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UNITED STATES TARIFF COMMISSION

SYNTHETIC
ORGANIC CHEMICALS

United States Production
and Sales, 1964

TC Publication 167



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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)
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**SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1964**

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

U.S. GOVERNMENT PRINTING OFFICE
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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 of 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 agreements¹); and
- (4) Produced and held in stock.

¹A 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					
	1963	1964	Increase or decrease (-), 1964 over 1963 ¹	Quantity			Value		
				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 operators² 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 toluene² (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 xylene² 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 naphthalene³ 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
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:				1,000 dollars	
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	25,521	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--	55,966	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 5A⁴). 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				
Total-----	1,000 pounds 27,288,077	1,000 pounds 12,886,617	1,000 dollars 438,821	Per pound \$0.034
C ₂ hydrocarbons, total-----	10,248,954	2,795,106	117,439	.042
Acetylene ² -----	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 C₅ hydrocarbon mixtures.

⁹ Includes compounds having a molecular weight of 3,000 or less.

¹⁰ Includes data for di-tert-butylidiusulfide 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:

<i>Chemical group</i>	<i>Number of companies</i>
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
Organic chemicals, cyclic and acyclic, grand total:				<i>Percent</i>	<i>Percent</i>
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
<i>1. Intermediates, Cyclic</i>					
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
<i>2. Dyes, Cyclic</i>					
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
<i>3. Synthetic Organic Pigments, Cyclic</i>					
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					
Cyclic:				<i>Percent</i>	<i>Percent</i>
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-----	19,998	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
<i>10. Surface-Active Agents</i>					
Cyclic:				<i>Percent</i>	<i>Percent</i>
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
<i>11. Pesticides and Other Organic Agricultural Chemicals</i>					
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
<i>12. Miscellaneous Chemicals</i>					
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:

<i>Chemical group</i>	<i>Number of companies</i>	<i>Chemical group</i>	<i>Number of companies</i>
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 7A¹ 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
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 ₂ H=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 ₂ H=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 ₃ H=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 ₃ H=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 ₃ H=1]-----	223	...	...	...
6-Amino-m-toluenesulfonic acid [SO ₃ H=1]-----	280	...	...	...
16-Aminoviolanthrone-----	21	...	...	...
2-Amino-3,5-xylenesulfonic acid [SO ₃ H=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-methylantraquinone-----	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	...	...	...
<i>o</i> -Chlorotoluene (Benzyl chloride)-----	52,408	8,471	1,551	\$0.18
5-Chloro- <i>o</i> -toluidine [NH ₂ =1] and hydrochloride-----	657	159	218	1.37
Cresols, total ² -----	62,467	52,244	10,951	.21
<i>m</i> -, <i>o</i> -, and <i>p</i> -Cresols-----	26,147	22,811	7,135	.31
(<i>m</i> , <i>p</i>)-Cresol (from coal tar and petroleum)-----	24,445	19,009	2,247	.12
(<i>o</i> , <i>m</i> , <i>p</i>)-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-----	1,367,342	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	...	...	...
<i>o</i> -Dichlorobenzene-----	52,308	37,825	4,251	.11
<i>o</i> (and <i>p</i>)-Dichlorobenzene-----	12,997	16,189	528	.03
<i>p</i> -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- <i>p</i> -dichlorobenzene)-----	417	...	...	...
2,5-Dichlorosulfanilic acid [SO ₂ H=1]-----	102	...	...	...
<i>p</i> -Diethylaminobenzaldehyde-----	26	...	...	...
<i>N,N</i> -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
<i>N,N</i> -Dimethylaniline-----	10,855	4,901	1,063	.22
<i>N,N</i> -Dimethylbenzylamine-----	78	...	...	...
2,2'-Dimethyl-1,1'-bianthraquinone-----	118	...	...	...
<i>N,N</i> -Dimethyl- <i>p</i> -nitrosoaniline-----	89	...	...	...
<i>p</i> -(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(<i>p</i> -toluidino)anthraquinone-----	162	...	...	...
Dodecylbenzene ⁴ -----	413,972	352,417	29,049	.08
Dodecylphenol-----	25,783	...	...	...
<i>N</i> -Ethylaniline, refined-----	409	...	...	...
Ethylbenzene-----	2,953,879	473,217	19,933	.04
<i>N</i> -Ethyl- <i>N</i> -phenylbenzylamine-----	493	...	...	...
2-Ethyl-2-phenylmalonic acid, diethyl ester-----	259	...	...	...
3-(<i>N</i> -Ethyl- <i>m</i> -toluidino)propionitrile-----	61	...	...	...
<i>o</i> -Formylbenzenesulfonic acid (<i>o</i> -Sulfo benzaldehyde)-----	239	20	46	2.30
<i>p</i> -Hydrazinobenzenesulfonic acid-----	153	...	...	...
<i>p</i> -Hydroxybenzoic acid, methyl ester-----	255	200	295	1.48
<i>p</i> -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
1,1'-Iminobis[4-nitroanthraquinone]-----	91	...	...	...
1,1'-Iminodianthraquinone (Dianthrime)-----	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-Anthraketrol)-----	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 ₃ H=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-sulfohenyl)-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
Phenylacetone trile (α-Tolunitrile)-----	1,740	636	369	.58
p-Phenylazoaniline (p-Aminoazobenzene) and hydrochloride-----	133	...	...	...
2,2'-(Phenylimino)diethanol (Phenyldiethanolamine)-----	545	...	...	...
1(2H)-Phthalazine-----	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- Δ^2 , ³ -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 8A² 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 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				
Acid red dyes--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
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				
<i>Azoic Compositions</i>				
Total-----	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
<i>Azoic Diazo Components, Bases (Fast Color Bases)</i>				
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	298	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
<i>Azoic Diazo Components, Salts (Fast Color Salts)</i>				
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
<i>Azoic Coupling Components (Naphthol AS and Derivatives)</i>				
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				
Azotic Coupling Components (Naphthol AS and Derivatives) --Continued				
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Azotic Coupling Component 4-----	...	7	15	\$2.14
Azotic Coupling Component 7-----	1,041	775	1,415	1.83
Azotic Coupling Component 14-----	148	103	219	2.13
Azotic Coupling Component 17-----	203	160	313	1.96
Azotic Coupling Component 18-----	744	658	782	1.19
Azotic Coupling Component 19-----	...	14	67	4.79
Azotic Coupling Component 20-----	106	86	176	2.05
Azotic Coupling Component 21-----	79	62	139	2.24
Azotic Coupling Component 29-----	28	25	53	2.12
All other azotic 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				
<i>Drug and Cosmetic and External Drug and Cosmetic Dyes--Continued</i>				
	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
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
SOLVENT DYES--Continued				
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
Total-----	1,000 pounds 184,387	1,000 pounds 178,273	1,000 dollars 264,023	Per pound \$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)-----	1,991	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
Total-----	1,000 pounds 184,387	1,000 pounds 178,273	1,000 dollars 264,023	Per pound \$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, FMA-----	58	37	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, FMA-----	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				
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-----	50	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 ² -----	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, B₂, B₁₂, 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 B₂ (riboflavin) amounted to 662,000 pounds; sales totaled 701,000 pounds, valued at \$6.4 million. Sales of vitamin B₁₂ (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
Antinaseants-----	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
Quinolone derivatives, total-----	320	227	2,905	12.80
5-Chloro-7-iodo-8-quinolinel (Iodochlorhydroxyquin)-----	11	...	...	...
5,7-Diiodo-8-quinolinel (Diodohydroxyquin)-----	21	...	...	...
8-Quinolinel (Oxyquinoline) benzoate-----	3	2	8	4.00
8-Quinolinel (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
MEDICINAL CHEMICALS, BENZENOID ⁷ --Continued				
Autonomic drugs--Continued				
Sympathomimetic (adrenergic) agents, total-----	1,000 pounds 245 (¹⁰)	1,000 pounds ...	1,000 dollars 33	Per pound \$127.91
Epinephrine-----	...	1	29	29.00
α-(Isopropylaminomethyl)protocatechuy alcohol (Isoproterenol)-----	156	140	1,038	7.41
Norephedrine (Phenylpropanolamine) hydrochloride-----	45	40	1,596	39.90
Phenylephrine hydrochloride-----	44	...	...	...
All other-----	93	21	474	22.57
All other autonomic drugs-----				
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-Toloxly-1,2-propanediol (Mephesin)-----	62	...	...	...
All other-----	38	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 ^{1,3} --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	325.00	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 uncombined form, including that sold in bulk and that sold in packages (tablets, ampoules, etc.). Sales of antibiotics include all forms (both undiluted or uncombined 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
Bacitracin (MU), total-----	3,728,231	3,217,150	1,000 dollars 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	358.63

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 ring; 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, B₁₂, D₂, and D₃ 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 B₁₂, 453.6 grams=1 pound; vitamins D₂ and D₃, 18.14 billion units=1 pound. Statistics for these vitamins (except vitamin D₃, 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
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
Isceugenol-----	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				
<i>Benzenoid and Naphthalenoid--Continued</i>				
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
<i>Terpenoid, Heterocyclic, and Alicyclic</i>				
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
Geranial-----	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
Methylinones, 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
Vetiveryl 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 15A⁷ 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
THERMOSETTING RESINS--Continued				
Phenolic and other tar acid resins, total-----	1,000 pounds, dry basis ² 832,540	1,000 pounds, dry basis ² 685,169	1,000 dollars 166,002	Per pound ¹ \$.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	4,622	...	...
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
THERMOPLASTIC RESINS--Continued				
Vinyl resins (resin content basis)--Continued	1,000 pounds, dry basis ²	1,000 pounds, dry basis ²	1,000 dollars	Per pound
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				
Polypropylene:				
Production and sales-----	1,000 pounds, dry basis ²	1,000 pounds, dry basis ²	1,000 dollars	Per pound
Used by reporting companies in processing-----	270,176	225,712	54,823	\$0.24
Sales and use, total-----	...	35,156	...	...
Molding-----	...	260,868	...	...
Extrusion-----	...	108,455	...	...
All other uses (including export)-----	...	113,543	...	...
All other thermoplastic resins ¹⁰ -----	233,109	38,870	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 cellulose, 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.

⁸See 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				
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

⁹See 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
Grand total-----	1,000 pounds ³ 3,421,218	1,000 pounds ³ 2,957,584	1,000 dollars 809,902	Per pound \$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 18E, 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				
Oleic acid esters, total-----	11,447	8,046	1,947	\$0.24
Butyl oleate-----	2,769	1,792	383	.21
Glycerol trioleate (Triclein)-----	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
<i>Not Sulfated or Sulfonated</i>				
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
Benzylmethyl(mixed alkyl)ammonium chloride-----	3,548	3,468	3,166	.91
Benzyldimethyloctadecylammonium chloride-----	309	286	260	.91
Benzyl dodecyl dimethyl ammonium chloride-----	789	747	651	.87
(3,4-Dichlorobenzyl)dodecyl dimethyl ammonium chloride-----	31	30	37	1.23
(Dodecylbenzyl)trimethyl ammonium 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
<i>Sulfated and Sulfonated</i>				
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				
<i>Sulfated and Sulfonated--Continued</i>				
Benzenesulfonates, total-----	1,000 pounds 590,670	1,000 pounds 575,756	1,000 dollars 90,497	Per pound \$.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
Diisopropyl-naphthalenesulfonic acid-----	333	...	...	...
Isopropyl-naphthalenesulfonic 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
<i>Not Sulfated or Sulfonated</i>				
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, alkoxyated, total-----	11,852	11,421	4,925	.43
(Mixed alkyl)amine, ethoxyated-----	2,383	2,157	982	.46
(Tallow alkyl)amine, ethoxyated-----	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				
<i>Not Sulfated or Sulfonated--Continued</i>				
Amides, amines, and quaternary ammonium salts--Continued				
Fatty acid - alkanolamine condensates--Continued				
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
Iauric 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-Octadeceryl)-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 ³ -----	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				
<i>Not Sulfated or Sulfonated--Continued</i>				
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	\$.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-----				
Alcohols, phosphated and polyphosphated, total-----	4,890	3,665	2,490	.68
2-Ethylhexyl phosphate, sodium salt-----	3,862	2,651	1,807	.68
Mixed mono- and dialkyl phosphate-----	229	201	63	.31
Octyl polyphosphate-----	324	276	215	.78
All other-----	112	112	44	.39
Other phosphoric and polyphosphoric acid esters-----	3,197	2,062	1,485	.72
	1,028	1,014	683	.67
Other nonbenzenoid surface-active agents, not sulfated or sulfonated ⁶ -----	30,499	30,004	4,661	.16
<i>Sulfated and Sulfonated</i>				
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				
<i>Sulfated and Sulfonated--Continued</i>				
n-Dodecyl sulfate salts, total-----	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
n-Dodecyl sulfate, ammonium salt-----	41,097	36,704	12,028	\$0.33
n-Dodecyl sulfate, sodium salt-----	1,849	1,836	921	.50
n-Dodecyl sulfate, triethanolamine 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-oleoylaurine-----	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 (DNEP)-----	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	30,935	.78
Hexachlorocyclohexane (Benzene hexachloride) and lindane ⁵	...	11,765	1,934	.16
Organophosphorus insecticides, total-----	39,661	42,769	51,527	1.20
0,0-Diethyl O-(p-nitrophenyl) phosphorothioate (Parathion)-----	12,768	10,338	7,349	.71
0,0-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 ² -----	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 ³ -----	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 ⁴ -----	40,832	29,948	31,389	1.05
All other insecticides, ⁵ rodenticides, and soil conditioners and fumigants ^{6,7} -----	62,271	52,626	7,359	.14

¹ Calculated from rounded figures.

² Includes captan, dichloro, glyodin, sodium pentachlorophenate, tri- and tetrachlorophenols, and others.

³ Includes dimethylurea compounds, dinitrophenol compounds, endothal, isopropyl carbamates (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 carbofenthiol, diazihon, 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 DVP, 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

