UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1968

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INTRODUCTION

This is the fifty-second 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 format of the annual report has been changed somewhat from that used in previous years, but the general contents remain the same. The report is made up of fourteen sections, each covering a specified group (based principally on use) of synthetic organic chemicals as follows: tar and tar crudes; crude products from petroleum and natural gas; intermediates; dyes; benzenoid pigments; medicinal chemicals; flavor and perfume materials; plastics and resin materials; rubber-processing chemicals; elastomers; plasticizers; surface-active agents; pesticides and related products; and miscellaneous organic chemicals.

This report covers U.S. production and sales of all synthetic organic chemicals for which the volume of production or sales exceeded 1,000 pounds or for which the value of sales exceeded $1,000, and identifies the manufacturers of each.

The data given in this report were supplied by approximately 800 companies. 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, whenever possible, bearing some relationship to the company name. The identification symbols are permanently assigned, and except for such changes as may be required, will continue to be used in future reports in this series. The company identification codes and their names and addresses are listed in the Appendix, table 1 and 2.

The raw materials referred to in this report are obtained from coal, crude petroleum, natural gas, and certain other materials such as vegetable oils, fats, rosin and grains. With few exceptions, the report does not cover organic chemicals that are derived from natural (vegetable) sources by simple extraction or distillation. 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.

In this report the statistics on production of the individual chemicals reported by manufacturers include the total output of the companies' plants, i.e., the quantities produced for consumption within the producing plants, as well as the quantities produced for domestic and foreign sale. The quantities reported as produced, therefore, generally exceed the quantities reported as sold. Some of these differences, however, are attributable to changes in inventories. As specified in the reporting instructions that the Commission sends to manufacturers, and as used in this report, production and sales (unless otherwise specifically indicated) are defined as follows:

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

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

[1] A toll agreement is an agreement between two firms, under which one firm furnishes the raw materials and pays the processing costs and the other firm prepares the finished product and returns it to the first firm.

Production excludes--

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

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

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

Sales exclude--

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

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

Data on the chemicals covered in this report are usually given in terms of undiluted materials. Products of 95 percent or more purity are considered to be 100 percent pure. The principal exceptions are the statistics on dyes and a few solvents, which are reported in terms of commercial concentrations, and the statistics on certain plastics and resins, which are reported on a dry basis. 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 the averages for products which vary widely in unit values and in the quantities sold.

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 given only where 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 1968 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 the Appendix.

Information on synonymous names of organic chemicals included in this report may be found in the *SOCMA Handbook: Commercial Organic Chemical Names*, recently published by the Chemical Abstracts Service of the American Chemical Society, or the *Colour Index* (2d edition), published in 1956 by the Society of Dyers and Colourists.

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

Combined production of all synthetic organic chemicals, tars, tar crudes, and crude products from petroleum and natural gas in 1968 was 199,787 million pounds--an increase of 13.2 percent over the output in 1967 (see table 1). Sales of these materials in 1968, which totaled 108,766 million pounds, valued at $12,620 million, were 15.3 percent larger than in 1967 in terms of quantity and 10.1 percent larger in terms of value. These figures include data on production and sales of chemicals measured at several successive steps in the manufacturing process, and therefore they necessarily reflect some duplication.

In 1968, production of all synthetic organic chemicals, including cyclic intermediates and finished chemical products, totaled 120,318 million pounds, or 14.9 percent more than the output in 1967 (see table 1). Production of cyclic intermediates (25,014 million pounds) was 20.3 percent larger in 1968 than in 1967; that of plastics and resin materials (16,360 million pounds) was 18.6 percent larger; that of rubber-processing chemicals (313 million pounds) was 18.4 percent larger; and production of pesticides and related products and miscellaneous chemicals were more than 13 percent larger in 1968 than in 1967.

The output of other groups of synthetic organic chemicals which increased in 1968 compared to 1967 were elastomers (11.7 percent), dyes (9.8 percent), surface-active agents (7.5 percent), plasticizers and flavor and perfume materials (5.4 and 5.3 percent larger). Pigments increased in production by less than 1 percent and medicinal chemicals decreased by 1.6 percent.

