounds), all came from Japan; and imports of acetoacetanilide, which came from the United Kingdom, Switzerland, West Germany, and Japan, amounted to 599,000 pounds. Among the other important individual chemicals imported, imports of 3-hydroxy-2-naphthoic acid (B.O.N.) came from Italy, Japan, and West Germany; p-toluenesulfonamide came principally from Japan.

Imports in 1964 of all finished benzenoid products that are dutiable under part 1C comprised 2,292 listed items, with a total weight of 23.7 million pounds and an invoice value of $34.7 million. In 1963, imports consisted of 2,005 items, with a total weight of 20.1 million pounds and an invoice value of $31.0 million. Imports of dyes in 1964 amounted to $16.3 million (invoice value), or 46.9 percent of the value of all imports under part 1C. In 1963, imports of dyes amounted to $12.6 million (invoice value), or 40.5 percent of the value of all imports under part 1C.

Imports of medicinals and pharmaceuticals, the next most important group of products entered under part 1C in 1964, were about 4 percent less in that year than in 1963 and 1962. In 1964, imports of medicinals and pharmaceuticals were valued at $9.8 million (invoice value), or 28.2 percent of the total value of imports under part 1C. In 1963, imports of medicinals and pharmaceuticals were valued at $10.2 million, or 38 percent of the total value of imports under part 1C. In 1964, imports of benzenoid pigments (toners and lakes) were valued at $1,128,000, compared with $616,000 in 1963. Imports of benzenoid flavor and perfume materials in 1964 ($2.3 million) were 19 percent less than in 1963 ($2.9 million). In 1964, imports of other benzenoid products entered under part 1C (chiefly synthetic resins and pesticides) were valued at $5.2 million, compared with $4.8 million (revised) in 1963.

B. List of *Colour Index* and Common Names for Synthetic Organic Pigments (Toners and Lakes)

In the Commission's reports for 1957 and earlier years, individual toners and lakes were identified by the names by which they were most commonly known in the literature and in the trade. In the reports for 1958 and the years since, they have been identified by the names used in the second edition of the *Colour Index*.

The following list of all *Colour Index* names which appear in tables 11A and 12 of this report is appended for quick reference. The list gives the common names (and coupling components, in the case of azo pigments) for each *Colour Index* pigment listed.

Synthetic organic pigments: List of Colour Index *and common names*

Colour Index name	Common name
Pigment Yellow 1	Hansa Yellow G (2-nitro-p-toluidine and acetoacetanilide).
Pigment Yellow 3	Hansa Yellow 10G (4-chloro-2-nitroaniline and o-chloroacetoacetanilide).
Pigment Yellow 12	Benzidine Yellow (3,3'-dichlorobenzidine and acetoacetanilide).
Pigment Yellow 13	Benzidine Yellow (3,3'-dichlorobenzidine and 2,4-acetoacetoxylidide).
Pigment Yellow 14	Benzidine Yellow (3,3'-dichlorobenzidine and o-acetoacetotoluidide).
Pigment Yellow 17	Benzidine Yellow (3,3'-dichlorobenzidine and o-acetoacetanisidide).
Pigment Orange 5	Dinitroaniline Orange (2,4-dinitroaniline and 2-naphthol).
Pigment Orange 13	Benzidine Orange (3,3'-dichlorobenzidine and 3-methyl-1-phenyl-2-pyrazolin-5-one).
Pigment Orange 16	Dianisidine Orange (o-dianisidine and acetoacetanilide).
Pigment Red 1	Para Red (p-nitroaniline and 2-naphthol).
Pigment Red 2	Naphthol Red (2,5-dichloroaniline and Naphthol AS).
Pigment Red 3	Toluidine Red (2-nitro-p-toluidine and 2-naphthol).
Pigment Red 4	Chlorinated Para Red (2-chloro-4-nitroaniline and 2-naphthol).
Pigment Red 5	Naphthol Red (N^1,N^1-diethyl-4-methoxymetanilamide and Naphthol AS-ITR).
Pigment Red 13	Naphthol Red (2-nitro-p-toluidine and Naphthol AS-D).
Pigment Red 17	Naphthol Red (5-nitro-o-toluidine and Naphthol AS-D).
Pigment Red 18	Toluidine Maroon (2-nitro-p-toluidine and Naphthol AS-BS).
Pigment Red 22	Naphthol Red (5-nitro-o-toluidine and Naphthol AS).
Pigment Red 23	Naphthol Red (5-nitro-o-anisidine and Naphthol AS-BS).
Pigment Red 38	Pyrazolone Red (3,3'-dichlorobenzidine and 5-oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester).
Pigment Red 48	Permanent Red 2B (6-amino-4-chloro-m-toluenesulfonic acid and 3-hydroxy-2-naphthoic acid).
Pigment Red 49	Lithol Red R (2-amino-1-naphthalenesulfonic acid and 2-naphthol).
Pigment Red 52	Lithol Red 2G[1] (2-amino-5-chloro-p-toluenesulfonic acid and 3-hydroxy-2-naphthoic acid).
Pigment Red 53	Red Lake C (2-amino-5-chloro-p-toluenesulfonic acid and 2-naphthol).
Pigment Red 54	Helio Bordeaux BL (1-naphthylamine and 1-naphthol-5-sulfonic acid).
Pigment Red 57	Lithol Rubine B (6-amino-m-toluenesulfonic acid and 3-hydroxy-2-naphthoic acid).
Pigment Red 60	Pigment Scarlet 3B (anthranilic acid and 2-naphthol-3,6-disulfonic acid).
Pigment Red 63	BON Maroon (2-amino-1-naphthalenesulfonic acid and 3-hydroxy-2-naphthoic acid).
Pigment Red 81	Rhodamine 6G.
Pigment Red 83	Alizarin Red B.
Pigment Red 90	Bromo Acid; Eosin.
(Acid Red 26)	Scarlet 2R (2,4-xylidine and 2-naphthol-3,6-disulfonic acid).
Pigment Violet 1	Rhodamine B.
Pigment Violet 3	Methyl Violet B.
Pigment Violet 5	Helio Fast Rubine 4BL.
Pigment Blue 1	Victoria Pure Blue BO.
Pigment Blue 2	Victoria Blue B.
Pigment Blue 9	Setoglaucine.
Pigment Blue 14	Ethyl Violet.
Pigment Blue 15	Phthalocyanine Blue.
Pigment Blue 19	Alkali Blue.
Pigment Blue 24	Peacock Blue Lake.
Pigment Blue 25	Dianisidine Blue (o-dianisidine and Naphthol AS).
Pigment Green 1	Brilliant Green.
Pigment Green 2	Brilliant Green and Thioflavine.
Pigment Green 4	Malachite Green.
Pigment Green 7	Phthalocyanine Green.
Pigment Green 8	Pigment Green B.
Pigment Brown 3	Bismarck Brown R (toluene-2,4-diamine).
(Natural Black 3)	Logwood Black.