¹³See 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 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-Diethylaminobenzediazonium chloride (p-Diazo-N,N-diethylaniline) - zinc chloride-----	119	104	247	2.38
p-Dimethylaminobenzediazonium 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% ² -----	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	238,133	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-dimethyl ethylamine (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
Dodecenylosuccinic 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	64.9	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				
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				
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)-----	1,000 pounds ...	1,000 pounds 343	1,000 dollars 68	Per pound \$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-----	1,341	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-Hydroxyethylthylenedinitrilo) 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				
Zinc stearate-----	1,000 pounds 9,982	1,000 pounds 9,880	1,000 dollars 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 anti-freeze 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, KFP.
*Toluene, specification and other grades-----	ACY, KFP.
*Xylenes, all grades-----	ACY, KFP.
*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°-----	AMD, 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-----	NOF, 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-----	AMD, 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, GOC, 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.
Nohexane (2,2-Dimethylbutane)-----	PLC.
All other-----	APR, PLC.
C ₇ hydrocarbons:	
*n-Heptane-----	GSD, EOX, 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. TRC.
8-Acetamido-1-(4-acetamido-2-hydroxy-5-nitrophenylazo)- 2-naphthol.	
3-Acetamido-6-aminobenzenesulfonic acid-----	ICI.
5-Acetamido-2-aminobenzenesulfonic acid-----	G.
3-(2-Acetamido-4-aminophenylazo)-1,5-naphthalenedi- sulfonic acid.	TRC.
p-Acetamidobenzoic acid-----	DUP.
2-Acetamido-3-chloroanthraquinone-----	G, ICI.
*Acetanilide, tech-----	CTN, EKT, MRK, SAL, SW.
Acetoacetanilide-----	FMP, UCC.
o-Acetoacetanilide-----	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-----	LLL.
p-Acetylbenzenesulfonic acid, sodium salt-----	LLL.
p-Acetylbenzenesulfonylurethane-----	LLL.
N ⁴ -Acetylsulfamethoxy-pyridazine-----	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.	LLL.
Aminoaceanthryleno[2,1-a]aceanthrylene-5,13-dione-----	ICI.
*4'-Aminoacetanilide (Acetyl-p-phenylenediamine)-----	DUP, G, NAC, TRC.
3'-Aminoacetophenone-----	SH.
*5-Amino-2-(p-aminoanilino)benzenesulfonic acid-----	CMG, G, TRC, YAW.
1-Amino-4-(3-amino-4-sulfoanilino)-2-anthraquinonesul- fonic acid.	TRC.
1-Amino-4-(4-amino-3-sulfoanilino)-2-anthraquinonesul- fonic 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-Aminoantipyrene-----	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 ₂ H=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-----	OMB, NAC, TRC.
2-Amino-6-chloropyrazine-----	ACY.
3-Amino-6-chloropyridazine-----	ACY.
*6-Amino-4-chloro-m-toluenesulfonic acid [SO ₂ H=1]-----	ACY, DUP, HSC, NAC, SW.
*2-Amino-5-chloro-p-toluenesulfonic acid [SO ₂ H=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-nitrobenzenesulfonamide-----	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)amino]-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.
4-Amino-N-isopropyl-1-phenol-4-sulfonamide-----	TRC.
4-Amino-3-(β-methanesulfanamideethyl)-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-----	AAF, 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-----	NEF, 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-Aminonaph[2,3-c]acridan-5,8,14-trione-----	DUP.
4-Aminonaph[2,3-c]acridan-5,8,14-trione-----	DUP.
6-Aminonaph[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), monosodium salt.	DUP, NAC.
*8-Amino-1-naphthol-3,6-disulfonic acid (H acid), monosodium 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 ₂ H=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.
1-2-Amino-1-(p-nitrophenyl)-1,3-propanediol-----	FD.
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-----	AAF, CWN, DUP, NAC, TRC.
m-(p-Aminophenylazo)benzenesulfonic acid-----	AAF, TRC.
*p-(p-Aminophenylazo)benzenesulfonic acid-----	ACY, TRC.
7-(4-Aminophenylazo)-1,3-naphthalenedisulfonic acid-----	TRC, CMG, DUP, G, NAC, 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-----	AAF, 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.	AAF.
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 ₃ H=1]-----	ACY, DUP, G, SDH, SMA.
*6-Amino-m-toluenesulfonic acid [SO ₃ H=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 ₃ H=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, SDG.
*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, MDN.
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-Aniscin-----	TRC.
Anisole, tech-----	CTN.
Anthracene, refined-----	DUP, LIL.
Anthraflavic acid (2,6-Dihydroxyanthraquinone)-----	ACP.
Anthranilic acid (o-Aminobenzoic acid)-----	DUP, G, TRC.
*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-Anthraquinomedisulfonic acid and salt-----	AAP, DUP, G, ICI, NAC, TRC, VPC.
*1-Anthraquinomedisulfonic acid and salt (Silver salt)-----	AAP, ACY, DUP, G, ICI, MAY, NAC, TRC.
2-Anthraquinomedisulfonic acid and salt (Silver salt)-----	DUP, NAC.
1,1'-[1,5(and 1,8)-Anthraquinonylenediamino]bisnaphth- [2,3-o]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-----	EPG, HJ, 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-methyltriazene-3-yl]-acetic acid.	G.
8-Benzamido-1-naphthol-3,6-disulfonic acid-----	TRC.
3-Benzamido-1-naphthol-3-sulfonic acid-----	TRC.
Benzanilide-----	DUF.
*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-Benzofuranacetoneitrile-----	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.
Benzoylactic 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-----	TCO, 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.
Benzylethanamine-----	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-Benzylideneiminoantipyrine-----	SDW.
p-(Benzylloxy)phenol-----	EK.
Benzyl polysulfide-----	HK.
Benzyltrimethylammonium hydroxide-----	MLS.
Benzyltrimethylammonium methoxide-----	MLS.
*3,3'-Bianthra[1,9]pyrazole-6,6'-(2H,2'H)dione (Pyrazole-anthrone 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-----	ACT, 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-bi- phenylcarboxamide].	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 (Miehler's hydrol)-----	SDH.
4,4'-Bis(dimethylamino)benzophenone (Miehler'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)-di- nitroanthraquinone.	DUP.
4,4'-Bis[p-hydroxyphenylazo]-2,2'-stilbenedisulfonic acid-	TRC.
4,4'-Bis[p-hydroxyphenyl]valeric acid-----	JNG.
2,4-Bis(methylsulfamyl)-5-chloroaniline-----	ABB.
Bis(o-nitrophenyl)sulfide-----	X.
m-Bis(m-phenoxyphenoxy)benzene-----	EK.
2-Bromoacetophenone-----	EK.
p-Bromoaniline-----	EK.
2-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,i]isoquinoline-2,7(3H)- dione.	G.
1-Bromonaphthalene-----	EK.
4-Bromonaphthalic anhydride-----	G.
1-(9-Bromo-7-oxo-7H-benz[de]anthracen-3-ylamino)anthra- quinone.	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 [OH=1]-----	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-methoxymetaniamide-----	KLS.
N ¹ -Butyl-4-methoxymetaniamide-----	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'-Carboxyldibenzoic acid-----	ACY.
6 (and 2)-Carboxybenzene-2 (and 4)-diazol-oxide-----	DUP.
5-(o-Carboxybenzoyl)-2-chloroanilic 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'-Chloroacetacetanilide-----	FMP, UCC.
α -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, MFO, OMC, PFG.
1-Chlorobenzene-4-methylsulfone-----	TRC.
4-Chlorobenzenesulfonic 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-xylylidene-----	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'-dimethoxyacetanilide-----	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.
o-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-nitrobenzenesulfonamide-----	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-anisidine-----	PCW.
3-Chloro-4-hydroxyquinoline-3,4-carbonyl acid-----	SDH.
6-Chloroisatoic anhydride-----	MEE.
o-Chloro-α-(isopropylamino)methyl benzyl alcohol hydrochloride.	LLL.
4-Chloro-N-isopropyl-3-nitrobenzenesulfonamide-----	TRC.
5-Chlorometamlic acid-----	NAC.
*6-Chlorometamlic acid-----	AAP, DUP, SW.
5-Chloro-2-methoxybenzediazonium 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-methylantraquinone-----	AAP, ACY, CMG, G, ICI, NAC, TRC.
6-Chloro-2-methyl-7-chlorosulfamoyl-2H-1,2,4-benzo- thiadiazin-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-benzo- thiadiazin-3(4H)-one, 1,1-dioxide.	ABB.
α -Chloromethylnaphthalene-----	BPC.
4-Chloro-3-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzene- sulfonic acid.	DUP, G.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide-----	ABB.
5-Chloro-2-(n-methyl)-sulfamyl-4-sulfamyl-n-benzylaniline- Chloronaphthalenes-----	ABB. G, KPT.
*2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)-----	ACY, DOW, DUP, HSC.
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)-----	DOW, DUP, VFC.
*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-nitrobenzenesulfonamide	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-Chlorophenylacetone-----	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-----	FMF, NEP.
2-Chloroquinizarin-----	HSH.
7-Chloro-4-quinolinol-----	SDW.
4-Chlororesorcinol-----	AAF, G.
2-Chloro-5-sulfamoylbenzoic acid-----	TRC.
8-Chlorotheophylline-----	MAL.
2-Chlorothiexanthenone-----	KF.
2-Chlorothiophene-----	GAM.
m-Chlorotoluene-----	HK.
o-Chlorotoluene-----	HN.
p-Chlorotoluene-----	HN.
*o-Chlorotoluene (Benzyl chloride)-----	BFC, 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-----	AAF, PCW.
*5-Chloro-o-toluidine [NH ₂ =1] (4-Chloro-o-toluidine [CH ₃ =1])-----	AAF, BUC, DUF, NAC, SDH.
*5-Chloro-o-toluidine hydrochloride [NH ₂ =1]-----	ATI, AUG, BUC, KLS, SDH.
3-Chloro-p-toluidine [NH ₂ =1]-----	DUP.
N-(5-Chloro-o-tolylazo)sarcosine-----	ATI, 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, β, γ -trifluoro-6-nitrotoluene-----	MEE.
4-Chloro- α, β, γ -trifluoro-3-nitrotoluene-----	G.
p-Chloro- α, β, γ -trifluorotoluene-----	HK.
2-Chloro-1,3,5-trinitrobenzene-----	EK.
Chlorotriphenylmethane-----	EK.
α -Chloro-p-xylene-----	BFC.
2-Chloro-p-xylene-----	DUP.
4-Chloro-2,5-xylenesulfonyl chloride-----	G, NAC.
4-Chloro-3,5-xylenol-----	OTA.
6-Chloro-3,4-xyllylmethylcarbamate-----	UPJ.
4-Chloro-2,5-xyllylthioacetic acid-----	NAC.
Cholic acid-----	SRL, WIL.
Chryszin (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)
Cryptoocyanine-----	EK.
*Cumene-----	ACC, ACP, CLK, DOW, GOC, HPC, PLC, SHC, SKO, SOC, TX. DUP.
2-[p-(2-Cyanoacetimido)phenyl]-6-methyl-7-benzothiazole-sulfonic acid.	
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. x.
1,4-Cyclohexanedicarboxylic acid, dimethyl ester-----	NAC.
1,2-Cyclohexanedicarboxylic anhydride-----	RS.A.
1,2-Cyclohexanedione-----	
*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)-aminol-p-acetophenetidide-----	TRC.
4,4'-Diacetyl-amino-3,3'-dinitro-biphenyl-----	AAP.
N,N-Diacetyl-4,4'-diaminobiphenyl-----	AAP.
N,N-Diallylcamphoramic acid-----	WYT.
N ² ,N ² -Diallyl melamine-----	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-Diaminoanthranilic acid-----	G, ICC.
3,3'-Diaminobenzanilide-----	AAP.
3,4-Diaminobenzanilide-----	AAP.
2,4-Diaminobenzenesulfonic acid [SO ₂ H=1]-----	DUP, NAC, TRC.
2,5-Diaminobenzenesulfonic acid [SO ₂ H=1]-----	TRC.
*4,4'-Diamino-2,2'-biphenyldisulfonic acid-----	AAP, ACY, NAC.
3,7-Diaminodibenzothiohenedisulfonic acid, 5,5-dioxide, disodium salt.	ACY.
Diaminodibromodi-p-toluidinoanthraquinone-----	ICI.
1,4-Diamino-2,3-dichloroanthraquinone-----	CMC, 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-----	NEF, RIL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid-----	ACY, DUP, G, NAC, SDH, TRC, VPC.
Diaminotetrabromoanthraquinone-----	ICI.
4,6-Diamino-m-toluenesulfonic acid [SO ₂ H=1]-----	NAC.
3,5-Diamino-p-toluenesulfonic acid [SO ₂ H=1]-----	G.
Di-tert-amyloxyphenyl 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'-diphthaloylcarbazole-----	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.
Dibenzothioephene-----	EK, EVN.
*1,5-Dibenzocyanthalene-----	ACY, DUP, G, HST, ICI, TRC, VPC.
1',2',6',7'-Dibenzopyrene-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-----	G, MAY, NAC, TRC.
m-Dibromobenzene-----	DUP.
p-Dibromobenzene-----	EK.
2,2'-Dibromobiphenyl-----	DOW.
Dibromodibenzol[b,def]chrysene-7,14-dione-----	EDC.
ar-Dibromoethylbenzene-----	ICI.
2,6-Dibromo-1,5-naphthalenediol-----	DOW.
Dibromo-8,16-pyranthrene-dione-----	EK.
X,Y-Dibromothiathrene-----	DUP.
Dibromoviolanthrone-----	TRC.
2,5-Dibutoxyaniline-----	G.
2,6-Di-tert-butyl-4-nonylphenol-----	EKT.
2,4-Di-tert-butylphenol-----	G.
2,4-Dichloroaniline-----	DOW.
3,4-Dichloroaniline-----	EK.
*2,5-Dichloroaniline and hydrochloride [NH ₂ =1]-----	DUP, MON.
3,4-Dichloroaniline-6-sulfonic acid-----	AAP, DUP, KLS, NAC, SDH.
3-(2,4-Dichloroanilino)-1-(2,4,6-trichlorophenyl)-2-pyrazolin-5-one.	SW.
1,5-Dichloroanthraquinone-----	EK.
1,5(and 1,8)-Dichloroanthraquinone-----	DUP, ICI, NAC.
*1,8-Dichloroanthraquinone-----	DUP, NAC.
4,5-Dichloro-1,8-anthraquinonedisulfonic acid-----	G, ICI, TRC.
2,2'-Dichlorosobenzene-----	G.
3-(3,4-Dichlorobenzamido)-1-phenyl-2-pyrazolin-5-one-----	DUP.
Dichlorobenzanthrone-----	EK.
m-Dichlorobenzene-----	ACY.
*o-Dichlorobenzene-----	EK, WOI, x.
*o(and p)-Dichlorobenzene-----	ACS, CPD, DOW, DUP, DVC, MON, OMC, PFG, SCC, SVT, WOI.
*p-Dichlorobenzene-----	GGY, HKD, MTO.
4,6-Dichloro-m-benzenedisulfonamide-----	ACS, CPD, DOW, DUP, DVC, HK, MON, PFG, SCC, SVT, WOI.
4,6-Dichloro-m-benzenedisulfonyl chloride-----	ABB.
*3,3'-Dichlorobenzidine base and salts-----	ABB.
2,4-Dichlorobenzoic acid-----	ALL, CWN, IMP, LAK, NAC.
2,6-Dichlorobenzonitrile-----	HN.
2,5-Dichloro-3,6-bis(9-ethylcarbazol-3-ylamino)-p-benzoquinone.	x.
8,18-Dichloro-5,15-diethyl-5,15-dihydrodiindolo-(3,2-b:3',2'-m)triphenodioxazine.	TRC.
2,5-Dichloro-3,6-dihydroxy-p-benzoquinone-----	AAP, TRC.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbonitrile.	EK.
4,5-Dichloro-3,6-dioxocyclohexene-1,2-dicarbonitrile-----	LIL.
	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 ₂ H=1]-----	CMG, DUP, G, VPC.
2,5-Dichloro-4-sulfobenzediazonium 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-xyleneol-----	OTA.
Dicyclohexylamine-----	ABB, VGC.
Dicyclohexylcarbodiimide-----	G.
Dicyclopentadiene and cyclopentadiene-----	ENJ, UCC.
Dicyclopentadiene dioxide-----	UCC.
2,4-Di(1,1-dimethylpropyl)phenol (Di-tert-amyphenol)-----	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-Diethylaminobenzoaldehyde-----	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,N'-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]cyclohepten-5-one-----	LIL.
3,4-Dihydro-3,4-dioxo-1-naphthalenesulfonic acid, sodium salt.	EK.
3,4-Di(1,4-dimethoxy-1(2H)-naphthalenone)-----	GAM.
10,11-Dihydro-5-[3-(methylamino)propyl]-5H-dibenzo[a,d]cyclohepten-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 (Protocatechic 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-Dinitro- chrysanfin).	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).	HSB, NAC.
6,7-Dihydroxy-2-naphthalenesulfonic acid-----	FMT, G, IDC, NAC.
3,5-Dihydroxy-2-naphthoic acid-----	G.
11 β ,21-Dihydroxypregna-4,17(20)-cis-dien-3-one-----	UPJ.
11 β ,21-Dihydroxypregna-1,4,17(20)-cis-trien-3-one-----	UPJ.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalene- disulfonic acid, trisodium salt.	EX.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)-----	ACY, DUP, G, ICI, MAY, NAC.
m-Diiodobenzene-----	EK.
2,5-Diiodobenzoic acid-----	RSB.
3,5-Diiodo-L-tyrosine-----	EK.
N,N'-Diisopropyl-p-phenylenediamine-----	DUP.
2,5-Dimethoxyaniline-----	EKT, KIS.
1,5 (and 1,8)-Dimethoxyanthraquinone-----	TRC.
m-Dimethoxybenzene-----	ACY, ICO.
p-Dimethoxybenzene-----	G, ICO.
*3,3'-Dimethoxybenzidine-----	ALL, 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)acetoni trile-----	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)thienylamino]pyridine (non- medicinal grade).	ABB.
α , α' , α'' -tris(Dimethylamino)mesitol-----	TKL.
o-(Dimethylaminoethyl)-p-butylphenol-----	RH.
m-Dimethylaminophenol-----	ACY, NAC.
N-(p-Dimethylaminophenyl)-1,4-naphthoquinoneimine-----	NAC.
*N,N-Dimethylaniline-----	ACY, D&C, DUP, NAC, SDH.
7,12-Dimethylbenz[a]anthracene-----	EK.
*N,N-Dimethylbenzylamine-----	ICO, MIS, x.
α , α' -Dimethylbenzyl hydroperoxide-----	ACP.
4-(α , α' -Dimethylbenzyl)-2-phenylazophenol-----	TRC.
*2,2'-Dimethyl-1,1'-biantraquinone-----	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-13 β -hydroxy-9(13 β)-ceronenone-----	WLM.
2,3-Dimethylindole-----	DUP.
2,5-Dimethyl-4-(2-morpholinyl)methylphenol, 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-Diphenoxanthraquinone-----	ICI, VPC.
1,5(and 1,8)-Diphenoxanthraquinone-----	AAP, DUP.
1,8-Diphenoxanthraquinone-----	EKT, G, ICI.
*Diphenylacetic acid-----	ARA, BPC, LLL.
Diphenylacetone-----	TK.
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.	LLL.
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-----	LLL.
*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.
Dixylylthane-----	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)acetoneitrile-----	ACY.
6-Ethoxy-2-mercaptobenzothiazole-----	ARA, DUP.
2-Ethoxynaphthalene-----	ICO, NAC.
2-Ethoxy-1-naphthoyl chloride-----	ICO, OPC.
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 ₂ H=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 ₂ H=1]	G.
Hydroquinone, tech	CRS, EKT.
Hydroxyacetophenone	OTC.
2'-Hydroxyacetophenone	SDH.
3'-Hydroxyacetophenone	OTC.
4'-Hydroxyacetophenone	SDH.
3'-Hydroxyacetophenone benzoate	TRC.
6'-Hydroxy-m-acetotoluidide	AAP.
1-Hydroxyanthraquinone	DOW.
p-Hydroxybenzaldehyde	G.
2-Hydroxy-11H-benzo[a]carbazole-3-carboxylic acid	HN.
p-Hydroxybenzoic acid	HN, WSN.
p-Hydroxybenzoic acid, butyl ester	HN, ICO, WSN.
p-Hydroxybenzoic acid, ethyl ester	HN, ICO, LEM, 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-----	ABE.
4-Hydroxy-N ¹ , N ¹ -dimethylmetanilamide-----	G.
3-(N-2-Hydroxyethylamino)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)-----	ATI, 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, ATI.
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)carbonyl]acetanilide-----	TRC.
1-(2-Hydroxy-4-nitrophenylazo)-2-naphthol-----	TRC.
4-Hydroxypropiphenone-----	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 (Dianthrime)-----	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.
Isocitrosopropiphenone-----	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)
Isocetylphenol	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.
*Isoviclanthrone (Isodibenzanthrone)	ACY, DUP, G, MAY.
*Leuco-1,4-diaminanthraquinone	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	EMV, LIL, MED.
Metanilamide	CNG, 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'-Methoxypropionphenone, 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 [$\text{NH}_2=1$]	DUP.
m-Methylanisole	GIV.
N-Methylantranilic acid	ICC.
2-Methylantraquinone	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-Methylethaniline	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 ₃ H=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.
16 α -Methyl-1,4,9(11)pregnatriene-17 α -21-diol-3,20-dione, 21-ethyl carbonate.	SCH.
Methylpropylcarbonylbarbituric acid-----	LIL.
Methylpyrazine-----	WYN.
1-Methylpyrrole-----	DUP.
* α -Methylstyrene-----	ACP, CLK, DOW, HPC.
N-Methyl-5-sulfantranilic 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,i]isoquinoline-2,7(3H)-dione.	ICI.
3-Methyl-1-(p-tolyl)-2-pyrazolin-5-one-----	VPC.
6'-Methyl-4'-p-tolylsulfonamido-m-benzanisidine-----	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-Naphtholbenzoin-----	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 (Neville & 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.
Naphthostyryl-----	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-acetanilide-----	DUP.
2-Nitro-p-acetanilide-----	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-Nitrobenzenesulfonamide-----	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-furaldehydiacetate-----	NOR.
5-Nitro-2-furaldehyde semioxamazine-----	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-sulfostryryl)-3-sulfo-phenyl]-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 ₂ H=1]-----	ACY, DUP, G, NAC, SDH, TRC.
3-Nitro-p-toluenesulfonic acid [SO ₂ H=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-dimcnylphenol-----	JCC.
*Nonylphenol-----	G, JCC, MON, RH, UCP, USR.
Octylphenol-----	G, FRD, 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-ylene-diimino)- 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.
Pentyl-naphthalenes (Amylnaphthalenes)-	PAS.
o-Pentylphenol (o-Amylphenol)-----	PAS.
3,4,9,10-Perylenetetra-carboxylic acid-----	DUP, G.
3,4,9,10-Perylenetetra-carboxylic diimide-----	DUP, NAC.
Phenacetyl chloride-----	IGO.
β-Phenethylamine-----	MIS.
β-Phenethylamine sulfate-----	MIS.
o-Phenethylbenzoic acid-----	LIL.
o-Phenetidine-----	MON.
p-Phenetidine-----	DOW, MON.
*Phenol:	
*Natural:	
*From coal tar: ¹	
39° C., m.p.-----	KPT, FRD.
82%-84%-----	ACP, KPT.
All other-----	ACP, KPT, PHD.
*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.---	HRD, UCP.
*From cumene by oxidation: U.S.P.-----	ACP, CLK, HPC, MON, SHC, SKO, SOC, UCC.
Phenylsulfonaphthalein, 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)-----	BFC, GIV, TBK.
Phenylacetic acid, ethyl ester, tech-----	BFC, MAL.
*Phenylacetic acid, potassium salt-----	BFC, OPC, TBK.
Phenylacetic acid, sodium salt-----	BFC.
*Phenylacetone trile (α-Tolunitrile)-----	BFC, OPC, SDW, TBK.
4'-Phenylacetophenone-----	DUP, NES.
2-Phenylanthr[2,3]oxazole-5,10-dione-----	G.
*Phenylazoaniline (p-Aminosobenzene) and hydrochloride--	AAP, ACY, DUP, G, NAC.
4-Phenylazodiphenylamine-----	EK.
4-Phenylazo-1-naphthylamine-----	DUP.
5-Phenylzosalicylic acid-----	TRC.
N ¹ -Phenyl-1,2,4-benzenetriamine-----	RBC.
1-Phenyl-1,3-butanedione-----	EK.
2-Phenylbutyric acid-----	BFC.