TABLE 1.--*Synthetic organic chemicals and their raw materials: U.S. production and sales, 1967 and 1968*

Chemical	Production			Sales					
				Quantity			Value		
	1967	1968	Increase or decrease (-), 1968 over 1967[1]	1967	1968	Increase or decrease (-), 1968 over 1967[1]	1967	1968	Increase or decrease (-), 1968 over 1967[1]
	Million pounds	*Million pounds*	*Percent*	*Million pounds*	*Million pounds*	*Percent*	*Million dollars*	*Million dollars*	*Percent*
Grand total[2]	176,541	199,787	13.2	94,309	108,766	15.3	11,466	12,620	10.1
Tar	7,803	7,608	-2.5	3,547	3,580	.9	34	36	7.7
Tar crudes	9,588	9,845	2.7	6,132	6,418	4.7	136	138	1.4
Crude products from petroleum and natural gas	54,438	62,017	13.9	29,453	34,189	16.1	858	920	7.2
Synthetic organic chemicals, total[2]	104,711	120,318	14.9	55,177	64,578	17.0	10,438	11,526	10.4
Intermediates	20,793	25,014	20.3	9,461	11,328	19.7	1,000	1,131	13.1
Dyes	206	226	9.8	199	215	8.1	332	370	11.5
Benzenoid pigments	53	54	.8	43	46	6.9	108	120	10.7
Medicinal chemicals	180	177	-1.6	127	123	-3.5	385	415	7.7
Flavor and perfume materials	112	117	5.3	97	109	12.6	93	97	4.2
Plastics and resin materials	13,793	16,360	18.6	11,977	14,397	20.2	2,673	2,907	8.8
Rubber-processing chemicals	264	313	18.4	201	236	17.5	132	151	14.8
Elastomers (synthetic rubbers)	3,823	4,268	11.7	3,262	3,563	9.2	874	973	11.3
Plasticizers	1,263	1,331	5.4	1,162	1,239	6.6	261	280	7.2
Surface-active agents	3,479	3,739	7.5	1,750	1,998	14.2	317	357	12.6
Pesticides and related products	1,050	1,192	13.6	897	960	6.9	787	849	7.9
Miscellaneous chemicals	59,696	67,525	13.1	26,001	30,366	16.8	3,476	3,875	11.5

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

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, benzenoid pigments, medicinal chemicals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers (synthetic rubbers), plasticizers, surface-active agents, pesticides and related products, 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 1968 was 120,318 million pounds, or 14.9 percent more than the output of 104,711 million pounds reported for 1967 (see table 6). Sales of synthetic organic chemicals in 1968 amounted to 64,578 million pounds, valued at $11,526 million, compared with 55,177 million pounds, valued at $10,438 million, in 1967. Production of all cyclic products (intermediates and finished products combined) in 1968 totaled 39,406 million pounds, or 17.7 percent more than the 33,479 million pounds produced in 1967. The output of acyclic organic chemicals in 1968 amounted to 80,912 million pounds--13.6 percent more than the 71,232 million pounds reported for 1967.

TABLE 2.--Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1967 and 1968

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

Chemical	Average 1957-59	1967	1968	Increase, or decrease (-)	
				1968 over 1957-59	1968 over 1967
				Percent	*Percent*
Organic chemicals, cyclic and acyclic, grand total:					
Production	45,598,853	104,711,357	120,317,519	164.0	14.9
Sales	23,744,812	55,176,823	64,578,316	172.0	17.0
Sales value	5,743,764	10,438,453	11,525,618	100.5	10.4
Cyclic, total:					
Production	14,381,651	33,479,469	39,405,527	174.0	17.7
Sales	8,829,037	19,328,628	22,264,656	152.2	15.2
Sales value	2,785,100	4,610,293	5,088,853	82.7	10.4
Acyclic, total:					
Production	31,217,202	71,231,888	80,911,992	159.4	13.6
Sales	14,915,775	35,848,195	42,313,660	183.7	18.0
Sales value	2,958,664	5,828,160	6,436,765	117.2	10.4
1. Cyclic Intermediates					
Production	7,343,167	20,793,132	25,013,938	240.6	20.3
Sales	2,919,264	9,461,180	11,328,129	288.0	19.7
Sales value	481,920	1,000,359	1,131,433	134.8	13.1
2. Dyes					
Production	150,830	206,240	226,498	50.2	9.8
Sales	141,731	198,592	214,661	51.4	8.1
Sales value	182,513	332,049	370,196	102.8	11.5
3. Benzenoid Pigments					
Production	38,603	53,322	53,749	39.2	0.8
Sales	30,218	42,867	45,810	51.6	6.9
Sales value	58,648	108,354	119,934	104.5	10.7