[1] Lithol Red 2G has become generally accepted as the name for Pigment Red 52, although the 2d edition of the *Colour Index* lists this name for Pigment Red 69.

Note.--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*.

C. Employment in the Synthetic Organic Chemicals Industry, 1964 (Original Manufacturers Only)

At the request of the Special Representative for Trade Negotiations, the Tariff Commission conducted a one-time survey of original manufacturers in the synthetic organic chemicals industry to obtain employment data by product groups, by plants, for 1964. The survey also included producers of crude products from coal tar, petroleum, and natural gas. Figures in table 24 show employment as of December 31, 1964, or the pay period nearest the end of 1964.

There were 275,299 persons employed in the production and sales of synthetic organic chemicals, including crudes, in December 1964; 262,261 were employed in the synthetic organic chemicals industry and 13,038 in the tar crudes and petroleum crudes industries. Employment data were submitted by 696 companies, operating 1,156 plants, out of a total of 803 companies that reported production and sales data to the Commission for 1964. The companies which reported employment accounted for 92.4 percent of the 1964 production of synthetic organic chemicals, for 99.1 percent of production of tar crudes, and for 96.6 percent of the production of crude products from petroleum and natural gas. For the most part, the chemical companies which did not report employment are relatively small in size; a few large integrated companies also did not report. Production by these large companies, however, amounted to only a small part of total U.S. production of synthetic organic chemicals.

No attempt was made to collect separate data on production workers. Supervisory employees and research or sales personnel located at the plants are included in the figures on plant employment. Therefore, the figures on employment at plants shown in table 24 cannot be used to determine the number of production workers in the industry.

Coverage of the industry, by product groups, is also given in table 24. The percent of the industry covered is based on the production accounted for by those companies reporting employment in each respective product group. The reporting companies accounted for more than 85 percent of production in 1964 in 13 of the 15 product groups. Companies reporting employment in two product groups--elastomers and miscellaneous cyclic chemicals--accounted for less than 71 percent of production in each group in 1964. (See table 24.)

Employment in December 1964 in the synthetic organic chemicals industry, by States having three or more plants, is given in table 25. Similar data on employment in the tar crudes and petroleum crudes industries cannot be published without disclosing the operations of individual companies.

Total employment of 1,087 in the tar crudes industry was reported by plants in the following States: Alabama, California, Illinois, Maryland, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, Texas, and Wyoming.

Employment in the petroleum crudes industry, which amounted to 11,951 in December 1964, was reported by plants located in California, Connecticut, Delaware, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Mississippi, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, and West Virginia.