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-----	REC.
N,N'-p-Phenylenedis[acetamide]-----	ACY.
m-Phenylenediamine-----	ACY, DUP, G, NAC.
o-Phenylenediamine-----	FMT, MEE, TRC.
p-Phenylenediamine-----	EPG.
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-----	ABE, 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-----	BPC.
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.
*Pyranthrene-----	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.
Quinthalone (Quinoline yellow, base)-----	NAC.
Resorcinol, monoacetate (nonmedicinal grade)-----	AAP.
Resorcinol, tech-----	KPT.
β-Resorcylaldehyde-----	EK, G.
β-Resorcyllic acid-----	ACY, KPT.
β-Resorcyllic 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-Sulfobenzic, cyclic anhydride-----	EK.
5-Sulfoisophthalic acid, dimethyl ester-----	x.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)-----	MON, UPF.
4-Sulphthalic 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-pyranthrene-dione-----	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.
$\alpha,\alpha,2,6$ -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'''-Tetranitrothphalocyaninato(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, UFF.
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-Tolhydroquinone (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-Tolyazo)-o-toluidine-----	ACY, DUP, G, KLS, NAC, SDH, TRC.
4-(o-Tolyazo)-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-----	DOC, UCS.
α, β, γ -Trichlorotoluene (Benzotrichloride)-----	HK, HN, THP.
$\alpha, 2, 4$ -Trichlorotoluene-----	HM.
$\alpha, 2, 4$ (and $\alpha, 2, 6$)-Trichlorotoluene-----	BFC.
$\alpha, 3, 4$ -Trichlorotoluene-----	HM.
1, 3, 5-Triethylbenzene-----	DUP.
3-Trifluoromethyl diphenylamine-----	SK.
2-Trifluoromethyl phenothiazine-----	SK.
α, β, γ -Trifluoro-4-nitro-m-cresol-----	MEE.
α, β, γ -Trifluoro-m-nitrotoluene-----	MEE.
α, β, γ -Trifluorotoluene-----	HK.
α, β, γ -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, FLC.
2, 3, 3-Trimethyl-3H-indole-----	G.
*1, 3, 3-Trimethyl-(α, β, γ)-indolineacetaldehyde-----	DUP, G, VPC.
*1, 3, 3-Trimethyl-2-methyleneindoline (Trimethyl base)-----	DUP, G, VPC.
Trimethylphenylammonium iodide-----	EK.
$\alpha, \alpha', 2$ -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-Ureidomiline-----	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.-----	
*Medium b.p.-----	NPC, PIT, PRD.
Not classified as to b.p.-----	KPT, NPC, PIT, PRD.
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, MFX, 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-----	TRC.
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, GPC, 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-----	ALF, VFC.
*Acid red dyes:	
*Acid Red 1-----	AAP, ACY, BKS, DUP, G, NAC, SDH, TRC, VPC, YAW.
*Acid Red 4-----	ATL, CMG, DUF, G, TRC, VPC, YAW.
Acid Red 12-----	G, NAC, TRC.
*Acid Red 14-----	ATL, DUF, 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-----	DUF, 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-----	TRC.
Acid Red 212-----	NAC.
Acid Red 213-----	TRC.
Acid Red 218-----	TRC.
Acid Red 273-----	NAC.
Acid Red 292-----	G.
Acid Red 299-----	ACY.
Acid Red 309-----	TRC.
Other acid red dyes-----	TRC.
*Acid violet dyes:	ACY, ALT, ATL, TRC, VPC.
*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, VFC.
Acid Blue 47-----	DUP, ICI.
Acid Blue 48-----	HSC.
Acid Blue 58-----	DUP.
Acid Blue 59-----	NAC.
Acid Blue 62-----	G, VFC.
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, VFC.
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, VFC.
*Acid green dyes:	
Acid Green 1-----	ACY, NAC.
*Acid Green 3-----	ACY, DUP, G, NAC, TRC, VFC.
Acid Green 5-----	G.
*Acid Green 9-----	ACY, DUP, G, NAC, VFC.
*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, VFC.
Acid Green 35-----	TRC.
Acid Green 41-----	ICI, VFC.
Acid Green 44-----	VFC.
Acid Green 50-----	ACY, G, VFC.
Acid Green 58-----	TRC.
Other acid green dyes-----	ALT, TRC, VFC.
*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	
<i>Azoic Compositions</i>	
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	
<i>Azoic Compositions--Continued</i>	
*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.
<i>Azoic Diazo Components, Bases</i>	
<i>(Fast Color Bases)</i>	
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-----	DUF, NAC.
*Azoic Diazo Component 9, base-----	AAP, DUF, 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	
<i>Azoic Diazo Components, Salts (Fast Color Salts)</i>	
*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.
<i>Azoic Coupling Components (Naphthol AS and Derivatives)</i>	
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	
<i>Izoic Coupling Components</i> (Naphthol AS and Derivatives)--Continued	
Azotic Coupling Component 36-----	G.
Azotic Coupling Component 43-----	ATL, G.
Other azotic coupling components-----	ATL, G, VFC.
BASIC DYES	
Basic yellow dyes:	
Basic Yellow 1-----	DUF.
*Basic Yellow 2-----	ACY, DUP, NAC.
Basic Yellow 5-----	NAC.
*Basic Yellow 11-----	DUP, G, NAC, VFC.
*Basic Yellow 13-----	DUP, G, NAC.
Basic Yellow 15-----	DUF.
Basic Yellow 26-----	ACY.
Basic Yellow 27-----	ACY.
Basic Yellow 28-----	VFC.
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-----	VFC.
Basic Orange 14-----	G.
Basic Orange 17-----	NAC.
*Basic Orange 21-----	DUF, G, NAC, VFC.
Basic Orange 22-----	G, NAC.
Basic Orange 24-----	DUF.
Basic Orange 25-----	DUF.
Basic Orange 26-----	DUF.
Basic Orange 31-----	ACY.
*Basic red dyes:	
Basic Red 1-----	DUF, G.
*Basic Red 2-----	DUF, G, NAC.
Basic Red 9-----	DSC, HSC.
Basic Red 12-----	DUF.
Basic Red 13-----	G, NAC.
*Basic Red 14-----	ACY, DUP, G, NAC, VFC.
Basic Red 15-----	DUF, G.
Basic Red 16-----	DUF.
Basic Red 17-----	DUF.
Basic Red 18-----	DUF.
Basic Red 19-----	DUF.
Basic Red 20-----	DUF.
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, DUF, G, NAC, SDH.
*Basic Violet 4-----	DGC, DUF, 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-----	DUF.
*Basic Violet 16-----	DUP, G, VFC.
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, DUF, FAB, G, VPC.
*Direct orange dyes:	
*Direct Orange 1-----	AAP, CMG, NAC, VPC.
Direct Orange 6-----	NAC.
*Direct Orange 8-----	ATL, DUF, G, NAC, TRC.
Direct Orange 10-----	AAP, NAC.
Direct Orange 11-----	G.
*Direct Orange 15-----	ACY, DUF, G, NAC, TRC.
*Direct Orange 26-----	ATL, CMG, DUF, G, NAC, TRC.
Direct Orange 29-----	ATL, BKS, TRC.
*Direct Orange 34-----	ACY, ATL, CMG, DUF, G, NAC.
*Direct Orange 37-----	ACY, CMG, DUF, G, TRC.
Direct Orange 38-----	NAC.
*Direct Orange 39-----	ATL, BKS, CMG, DUF, G.
Direct Orange 40-----	DUF.
Direct Orange 48-----	DUF.
Direct Orange 55-----	DUF, NAC.
Direct Orange 59-----	DUF, 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-----	DUF, G, TRC, VPC.
Direct Orange 74-----	DUF.
Direct Orange 76-----	DUF.
Direct Orange 78-----	DUF, VPC.
Direct Orange 79-----	DUF.
Direct Orange 80-----	DUF, VPC.
*Direct Orange 81-----	DUF, G, NAC, VPC.
Direct Orange 83-----	G, NAC.
Direct Orange 88-----	DUF.
*Direct Orange 102-----	ACY, DUF, G, NAC.
Direct Orange 105-----	BKS.
Direct Orange 110-----	TRC.
Other direct orange dyes-----	ALT, ATL, BL, DUF, G, VPC.
*Direct red dyes:	
*Direct Red 1-----	AAP, ATL, DUF, G, NAC, TRC, YAW.
*Direct Red 2-----	ATL, BKS, DUF, NAC, TRC.
*Direct Red 4-----	NAC, TRC, VPC.
Direct Red 5-----	NAC.
Direct Red 7-----	DUF.
*Direct Red 10-----	AAP, ACY, ATL, NAC.
*Direct Red 13-----	AAP, ATL, DUF, G, NAC, TRC, YAW.
*Direct Red 16-----	ATL, DUF, G, NAC, TRC.
Direct Red 20-----	G, NAC.
*Direct Red 23-----	ATL, BKS, CMG, DUF, FAB, G, NAC, TRC, VPC.
*Direct Red 24-----	AAP, ATL, BKS, BL, FAB, NAC, TRC, VPC.
*Direct Red 26-----	ATL, BKS, CMG, DUF, G, NAC, TRC, VPC.
*Direct Red 28-----	ATL, DUF, NAC, TRC.
Direct Red 30-----	VPC.
*Direct Red 31-----	ATL, DUF, G, NAC.
Direct Red 32-----	DUF, 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, VPG.
*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-----	DUP.
Fluorescent Brightening Agent 102-----	G.
Fluorescent Brightening Agent 108-----	VPC.
Fluorescent Brightening Agent 113-----	VPC.
Fluorescent Brightening Agent 114-----	ACY.
Fluorescent Brightening Agent 125-----	CIB.
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	
<i>Food, Drug, and Cosmetic Dyes</i>	
*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.
<i>Drug and Cosmetic Dyes</i>	
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.--Eenzenoid 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	
<i>Drug and Cosmetic Dyes--Continued</i>	
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.
<i>Drug and Cosmetic Dyes, External</i>	
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, CMQ, 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-----	SDC.
Leuco Sulfur Brown 37-----	DUP, SDC.
Sulfur Brown 39-----	DUP.
Sulfur Brown 40-----	NAC.
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, DUF, 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, DUF, 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, LUY, 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, IOC, IMP, KON, MRX, ROM, S, SDH, SNA, SW, x.
*Pigment Yellow 17, C.I. 21 105-----	ACY, AMS, HSC, 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, 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, ELN, 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, MFX.
All other-----	IMP.
Orange lakes:	
Pigment Orange 17, C.I. 15 510-----	CIK, CPC, IMP, KOW, MGR.
All other-----	HAM.
*Red lakes:	
*Pigment Red 60, C.I. 16 105-----	BLN, DUP, HSH, KON, MFX, SNA, SW.
*Pigment Red 83, C.I. 58 000-----	IMP, KON, MFX, 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, KOW.
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-----	QMS.
*Bacitracin-----	COM, PFZ, PMP, x.
Cephalothin, sodium-----	LIL.
Chloramphenicol-----	PD.
Chlortetracycline-----	ACY.
Cycloserine-----	COM.
Dactinomycin-----	MRK.
Demethylchlortetracycline-----	ACY.
*Dihydrostreptomycin-----	MRK, QMS, PFZ.
Erythromycin-----	ABB, LIL.
Fumagillin-----	ABB.
Gentamicin-----	SCH.
Gramicidin-----	BAX, PEN.
Kanamycin-----	BRS.
Lincosycin-----	x.
*Neomycin-----	ACY, QMS, PEN, PFZ, UPJ.
Novobiocin-----	MRK, UPJ.
Nystatin-----	QMS.
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, QMS, PFZ, WYT.
*Penicillin G, procaine-----	ABB, LIL, MRK, QMS, PFZ, WYT.
*Penicillin G, other:	
Penicillin G, benzathine-----	PFZ, WYT.
Penicillin G, sodium-----	MRK, QMS, PFZ.
Penicillin O, chlorprocaine-----	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-----	QMS, PFZ.
Phenethicillin, potassium-----	BRS, WYT.
Polymyxin B-----	PFZ.
Ristocetin-----	ABB.
Streptomycin-----	LIL, MRK, QMS, PFZ.
*Tetracycline-----	ACY, BRS, PFZ, RLS.
Thiostreptom-----	QMS.
Triacetyloleandomycin-----	PFZ.
Tyrosin-----	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, QMS, 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 2)
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-chlorotheophyllinate (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 (Tri-pelenamine).	CBP.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (Tri-pelenamine) citrate.	CBP.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (Tri-pelenamine) 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.
1-2-[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 (Pyrbutamine) 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-----	CIV.
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 (Diodochydroxyquin)-----	LEM, PYL, RSA, SRL.
8-Hydroxyquinoline-5-sulfonic acid-----	MTL.
8-Quinolinel (Oxyquinoline)-----	GAM, LEM, MTL.
*8-Quinolinel (Oxyquinoline) benzoate-----	GAM, LEM, MTL.
8-Quinolinel (Oxyquinoline) citrate-----	GAM.
8-Quinolinel (Oxyquinoline) potassium sulfate-----	LEM.
*8-Quinolinel (Oxyquinoline) sulfate-----	GAM, LEM, MTL, PYL.
*Sulfonamides:	
6-Acetamido-4-hydroxy-3-(4-sulfamoylphenylazo)-2,7-naphthalenedisulfonic acid, disodium salt (Azosulfamide).	SDW.
N ² -Acetyl-N ² -(3,4-dimethyl-5-isoxazolyl)sulfanilamide (Acetylsulfisoxazole).	HOF.
N ² -Acetylsulfamethoxy-pyridazine-----	ACY.
4'-(Acetylsulfamoyl)phthalanilic acid (Phthalylsulfacetamide).	LEM.
N ² -Benzylsulfanilamide-----	SDW.
N,N'-Bis(3-nitrobenzenesulfonyl)ethylenediamine-----	SAL.
N ² -(6-Chloro-2-pyrazinyl)sulfanilamide (Sulfachloropyrazine), sodium derivative.	ACY.
N ² -(2,6-Dimethoxy-4-pyrimidinyl)sulfanilamide (Sulfadimethoxine).	HOF.
N ² -(3,4-Dimethyl-5-isoxazolyl)sulfanilamide (Sulfisoxazole).	HOF.
N ² -(5-Ethyl-1,3,4-thiadiazol-2-yl)sulfanilamide (Sulfathidole).	ACY.
N ² -(5-Methyl-3-isoxazolyl)sulfanilamide (Sulfamethoxazole).	HOF.
N ² -(5-Methyl-3,4-thiadiazol-2-yl)sulfanilamide (Sulfamethizole).	ACY.
4'-(p-Nitrophenylsulfamoyl)acetanilide (Sulfantran)---	SAL.
p-Nitrosulfathiazole-----	SDW.
Succinylsulfathiazole-----	LEM, MRK.
Sulfabromomethazine, sodium-----	MRK.
Sulfanilamide-----	MRK.
Sulfanilamide-----	LEM, SAL.
N-Sulfanilylacetamide (Sulfacetamide)-----	LEM, SCH.
N-Sulfanilylacetamide, sodium derivative-----	LEM, SCH.
N-Sulfanilybenzamide (Sulfabenzamide)-----	ACY.
N-Sulfanilybenzamide, 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 (Phthalyl-	LEM, MRK.
sulfathiazole).	
*Other anti-infective agents:	
*Anthelmintic, antifungal, and antiprotozoan agents:	
1-[(4-Amino-2-propyl-5-pyrimidinyl)methyl]-2-	MRK.
picolinium chloride hydrochloride (Amprolium).	
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	BUR.
(Pyrine thamine).	
6-(2-Diethylaminoethoxy)-2-dimethylaminobenzo-	HOF.
thiazole (Diamthazole) dihydrochloride.	
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.
Pyrrinium pamoste-----	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	MON.
(Chloramine T).	
2,4-Diamino-4'-ethoxyazobenzene (Ethoxazene) hydro-	KON.
chloride.	
2,6-Diamino-3-phenylazopyridine (Phenazopyridine)	HOF, KON, NEP.
hydrochloride.	
3,5-Dinitrobenzamide-----	SAL.
1-Ethyl-1,4-dihydro-7-methyl-4-oxo-1,8-naphthyr-	SDW.
dine-3-carboxylic (Nalidixic) acid.	
Hexamethylenetetramine (Methenamine) mandelate-----	LEM, NEP, PYL, TNO.

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	
*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)]dimethanesulfonic	ABB.
acid (Sulfoxone), disodium salt.	
3,4',5'-Tribromosalicylanilide (Tribromsalan)-----	TRO.
*Autonomic drugs:	
*Parasympatholytic (anticholinergic) agents:	
Anisotropine methyl bromide-----	x.
(3-Carbamoyl-3,3-diphenylpropyl)diisopropylmethyl-	SK.
ammonium (Isopropamide) iodide.	
(3-Carbamoyl-3,3-diphenylpropyl)ethyl-dimethyl-	ICO.
ammonium (Ambutonium) bromide.	
1-Cyclohexyl-3-diethylamino-1-phenyl-1-propanol	ACY.
ethiodide (Tridihexethyl iodide).	
4-(β-Cyclohexyl-β-hydroxyphenethyl)-1,1-dimethyl-	ABB.
piperazinium (Hexocyclium) methyl sulfate.	
α-Cyclohexyl-α-phenyl-1-piperidinepropanol (Tri-	SDW.
hexyphenidyl).	
α-Cyclohexyl-α-phenyl-1-piperidinepropanol (Tri-	ACY.
hexyphenidyl) hydrochloride.	
β-Diethylaminoethyl diphenylthioacetate (Thiphenamil)	x.
hydrochloride.	
10-(2-Diethylaminopropyl)phenothiazine (Ethopropazine)-	NEP.
Diethyl(2-hydroxyethyl)methylammonium bromide,	SRL.
xanthene-9-carboxylate (Methantheline bromide).	
4-(Dimethylamino)-2,2-diphenylvaleramide (Aminopenta-	ICO.
mide) sulfate.	
N,N-Dimethyl-2-(o-methyl-α-phenylbenzyl-oxy)ethylamine	RIK.
(Orphenadrine) citrate.	
N,N-Dimethyl-2-(o-methyl-α-phenylbenzyl-oxy)ethylamine	RIK.
(Orphenadrine) hydrochloride.	
N,N-Dimethyl-4-piperidylidene-1,1-diphenylmethane	SCH.
(Diphenamil) methyl sulfate.	
Diphenylacetyldiethylaminoethanol (Adiphenine) hydro-	CBP.
chloride.	
N-Ethyl-3-piperidyl benzilate methobromide (Pipenzo-	LKL.
late bromide).	
N-Ethyl-3-piperidyl diphenylacetate (Piperidolate)	LKL.
hydrochloride.	
Fluorene-9-carboxylic acid, 2-(diethylamino)ethyl	SRL.
ester (Pavatrine) hydrochloride.	
Homatropine-----	CTN, HEX.
Homatropine hydrobromide-----	CTN.
Homatropine methyl bromide-----	CTN, EN, HEX.
4-Hydroxy-1,1-dimethylpiperidinium methyl sulfate,	x.
3-methyl-2-phenylvalerate (Pentapiperide methyl	
sulfate).	
(2-Hydroxyethyl)diisopropylmethylammonium bromide,	SRL.
xanthene-9-carboxylate (Propantheline bromide).	
N-Methyl-3-piperidyl benzilate methobromide (Mepenzo-	LKL.
late bromide).	