See footnote at end of table.

TABLE 2.--Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1967 and 1968--Continued

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

Chemical	Average 1957-59	1967	1968	Increase, or decrease (-)	
				1968 over 1957-59	1968 over 1967
				Percent	*Percent*
4. Medicinal Chemicals					
Cyclic:					
Production	70,654	110,129	113,200	60.2	2.8
Sales	54,151	70,120	77,184	(1)	10.1
Sales value	$35,297	348,873	383,570	(1)	9.9
Acyclic:					
Production	31,592	69,941	64,021	102.6	-8.5
Sales	28,738	56,804	45,349	(1)	-20.2
Sales value	35,660	36,402	31,354	(1)	-13.9
5. Flavor and Perfume Materials					
Cyclic:					
Production	27,312	57,978	60,271	120.7	4.0
Sales	22,446	47,285	49,708	121.4	5.1
Sales value	33,903	52,866	52,435	54.7	-0.8
Acyclic:					
Production	19,033	53,558	57,188	200.5	6.8
Sales	19,958	49,311	59,058	195.9	19.8
Sales value	21,912	40,495	44,825	104.6	10.7
6. Plastics and Resin Materials					
Cyclic:					
Production	2,278,862	5,033,497	5,898,645	158.8	17.2
Sales	1,900,032	4,224,121	4,901,793	158.0	16.0
Sales value	$18,501	1,036,940	1,121,366	116.3	8.1
Acyclic:					
Production	2,628,779	8,759,452	10,461,020	297.9	19.4
Sales	2,438,853	7,753,242	9,495,658	289.3	22.5
Sales value	864,523	1,635,690	1,785,605	106.5	9.2
7. Rubber-Processing Chemicals					
Cyclic:					
Production	159,182	220,139	263,554	65.6	19.7
Sales	115,704	169,970	199,357	72.3	17.3
Sales value	74,479	116,318	132,880	78.4	14.2
Acyclic:					
Production	29,150	43,994	49,093	68.4	11.6
Sales	22,127	30,878	36,583	65.3	18.5
Sales value	14,289	15,477	18,388	28.3	18.8
8. Elastomers (Synthetic Rubbers)					
Cyclic:					
Production	1,938,732	2,297,637	2,563,065	32.2	11.6
Sales	1,726,757	1,940,099	2,017,026	16.8	4.0
Sales value	404,897	439,580	479,058	18.3	9.0
Acyclic:					
Production	521,811	1,524,908	1,705,021	226.8	11.8
Sales	509,262	1,321,945	1,545,678	203.5	17.0
Sales value	199,627	434,657	494,099	147.5	13.7
9. Plasticizers					
Cyclic:					
Production	348,210	929,871	985,101	182.9	5.9
Sales	297,423	865,084	918,482	208.8	6.2
Sales value	83,509	167,827	177,725	112.8	5.9
Acyclic:					
Production	118,118	332,908	346,075	193.0	4.0
Sales	100,984	296,767	320,182	217.1	7.9
Sales value	38,772	93,142	102,048	163.2	9.6

See footnote at end of table.