TABLE 24. -- *Synthetic organic chemicals industry, including crudes: Employment as of Dec. 31, 1964, or pay period nearest end of 1964*

Product group	Total employment[1]		Distribution of employment	
	Number	Percent of industry covered[2]	At plants	At other locations[3]
Grand total	275,299	94.5	214,777	60,522
Tar and tar crudes	1,087	99.1	960	127
Crude products from petroleum, total	11,951	96.6	10,208	1,743
A. Aromatics and naphthenes	2,920	...	2,211	709
B. Aliphatic hydrocarbons	9,031	...	7,997	1,034
Synthetic organic chemicals, total	262,261	92.4	203,609	58,652
Benzenoid, modified benzenoid, and benzenoid raw materials	115,611	...	89,937	25,674
Other	146,650	...	113,672	32,978
Cyclic intermediates, total	21,625	98.6	16,843	4,782
A. Benzenoid	20,294	...	15,815	4,479
B. Other	1,331	...	1,028	303
Dyes	9,347	99.8	7,064	2,283
Synthetic organic pigments	3,873	99.0	3,308	565
Medicinal chemicals, total	30,842	92.5	19,497	11,345
A. Benzenoid	14,989	...	9,365	5,624
B. Other	15,853	...	10,132	5,721
Flavor and perfume materials, total	2,533	88.8	2,220	313
A. Benzenoid and modified benzenoid	1,223	...	1,055	168
B. Other	1,310	...	1,165	145
Plastics and resin materials, total	68,648	92.2	54,735	13,913
A. Benzenoid	29,708	...	23,995	5,713
B. Other	38,940	...	30,740	8,200
Rubber-processing chemicals, total	3,618	86.5	2,784	834
A. Benzenoid	2,199	...	1,590	609
B. Other	1,419	...	1,194	225
Elastomers, total	14,306	65.8	12,283	2,023
A. Benzenoid	4,097	...	3,448	649
B. Other	10,209	...	8,835	1,374
Plasticizers, total	3,811	93.6	3,001	810
A. Benzenoid	1,928	...	1,572	356
B. Other	1,883	...	1,429	454
Surface-active agents, total	13,932	93.8	11,870	2,062
A. Benzenoid	6,796	...	5,651	1,145
B. Other	7,136	...	6,219	917
Pesticides, total	7,459	95.0	5,192	2,267
A. Benzenoid	2,874	...	2,018	856
B. Other	4,585	...	3,174	1,411
Miscellaneous cyclic chemicals, total	7,334	70.3	6,060	1,274
A. Benzenoid	3,751	...	3,209	542
B. Other	3,583	...	2,851	732
Miscellaneous acyclic chemicals, total	68,035	92.8	53,324	14,711
A. From benzenoid raw materials	13,217	...	10,771	2,446
B. Other	54,818	...	42,553	12,265
Other synthetic organic chemicals, total[4]	6,898	([5])	5,428	1,470
A. Benzenoid	1,315	...	1,076	239
B. Other	5,583	...	4,352	1,231

[1] Employment at those locations where the same persons handle more than a single product group was allocated between the applicable products by the reporting company.

[2] Coverage shown is based on the production accounted for by those companies reporting employment in each respective product group.

[3] Includes employees engaged in sales, research, administration, etc.

[4] Production and sales of chemicals reported in this group were transferred to the appropriate product groups shown above. Employment figures, however, were not allocated.

[5] Not available.

TABLE 25.--*Synthetic organic chemicals industry: Employment by States,*[1] *as of Dec. 31, 1964, or pay period nearest end of 1964*

State	Number employed	State	Number employed
New Jersey	29,675	Alabama	2,592
Texas	26,236	Indiana	2,521
New York	18,376	Delaware	1,947
West Virginia	13,330	Rhode Island	945
Pennsylvania	13,111	Wisconsin	917
Michigan	12,915	Kansas	839
Ohio	9,571	Georgia	812
Tennessee	8,510	Maryland	743
Illinois	8,333	Colorado	567
California	6,738	Mississippi	539
Louisiana	5,877	Washington	522
Kentucky	5,589	Iowa	337
Massachusetts	5,243	All other States[2]	7,352
Virginia	5,000	Total employment at plants	203,609
Connecticut	4,031	Employment at other than plant locations	58,652
South Carolina	3,819		
Missouri	3,545		
North Carolina	3,077	Grand total	262,261

[1] All States listed have 3 or more producing plants. Employment is distributed among the plants in such a manner as not to disclose individual company operations.

[2] Includes Arkansas, Florida, Maine, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Oklahoma, Oregon, and Utah.

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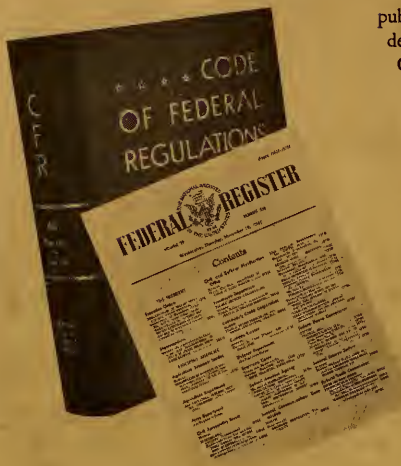

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