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 (Oxyphen-cyclimine) hydrochloride.	PFZ.
1-Phenylcyclopentanecarboxylic acid, 2-diethylamino-ethyl ester (Caramiphen) ethanesulfonate.	SK.
Tropine benzhydryl ether methanesulfonate (Benztropine mesylate).	x.
*Sympathomimetic (adrenergic) agents:	
l-3,4-Dihydroxynorephedrine (Nordefrin) hydrochloride--	SDW.
*Epinephrine-----	
1-(p-Hydroxyphenyl)-2-(1-methyl-3-phenylpropylamine)-propanol (Nylidrin) hydrochloride.	DOD, SDW, VB.
* α -(Isopropylaminomethyl)protocatechuyl alcohol (Iso-	
proterenol).	ABB, CTN, GAN.
o-Methoxy-N, α -dimethylphenethylamine (Methoxyphena-mine) 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-----	
1-Phenylephrine base-----	BKL, GAM, GAN, HEX, ICO, NEF, ORT. CTN, GAN.
*Phenylephrine hydrochloride-----	
2-(1,2,3,4-Tetrahydro-1-naphthyl)-2-imidazoline (Tetrahydrozoline) hydrochloride.	CTN, GAN, SDW. PFZ.
*All other autonomic drugs:	
2-Benzyl-2-imidazoline (Tolazoline) hydrochloride-----	CTN.
1-Hydrazinophthalazine (Hydralazine) hydrochloride-----	CBP.
3-Hydroxy-1-methylpyridinium bromide, dimethyl-carbamate (Pyridostigmine bromide).	HOF.
Neostigmine bromide-----	HEX.
Physostigmine-----	PEN.
*Benzothiadiazine derivatives:	
3-Benzyl-3,4-dihydro-6-(trifluoromethyl)-2H-1,2,4-benzo-thiadiazine-7-sulfonamide 1,1-dioxide (Bendroflu-methiazide).	OMS.
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 (Methy-clothiazide).	ABB.
6-Chloro-3-dichloromethyl-3,4-dihydro-2H-1,2,4-benzo-thiadiazine-7-sulfonamide 1,1-dioxide (Trichlor-methiazide).	SCH.
6-Chloro-3,4-dihydro-2H-1,2,4-benzothiadiazine-7-sul-fonamide 1,1-dioxide (Hydrochlorothiazide).	ABB, CBP, MRK.
6-Chloro-3,4-dihydro-2-methyl-3-(2,2,2-trifluoroethyl-thiomethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Polythiazide).	PFZ.
6-Chloro-3,4-dihydro-3-(5-norbormen-2-yl)-2H-1,2,4-ben-zothiadiazine-7-sulfonamide 1,1-dioxide (Cyclo-thiazide).	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-benzothiazine-7-sulfonamide 1,1-dioxide (Hydroflumethiazide).	OMS.
6-(Trifluoromethyl)-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (Flumethiazide).	OMS.
*Bismuth subgallate-----	
	BKC, MAL, PEN.
*Central depressants:	
*Dihydrocodeinone (Hydrocodone) bitartrate-----	EN, MAL, MRK, PEN.
*5-Ethyl-5-phenylbarbituric acid (Phenobarbital)-----	BFC, GAN, MAL, SDW.
*5-Ethyl-5-phenylbarbituric acid, sodium derivative-----	BFC, GAN, MAL, SDW.
*p-Hydroxyacetanilide (Acetaminophen)-----	ABB, ATF, 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.	OMS, 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.	OMS, SCH.
*3-o-Tolylxy-1,2-propanediol (Mephesisin)-----	
	BKL, HEX, OMS.
*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- $\Delta^{9,\gamma}$ -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 (Phenaglycodel).	LIL.
2-(4-Chlorophenyl)tetrahydro-3-methyl-4H-1,3-thiazin-4-one 1,1-dioxide (Chlormezanone).	SDW.
5-(o-Methoxyphenoxymethyl)-2-oxazolidinone (Mephexalone).	ACY.
2-Methyl-3-o-tolyl-4(3H)-quinazolinone (Methaqualone)- α -(4-Piperidyl)benzhydrol (Azacyclonol) hydrochloride.	HEX.
3-o-Tolyloxy-1,2-propanediol 1-carbamate (Mephesisin carbamate).	KBC.
Tubocurarine-----	OMS.
*All other central depressants:	ABB, OMS.
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 (Amileridine) 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) hydro-	HOF.
bromide.	
ω-Methoxypoly(ethyleneoxy)ethyl p-butylaminobenzoate	CBP.
(Benzonate).	
N-Methyl-2-phenylsuccinimide (Phensuximide)-----	PD.
10-Phenothiazinecarboxylic acid, 2-(2-dimethylamino-	x.
ethoxy)ethyl ester (Dimethoxanate) hydrochloride.	
Phenylacetylurea (Phenacemide)-----	ABB.
1-Phenylcyclopentanecarboxylic acid, 2-(2-diethylamino-	PFZ.
ethoxy)ethyl ester (Carbetapentans) citrate.	
α-(2-Pyridylaminomethyl)benzyl alcohol (Phenramidol)	OTC.
hydrochloride.	
*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) hydro-	ABB, GAN, HEX.
chloride.	
dl-N,α-Dimethylphenethylamine (Methamphetamine) base-	HEX, OTC.
dl-N,α-Dimethylphenethylamine (Methamphetamine)	GAN, HEX.
hydrochloride.	
l-N,α-Dimethylphenethylamine (Methamphetamine) base--	ABB.
*Antidepressants:	
1-[2-(Benzylcarbamoyl)ethyl]-2-isonicotinoylhydrazine	PFZ.
(Nalamide).	
10,11-Dihydro-N,N-dimethyl-5H-dibenzo[a,d]cycloheptene-	MRX.
Δ ² ; γ-propylamine (Amitriptyline).	
10,11-Dihydro-N-methyl-5H-dibenzo[a,d]cycloheptene-	LLL.
Δ ² ; γ-propylamine (Nortriptyline).	
Phenethylhydrazine (Phenelzine) sulfate-----	NEP.
trans-2-Phenylcyclopropylamine (Tranlycypromine) sulfate	x.
*All other central stimulants:	
d-N-Benzyl-N,α-dimethylphenethylamine (Benzphetamine)	x.
hydrochloride.	
Caffeine sodium benzoate-----	GAN, MAL.
p-Chloro-α,α-dimethylphenethylamine (Chlorphentermine)	NEP.
hydrochloride.	
Diethylaminopropiophenone (Diethylpropion)-----	BKC, GAN.
2-(Dimethylamino)ethanol, p-acetamidobenzoic acid salt	RIK.
(Deanol acetamidobenzoate).	
α,α-Dimethylphenethylamine (Phentermine)-----	HEX.
3,4-Dimethyl-2-phenylmorpholine (Phendimetrazine)-----	x.
3-Methyl-2-phenylmorpholine (Phenmetrazine) hydro-	GGY.
chloride.	
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, MCN, SDH.
*Synthetic hypoglycemic agents:	
1-[(p-Acetylphenyl)sulfonyl]-3-cyclohexylurea (Acetohexamide).	LIL.
1-Butyl-3-p-tolylsulfonyleurea (Tolbutamide)-----	HST, x.
1-(p-Chlorobenzesulfonyl)-3-propylurea (Chlorpropamide)	PFZ.
1-(Hexahydro-1-azepinyl)-3-p-tolylsulfonyleurea (Tolazamide).	UPJ.
1-Phenethylbiguanide (Phenformin) hydrochloride-----	x.
*Vitamins:	
*B ₂ (Riboflavin):	
For animal and poultry consumption-----	GPR, HOF, MRK, FMP.
For human consumption-----	HOF, MRK.
*B ₁₂ (Cyanocobalamin):	
Feed grade-----	GPR, MRK, FMP.
Pharmaceutical-----	IMC, MRK.
U.S.P. Crystalline-----	MRK.
*Niacin (Nicotinic acid):	
Feed grade-----	ABB, CKL, MRK, NEP, RIL.
Medicinal grade-----	MRK, NOF, 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 (Methyl dopa)---	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-acetoxylicide (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.-----	LLL.
3-(2-Methyl-1-piperidyl)propyl p-cyclohexyloxybenzoate (Cyclomethycaine).-----	LLL.
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'-xylicide (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'-Methylenbis(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 (Nicotiny 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 (Icphendylate)-----	x.
Meglumine iothalamate-----	MAL.
Sodium o-iodochippurate dihydrate-----	MAL.
Sodium iothalamate-----	MAL.
Rutin-----	PEN.
Scarlet red-----	NAC.
Sodium benzoate-----	PFZ.
8-Succinylfluoranthene (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 (Acinetrazole)-----	ACY.
2-Amino-5-nitrothiazole-----	ACY.
1-Ethyl-3-(5-nitro-2-thiazolyl)urea (Nithiazide)-----	MRK.
1-(2-Hydroxyethyl)-2-methyl-5-nitroimidazole (Metro-nidazole).	RDA.
5-Nitro-2-furaldehyde acetylhydrazone (Nihydrazone)---	NOR.
5-Nitro-2-furaldehyde semicarbazone (Nitrofurazone)---	NOR.
N-(5-Nitro-2-furfurylidene)-1-aminohydantoin (Nitro-furantoin).	NOR.
3-(5-Nitro-2-furfurylideneamino)-2-oxazolidinone (Fura-solidone).	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 (Diethyl-carbamazine) dihydrogen citrate.	ACY.
Hexamethylenetetramine (Methenamine)-----	HN.
β-(Hydroxymethoxy)tricarballylic acid, γ-lactone, hexamethylenetetramine salt (Citramin).	SDW.
4,5-Imidazolidinonecarboxamide (Glycarbylamide)-----	MRK.
2-Propylvaleric acid and bismuth salt-----	x.
Sodium bismuth triglycolylate-----	x.
*Autonomic drugs:	
Acetylcholine chloride-----	MRK.
Acetyl-β-methylcholine (Methacholine) chloride-----	MRK, RSA.
1-Cyclopentyl-2-methylpropylamine (Cyclopentamine) hydrochloride.	LIL.
Diethylaminocarbethoxybicyclohexyl (Dicyclamine) hydrochloride.	BKC.
Diethyl(2-hydroxyethyl)methylammonium bromide, α-cyclopentyl-2-thiophenecarboxylate (Penthenate 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 (Thiexinol 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 acid (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--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.	BFC, GAN, LIL.
5-Ethyl-5-(1-methyl-1-buteryl)barbituric acid (Vinbarbital).	GAN.
*5-Ethyl-5-(1-methylbutyl)barbituric acid (Pentobarbital).	ABB, BFC, GAN.
5-Ethyl-5-(1-methylbutyl)barbituric acid, sodium derivative.	ABB, BFC, GAN.
5-Ethyl-5-(1-methylbutyl)-2-thiobarbituric acid (Thiopental) and sodium derivative.	ABB.
5-Ethyl-5-n-pentylbarbituric acid, sodium derivative---	BFC.
*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-ethylbutyl)-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-oxazoliginedione (Paramethadione).	ABB.
2-Ethyl-2-methylsuccinimide (Ethosuximide)-----	PD.
Ethinylcyclohexyl carbamate (Ethinamate)-----	LLL.
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-oxazolinedione (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, SRI, 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.
9,11 β -Dichloro-17,21-dihydroxypregna-1,4-diene-3,20-dione (Dichlorisone) 21-acetate.	SCH.
17 α -Ethinyl-17 β -hydroxy-5(10)-estrene-3-one (Norethynodrel).	SRL.
9 α -Fluorohydrocortisone acetate (Fludrocortisone)-----	UPJ.
Fluorometholone-----	UPJ.
9-Fluoro-11 β ,17,21-trihydroxy-16 β -methylpregna-1,4-diene-3,20-dione (Betamethasone).	SCH.
Fluoxymesterone-----	UPJ.
Fluprednisolone-----	UPJ.
*Hydrocortisone alcohol and acetate-----	
Hydrocortisone diethylaminoacetate (Hydrocortamate) hydrochloride.	MRK, PFZ, UPJ.
Hydrocortisone phosphate-----	MRK.
17-Hydroxy-11-dehydrocorticosterone (Cortisone) and acetate.	MRK, UPJ.
17-Hydroxypregna-4-ene-3,20-dione (Hydroxyprogesterone)--11 α -Hydroxyprogesterone-----	SCH.
Insulin (salt cake)-----	UPJ.
Medroxyprogesterone acetate-----	ARP.
17-Methyl-5 α -androstano[3,2-c]pyrazole-17 β -ol (Stanozolol).	x.
Methylprednisolone-----	SDW.
Prednisolone-----	UPJ.
Prednisolone-----	MRK, SCH, UPJ.
Progesterone-----	MRK, SCH, UPJ.
Triamcinolone-----	x.
*Theobromine and theophylline derivatives:	
Theobromine, sodium acetate-----	ACY, OMS.
Theophylline aminoisobutanol (Ambuphylline)-----	MAL.
Theophylline cholineate (Oxtriphylline)-----	GAN.
Theophylline ethylenediamine (Aminophylline)-----	NEF.
Theophylline ethylenediamine, sodium biphosphate-----	GAN, LEM, SRL.
Theophylline monethanolamine-----	GAN.
LIII.	
*Therapeutic nutrients:	
*Amino acids:	
β -Alanine-----	BFG, NOP.
*Amino acid mixtures-----	ABE, 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 levulinat-----	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-Calcium pantothenate, calcium chloride complex-----	NOP.
d-Pantothenyl alcohol (Dexpantenol)-----	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.
Ethylendiamine dihydriodide-----	PYL, WHL.
Ethyl nitrite-----	MAL.
Galactose-----	PFN.
Gitalin-----	PEN.
Glyceryl trinitrate-----	APD.
Heparin, sodium-----	ABB, RIK.
17-Hydroxy-7 α -mercapto-3-oxo-17 α -pregn-4-ene-21-carbox- ylic 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 (Mercaptopurin, sodium).	WYT.
[3-(Chloromercuri)-2-methoxypropyl]urea (Chlormero- drin).	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	
<i>Benzenoid and Naphthalenoid</i>	
2'-Acetonaphthone (Methyl β -naphthyl ketone)-----	GIV, TBK.
Acetophenone-----	GIV, TBK.
7-Acetyl-6-ethyl-1,1,4,4-tetramethyl-1,2,3,4-tetrahydro- naphthalene.	GIV.
p-Allylanisole-----	GIV.
Allyl phenoxycetate-----	GIV.
*4-Allylveratrole (Eugenyl methyl ether)-----	FB, GIV, ICO, TBK.
p-tert-Amylcyclohexanone-----	IFF.
*Anethole (p-Propenylanisole)-----	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 -toluate)-----	MW, 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- β -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 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
<i>Benzenoid and Naphthalenoid--Continued</i>	
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 methylguaiethol)-----	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-methylantranilate (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	
<i>Benzenoid and Naphthalenoid--Continued</i>	
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 (Isceugenyl methyl ether)-----	GIV, ICO, TBK.
p-Propylanisole-----	GIV.
n-Propyl phenethyl acetal-----	GIV.
Styrollyl 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-----	FFW.
<i>Terpenoid, Heterocyclic, and Alicyclic</i>	
Allyl cyclohexyl propionate-----	GIV.
Allyl ionone-----	GIV, IFF.
Amryis 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.
Cyclohexadecanolid-----	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	
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>	
*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	
<i>Terpenoid, Heterocyclic, and Alicyclic--Continued</i>	
*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 alloocimanol-----	IFF.
3,5,5-Trimethylcyclohexanol-----	ICO.
Vertofix (Acetyl cedrene, principally)-----	IFF.
Vetivanol-----	GIV, TBK.
*Vetivanyl 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.
Butyrene (Di-n-propyl ketone)-----	TBK.
Butyryl 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-ol-----	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, HW, RT, TBK.
Ethyl decanoate-----	TBK.
Ethylene brassylate-----	VLY.
Ethyl heptanoate (Ethyl enanthate)-----	FEL, TBK.
*Ethyl hexanoate (Ethyl caproate)-----	FB, HW, 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)-----	CCM, 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-Methylnonylacetalddehyde)-----	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, DEB, DSO, DUN, DUP, EW, FAR, FBR, FCD, FLW, FOC, FRE, FSH, GEI, GIL, GLD, GRV, HAN, HPC, HRS, ICF, JAM, JOB, JOD, JWJ, KEL, KMC, KMP, KPS, KYN, LON, MCC, MID, MNF, MR, NCI, NPV, 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, NPV, 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, NSF, PAI, VEL.
*Rubber compounding-----	ACC, ACP, NEV, NSF, 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, MNF, MRB, NON, ORO, OSB, PPG, PYR, REZ, RMC, SPP, SHR, 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, ACP, 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, G3, HER, HKD, HVG, IRC, MRB, PLS, RCI, RGC, SYR, UCF, 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, FGU, 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, SPF, 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, DUF, GFM, 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, SCP, SRR.
Styrene and alkyl polyesters-----	ADM, DEG, FLW, RCI.
*Urea and melamine resins:	
*Textile treating and coating resins-----	ACY, APX, BRY, CAT, CIB, CKM, CRC, DAN, DEP, DUF, ECC, HNC, HRT, JSC, MON, MRA, ONX, PC, QCF, 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, DUF, FRP, GLD, GRV, JOD, KFS, 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, PIL, PFG, 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, PLJ, 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, DUF, FIR, GNT, GRD, GRP, GYR, ICC, JNS, KPP, MON, MRT, ONX, PAI, PCL, PVI, RCC, RH, SEK, SHC, SPI, UBS, UCF, UNC, USR, WAS, WIC, x.
Vinyl resins:	
*Polyvinyl acetate resins:	
*Emulsion paint-----	ACP, AIR, AML, APV, BAL, BEN, BOR, CEL, DAV, DSO, DUF, FAR, FLH, GLD, GRD, HAN, JOD, KMC, KMF, MCC, MR, NPV, NSC, PFG, RCI, REL, SED, SFC, SRC, SW, UCF, WAS, WIC.
*Adhesives-----	ACP, AIR, BAL, BOR, CEL, DUF, FC, FLH, GLC, GRD, HNC, MRN, NSC, NTC, PII, RCI, SH, SRC, SYR, UCF, WIC.
*Bonding and sizing-----	AIR, AML, CAT, CEL, CST, DUF, GLC, GRD, PII, QCF, RPC, SEY, SRC, WIC.
*All other uses-----	AML, BAL, BLS, BOR, CEL, DAN, DUF, FC, GRD, HRT, JNT, JSC, NEP, NSC, OCF, RPC, SOC, SED, SRC, UCF, WIC.
*Polyvinyl chloride and copolymer resins:	
*Film, under 6 mils-----	ATU, BFG, BOR, CRY, DOW, ESC, FCF, FIR, GNT, GYR, MON, PNT, THC, UCF.
*Sheet, 6 mils and over-----	ATU, BFG, BOR, CRY, DA, DOW, ESC, FCF, FIR, GNT, GYR, MON, PNT, THC, UCF, USR.
*Flooring-----	AME, BFG, BOR, CRY, CUC, DA, ESC, FCF, FIR, GNT, GYR, KYS, MON, THC, UCF, USR.
*Paper and textile coating-----	ATU, BFG, BOR, CRY, DA, DOW, ESC, FCF, MON, ONX, PNT, UCF, 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, FCF, FIR, GNT, GYR, LAS, MON, THC, UCF, 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, UCF, USR.
*All other moldings-----	ATU, BFG, BOR, CRY, DA, DOW, ESC, GYR, MON, UCP.
*All other uses-----	ATU, BFG, BOR, CRY, CUC, DA, DOW, ESC, FCF, FIR, GNT, GRA, GYR, MON, PNT, PYR, UCF, USR.
*All other vinyl resins-----	ADM, AIR, BOR, BOY, DOW, DSO, DUF, FC, G, JOD, MCC, NSC, SNW, SRC, SW, UCF.
Polyolefin plastics materials:	
*Polyethylene, density 0.940 and below:	
*Injection molding-----	CEL, DOW, DUF, EXK, ENJ, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCF, USI.
*Blow molding-----	CEL, DOW, DUF, EXK, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCF, USI.
Extrusions:	
*Film and sheet-----	CEL, DOW, DUF, EXK, ENJ, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCF, USI, x.
*Wire and cable coating-----	CEL, DOW, DUF, EXK, GRP, KPP, MON, PLC, SHC, SPN, UCF, USI.
*Extrusion coating on paper and other substrates-----	CEL, DOW, DUF, EXK, GRP, KPP, MON, PLC, RCC, SHC, SPN, UCF, 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 2)
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-----	
*Blow molding-----	CEL, DOW, DUP, EKX, GRP, HPC, KPP, PLC, RCC, 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-----	
*Extrusion-----	AVS, DOW, EKX, ENJ, GRP, HPC, NVT, ORO, PLC, RCC, SHC, SPN, UCP, USI.
*All other uses-----	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, PAL, PII, PPG, QUN, RCI, RH, RPC, SAR, SEC, 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 -propylacrylamilide-----	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:	
Dibenzylidithiocarbamic acid, sodium salt-----	USR.
Dibenzylidithiocarbamic acid, zinc salt-----	USR.
Dibutylidithiocarbamic acid, N,N-dimethylcyclohexyl-amine salt.	MON.
Dibutylidithiocarbamic acid, diphenylguanidine salt-----	CCO.
Dimethylethylene diphenylidithiocarbamic acid, lead salt	CCO.
2,4-Dinitrophenyl dimethylidithiocarbamate-----	USR.
Piperidinecarbodiithioic 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-Butyryl-p-aminophenol-----	MLS.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine-----	USR.
Diarylethylene diamines, mixed-----	GYR.
N,N'-Di(1-ethyl-3-methylpentyl)-p-phenylenediamine-----	EKT, MON, UPM.
1,2-Dihydro-6-dodecyl-2,4-trimethylquinoline-----	MON.
1,2-Dihydro-6-ethoxy-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, MCN, UPM.
N,N'-Di-2-naphthyl-p-phenylenediamine-----	BFG.
4,4'-Diocetyldiphenylamine-----	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, FIT, USR.
Phenol, hindered-----	DUF, GYR, FIT.
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.
Dixylol disulfides, mixed-----	DUP, PIT.
2-Naphthalenethiol-----	DUP.
Pentachlorobenzene thiol-----	DUP.
Pentachlorobenzene thiol, 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:	
Dibutylthiocarbamic acid, potassium salt-----	VNC.
Dibutylthiocarbamic acid, sodium salt-----	DUP, PAS, USR, VNC.
Dibutylthiocarbamic acid, zinc salt-----	ALC, DUP, GYR, PAS, RBC, USR, VNC.
Diethylthiocarbamic acid, cadmium salt and	VNC.
bis(diethylthiocarbamoyl) disulfide mixture.	
Diethylthiocarbamic acid, selenium salt-----	VNC.
Diethylthiocarbamic acid, sodium salt-----	ALC, PAS.
Diethylthiocarbamic acid, tellurium salt-----	VNC.
Diethylthiocarbamic acid, zinc salt-----	ALC, GYR, RBC, USR, VNC.
Dimethylthiocarbamic acid, bismuth salt-----	VNC.
Dimethylthiocarbamic acid, copper salt-----	VNC.
Dimethylthiocarbamic acid, lead salt-----	VNC.
Dimethylthiocarbamic acid, potassium salt-----	GYR, PAS, USR.
Dimethylthiocarbamic acid, selenium salt-----	VNC.
Dimethylthiocarbamic acid, sodium salt-----	ALC, BFG, DUP, GYR, PAS, USR.
Dimethylthiocarbamic acid, sodium salt and sodium	BFG, GNT.
polysulfide.	
*Dimethylthiocarbamic acid, zinc salt-----	ALC, DUP, FMN, GYR, PAS, RBC, USR, WRC.
All other-----	PAS.
*Thiurams:	
Bis(diethylthiocarbamoyl) 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,
*Polybutadiene-styrene-vinylpyridine type-----	PLC, RUB, SEP, SHC, TUS, URC, USR, WIC.
*Polyurethane type-----	BFG, FIR, FRS, GNT, GYR, PLC, USR.
	ACY, BFG, DUP, GNT, MDB, ORU, PRC, TKL, USR.
ELASTOMERS, ACYCLIC	
Polyacrylate ester type-----	ACY, BFG, TKL, WIC.
Polyalkylene 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.
Dipropenediol dibenzoate-----	TNP.
N-Ethyl-p-toluenesulfonamide-----	MON.
Isopropylidenediphenoxypropanol-----	DCW.
Naphthalene, alkylated-----	ACC.
Phosphoric acid esters:	
*Cresyl diphenyl phosphate-----	CEL, FMP, MON, MTR, SF, SPP.
Dibutyl phenyl phosphate-----	MON.
Diphenyl mono-o-xeryl phosphate-----	DCW.
Diphenyl octyl phosphate-----	MON.
Methyl diphenyl phosphate-----	FMP, MON.
*Tricresyl phosphate-----	CEL, FMP, FRO, MON, MTR, SF.
*Triphenyl phosphate-----	CEL, DCW, 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.
*Diethyl 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----- n-Octyl n-decyl phthalate----- All other phthalic anhydride esters----- Polyethylene glycol dibenzoate----- Tetrahydrofurfuryl oleate----- Toluenesulfonamide, o-, p- mixtures----- Triethylene glycol dibenzoate----- *Trimellitic acid esters----- All other cyclic plasticizers-----	ACP, PCC, PFZ. ACP, GRH, HPC, MON, PCC, PFZ, RCI, RUB, THC, UCC. BRG, FMP, PCC, PFZ, UCC. TNF. CCW, EMR. ACY, MON. TNF. ACC, PCC, PFZ, RUB. CCW, EKT, WTH.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters: *Di(2-(2-butoxyethoxy)ethyl) adipate----- *Di(2-ethylhexyl) adipate----- *Disobutyl adipate----- *Disodecyl adipate----- *Diiso-octyl adipate----- Iso-octyl isodecyl adipate----- *Octyl decyl adipate----- All other adipic acid esters----- *Azelaic acid esters: Di(2-ethylhexyl) azelate----- Disobutyl azelate----- Diiso-octyl azelate----- All other azelaic acid esters----- Citric and acetylcitric acid esters----- *Complex linear polyesters and polymeric plasticizers----- Di(2-(2-butoxyethoxy)ethyl)methane----- Diethylene glycol dinnonanoate----- Diiso-octyl diglycolate----- *Epoxidized esters: Butyl epoxytallate----- *Epoxidized soya oils----- 2-Ethylhexyl epoxytallates----- Octyl epoxystearates----- *Octyl epoxytallates----- All other epoxidized esters----- Glycerol pelargonate----- Glycerol tributyrate and tripropionate----- Glycol pelargonate----- Isodecyl nonanoate (Isodecyl pelargonate)----- Lauric acid esters----- Myristic acid esters: Butyl myristate----- *Isopropyl myristate----- *Oleic acid esters: *Butyl oleate----- *Glycerol trioleate (Triolein)----- *Isopropyl oleate----- *Methyl oleate----- *n-Propyl oleate----- All other oleic acid esters----- Palmitic acid esters: *Isopropyl palmitate----- All other palmitic acid esters----- *Phosphoric acid esters: Tri(2-butoxyethyl) phosphate----- Triethyl phosphate----- Tricoctyl phosphate----- All other phosphoric acid esters-----	CCW, FMP, GRH, PCC, TKL. EKT, HAL, MON, PCC, PFZ, RCI, RUB, THC, UCC, WTH. FMP, GRH, HAL, PCC, RCI, WTH. ACP, EKT, GRH, LEH, MON, PCC, PFZ, RCI, RH, RUB, THC, UCC. GRH, HAL, LEH, PCC, RCI, RH, RUB. BFG, GRH, MON, PCC, RCI. ACP, GRH, LEH, PCC, RCI, RUB, THC, TKL, UCC. ACP, EKT, KES, LEH, PCC, PFZ, THC. DUP, EKT, EMR, PFZ, RCI, RUB, UCC. HAL, RCI. EMR, MON. ACP, EMR, LEH, PFZ, UCC. PFZ. ADM, EKT, EMR, GLY, HAL, HPC, LEH, MON, PFZ, RH, RUB, WM, WTC. GRD. EMR, RUB. CCA, FMP. ADM. ADM, ARG, CCW, RCI, RH, SWT, THC, UCC. ADM, UCC. ARG. ARG, CCW, RH, THC, UCC. ADM, BAC, EMR, RCI, RH, SWT, THC. EMR. EMR. EMR, LEH. HAL. ICI, KES. DRW, EMR, ICI, KES, NOP, PCS, PRP. CIN, HAL, ICI, KES, LAS, NOP, RUB, SWT, WM, WTH. DRW, EMR, SWT, WM. CRT, ICI, KES, WM. EMR, ICI, NOP, SWT. CHL, EMR, WM. HAL, ICI, KES, RH. DRW, EMR, ICI, KES, PRP, WM. DRW, EKT, KES, RUB. FMP. EKT. UCC. 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	
<i>Not Sulfated or Sulfonated</i>	
*Amides, amines, and quaternary ammonium salts:	
*Benzyl(coconut oil alkyl)dimethylammonium chloride-----	BC, CRT, FIN, TXT.
*Benzyl(dimethyl(mixed alkyl)ammonium chloride)-----	BC, CUL, FIN, ONX, PCS, RH, TXT, VAC.
*Benzyl(dimethyl)octadecylammonium chloride-----	ONX, PCS, RET, WSN.
*Benzyl(dodecyl)dimethylammonium chloride-----	DEP, ONX, SDH, WSN.
*(3,4-Dichlorobenzyl)dodecyl(dimethyl)ammonium 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-imidazolium chloride.	NLC.
1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium chloride.	FCS, UVC.
1-Benzyl-1-(2-hydroxyethyl)-2-(tall oil alkyl)-2-imidazolium 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(octyltolyl)oxyammonium chloride--	RH.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine-----	APX.
(Tridecylbenzyl)diethyl(2-hydroxyethyl)ammonium chloride.	ORO.
*All other:	
Benzyl(dimethyl)tetradecylammonium chloride-----	SNW, WSN.
Benzylhexadecyl(dimethyl)ammonium chloride-----	FIN, ONX, RH, SDW.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ARC, GNM, ONX, FCS.
Benzyl(trimethyl)ammonium chloride-----	COM.
(Dodecylbenzyl)dimethyloctadecylammonium chloride-----	AML.
(Dodecylbenzyl)triethylammonium chloride-----	FC.
(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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*Carboxylic acid esters and ethers--Continued	
*Other carboxylic acid esters and ethers:	
Alkylphenol - formaldehyde, alkoxyated:	
(Mixed alkyl)phenol - formaldehyde, alkoxyated-----	RTF, VIS.
Nonylphenol - formaldehyde, alkoxyated-----	RTF.
t-Octylphenol - formaldehyde, ethoxyated-----	SDW.
Pentylphenol - formaldehyde, alkoxyated-----	RTF.
Diisobutylphenol, ethoxyated-----	G, RH.
Dinonylphenol, ethoxyated-----	G, JCC, STP.
(Mixed alkyl)phenol, ethoxyated-----	G, PCS, STP.
(Mixed alkyl)phenol, ethoxyated, butyl ether-----	RH.
Nonylphenoxy poly(ethyleneoxy)ethyl iodide-----	G.
n-Octylphenol, ethoxyated-----	ICI.
Phthalic acid, octadecyl ester, potassium salt-----	CIB.
Tetradecylphenol, ethoxyated-----	ORO.
Tridecylphenol, ethoxyated-----	PCS.
Xylenol, ethoxyated-----	VIS.
All other-----	RH.
*Phosphoric and polyphosphoric acid esters and salts:	
*Nonyl- and dinonylphenol, ethoxyated and phosphated:	
Dinonylphenol, ethoxyated and phosphated-----	G.
Nonylphenol, ethoxyated and phosphated-----	CIN, G, RZL, SEY, TCC, TXT, UVC, WAY, WTC.
Nonylphenol, ethoxyated and phosphated, barium salt-----	G.
Other phosphoric and polyphosphoric acid esters and salts:	
Dodecylphenol, ethoxyated and phosphated-----	TCI.
Octylphenol, ethoxyated and phosphated, magnesium salt-----	SMC.
Phenol, ethoxyated and phosphated-----	G.
<i>Sulfated and Sulfonated</i>	
*Alkylphenols, ethoxyated and sulfated:	
Dodecylphenol, ethoxyated and sulfated-----	G, LEV, STP.
(Mixed alkyl)phenol, ethoxyated and sulfated-----	G.
*Nonylphenol, ethoxyated and sulfated-----	