TABLE 2.--Synthetic organic chemicals: Summary of U.S. production and sales of intermediates and finished products, average 1957-59, annual 1967 and 1968--Continued

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

Chemical	Average 1957-59	1967	1968	Increase, or decrease (-)	
				1968 over 1957-59	1968 over 1966
				Percent	*Percent*
10. Surface-Active Agents					
Cyclic:					
Production	852,314	1,418,444	1,500,310	76.0	5.8
Sales	800,432	852,238	887,339	(1)	4.1
Sales value	127,936	95,810	102,658	(1)	7.1
Acyclic:					
Production	502,715	2,060,851	2,239,072	(1)	8.6
Sales	432,135	897,786	1,110,878	(1)	23.7
Sales value	113,215	220,877	254,074	(1)	15.0
11. Pesticides and Related Products					
Cyclic:					
Production	440,384	823,158	929,548	111.1	12.9
Sales	375,627	681,532	722,661	92.4	6.0
Sales value	150,837	627,742	697,295	362.3	11.1
Acyclic:					
Production	105,080	226,505	262,812	150.1	16.0
Sales	91,938	215,831	236,970	157.7	9.8
Sales value	49,049	159,301	151,945	209.8	-4.6
12. Miscellaneous Chemicals					
Cyclic:					
Production	733,401	1,535,922	1,797,648	145.1	17.0
Sales	445,252	775,540	902,506	102.7	16.4
Sales value	132,660	283,575	320,303	141.4	13.0
Acyclic:					
Production	27,260,924	58,159,771	65,727,690	141.1	13.0
Sales	11,271,780	25,225,631	29,463,304	161.4	16.8
Sales value	1,621,617	3,192,119	3,554,427	118.6	11.4

[1]Data for 1968 are not comparable with those for average 1957-59.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1968 of one or more of the chemicals included in the groups listed in table 6:

Chemical group	*Number of companies*	*Chemical group*	*Number of companies*
Cyclic Intermediates	217	Rubber-processing chemicals	33
Dyes	49	Elastomers (synthetic rubbers)	32
Benzenoid pigments	34	Plasticizers	58
Medicinal chemicals	109	Surface-active agents	207
Flavor and perfume materials	52	Pesticides and related products	89
Plastics and resin materials	288	Miscellaneous chemicals	330

Tar

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

The quantity of tar produced from coal in the United States in 1968 was 761 million gallons, or 2.5 percent less than the 780 million gallons produced in 1967 (see table 1). U.S. production of water-gas and oil-gas tars was not reported to the Commission for 1967 or 1968; production of these tars amounted to 19 million gallons in 1962, the last year for which production was reported to the Tariff Commission.

Consumption of tar in 1968 amounted to 751 million gallons, of which 644 million gallons was consumed in distillation and in other uses (by tar distillers), 105 million gallons were used as fuel, and 2 million gallons were consumed by coke-oven operators in miscellaneous uses (see table 2). Table 4 lists tar products and identifies the manufacturers.

Tar Crudes

Tar crudes are obtained from coke-oven gas and by distilling coal tar, water-gas tar, and oil-gas tar. The most important tar crudes are benzene, toluene, xylene, naphthalene, creosote oil, and pitch of tar. Some of these products are identical with those obtained from petroleum. Data for materials derived from petroleum are included, for the most part, with the statistics for like materials derived from coke-oven gas and tars, and are shown in tables 1 and 3.

Domestic production of industrial and specification grades of benzene reported by coke-oven operators and petroleum refinery operators[1] in 1968 amounted to 1,000 million gallons--3.2 percent more than the 969 million gallons reported for 1967. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum operators in 1968 amounted to 614 million gallons, valued at $130 million, compared with 564 million gallons, valued at $135 million, in 1967. In 1968 the output of toluene[1] (including material produced for use in blending in aviation fuel) amounted to 695 million gallons--8.0 percent more than the 644 million gallons reported for 1967. Sales of toluene in 1968 were 442 million gallons, valued at $76 million, compared with 385 million gallons, valued at $72 million, in 1967. The output of xylene [1] in 1968 (including that produced for blending in motor

[1] 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.

fuels) was 537 million gallons, compared with 455 million gallons in 1967. About 99 percent of the 537 million gallons of xylene produced in 1968 was obtained from petroleum sources.