Nonylphenol, ethoxyated and sulfated, ammonium salt-----	CRT, G, OMC, STP, TXT, WTC.
Nonylphenol, ethoxyated and sulfated, triethanolamine salt-----	CIB, MYW.
Nonylphenol, ethoxyated and sulfated, triethanolamine salt-----	x.
n-Octylphenol, ethoxyated 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	
<i>Sulfated and Sulfonated--Continued</i>	
*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:	
Benzyl naphthalenesulfonic acid-----	G.
Butyl naphthalenesulfonic acid-----	SCP.
Butyl naphthalenesulfonic acid, sodium salt-----	CLD, CMG, GGY, PFZ.
Di butyl naphthalenesulfonic acid-----	G, MRA, S.
Didodecyl naphthalenesulfonic acid, sodium salt-----	PFZ.
*Diisopropyl naphthalenesulfonic acid-----	DUP, G, GRD.
Diisopropyl naphthalenesulfonic acid, sodium salt-----	G, PFZ.
Di pentyl naphthalenesulfonic acid-----	GGY.
Di pentyl naphthalenesulfonic acid, ammonium salt-----	VIS.
*Isopropyl naphthalenesulfonic 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	
<i>Sulfated and Sulfonated--Continued</i>	
*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:	
Butylhydroxyphenylsulfonic acid-----	ICO, RBC.
Dodecylidiphenyloxidedisulfonic 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	
<i>Not Sulfated or Sulfonated</i>	
*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:	
Alkyl ethyldimethylammonium salts:	
Ethyldimethyl(9-octadecenyl)ammonium bromide-----	ONX.
Ethyldimethyl(soybean oil alkyl)ammonium bromide---	BC.
Ethyhexadecyldimethylammonium 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)dimethylammonium 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)ethyl- enediamine salt.	ICI.
Stearic acid, triethanolamine salt-----	AML, TCC.
All other-----	PCS.
*Amines, alkoxyated:	
N,N-Bis(2-hydroxyethyl)dodecylamine-----	FIN.
N,N-Bis(2-hydroxyethyl)octadecylamine-----	FIN.
N,N-Bis(2-hydroxyethyl)-2-(stearamidomethoxy)ethyl- amine.	CIB.
N,N-Bis(2-hydroxyethyl)-2-(stearamidomethoxy)ethyl- amine - 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)ethyl- enediamine.	VIS.
*(Mixed alkyl)amine, ethoxylated-----	APD, CIB, G, NOP, RH.
(9-Octadecenyl)amine, ethoxylated-----	ARC, PCS.
Octadecylamine, ethoxylated-----	ARC, ICI.
Polyethylenepolyamine, alkoxyated-----	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-----	
*Lauric acid - diethanolamine condensate-----	JRG, PCS.
Linoleic acid - diethanolamine condensate-----	ARD, CLI, CTL, HLI, ICI, MOA, ONX, PCS, PG, RZL, SBC, VND, WTC.
Myristic acid - diethanolamine condensate-----	VND.
Oleic acid - diethanolamine condensates:	CLI.
*(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-----	
Tallow acids - diethanolamine condensate-----	EFH, MRA, MRV, SEY, WTC.
Other diethanolamine condensates-----	PCS, PG, RPC.
Other alkanolamine condensates:	
Coconut oil acids - ethanolamine condensate-----	BSC, HLI, RCD, WTC,
Coconut oil acids - isopropanolamine condensate-----	APX, CCL, HRT, MOA, PCS, PG, RCD, TXT, VND, WIC, WTC.
Lauric acid - ethanolamine condensate-----	LEV, STP, TXT.
*Lauric acid - isopropanolamine condensate-----	RCD, WTC.
Myristic acid - ethanolamine condensate-----	ARC, ARD, CLI, MOA, PCS, TXT, WTC.
Myristic acid - isopropanolamine condensate-----	WTC.
Oleic acid - ethanolamine condensate-----	ARD, TXT.
Oleic acid - isopropanolamine condensate-----	ARD.
*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-----	
All other fatty acid - alkanolamine condensates-----	CLI.
*Fatty acid - polyamine condensates:	
Adipic and stearic acids - diethylenetriamine condensate.	CLI, GLY.
Coconut oil acids - diethylenetriamine condensate-----	APX.
Coconut oil acids - N,N-dimethyl-1,3-propylenediamine condensate.	APX, NOP, SEY.
Coconut oil acids - propylenediamine condensate-----	JRG.
Mixed fatty acids - polyalkylenepolyamine condensate-----	TXT.
Oleic acid - aminoethylpiperazine condensate-----	VIS.
*Oleic acid - diethylenetriamine condensate-----	PCS.
Oleic acid - diethylenetriamine condensate, acetic acid salt.	HDG, PCS, SEY.
Oleic acid - N,N-dimethyl-1,3-propylenediamine condensate.	PCS, UVC.
	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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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-----	CBF.
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-imidazolium chloride, disodium salt.	PCS.
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolium hydroxide, disodium salt.	MIR.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium chloride, sodium salt.	PCS.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt.	MIR.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolium 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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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-stearamidooethyl)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-Dodecyl-diethylenetriamine-----	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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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, TCG, 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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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, SPF, 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, DEF, 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, ONX, 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 laurate 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-----	HFC.
Sorbitol, alkoxylated-----	VAC.
Soybean oil, ethoxylated-----	GGL.
Sperm oil alcohol, ethoxylated-----	DUP.
Tallow alcohol, ethoxylated-----	G.
2,4,7,9-Tetramethyl-5-decyl-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	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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, alkoxyated-----	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.
*Iauric 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-----	DUF.
Mixed decyl, dodecyl, and octyl phosphate, morpholine salt.	DUF.
*Mixed mono- and dialkyl phosphate-----	CST, DUP, UVC.
9-Octadecenyl phosphate-----	DUF.
Octadecyl phosphate, ethanolamine salt-----	RCD.
Octyl phosphate, alkylamine salt-----	DUF, 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 2)
NONBENZENOID SURFACE-ACTIVE AGENTS--Continued	
<i>Not Sulfated or Sulfonated--Continued</i>	
*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, JGC, LMI, STC.
<i>Sulfated and Sulfonated</i>	
*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-----	AC, 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, SLG, 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	
<i>Sulfated and Sulfonated--Continued</i>	
*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-----	IUR, NOP.
*Meat's-foot oil, sulfonated-----	ACT, BAO, CRT, KAL, LUR, MRD, NOP, PC, SEA, WHW.
Oleostearin, sulfonated-----	SEA.
*Peanut oil, sulfonated-----	ACY, CRT, ICI, LEA, IUR, NOP, SCP, SEY, SLC, SOS.
Red fish oil, sulfonated-----	WHI.
*Rice-bran oil, sulfonated-----	HRT, KNG, IUR, NOP--
*Soybean oil, sulfonated-----	APX, CRT, DRW, HRT, KAL, LEA, MRD, ONX.
*Sperm oil, sulfonated-----	ACT, BAD, CID, 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-----	PGS.
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	
<i>Sulfated and Sulfonated--Continued</i>	
*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----- (2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate.	JOR. LUR.
Bis(hydrogenated tallow alkyl)dimethylammonium methylsulfate.	x.
Dimethyldioctadecylammonium methyl sulfate-----	ONX. APD.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolium ethyl sulfate.	APD. APD.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate-----	APD.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate.	APD.
2-Heptadecyl-1-(2-stearamidoethyl)-2-imidazolium 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, mono-ethoxylated, ethyl sulfate.	WTC.
Tall oil acids - polyalkylenepolyamine condensate, sulfated.	VIS.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine diolate 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, tri-ethanolamine 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	
<i>Sulfated and Sulfonated--Continued</i>	
*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, WHL, 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.
Cocunut oil isethionate-----	DRW.
Cocunut oil isethionate, sodium salt-----	G, LEV.
Dodecyl sulfoacetate-----	NAC.
Ethyl sulfo-oleate-----	G, KAL.
Glycerol mono(cocunut oil) ester, sulfated, ammonium salt.	CP.
Glycerol mono(cocunut 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-Iauroyloxy-1-propanesulfonic acid-----	SDH.
Methyl sulfo-oleate-----	ICI.
*Propyl sulfo-oleate-----	ACY, BSC, CHL, EPH, 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- 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-Phenylmercuriiformamide-----	VIN.
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)-----	EXT, DOW, FRO, MON, RCI.
Pentachlorophenol, sodium salt-----	DOW, MON, RCI.
8-Quinololinol (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-butyl 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 (Momuron)-----	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 (Duron)-----	DUP.
N-(3,4-Dichlorophenyl) methacrylamide (Dicryl)-----	FMN.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Iduron)-	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 (Penuron)-----	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.
Diphenylacetone trile-----	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).	HFC.
Indolebutyric acid-----	ARA.
Isopropyl carbanilate (Isopropyl N-phenylcarbamate) (IPC).	PGF.
Isopropyl 3-chlorocarbanilate (Isopropyl N-(3-chloro- phenyl)carbamate) (CIPC).	PGF.
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetamide-----	AMC.
1-Naphthaleneacetic acid-----	AMC, COR.
1-Naphthaleneacetic acid, methyl ester-----	AMC.
1-Naphthaleneacetic acid, sodium salt-----	AMC, BKL.
2-Naphthylloxyacetic acid-----	BKL.
2-Naphthylloxyacetic 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, HFC, MON.
*(2,4-Dichlorophenoxy)acetic acid esters and salts:	
(2,4-Dichlorophenoxy)acetic acid, 2-butoxyethyl ester.	AMC.
(2,4-Dichlorophenoxy)acetic acid, butoxypolypropyl- ene glycol ester.	DOW.
*(2,4-Dichlorophenoxy)acetic acid, n-butyl ester----	AMC, DA, DOW, HFC, IMR, MON, RIV.
(2,4-Dichlorophenoxy)acetic acid, sec-butyl ester----	CHC.
*(2,4-Dichlorophenoxy)acetic acid, dimethylamine salt	ALC, AMC, CHC, DA, DOW, HFC, 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, HFC.
*(2,4-Dichlorophenoxy)acetic acid, iso-octyl ester---	CHC, DOW, MON, RIV, TMH.
*(2,4-Dichlorophenoxy)acetic acid, isopropyl ester---	AMC, CHC, DA, DOW, HFC, 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, butoxypolypropyleneglycol 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)-----	BHM.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclopentadiene) isomers.	GLY, GUA, MEL, TRO, WRC.
N-Tolylphthalamic acid-----	VEL.
Tributyl(2,4-dichlorobenzyl)phosphonium chloride-----	USR.
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)-----	VC.
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-ethylhexyl ester.	DOW, HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid, triethenolamine salt.	HPC.
Tris[2-(2,4-dichlorophenoxy)ethyl]phosphite (2,4-DEP)---	BKL.
All other cyclic herbicides and plant hormones-----	USR.
Insect attractants:	ATA, DUP, HPC, SF.
4-(p-Acetoxyphenyl)-2-butanone-----	TBK.
tert-Butyl 4 (and 5)-chloro-2-methylcyclohexane-carboxylate.	TBK.
*Insecticides:	
Allethrin (Allyl homolog of Cinerin I)-----	EPC.
Benzyl thiocyanate-----	HK.
Chlorinated insecticides:	
*Aldrin-toxaphene group:	
Heptachloro-tetrahydro-methanoindene (Heptachlor)---	VEL.
Hexachloro-epoxy-octahydro-endo, endo-dimethanonaphthalene (Endrin).	SHC, VEL.
Hexachloro-epoxy-octahydro-endo, exo-dimethanonaphthalene (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-----	FNN, 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-o-(trichloromethyl)benzhydrol-----	RH.
*Hexachlorocyclohexane (Benzene hexachloride)-----	DA, FRO, HK, PPG.
*Hexachlorocyclohexane, 100% γ -isomer (Lindane)-----	HK.
Hexachloro-hexahydro-methano-benzodioxathin epoxide (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)--- 1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor).	ACG, DA, GGY, LEB, MTO, OMC, RBC. DUP.
All other chlorinated insecticides----- N,N-Diethyltoluamide----- Isobornyl thiocyanatoacetate----- 1-Naphthyl methylcarbamate-----	LLL, USR. HPC, PFZ. BKC, CIS, HPC. UCC.
*Organophosphorus insecticides:	
4-tert-Butyl-2-chlorophenyl methyl methylphosphor- amide.	DOW.
2-Chloro-1-(2,4-dichlorophenyl)vinyl diethyl phosphate O-(3-Chloro-4-methyl-2-oxo-2H-1-benzopyran-7-yl) O,O- diethyl phosphorothioate.	SHC. CHG.
S-(p-Chlorophenylthio)methyl O,O-diethyl phosphoro- dithioate (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] phosphoro- thioate.	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) phosphoro- thioate (Ronnel).	DOW.
p-Dioxane-2,3-diyl ethyl phosphorodithioate----- O-Ethyl O-(p-nitrophenyl) phenylphosphonothioate----- α-Methylbenzyl 3-hydroxycrotonate, dimethyl phosphate ester.	HPC. VIC. SHC.
All other organophosphorus insecticides----- Nematocides: O-2,4-Dichlorophenyl O,O-diethyl phosphoro- thioate.	SF. 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)-- Polyethylenethiuram disulfide (PETD)-----	CIS, DUP, FMN, RH.
Dodecylguanidine acetate (Dodine)-----	FMN. ACY.
Mercury fungicides:	
3-Ethyl(mercurithio)-1,2-propanediol-----	DUP.
Ethylmercury acetate-----	DUP.
Ethylmercury chloride-----	DUP.
Ethylmercury phosphate-----	DUP.
Hydroxyethylmercury acetate-----	WRG.
3-Methyl(mercurithio)-1,2-propanediol-----	DUP.
Methylmercury acetate-----	DUP.
Methylmercury hydroxide-----	MRT.
Methylmercury nitrile-----	WRG.
All other acyclic fungicides-----	MLD.
*Herbicides and plant hormones:	
Caecydic acid-----	
2-Chloroallyl diethyldithiocarbamate (CDEC)-----	ASL.
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-----	ACC.
*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 phosphorotrithioate-----	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(dialkoxylphosphinothioyl) disulfides-----	FMN.
S-[1,2-Bis(ethoxycarbonyl)ethyl] 0,0-dimethyl phos- phorodithioate (Malathion).	ACY.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled).	SHC.
2,2-Dichlorovinyl dimethyl phosphate (DDVP)-----	SHC.
0,0-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate-	CHG.
0,0-Diethyl O-[2-(ethylthio)ethyl] phosphorothioate---	CHG.
0,0-Diethyl S-[2-(ethylthio)ethyl] phosphorothioate-	CHG.
0,0-Diethyl S-[(ethylthio)methyl] phosphorodithioate--	ACY.
0,0-Diethyl phosphorochloridothioate-----	MON.
Diethyl phosphorochloridothioate-----	VIC.
Dimethyl 3-hydroxycrotonate, dimethyl phosphate ester-	SHC.
0,0-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 phosphorochloridodithionate-----	VIC.
Ethyl methylene phosphorodithioate (Ethion)-----	FMN, FMP.
*Ethyl pyrophosphate (Tetraethyl pyrophosphate) (TEPP)-	ALC, AMP, OTH.
S-2-(Ethylsulfanyl)ethyl 0,0-dimethyl phosphoro-	CHG.
dithioate.	
Methyl 3-hydroxycrotonate, dimethyl phosphate ester---	SHC.
All other organophosphorus insecticides-----	ACY.
2-Thiocyanatoethyl laurate-----	x.
*Rodenticides: Sodium fluoroacetate-----	REC.
*Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium	ACY.
salt.	
*Soil fumigants:	
*Bromomethane (Methyl bromide)-----	AMP, DOW, FRO, CTL, 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(C ₃ -C ₂₀ alkyl)-p-cresol-----	EKT.
Bis[2,4-dichlorobenzoyl] peroxide-----	CAD, OXY.
Bis[1-(2-methylaziridinyl)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-propyl-toluene (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-Chlorobenzylidene malononitrile-----	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-amyhydroquinone-----	EKT.
1,4-Diazabicyclo[2.2.2]octane (Triethylenediamine)-----	HOU.
Diazodimetrophenol-----	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.
Di-butyltinbis(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-----	CMC.
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, FMP, RH, WBC.
Proteases-----	BAX, FMP, RH, WBC.
Other-----	RH, WBC.
Nonhydrolytic	
Other-----	FMO, MLS, WBC.
1,2-Epoxy-3-phenoxypropane (Glycidyl phenyl ether)-----	PLB.
6-Ethoxy-m-anol (Propenylmethylguaehtol)-----	SHC.
5-Ethyl-10,10-diphenylphenylphenazasiline-----	ICO.
Ethylenediaminebis[o-hydroxyphenylacetic acid], monosodium ferric salt.	MRK.
Ethylglucosyl p-aminobenzoate-----	GGY.
2-Ethylhexyl octylphenyl phosphite-----	VND.
2-Ethylhexyl salicylate-----	VC.
2-Ethylhexyl tallate-----	ICO.
Ethyl hydrocaffeate-----	UCC.
*Ethylmorpholine-----	ICO.
Fenchone-----	BC, JCC, UCC.
	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-1-ethylpropyl carbamate (Benzamate)-----	DOW.
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt-----	ACY.
Dicresylphosphorodithioic acid, sodium salt-----	KOU.
2,2'-Dimethylthiocarbaniide (Di-o-tolythiourea)-----	ACY, DUP.
Rosin amines-----	HPC.
Thiocarbaniide (Diphenylthiourea)-----	ACY, NAC.
Furan derivatives:	
2-Furaldehyde (Furfural)-----	KQO.
Tetrahydrofurfuryl alcohol-----	KQO.
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, SER.
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-----	GGH.
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, SER.
Isoamyl p-dimethylaminobenzoate-----	VND.
Isocyanuric acid-----	MON.
Isocyanuric acid, sodium salt (Sodium isocyanurate)-----	FMB.
Isopropyl-o-cresol-----	CP.
Isopropyl-p-cresol-----	GIV.
p-Isopropyl-o-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-----	CGA.
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-Methylantranilic 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 (Methylbi-cyclo-(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.
Pheryltrimethylammonium 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-methylguaisacol (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-diethylaniline) 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-Ethylbenzimid)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-----	ECT.
Phenylmercaptotetrazole-----	TNC.
1-Phenyl-3-pyrazolidinone-----	GGY, WAY.
4-Phenylpyrocatechol-----	X.
2-Resorcylic monoethanolamide-----	FMT.
4,4'-Thiodiresorcinol (Diresorcylic 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 interpolymers, 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-----	ORO, 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, sulfated-----	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-Toluidylguanide-----	MON.
3,4',5-Tribromosalicylanilide-----	FIN.
3,4,4'-Trichlorocarbonyl chloride-----	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, CGM, DUP, EKT, HPC, MON, PUB, SHC, UCC.
Acetamide-----	ACG.
Acetamidine hydrochloride-----	MRK.
2-Acetamidoethanol (N-Acetyethanolamine)-----	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-	CEL, EKT.
phase process.	
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, SKD, 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.
Acetic 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 ₆ 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, BOR, CEL, CCM, DUP, ESC, GYR, HPC, MON, RH, SPN, UCC.
2-Methyl-3-buten-2-ol-----	AIR.
2-Methyl-3-buten-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 (Acetaldo)-----	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-pentenonic 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.
Diethylamine-----	PAS, UCC.
*Diethylamine hydrochloride-----	DUP, PAS, UCC.
2,2'-Diethyldihexylamine-----	x.
Diethylenetriamine-----	VCC.
N,N-Diethylethylenediamine-----	DCW, UCC.
N ¹ ,N ¹ -Diethyl-1,4-pentanediamine (Novoldiamine)-----	COK.
N,N-Diethyl-1,3-propanediamine-----	SDH.
Diisobutylamine-----	UCC.
Diisopropylamine-----	PAS.
Dilaurylamine-----	PAS, UCC.
*Dimethylamine-----	GNM.
Dimethylamine hydrochloride-----	COM, DUP, PAS, RH.
Dimethylamine sulfate-----	ICO, TNC.
Dimethylmethylamine-----	RH.
N,N-Dimethyloctadecylamine (Stearyl dimethylamine)-----	BC.
N,N-Dimethyl-1,3-propanediamine-----	ARC.
Dipentylamine (Diamylamine)-----	JCC, UCC.
Dipropylamine-----	PAS.
Dipropylenetriamine-----	PAS, UCC.
Dodecylamine-----	UCC.
Ethylamine-----	ARC, FOR, GNM.
Ethylenediamine-----	ESC, PAS, UCC.
Ethylenediamine dihydrochloride-----	DOW, JCC, UCC.
Ethylenediamine sulfate-----	BKC.
Hexadecylamine-----	EK.
1,6-Hexanediamine (Hexamethylenediamine)-----	ADM, ARC.
3,3'-Iminobispropylamine-----	DUP, MON.
Isobutylamine-----	JCC, UCC.
*Isopropylamine-----	PAS.
Lauryl dimethylamine-----	ESC, PAS, UCC, VCC.
Methylamine hydrochloride-----	BC.
*Methylamine, mono-----	RBC.
Methyltriethylenediamine-----	COM, DUP, ESC, PAS, RH.
*Octadecylamine-----	JCC.
Octylamine-----	ADM, ARC, CGL, FOR, GNM.
*Oleylamine-----	ADM, ARC, RH, UCC.
Pentylamine (Monoamylamine)-----	ARC, CGL, FOR, GNM.
Primary alkylamines, mixed-----	ALB, EK, PAS.
1,2-Propanediamine (Propylenediamine)-----	RH.
1,3-Propanediamine-----	UCC.
Propylamine-----	UCC.
Soybean oil amine-----	PAS, UCC.
Tall oil amine-----	ARC, CGL.
*Tallow amine-----	CGL, GNM.
Tallow amine, dihydrogenated-----	ADM, ARC, CGL, FOR, GNM.
Tallow amine, hydrogenated-----	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.
Triptylamine-----	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-----	SNW.
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' -Azodisobutyronitrile).-----	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, GMC, 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 butymediol-----	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-----	ACC.
Boron trifluoride monoethylamine complex-----	ACC.
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, OMC, UCC.
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether).	JCC, OMC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether).	DOW, OMC.
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.
Butylethylthiourea-----	PAS.
*tert-Butyl hydroperoxide-----	AZT, CAD, UPR, WTL.
2,2'-(Butylimino)diethanol (N,N-Bis(2-hydroxyethyl)butylamine).	PAS.
Butyl lactate-----	COM, CWN, UFC.
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 peroxyphthalate-----	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, OLN, 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, MIO.
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 chlorhydrin)-----	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)-----	BKI, 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	
Cococnitrile-----	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.
Cyanoacetylhydrazide-----	KF.
Cyanoacetic acid-----	KF.
Cyanogen bromide-----	EK.
3-Cyanopropylamine-----	EKT.
1,10-Decanediol-----	NEP.
Decanoyl chloride-----	TK.
*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, DUF, 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-difluoroethyl 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-----	DUF.
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.
Disobutylaluminum chloride-----	TSA.
Disobutylaluminum 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, OMC.
N,N-Dimethylacetamide-----	DUP.
N,N-Dimethylacetoacetamide-----	EKT.
*2-Dimethylaminoethanol-----	AAC, PAS, RH, UCC.
Dimethylamino-2-propanol-----	COM, 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)-----	EXX.
Dimethyltin dichloride-----	x.
1,3-Dimethylurea-----	PAS.
Dioctanoyl peroxide (Caprylyl peroxide)-----	x.
Diocetyl 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	
*Diocyl maleate----- 1,3-Diocy1-2-thiourea-----	CRT, MON, PCC, RUB. PAS.
*Dipropylene glycol----- Distearyl 3,3'-thiodipropionate-----	CEL, DOW, JCC, OMC, UCC. CCW.
Dithiooxamide----- Ditridecyl maleate-----	MAL. RUB.
n-Dodecane-----	HMY.
*Dodeceny1succinic anhydride----- n-Eicosane-----	HMY, MON, NAC. HMY.
*Epichlorohydrin-----	DOW, SHC, UCC.
*Erucamide----- Erucic acid-----	ADM, FIN, HUM. ADM.
Ethanedithiol-----	RBC.
*Ethanalamines: *2-Aminoethanol (Monoethanolamine)-----	ACN, DOW, JCC, UCC.
*2,2'-Iminodiethanol (Diethanolamine)-----	ACN, DOW, JCC, UCC.
*2,2',2''-Nitrilotriethanol (Triethanolamine)-----	ACN, DOW, JCC, UCC.
Ethanalamine hydrochloride-----	WSN.
Ethanalamine 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-----	EKL, 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:	WTC.
Aluminum 2-ethylhexanoate-----	CCA.
Barium 2-ethylhexanoate-----	CCA.
Cadmium 2-ethylhexanoate-----	CCA, FER, HNX, HSH, MCI, MLD, SRR, SW, WTC.
*Calcium 2-ethylhexanoate-----	CCA, FER, HNX, HSH, MCI, MLD, SHP, SRR, SW, WTC.
*Cobalt 2-ethylhexanoate-----	CCA, SRR.
Copper 2-ethylhexanoate-----	x.
Dibutyltin di-2-ethylhexanoate-----	CCA.
Iron 2-ethylhexanoate-----	CCA, HNX, HSH, MCI, MLD, NTL, SHP, SRR, SW, WTC.
*Lead 2-ethylhexanoate-----	CCA, HNX, MCI, MLD, SHP, SRR.
*Manganese 2-ethylhexanoate-----	MCI.
Nickel 2-ethylhexanoate-----	CCA.
Potassium 2-ethylhexanoate-----	CCA.
Rare earths 2-ethylhexanoate-----	WTC, x.
Stannous 2-ethylhexanoate-----	CCA.
Strontium 2-ethylhexanoate-----	CCA, HNX, HSH, MCI, SRR, WTC, x.
*Zinc 2-ethylhexanoate-----	CCA, HNX, WTC.
Zirconium 2-ethylhexanoate-----	SW.
All other-----	CEL, EKI, UCC.
2-Ethyl-1-hexyl acetate-----	CEL, DEC, RH, UCC.
*2-Ethyl-1-hexyl acrylate-----	KF.
2-Ethylhexyl cyanoacetate-----	DUP.
2-Ethylhexyl methacrylate-----	CEL.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylol- propane).	CEL.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol allyl ethers---	CEL.
Ethylidene diacetate-----	OTC.
Ethyl isocyanate-----	PAS.
2-(Ethylmercapto)ethanol-----	LIL.
Ethylmercuric chloride-----	RH.
Ethyl 2-methyl lactate (Ethyl α -hydroxyisobutyrate)-----	LIL.
Ethyl (1-methyl-2-pentynyl)cyanoacetate-----	FB, NW, TBK.
*Ethyl propionate-----	MFR, SFA, UCC.
*Ethyl silicate (Tetraethoxysilane)-----	UCC.
Ethyl sulfate (Diethyl sulfate)-----	MED.
N-Ethylurea-----	UCC.
Ethyl vinyl ether-----	
Fats and oils, chemically modified:	SPP.
Lard oil, nitrated-----	DOM, RT.
Vegetable oils, brominated-----	CHL.
Other-----	
Fatty acids, chemically modified:	DUP.
α -Bromo(lauric-stearic) acids-----	BAC.
Castor oil fatty acids, dehydrated-----	ABB, RH, RT.
All other-----	
Fatty acid esters, not included with plasticizers or surface-active agents:	VND.
Decyl oleate-----	ICO.
Ethyl stearate-----	VND.
Isopropyl linoleate-----	PCS.
Isopropyl palmyristate-----	BFR, CHL.
Methyl esters of tallow-----	ADM, EMR, ENJ, FG, RT, x.
All other-----	ADM.
Fish oil fatty acid amide-----	ADM.
Flotation reagents:	DOW.
Isopropyl ethylthionocarbamate-----	
Phosphorodithioates (Dithiophosphates):	ACY.
Potassium dihexyl phosphorodithioate-----	ACY.
Sodium di-sec-butyl diethyl phosphorodithioate-----	

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, UCF.
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.
Thallos 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-----	MCN.
Glycerol, synthetic-----	AFD, DOW, RH, SHC, UCC.
Glycidol (2,3-Epoxy-1-propanol)-----	OTC.
Glycine (aminoacetic acid), tech-----	BFC.
Glycine, cupric salt-----	BFC.
Glycine ethyl ester hydrochloride-----	BFC.
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)-----	GLB, EK.
2-Bromopentane (1-Methylbutyl bromide)-----	ABB, BPC, LIL.
1-Bromopropane (n-Propyl bromide)-----	BPC, EK.
3-Bromopropene (Allyl bromide)-----	GLB, 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-methylpropane (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-----	BCL.
Hexamethylenediammonium adipate-----	MON.
Hexamethylene diisocyanate-----	OTC.
2,5-Hexanedione (Acetylacetone)-----	RBC.
1,2,6-Hexanetriol-----	UCC.
1,2,6-Hexanetriol octoate-----	KES.
Hexanoic acid (Caproic acid)-----	FB, TPK.
Hexyl acetate-----	ENJ.
2-[2-(Hexyloxy)ethoxy]ethanol-----	UCC.
Hydracrylonitrile (Ethylene cyanohydrin)-----	UCC.
Hydrazine and salts-----	FMT, CMC.
2-Hydrazinoethanol-----	NOR.
Hydrocarbon polymer-----	ENJ.
N-[3-(Hydroxymethyl)-2-methoxypropyl]carbamoylsuccinamic acid (Methoxyoximercuripropylsuccinyl urea).	KCL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylol ethane).	TRJ.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris(hydroxymethyl)nitromethane).	CGM.
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.
Isascorbic acid-----	MRK, PFZ.
*Isascorbic 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 (Isocamyl ether)-----	GIV.
Isoprenylaluminum-----	TSA.
Isopropanolamines:	
1-Amino-2-propanol (Monoisopropanolamine)-----	DOW, UCC.
1,1'-Iminodi-2-propanol (Diisopropanolamine)-----	DOW, UCC.
1,1',1'-Nitrioltri-2-propanol (Triisopropanolamine)-----	DOW, UCC.
*Isopropyl acetate-----	EKT, ENJ, HPC, UCC.
2-Isopropylaminoethanol-----	PAS.
Isopropyl chloroformate-----	CTN, PFG.
*Isopropyl ether-----	ENU, 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-----	MDN.
Lauric acid salts-----	COW.
Lauronitrile-----	FOR.
Lauroyl bromide-----	DOW.
*Lauroyl chloride-----	BC, G, HK, MDN, TBK.
*Lauroyl peroxide-----	AZT, CAD, UPR, WTL.
Lauryl lactate-----	VND.
Levulinic acid-----	CRZ.
*Linoleic acid salts:	
*Calcium linoleate-----	CCA, LEF, SHF, SRR.
*Cobalt linoleate-----	HSH, SHF, SRR.
Copper linoleate-----	WTC.
Iron linoleate-----	HSH.
Lead linoleate-----	SHF, 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 linolate-----	SDH, SRR.
Manganese linolate-----	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-----	LJB.
Zinc alkyl phosphorodithioates-----	ENJ, LJB.
Zinc di(butylhexyl) phosphorodithioate-----	ORO.
Zinc dihexyl phosphorodithioate-----	MON, SIN.
Zinc hexyl isopropyl phosphorodithioate-----	TX.
All other-----	ACY, LJB, MON, SIN, TX.
Sulfurized butenes-----	LJB.
Sulfurized lard oil-----	CCW, GOC, SIN, SOI.
Sulfurized methyl oleate-----	SIN.
*Sulfurized sperm oil-----	CCW, LJB, QCF, SIN, SOI, x.
Tetradecyl selenide-----	ORO.
All other-----	CCW, ENJ, HK, LJB, MON, ORO, SIN, x.
Magnesium methylate-----	MPT, SFA.
Maleic acid-----	NAC, PFN.
Maleic acid, tribasic lead salt-----	NTL.
*Maleic anhydride-----	HN, KFS, 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.
Methylidene acetate-----	UCC.
Methanesulfonic acid-----	EK, PAS.
*2-Methoxyethanol (Ethylene glycol monoethyl ether)-----	DOW, JCC, GMC, UCC.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol monoethyl ether)-----	DOW, JCC, GMC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)-----	DOW, GMC, 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-----	ACT.
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, DEC, RH.
Methylal (Dimethoxymethane)-----	CEL.
Methylaluminum sesquichloride-----	TNA.
2-Methylaminoethanol (N-Methylethanolamine)-----	UCC.
Methyl horate-----	MHI, SFA.
3-Methyl-2-butenic acid-----	UCC.
2-Methyl-1-buten-3-yne (Isopropenylacetylene)-----	AIR.
2-Methyl-2-(sec-butyl)-1,3-propanediol-----	BKL.
Methyl butynoxyethanol-----	AIR.
Methyl carbamate-----	EKL.
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-----	ABP, DUP.
Methylglycerol-----	APP.
5-Methyl-2-hexanone (Methyl isoamyl ketone)-----	EKT, UCC.
2,2'-(Methylimino)diethanol (Methyl diethanolamine)-----	DOW, UCC.
Methyl isocyanate-----	CTN, OTC.
2-Methylactic acid (α -Hydroxyisobutyric acid)-----	EK.
2-Methylactonitrile (Acetone cyanohydrin)-----	RH, x.
Methylmagnesium bromide-----	ARA.
Methylmagnesium chloride-----	ARA.
Methyl methacrylate, monomer-----	ACT, 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, ICC, 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.
Methylpseudocionone-----	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-Methylpentanaldehyde)-----	UCC.
2-Methylvaleric acid-----	UCC.
Methyl vinyl ether-----	G, UCC.
Micochloric 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.
Nonerylsuccinic 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-----	AOG, BKC, PFZ.
Sodium binoxalate-----	VIC.
Sodium oxalate-----	ACB, 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, TEK.
Pantolactone-----	CKL, NOP.
Paraformaldehyde-----	CEL, HN.
Paraldehyde (Paracetaldehyde)-----	UCC.
*Pentaerythritol-----	COM, DCI, HN, HPC, RCI, TRJ.
Pentaerythritol caprylate-----	DRW.
Pentaerythritol, di- and other-----	HPC.
Pentaerythritol, di- and tri-----	HPC.
Pentaerythritol pelargonate-----	DRW.
*Pentaerythritol tetramtrate-----	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, EXT, GE, MOB, NAC, OMC, PPG, SF, UCC, UPJ,
	VDM.
*Phosphorus acid esters, not elsewhere specified (See also Plasticizers, Surface-Active Agents, Pesticides, Flo-tation 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-----	VIC.
Diocetyl hydrogen phosphate-----	HK.
Diocetyl hydrogen phosphite-----	VIC.
2-Ethylhexyl phosphates (mono- and di-)-----	VIC.
Ethyl phosphates (mono- and di-)-----	VC.
Iso-octyl hydrogen phosphate-----	VC.
Isopentyl octyl hydrogen phosphate-----	VIC.
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-----	ACM, 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-----	EKC.
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.
Pseudocionone-----	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, ACRYLIC--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)tetraacetic acid, sodium salt-----	DOW, GGY, HMP, RPC, TOC.
*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, TOC.
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, TOC.
(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)-----	BRP, DA, DUP, HSH, KF, OMC, RBC, SFA.
Sodium polypectate-----	SKG.
Sodium sorbitol borate-----	APD.
Sorbalddehyde (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, CGA, 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, ARG, 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.
Tetrahydroseudionone-----	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.
Tetrapropylsuccinic acid-----	x.
Thioacetamide-----	BKC.
Thioacetic acid-----	EVN.
2,2'-Thiodiethanol (Thiodiethylene glycol)-----	UCC.
3,3'-Thiodipropionic acid-----	COW, EVN.
3,3'-Thiodipropionitrile-----	ACY, HAB.
Thiosemicarbazide-----	ACY, FMT.
Titanic acid esters-----	DUP.
Triacetoxyvinylsilane-----	DCC.
Tributylphosphine-----	COW, 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, OMC, UCC.
Triethylene glycol dimethacrylate-----	SAR.
Triethyl orthoacetate-----	KF.
Triethyl orthoformate-----	KF.
Triethyl orthopropionate-----	KF.
Trifluoroacetaldehyde-----	CLB.
Trifluoroacetic anhydride-----	EK.
Tri(hexylene glycol) biphosphate-----	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-----	EKK.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate-----	EKK.
Trimethylpentanol-----	EKK.
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	Code	Name of company
AAC	Alcolac Chemical Corp.	APX	Apex Chemical Co., Inc.
AAE	American Aniline & Extract Co., Inc.	ARA	Arapahoe Chemicals, Inc.
AAI	American Alkyd Industries	ARC	Armour & Co., Armour Industrial Chemical Co. Div.
AAP	American Aniline Products, Inc.	ARD	Ardmore Chemical Co.
ASB	Abbott Laboratories	ARG	Argus Chemical Corp.
ABS	American Brake Shoe Co., American BrakeBlok Div.	ARK	Armstrong Cork Co.
ACB	Allied Chemical Corp., Barrett Div.	ARL	Arol Chemical Products Co.
ACC	Amoco Chemicals Corp.	ARM	Armour Agricultural Chemical Co.
ACG	Allied Chemical Corp., General Chemical Div.	ARO	Mobil Finishes Co., Inc., Arco Div.
ACD	Allied Chemical Corp., Nitrogen Div.	ARP	Armour Pharmaceutical Co.
ACO	Acralite Co., Inc.	ARZ	Arizona Chemical Co.
ACP	Allied Chemical Corp., Plastics Div.	ASH	Ashland Oil & Refining Co.
ACR	Acme Resin Corp.	ASL	Ansul Chemical Co.
ACS	Allied Chemical Corp., Solvay Process Div.	AST	Astra Pharmaceutical Products, Inc.
ACT	Arthur C. Trask Co.	ASY	American Synthetic Rubber Corp.
ACU	Allied Chemical Corp., Union Texas Petroleum Div.	ATC	American Tartars Corp.
ACY	American Cyanamid Co.	ATL	Atlantic Chemical Corp.
ADC	Ad-Co Color Corp.	ATP	Ateo Chemical-Industrial Products, Inc.
ADM	Archer-Daniels-Midland Co.	ATR	Atlantic Refining Co.
AIR	Air Reduction Co., Inc., Air Reduction Chemical & Carbide Co. Div.	ATU	Atlantic Tubing & Rubber Co.
AKS	Arkansas Co., Inc.	AUG	Augusta Chemical Co.
ALB	Ames Laboratories, Inc.	AV	FMC Corp., American Viscose Div.
ALC	Alco Chemical Corp.	AVS	Avisun Corp.
ALD	Aldrich Chemical Co., Inc.	AZT	Aztec Chemicals, Inc.
ALF	Allied Chemical Corp., Fibers Div.	BAC	Baker Castor Oil Co.
ALL	Alliance Color & Chemical Co.	BAL	Baltimore Paint & Chemical Corp.
ALO	Alamo Polymer Corp.	BAO	Bayoil Co., Inc.
ALT	Crompton & Knowles Corp., Althouse Chemical Co. Div.	BAT	Bates Chemical Co.
ALX	Alox Corp.	BAX	Barter Laboratories, Inc.
AMB	American Bio-Synthetics Corp.	BC	Barlow Chemical Corp.
AMC	Amchem Products, Inc.	BCM	Belding Chemical Industries
AME	American Chemical Corp.	BCN	Beacon Chemical Industries, Inc.
AMF	Mobil Finishes Co., Inc., Ferbert-Schorndorfer Div.	BEN	Bennett's
AML	Amalgamated Chemical Corp.	BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
AMO	American Oil Co. (Texas)	BFR	Branchflower Co.
AMP	American Potash & Chemical Corp.	BGC	Balfour Chemicals, Inc.
AMR	Pacific Resins & Chemical Co.	BJL	Burdick & Jackson Laboratories, Inc.
AMS	Martin-Marietta Corp., Ridgway Color & Chemical Div.	BKC	J. T. Baker Chemical Co.
ANM	Ancon Chemical Co.	BKL	Millmaster Onyx Corp., Berkeley Chemical Dept.
APC	Appleton Coated Paper Co.	BKM	Buckman Laboratories, Inc.
APD	Atlas Chemical Industries, Inc., Chemicals Div.	BKS	Berkshire Color & Chemical Co.
APR	Atlas Processing Co.	BKT	J. T. Baker Chemical Co., Taylor Div.
APT	American Petrochemical Corp.	BL	Belle Chemical Co., Inc.
APV	Armstrong Paint & Varnish Works, 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	Code	Name of company
BOY	Walter N. Boysen Co.	COP	Coopers Creek Chemical Corp.
BPC	Benzol Products Co.	CP	Colgate-Palmolive Co.
BPL	Brand Plastics Co.	CPC	Childs Pulp Colors, Inc.
BRD	Baird Chemical Industries, Inc.	CFD	Chemical Products Corp.
BRS	Bristol-Meyers Co., Bristol Laboratories Div.	CPT	Consolidated Paint Co.
BRU	M. A. Bruder & Sons, Inc.	CPV	Cook Paint & Varnish Co.
BRY	Bryant Chemical Corp.	CPY	Copolymer Rubber & Chemical Corp.
BSC	Burkart-Sohler Chemical Co.	CRC	Crown Chemical Corp.
BUC	Blackman-Uhler Chemical Co.	CRN	Corn Products Co.
BUK	Buckeye Cellulose Corp.	CRS	Carus Chemical Co., Inc.
BUR	Burroughs-Wellcome & Co. (U.S.A.), Inc.	CRT	Crest Chemical Corp.
BXT	J. H. Baxter & Co.	CRY	Tenneco Manufacturing Co., Tenneco Plastics Div.
		CRZ	Crown Zellerbach Corp., Chemical Products Div.
CAD	Cadet Chemical Corp.	CSD	Cosden Oil & Chemical Co.
CAL	Callery Chemical Co.	CSO	Cities Service Oil Co.
CAP	Cap-Roc, Inc., Capital Plastics Div.	CST	Charles S. Tanner Co.
CAT	Catalin Corp. of America	CTA	Conestoga Chemical Corp.
CAU	Calcasieu Chemical Corp.	CTL	Continental Chemical Co.
CBA	Ciba Corp., Ciba Products Co.	CTN	Chemetron Corp., Chemetron Chemicals, Organic Chemical Dept.
CBC	Georgia-Pacific Corp., Coos Bay Div.	CUC	Cumberland Chemical Corp.
CBD	Central Processing Co.	CUL	Culver Chemical Co.
CBM	Carborundum Co., Coated Abrasives Div.	CUT	Cutter Laboratories, Inc.
CBN	Columbian Carbon Co., Pigments & Elastomers Div.	CW	General Mills, Inc., Chemical Div.
CBP	Ciba Corp., Ciba Pharmaceutical Co. Div.	CWL	Cowles Chemical Co.
CBR	Colab Resin Corp.	OWN	Upjohn Co., Carwin Co. Div.
CBT	Sammuel Cabot, Inc.	CWP	Consolidated Papers, Inc.
CBY	Crosby Chemicals, Inc.		
CCA	Carlisle Chemical Works, Inc., Advance Div.	DA	Diamond Alkali Co., and Western Div.
CCC	Chase Chemical Corp.	DAN	Dan River Mills, Inc.
CCH	Pearsall Chemical Co.	DAV	Conchemco, Inc., H. B. Davis Co. Div.
CCI	Checkmate Chemicals, Inc.	DEC	Dow Badische Chemical Co.
CCL	Charlotte Chemical Laboratories	DCC	Dow Corning Corp.
CCO	Chemico, Inc.	DCI	Delaware Chemicals, Inc.
CCP	Crown Central Petroleum Corp.	DEG	Degen Oil & Chemical Co.
COW	Carlisle Chemical Works, Inc.	DEP	DePaul Chemical Co., Inc.
CD	Rudd Co., Polychem Div.	DEX	Dexter Chemical Corp.
CEL	Celanese Corp. of America: Celanese Chemical Co. Div. Celanese Plastics Co. Div.	DLH	Hess Oil & Chemical Corp.
		DLI	Dawe's Laboratories, Inc.
CEM	Chemirad Corp.	DOD	Donald A. Dodd
CFA	Cooperative Farm Chemicals Association	DCM	Dominion Products, Inc.
CFC	Rexall Chemical Co. - Kearny	DCW	Dow Chemical Co.
CGL	Cargill, Inc.	DPP	Dixie Pine Products Co., Inc.
CHC	Chipman Chemical Co., Inc.	DRL	Caradco, Inc., Durel Div.
CHG	Chemagro Corp.	DRW	Drew Chemical Corp.
CHL	Chemol, Inc.	ESC	Dye Specialties, Inc.
CHO	Stauffer Chemical Co., Calhio Chemicals Div.	DSO	DeSoto Chemical Coatings, Inc.
CHT	Chattanooga Medicine Co., Chatter Chemicals Div.	DUN	Frank W. Dunne Co.
		DUP	E. I. duPont de Nemours & Co., Inc.
CIB	Ciba Chemical & Dye Co.	DUR	Duraphene Corp.
CIK	Cal/Ink Co., Inc.	DVC	Dover Chemical Co.
CIN	Cindet Chemicals, Inc.	DXS	Sunray DX Oil Co.
CIS	Chemical Insecticide Corp.		
CKL	Chemlek Laboratories, Inc.	EAK	J. S. & W. R. Eakins, Inc.
CLB	Columbia Organic Chemicals Co., Inc.	ECC	Eastern Color & Chemical Co.
CLC	Charles L. Huiscking & Co., Inc., Clintbrook Chemical Co. Div.	EDC	Edcan Laboratories
		EFH	E. F. Houghton & Co.
CLD	Colloids, Inc.	EK	Eastman Kodak Co.
CLI	Clintwood Chemical Co.	EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.
CLK	Clark Oil & Refining Corp.	EKX	Eastman Kodak Co., Texas Eastman Co. Div.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.	ELP	El Paso Natural Gas Products Co.
		EMK	Emkay Chemical Co.
CLV	Clover Chemical Co.	EMR	Emery Industries, Inc.
CLY	W. A. Cleary Corp.	EN	Endo Laboratories, Inc.
CM	Carpenter-Morton Co.	ENJ	Enjay Chemical Co., Div. of Humble Oil & Refining Co.
CMG	Nyanza, Inc.	EPC	Epoxylyte Corp.
CMP	Commercial Products Co., Inc.	ESC	Escambia Chemical Corp.
CO	Continental Oil Co.	ETD	Ethyl-Dow Chemical Co.
COK	Cockerville Chemicals, Inc.	EVN	Evans Chemicals, Inc.
COL	Collier Carbon & Chemical Corp.	EW	Westinghouse Electric Corp., Micarta Div.
COM	Commercial Solvents Corp.		
CON	Concord Chemical Co., Inc.	FAB	Fabricolor Manufacturing Corp.
		FAR	Farnow, Inc.

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

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

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

Code	Name of company	Code	Name of company
JOD	Devoe & Reynolds Co., Inc., Jones-Dabney Div.	MET	M & T Chemicals, Inc.
JOR	W. H. & F. Jordan, Jr. Manufacturing Co., Inc.	MFG	Molded Fiber Glass Body Co., Resin Div.
JRG	Andrew Jergens Co.	MGR	Magruder Color Co., Inc.
JSC	Jersey State Chemical Co.	MHI	Metal Hydrides, Inc.
JTC	Joseph Turner & Co.	MDP	Midland Industrial Finishes Co.
JWL	Jewel Paint & Varnish Co.	MIR	Miranol Chemical Co., Inc.
KAI	Kaiser Aluminum & Chemical Corp.	MLD	Metaload Products Corp.
KAL	Kali Manufacturing Co.	MLS	Miles Laboratories, Inc., Miles Chemical Co. Div.
KCC	Kemecott Copper Corp., Chino Mines Div.	MMM	Minnesota Mining & Manufacturing Co.
KCH	Keystone Chemurgic Corp.	MNO	Monochem, Inc.
KCU	Kemecott Copper Corp., Utah Copper Div.	MNP	Minnesota Paints, Inc.
KCW	Keystone Color Works, Inc.	MOA	Mona Industries, Inc.
KEL	Kelly-Pickering Chemical Corp.	MOB	Mobay Chemical Co.
KEN	Kendall Refining Co.	MOC	Marathon Oil Co., Texas Refining Div.
KES	Armour Industrial Chemical Co., Kessler Chemical Div.	MON	Monsanto Co.
KET	Ketona Chemical Corp.	MOR	Mineral Oil Refining Co.
KF	Kay-Fries Chemicals, Inc.	MOT	Motomco, Inc.
KLS	Kilsdonk Chemical Corp.	MPL	Massachusetts Plastic Corp.
KMC	Kohler-McLister Paint Co.	MPP	Midwest Plastic Products Co.
KMP	Kelly-Moore Paint Co.	MR	Benjamin Moore & Co.
KND	Knoedler Chemical Co.	MRA	Metro-Atlantic, Inc.
KNG	Far-Best Corp., O. L. King Div.	MRB	Marblette Corp.
KNP	Knapp Products, Inc.	MRD	Marden-Wild Corp.
KON	H. Kohnstamm & Co., Inc.	MRK	Merck & Co., Inc.
KPI	Kenrich Petrochemicals, Inc.	MRN	Morningstar Paisley, Inc.
KPP	Koppers Co., Inc., Plastics Div.	MRO	Marco Chemical Corp.
KPS	Koppers Pittsburgh Co.	MRT	Morton Salt Co., Morton Chemical Co. Div.
KPT	Koppers Co., Inc., Tar & Chemical Div.	MRV	Marlowe-Van Loan Corp.
KRM	Lawler Chemicals, Inc., Krumbhaar Resin Div.	MRX	Max Marx Color & Chemical Co.
KYN	Kyanize Paints, Inc.	MSC	Mississippi Chemical Corp.
KYS	Keysor Chemical Co.	MTL	Metalsalts Corp.
LAK	Lakeway Chemical Co.	MTO	Montrose Chemical Corp. of California
LAM	LaMotte Chemical Products Co.	MTR	Baldwin-Montrose Chemical Co., Inc., Montrose Chemical Div.
LAS	Lasco Industries, Inc.	MYW	Stepan Chemical Co., Maywood Div.
LEA	Leatex Chemical Co.	NAC	Allied Chemical Corp., National Aniline Div.
LEB	Lebanon Chemical Corp.	NCI	Union Bag-Camp Paper Corp., Nelio Chemical Div.
LEF	Leffingwell Chemical Co.	NCW	Nostrup Chemical Works, Inc.
LEH	Lehigh Chemical Co.	NEO	Norda Essential Oil & Chemical Co., Inc.
LEM	B. L. Lemke & Co., Inc.	NEP	Nepera Chemical Co., Inc.
LEN	Leonard Refineries, Inc.	NES	Nease Chemical Co., Inc.
LEV	Lever Brothers Co.	NEV	Neville Chemical Co.
LIL	Eli Lilly & Co.	NIL	Nilok Chemicals, Inc.
LKL	Lakeside Laboratories, Div. of Colgate-Palmolive Co.	NIT	Nitrin, Inc.
LKY	St. Regis Paper Co., Lake States Yeast & Chemical Div.	NIX	Nixon-Baldwin Chemicals, Inc.
LMI	Lawrence Mills, Inc.	NLC	Nalco Chemical Co.
LON	Mobil Finishes Co., Inc., American-Marietta Paint Div.	NLF	Nalco Chemical Co., Freeport Div.
LPC	Lignin Products Co.	NOC	Norac Co., Inc.
LUB	Lubrizol Corp.	NON	A. P. Nonweiler Co.
LUE	George Lueders & Co.	NOP	Nopco Chemical Co., Inc.
LUR	Laurel Soap Manufacturing Co.	NOR	Norwich Pharmaceutical Co.
LVR	C. Lever Co., Inc.	NPC	Northwest Petrochemical Corp.
LVY	Fred'k H. Levey Co., Inc.	NPI	National Polychemicals, Inc.
MAH	Maier Color & Chemical Co.	NPP	National Plastic Products Co., Inc.
MAK	MacKenzie Chemical Works, Inc.	NPV	Norris Paint & Varnish Co.
MAL	Mallinckrodt Chemical Works	NRS	Norse Chemical Corp.
MAR	American Can Co., Marathon Div.	NSC	National Starch & Chemical Corp.
MAY	Otto B. May, Inc.	NSP	Alabama Binder & Chemical Corp.
MCA	Masonite Corp., Alpine Chemical Div.	NTB	National Biochemical Co.
MCB	Borg-Warner Corp., Marbon Chemical Div.	NTC	National Casein Co.
MCC	McCloskey Varnish Co.	NVL	National Lead Co.
MCH	Michigan Chemical Corp.	NVF	National Vulcanized Fibre Co.
MCI	Mooney Chemical Corp.	NVT	Novamont Corp.
MCO	Mathe Chemical Co.	NW	Northwestern Chemical Co.
MED	Medical Chemicals Corp.	NYC	American Dyewood Co., Inc., New York Color & Chemical Co. Div.
MEE	Maumee Chemical Co.	OCF	Owens-Corning Fiberglas Corp.
MER	Jefferson Lake Sulphur Co., Chemical Div.	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	Code	Name of company
ONX	Millmaster Onyx Corp., Onyx Chemical Co. Div.	QCP	Quaker Chemical Corp.
OPC	Orbis Products Corp.	QKO	Quaker Oats Co.
ORG	Organics, Inc.	QUN	K. J. Quinn & Co., Inc.
ORO	California Chemical Co., Cronite Div.		
ORT	Roshr Chemicals, Inc.	RAB	Raybestos-Manhattan, Inc., Raybestos Div.
ORU	Eagle-Fischer Co., Ohio Rubber Co. Div.	RBC	Roberts Chemicals, Inc.
OSB	C. J. Osborn Co.	RCC	Rexall Chemical Co.
OTA	Ottawa Chemical Co.	RCD	Richardson Co.
OTC	Ott Chemical Co.	RGI	Reichhold Chemicals, Inc.
OTH	California Chemical Co., Ortho Div.	RDA	Rhodia, Inc.
OKO	Oxo Chemicals Co.	RED	Red Spot Paint & Varnish Co., Inc.
OXR	Onyx Oils & Resins, Inc.	REH	Reheis Chemical Co., Div. of Armour Pharmaceutical Co.
OXY	Oxy Chemical Co.	REL	Reliance Universal, Inc.
		REM	Remington Arms Co., Inc.
PAI	Pennsylvania Industrial Chemical Corp.	RET	Rayette, Inc.
PAN	Pan American Petroleum Corp.	REZ	Rezolin, Inc.
PAR	Pennsylvania Refining Co.	RGC	Rogers Corp.
PAS	Pennsalt Chemicals Corp.	RH	Rohm & Haas Co.
PAT	Patent Chemicals, Inc.	RIC	Richfield Oil Corp.
PBY	Pillsbury Co., Chemical Div.	RIK	Riker Laboratories, Inc.
PC	Proctor Chemical Co., Inc.	RIL	Reilly Tar & Chemical Corp.
PCC	Pittsburgh Chemical Co., Div. of U.S. Steel Co.	RIV	Riverdale Chemical Co.
		RLS	Rachel Laboratories
PCH	Peerless Chemical Co.	RMC	Rinshed-Mason Co.
PCI	Pioneer Chemical Works, Inc.	ROC	Rock Hill Printing & Finishing Co.
PCS	Emery Industries, Inc., Western Div.	ROM	Roma Chemical Corp.
PCW	Pfister Chemical Works	ROY	Royce Chemical Co.
PD	Park, Davis & Co.	RPC	Refined Products Co.
PDC	Bernoclors-Poughkeepsie, Inc.	RPI	Rowland Products, Inc.
PDJ	Joseph Davis Plastics Co.	RSA	R. S. A. Corp.
PEK	Peck's Products Co.	RSB	Rosenberg Bros. & Co.
PEL	Pelron Corp.	RT	F. Ritter & Co.
PEN	S. B. Penick & Co.	RTC	Ritter Chemical Co., Inc.
PER	Perry & Derrick Co.	RTF	Retzloff Chemical Co.
PET	Petroleum Chemicals, Inc.	RTX	Riegel Textile Corp.
PFN	Pfanstiehl Laboratories, Inc.	RUB	Rubber Corp. of America
PFM	Phelan-Faust Paint Manufacturing Co.	RUR	Ruberoid Co.
FFW	Polak's Frutal Works	RZL	Rozilda Laboratories, Inc.
PFZ	Chas. Pfizer & Co., Inc.		
PG	Procter & Gamble Co., Procter & Gamble Manufacturing Co. Div.	S	Sandoz, Inc.
PGU	Gulf Oil Corp., Spencer Chemical Div., Perkins Glue Branch	SAC	Southeastern Adhesives Co.
		SAL	Dr. Salsbury's Laboratories
PHR	Pharmachem Corp.	SAR	Sartomer Resins, Inc.
PIC	Pierce Chemical Co.	SBC	Scher Bros., Inc.
PII	Polymer Industries, Inc.	SBR	Schwarz BioResearch, Inc.
PIL	Pilot Chemical Co.	SCC	Standard Chlorine Chemical Co., Inc.
PIT	Pitt-Consol Chemical Co.	SCF	Schaefer Varnish Co., Inc.
PLA	Richardson Co., Richardson Polymers Div.	SCH	Schering Corp.
PLB	P-L Biochemicals, Inc.	SCN	Schenectady Chemicals, Inc.
PLC	Phillips Petroleum Co.	SCO	Scholler Bros., Inc.
PLS	Plastics Engineering Co.	SCP	Standard Chemical Products, Inc.
PLU	Plumb Chemical Corp.	SCR	R. P. Scherer Corp.
PMA	Plastics Materials, Inc.	SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
PMC	Plastics Manufacturing Co.	SDG	Sterling Drug, Inc., Glenbrook Laboratories Div.
PMP	Premier Malt Products, Inc.	SDH	Sterling Drug, Inc., Hilton-Davis Chemical Co. Div.
PNT	Pantasote Co.	SDW	Sterling Drug, Inc., Winthrop Laboratories Div.
PNX	Phoenix Oil Co.	SEA	Seaboard Chemicals, Inc.
POL	Polymer Corp.	SED	Seidlitz Paint & Varnish Co.
PPG	Pittsburgh Plate Glass Co.	SEK	Sekisui Plastics Corp.
PPL	Pioneer Plastics Corp.	SEL	Selney Co., Inc.
PRC	Products Research Co.	SEP	Southeast Polymers, Inc.
PRD	Productol Chemical Co.	SEY	Seydel-Woolley & Co., Inc.
PRO	Pure Oil Co.	SF	Stauffer Chemical Co., Industrial Chemical Div.
PRP	S. B. Penick & Co., Parsons-Plymouth Div.	SFA	Stauffer Chemical Co., Anderson Chemical Co. Div.
PRT	Pratt & Lambert, Inc.	SH	Stein, Hall & Co., Inc.
PRX	Purex Corp., Ltd.	SHA	Shanco Plastics & Chemicals, Inc.
PSP	Georgia-Pacific Corp., Puget Sound Div.	SHC	Shell Oil Co., Shell Chemical Co. Div.
PTT	Petro-Tex Chemical Corp.	SHF	Standard Dairy Products Corp., Sheffield Chemical Co. Div.
PUB	Publicker Industries, Inc.		
PVI	Polyvinyl Chemicals, Inc.	SHL	Shulton, Inc., Fine Chemicals Div.
PYL	Polychemical Laboratories, Inc.	SHM	Shamrock Oil & Gas Corp.
PYR	Poly Resins	SHO	Shell Oil Co.
PYZ	Polyrez Co., Inc.	SHP	Shepherd Chemical Co.

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

Code	Name of company	Code	Name of company
SIC	Silmar Chemical Corp.	TEN	Tennessee Copper Co.
SID	George F. Siddall Co., Inc.	TGL	Triangle Chemical Co.
SIM	Simpson Timber Co.	THC	Thompson Chemical Co.
SIN	Sinclair Refining Co.	TIC	Ticonderoga Chemical Corp.
SIO	Standard Oil Co. of Ohio	TID	Tidewater Oil Co.
SIP	James P. Sipe & Co.	TKL	Thiokol Chemical Corp.
SK	Smith, Kline & French Laboratories	TMH	Thompson-Hayward Chemical Co.
SKC	Sinclair Koppers Chemical Co.	TMS	Sterling Drug, Inc., Thomasset Colors Div.
SKG	Sunkist Growers, Inc.	TNA	Ethyl Corp.
SKO	Skelly Oil Co.	TNC	Tennant Development Corp., Chemical Div.
SLC	Soluol Chemical Co., Inc.	TNI	Toni Co.
SLV	Sterling Drug, Inc., Salvo Chemical Div.	TNP	Velsicol Chemical Corp., Tensyn Div.
SM	Socony Mobil Oil Co., Inc.: Mobil Chemical Co. Div. Mobil Oil Co. Div.	TOC	Tennesso Oil Co.
SMC	Stamford Chemical Co.	TRC	Toms River Chemical Corp.
SNA	Ansbacher-Siegle Corp., Div. of Sun Chemical Corp.	TRJ	Trojan Powder Co.
SNC	Sonoco Products Co.	TRN	Trancoa Chemical Corp.
SNI	Southern Nitrogen Co., Inc.	TRQ	Troy Chemical Co.
SNO	SunOlin Chemical Co.	TTA	Texas Alkyls, Inc.
SNT	Suntide Refining Co.	TTX	Detrex Chemical Industries, Inc.
SNW	Sun Chemical Corp., Warwick Chemical Co. Div.	TUS	Texas-U.S. Chemical Co.
SOC	Standard Oil Co. of California, California Chemical Co. Div.	TV	Tousey Varnish Co.
SOG	Signal Oil & Gas Co., Houston Div.	TX	Texaco, Inc.
SOH	Sohio Chemical Co., Agent: Sohio Petroleum Co. Solar Nitrogen Chemicals, Inc.	TXC	Tex Chem Co.
SOI	American Oil Co. (Maryland)	TXT	Textilana Corp.
SOL	Solar Chemical Corp.	UBS	A. E. Staley Manufacturing Co., U B S Chemical Co. Div.
SON	Witco Chemical Co., Inc., Sonneborn Div.	UCC	Union Carbide Corp., Chemicals Div.
SOR	Thomason Industries, Inc., Southern Resin Div.	UCP	Union Carbide Corp., Plastics Div.
SOS	Southern Sizing Co.	UCS	Union Carbide Corp., Silicones Div.
SPC	Sinclair Paint Co.	UDI	Universal Detergents, Inc. & Petrochemicals Co.
SPD	General Electric Co., Silicone Products Dept.	UHL	Paul Uhlich & Co., Inc.
SPI	Sinclair Petrochemicals, Inc.	UNC	United Cork Companies
SPL	Spaulding Fibre Co., Inc.	UNG	Ungerer & Co.
SPN	Gulf Oil Corp., Spencer Chemical Div.	UNN	United Chemical Corp. of Norwood
SFP	Socony Paint Products Co.	UNO	United Oil Manufacturing Co.
SPY	Standard Pyroloxid Corp.	UNP	United Chemical Products Corp.
SRC	Shawinigan Resins Corp.	UNS	Union Starch & Refining Co., Inc.
SRL	G. D. Searle & Co.	UOC	Union Oil Co. of California
SRR	Fred'k A. Stresen-Reuter, Inc.	UPC	Upjohn Co., Polymer Chemicals Div.
STA	A. E. Staley Manufacturing Co.	UPF	United States Pipe & Foundry Co.
STC	Sou-Tex Chemical Co., Inc.	UPJ	Upjohn Co.
STD	Standard Dyestuff Corp.	UPL	United States Plywood Corp., California Div., Shasta Operations
STG	Stange Co.	UPM	Universal Oil Products Co.
STP	Stepan Chemical Co.	UPR	U.S. Peroxygen Corp.
SUG	Sucro-Chemical Div. of Colonial Sugars Co.	URC	United Carbon Co.
SUM	Summit Chemical Products Corp.	USB	U.S. Borax Research Corp.
SUN	Sun Oil Co.	USI	National Distillers & Chemical Corp.: A-B Chemical Corp. Div. National Petro Chemical Corp. Div. U.S. Industrial Chemicals Co. Div.
SVC	Sullivan Varnish Co.	USO	U.S. Oil Co.
SVT	Solvent Chemical Co., Inc.	USP	U.S. Plastic & Chemical Corp.
SW	Sherwin-Williams Co.	USR	Naugatuck Chemical Div. of U.S. Rubber Co.
SWP	Souhegan Wood Products, Inc.	UTR	Utah Resin Co., Inc.
SWR	Switzer Bros., Inc.	UVV	Universal Chemicals Corp.
SWT	Swift & Co.	VAC	Varmey Chemical Co.
SYC	Synthetic Chemicals, Inc.	VAL	Valchem
SYN	Syntron, Inc.	VAR	Reichhold Chemicals, Inc., Varcum Chemical Div.
SYF	Synthetic Products Co.	VB	Vermilys-Bell
SYR	Synco Resins, Inc.	VC	Socony Mobil Oil Co., Inc., Virginia-Carolina Chemical Co. Div.
SYV	Synvar Corp.	VDM	Van De Mark Chemical Co.
TAE	Thomas A. Edison Industries, McGraw-Edison Co., Medical Gas Div.	VEL	Velsicol Chemical Corp.
TAY	Taylor Corp.	VGC	Virginia Chemicals, Inc.
TBK	Universal Oil Products Co., Trubek Chemical Co. Div.	VIC	Stauffer Chemical Co., Victor Chemical Works Div.
TCC	Tanatex Chemical Corp.	VIN	Vineland Chemical Co.
TCH	Trylon Chemical Corp.	VIS	Nalco Chemical Co., Viscro Div.
TCI	Texize Chemicals, Inc.	VLY	Chem-Fleur, Inc.
TDC	Diversey Corp.	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	Code	Name of company
VPT	Vickers Refining Co., Inc.	WLI	White Laboratories, Inc.
VSV	Valentine Sugars, Inc., Valite Div.	WLM	Wilnot & Cassidy, Inc.
VTM	Vitamins, Inc.	WM	Wilson & Co., Inc., Wilson-Martin Div.
VTV	Vita-Var Corp., Div. of Textron Industries, Inc.	WOD	Wood Chemicals, Inc.
WAS	Washburn-Purex Co.	WOI	Neville Chemical Co., Chlorinated Products Div.
WAW	W. A. Wood Co.	WON	Woonsocket Color & Chemical Co.
WAX	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	WPC	Warren Paint & Color Co.
WBC	Worthington Biochemical Corp.	WRC	Wood Ridge Chemical Corp.
WBG	White & Bagley Co.	WRD	Weyerhaeuser Co., Wood Products Div.
WCA	West Coast Adhesives Co.	WSN	Washine Chemical Corp.
WDC	Western Dry Color Co.	WTC	Witco Chemical Co., Inc.
WHI	White & Hodges, Inc.	WTH	Wallace & Tiernan, Inc., Harchem Div.
WHL	Whitmoyer Laboratories, Inc.	WTL	Wallace & Tiernan, Inc., Lucidol Div.
WHW	Whittemore-Wright Co., Inc.	WVA	West Virginia Pulp & Paper Co., Polychemicals Div.
WIC	Wica Chemicals, Inc.	WYN	Wyandotte Chemicals Corp.
WIL	Wilson & Co., Inc., Wilson Laboratories Div.	WYT	American Home Products Corp., Wyeth Laboratories, Inc. Div.
WJ	Warner-Jenkinson Manufacturing Co.	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.
ADC	Acralite Co., Inc-----	59 Kent St., Brooklyn, N.Y. 11222.
ADO	Ad-Co Color Corp-----	66 Lister Ave., Newark, N.J. 07105.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Co. Div. Air Reduction Co., Inc.:	Widener Bldg., 1339 Chestnut St., Philadelphia, Pa. 19107.
ALR	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.
ALC	Alamo Polymer Corp-----	Phillips Bldg., 16th Fl., Bartlesville, Okla. 74004.
ALO	Alco Chemical Corp-----	Trenton Ave. and William St., Philadelphia, Pa. 19134.
ADC	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----- Allied Chemical Corp.:	33 Avenue P, Newark, N.J. 07105.
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	Anchem 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.
NBC	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-----	1314 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	Amsul Chemical Co-----	1 Stanton St., Marinette, Wis. 54143.
APX	Apex Chemical Co., Inc-----	200 S. 1st St., Elizabethtown, 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----- Armour & Co.:	P.O. Box 1685, Atlanta, Ga. 30301.
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, Kankeee, 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	Arol 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.
AFD	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.
EKC	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, Ossining, 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	Baycol Co., Inc-----	2 Union St., Peabody, Mass. 01961.
ECN	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.
EPC	Benzol Products Co-----	237 South St., Newark, N.J. 07114.
EKS	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.
BRB	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	Eryant Chemical Corp-----	6 North St., N. Quincy, Mass. 02171.
BUX	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.:	
	Oronite Div-----	200 Bush St., San Francisco, Calif. 94120.
	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	Caradoc, 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----- Celanese Plastics Co. Div-----	522 5th Ave., New York, N.Y. 10036. 744 Broad St., Newark, N.J. 07102.
CBD	Central Processing Co-----	P.O. Box 270, Springfield, Ore. 97477.
COL	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 (Rydens 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 Marchison Dr., Burlingame, Calif. 94011.
CIB	Ciba Chemical & Dye Co----- Ciba Corp.:	Route 208, Fair Lawn, N.J. 07410.
CBF	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.
CSC	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.
CLV	Clintwood Chemical Co-----	1 N. LaSalle St., Chicago, Ill. 60602.
CLI	Clover Chemical Co-----	360 Regis Ave., Pittsburgh, Pa. 15236.
COK	Cookerille Chemicals, Inc-----	Greenwood, Va. 22943.
CBR	Colab Resin Corp-----	Main St., Tewksbury, Mass. 01876.
COL	Colgate-Palmolive Co-----	300 Park Ave., New York, N.Y. 10022.
CPF	Collier Carbon & Chemical Corp-----	714 W. Olympic Blvd., Los Angeles, Calif. 90015.
CCF	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.
CMF	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.
CPL	Consolidated Papers, Inc-----	Wisconsin Rapids, Wis. 54494.
CWL	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.
CFY	Copolymer Rubber & Chemical Corp-----	F.O. Box 2591, Baton Rouge, La. 70821.
CRN	Corn Products Co-----	717 5th Ave., New York, N.Y. 10022.
GSD	Cosden Oil & Chemical Co-----	F.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.
CRF	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----- Western Div-----	300 Union Commerce Bldg., Cleveland, Ohio 44114. 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.
DCM	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-Fischer 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	Edean 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. 91739.
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	Fairmont Chemical Co., Inc-----	117 Blanchard St., Newark, N.J. 07105.
POC	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.
FMD	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. Heidelberg 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
FMB	FMC Corp.--Continued 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	Footo Mineral Co-----	Route 100, Exton, Pa. 19341.
FOR	Foremost Chemical Products Co-----	P. O. Box 599, Oakland, Calif. 94604.
FCM	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.
FOD	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., Fort 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.
GCY	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.
CFM	Chemical Div-----	Quimby St., Ossining, N.Y. 10562.
GW	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.:	
CBC	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., Chattanooga, 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.
GQR	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	Guardman 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. F. 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-----	Poissou 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	Havig Industries, Inc., Resin & Compound Div-----	900 Greenbank Rd., Wilmington, Del. 19808.
HXY	Haykeye Chemical Co-----	P.O. Box 899, Clinton, Iowa 52733.
HPC	Hercules Powder Co-----	Hercules Tower, 910 Market St., Wilmington, Del. 19899.
HMP	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.
HDC	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. Huiscking & 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.
ICC	Interchemical Corp.: 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. Mount 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	James-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----- Kennebecott Copper Corp.:	1177 Kendall Ave., Bradford, Pa. 16701.
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	Keyser 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-McLister Paint Co-----	P.O. Box 546, Denver, Colo. 80201.
KON	H. Kohnstamm & Co., Inc----- Koppers Co., Inc.:	161 Avenue of the Americas, New York, N.Y. 10013.
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.
LJR	Laurel Soap Manufacturing Co-----	Thompson and Tioga Sts., Philadelphia, Pa. 19134.
DMI	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.
LJE	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	Maier Color & Chemical Co-----	1700 N. Elston Ave., Chicago, Ill. 60622.
MAL	Mallinckrodt Chemical Works-----	P.O. Box 5439, St. Louis, Mo. 63160.
MRC	Marathon Oil Co., Texas Refining Div-----	P.O. Box 1191, Texas City, Tex. 77591.
MOB	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----- Martin-Marietta Corp.:	1508 Joshua Circle, High Point, N.C. 27261.
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	Merek & Co., Inc-----	126 E. Lincoln Ave., Rahway, N.J. 07065.
MHL	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., Centerville, 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.
MLD	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 Millmaster Oryx Corp.:	1127 Myrtle St., Elkhart, Ind. 46514.
BKL	Berkeley Chemical Dept-----	99 Park Ave., New York, N.Y. 10016.
ONX	Oryx 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. 34 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., Ashabuta, 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.
MRI	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	Nostrup 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.
CMC	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.
OKR	Oryx 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.
PMT	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.
COH	Pearsall Chemical Co-----	P.O. Box 108, Phillipsburg, N.J. 08865.
PEK	Peck's Products Co-----	P.O. Box 14508, St. Louis, Mo. 63178.
POH	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	Pfaunder Permutit, Inc., Ionac Chemical Co. Div-----	Birmingham, N.J. 08011.
PCW	Priester 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.
PFY	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.
PIE	Pierce Chemical Co-----	P.O. Box 117, Rockford, Ill. 61105.
FBY	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.
FLS	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., Feabody, 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.
FMP	Premier Malt Products, Inc-----	917 W. Juneau Ave., Milwaukee, Wis. 53201.
FG	Procter & Gamble Co., Procter & Gamble Manu- facturing 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-----	F.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.
POE	Pure Oil Co-----	205 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.
RIS	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	Rhodin, Inc-----	1651 18th St., Santa Monica, Calif. 90404.
RDA	Rhodia, Inc-----	60 E. 56th St., New York, N.Y. 08901.
RCD	Richardson Polymers Div-----	27th Ave. and Lake St., Malrose 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 Northoff 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.
RCM	Roma Chemical Corp-----	900 Passaic Ave., 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.
SCF	Dyestuff Div., Pigment Dept-----	61-63 Van Dam St., New York, N.Y. 10013.
SCN	Sartomer Resins, Inc-----	P.O. Box 56, Essington, Pa. 19029.
SBC	Schaefer Varnish Co., Inc-----	15th and Magnolia Sts., Louisville, Ky. 40210.
SCR	Schemetady Chemicals, Inc-----	Congress St. and 10th Ave., Schenectady, N.Y. 12301.
SCH	Scherer Bros., Inc-----	P.O. Box 538, Allwood Station, Clifton, N.J. 07012.
SCO	R. P. Scherer Corp-----	9425 Grinnell Ave., Detroit, Mich. 48213.
SBR	Schering Corp-----	1011 Morris Ave., Union, N.J. 07083.
SEA	Scholler Bros., Inc-----	Collins and Westmoreland Sts., Philadelphia, Pa. 19134.
SRL	Schwarz BioResearch, Inc-----	Mountain View Ave., Orangeburg, N.Y. 10962.
SED	Seaboard Chemicals, Inc-----	30 Foster St., Salem, Mass. 01971.
	G. D. Searle & Co-----	P.O. Box 5110, Chicago, Ill. 60680.
	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, Ore. 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	Socory Mobil Oil Co., Inc.: Mobil Chemical Co. Div----- Mobil Oil Co. Div-----	150 E. 42d St., New York, N.Y. 10017. 612 S. Flower St., Los Angeles, Calif. 90054, and P.O. Box 3311, Beaumont, Tex. 77704. 401 E. Main St., Richmond, Va. 23208. Metuchen, N.J. 08840.
VC	Virginia-Carolina Chemical Co. Div-----	621 Republic Bldg., Cleveland, Ohio 44115.
SPP	Socory Paint Products Co-----	621 Republic Bldg., Cleveland, Ohio 44115.
SOH	Sohio Chemical Co., Agent: Sohio Petroleum Co----- Solar Nitrogen Chemicals, Inc-----	36 Monument Sq., Leominster, Mass. 01453. Green Hill and Market Sts., W. Warwick, R.I. 02893. 341 Commercial St., Malden, Mass. 02148. Hartsville, S.C. 29550. Wilton, N.H. 03086. E. Catawba Ave., Mount Holly, N.C. 28120. P.O. Box 791, Lenoir, N.C. 28645. P.O. Box 309, Chattanooga, Tenn. 37401. P.O. Box 246, Savannah, Ga. 31402. P.O. Box 391, East Point, Ga. 30044. 310 Wheeler St., Tonawanda, N.Y. 14152. N. 22d and Eldorado Sts., Decatur, Ill. 62525. 491 Main St., Cambridge, Mass. 02142. 45 Jefferson St., P.O. Box 1131, Stamford, Conn. 06940 Clinton, Iowa 52733.
SOL	Solar Chemical Corp-----	621 Republic Bldg., Cleveland, Ohio 44115.
SLC	Soluol Chemical Co., Inc-----	36 Monument Sq., Leominster, Mass. 01453.
SVT	Solvent Chemical Co., Inc-----	Green Hill and Market Sts., W. Warwick, R.I. 02893.
SNC	Sonoco Products Co-----	341 Commercial St., Malden, Mass. 02148.
SWP	Souhegan Wood Products, Inc-----	Hartsville, S.C. 29550.
STC	Sou-Tex Chemical Co., Inc-----	Wilton, N.H. 03086.
SAC	Southeastern Adhesives Co-----	E. Catawba Ave., Mount Holly, N.C. 28120.
SEP	Southeast Polymers, Inc-----	P.O. Box 791, Lenoir, N.C. 28645.
SNI	Southern Nitrogen Co., Inc-----	P.O. Box 309, Chattanooga, Tenn. 37401.
SOS	Southern Sizing Co-----	P.O. Box 246, Savannah, Ga. 31402.
SPL	Spaulding Fibre Co., Inc-----	P.O. Box 391, East Point, Ga. 30044.
STA	A. E. Staley Manufacturing Co-----	310 Wheeler St., Tonawanda, N.Y. 14152.
UBS	U B S Chemical Co. Div-----	N. 22d and Eldorado Sts., Decatur, Ill. 62525.
SMC	Stamford Chemical Co-----	491 Main St., Cambridge, Mass. 02142.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div-----	45 Jefferson St., P.O. Box 1131, Stamford, Conn. 06940 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----- Stauffer Chemical Co.:	342 N. Western Ave., Chicago, Ill. 60612.
SFA	Anderson Chemical Co. Div-----	380 Madison Ave., New York, N.Y. 10017.
CHO	Calbio 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	Stegan Chemical Co-----	R.R. No. 1, Elwood, Ill. 60421.
MYW	Maywood Div----- Sterling Drug, Inc.:	100 W. Hunter Ave., Maywood, N.J. 07607.
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	Sacro-Chemical Div. of Colonial Sugars Co-----	P.O. Drawer C, 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.
SYF	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	Nudex 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, Fort Neches, Tex. 77651.
TXC	Tex Chem Co-----	20-21 Wagaraw Rd., East 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.:	
	Chemicals Div-----	270 Park Ave., New York, N.Y. 10017.
UCC	Plastics Div-----	270 Park Ave., New York, N.Y. 10017.
UCP	Silicones Div-----	270 Park Ave., New York, N.Y. 10017.
UCS	Union Oil Co. of California-----	461 S. Boylston St., Los Angeles, Calif. 90017.
UOC	Union Starch & Refining Co., Inc-----	301 Washington St., Columbus, Ind. 47201.
UNS	United Carbon Co-----	P.O. Box 149, Baytown, Tex. 77520.
URC	United Chemical Corp. of Norwood-----	P.O. Box 327, Endicott St., Norwood, Mass. 02062.
UNN	United Chemical Products Corp-----	York and Oolgate Sts., Jersey City, N.J. 07302.
UNP	United Cork Companies-----	50 Central Ave., Kearny, N.J. 07032.
UNC	United Oil Manufacturing Co-----	2d and Cascade Sts., Erie, Pa. 16512.
UNO	U.S. Borax Research Corp-----	3075 Wilshire Blvd., Los Angeles, Calif. 90005.
USB	U.S. Oil Co-----	P.O. Box 4228, E. Providence, R.I. 02914.
USO		

TABLE 22.--Synthetic 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.
OWN	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., Jamesville, 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.
VCC	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--4	P.O. Box 545, Wichita, Kans. 67201.
	Wallace & Tiernan, Inc.:	
WTH	Harchem Div-----	25 Main St., Belleville, N.J. 07109.
WTL	Lucidel Div-----	1740 Military Rd., Buffalo, N.Y. 14240.
WJ	Warner-Jenkinson Manufacturing Co-----	2526 Baldwin St., St. Louis, Mo. 63106.
WFC	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, Ore. 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	Whitcover Laboratories, Inc-----	19 N. Railroad St., Myerstown, Pa. 17067.
WHW	Whittmore-Wright Co. Inc-----	62 Alford St., Boston, Mass. 02129.
WIC	Wica Chemicals, Inc-----	P.O. Box 506, Charlotte, N.C. 28201.
WIM	Wilnot & Cassidy, Inc----- Wilson & Co., Inc.:	108 Provost St., Brooklyn, N.Y. 11222.
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.
WCD	Wood Chemicals, Inc-----	P.O. Box 3545, Eugene, Ore. 97401.
WRC	Wood Ridge Chemical Corp-----	Park Pl. E., Wood Ridge, N.J. 07075.
WCN	Woonsocket Color & Chemical Co-----	176 Sunnyside Ave., Woonsocket, R.I. 02895.
WPC	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 1930¹ 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	...
Azotic dyes-----	13	...	14	...
Azotic components:				
Fast color bases-----	169	...	311	...
Fast color salts-----	118	...	113	...
Naphthol AS and its derivatives-----	1,004	...	901	...
Basic-----	456	...	1,018	...
Direct-----	990	...	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	...	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 azotic 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

<i>Colour Index</i> 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-acetoacetoxyilidide).
Pigment Yellow 14-----	Benzidine Yellow (3,3'-dichlorobenzidine and o-acetoacetotoluidide).
Pigment Yellow 17-----	Benzidine Yellow (3,3'-dichlorobenzidine and o-acetoacetanilide).
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',N'-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-naphtholic 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-naphtholic 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-naphtholic 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-naphtholic 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-xylylene 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 50.
Pigment Blue 2-----	Victoria Blue B.
Pigment Blue 9-----	Setoglaucline.
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.

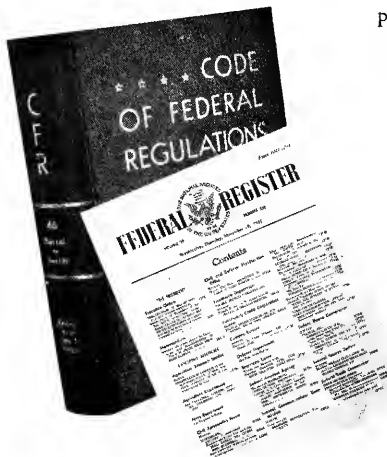
² Includes Arkansas, Florida, Maine, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, Oklahoma, Oregon, and Utah.

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- Operation of the Trade Agreements Program: 14th Report, July 1960-June 1962 (TC Publication 120, 1964), 35¢
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