Production of crude naphthalene in 1968 (including 376 million pounds of petroleum-derived naphthalene) amounted to 902 million pounds, compared with 898 million pounds in 1967. In 1968 the output of creosote oil for wood preservation was 127 million gallons (100 percent creosote basis), compared with 126 million gallons in 1967. Production of road tar in 1968 was 56 million gallons, compared with 50 million gallons in 1967.

Some of the products included in the statistics in table 3 are derived from other products for which data are also included in the table. The statistics, therefore, involve considerable duplication, and for this reason no group totals or grand totals are given. It is estimated that, after duplication has been eliminated insofar as possible, the net value of the output (from all sources) of these products and of tar burned as fuel was $574 million in 1968, compared with $597 million in 1967 and $552 million in 1966. The total value of sales of those products derived from coke-oven gas and tars, shown in table 3, amounted to $138 million in 1968, compared with $136 million in 1967. Table 4 lists crude tar products and identifies the manufacturers.

TABLE 1.--*Tar and tar crudes: Summary of U.S. production of specified products, average 1957-59, annual 1967 and 1968*

[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 1957-59	1967	1968	Increase, or decrease (-)	
					1968 over 1957-59	1968 over 1967
					Percent	*Percent*
Tar [1]	1,000 gal	760,816	780,334	760,761	(2)	-2.5
Benzene:						
Tar distillers[3]	1,000 gal	27,130	...	...	...	...
Coke-oven operators	1,000 gal	139,121	90,642	92,584	-33.5	2.1
Petroleum operators	1,000 gal	155,694	878,704	907,547	482.9	3.3
Total	1,000 gal	321,945	969,346	1,000,131	210.7	3.2
Toluene:						
Tar distillers	1,000 gal	4,162	...	...	...	...
Coke-oven operators	1,000 gal	31,007	19,357	19,645	-36.6	1.5
Petroleum operators	1,000 gal	204,421	624,454	675,534	230.5	8.2
Total	1,000 gal	239,590	643,811	695,179	190.2	8.0
Xylene:						
Tar distillers	1,000 gal	795	...	...	...	...
Coke-oven operators	1,000 gal	8,908	5,488	5,576	-37.4	1.6
Petroleum operators	1,000 gal	180,021	[4]449,349	[4]531,482	195.2	18.3
Total	1,000 gal	189,724	454,837	537,058	183.1	18.1
Naphthalene:						
Crude[5]	1,000 lb	396,882	520,991	525,711	32.5	.9
Petroleum naphthalene, all grades	1,000 lb	...	376,679	375,945	...	-.2
Total	1,000 lb	396,882	897,670	901,656	127.2	.4
Creosote oil (Dead oil):[6]						
Distillate as such (100% creosote basis)	1,000 gal	90,913	108,832	106,036	16.6	-2.6
Creosote content of coal-tar solution (100% creosote basis)	1,000 gal	14,172	17,402	20,858	47.2	19.9
Total	1,000 gal	105,085	126,234	126,894	20.8	.5

[1] Includes data for oil-gas, water-gas, and gas-retort tar reported to the American Gas Association for 1957-59 only, and for coal tar reported to the Division of Bituminous Coal, U.S. Bureau of Mines.

[2] Decreased by less than 0.05 percent.

[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.

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

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

TABLE 2.--*Tar: U.S. production and consumption, 1967 and 1968*

(In thousands of gallons)

Product	1967	1968
PRODUCTION		
Coal tar from coke-oven byproduct plants, total[1]	780,334	760,761
CONSUMPTION		
Total	746,590	750,926
Tar consumed by distillation, total	594,621	644,371
Coal tar distilled or topped by coke-oven operators[1]	291,624	301,254
Coal tar and water-gas tar distilled by tar distillers[2]	302,997	343,117
Tar consumed chiefly as fuel[1]	129,009	104,905
Tar consumed otherwise than by distillation or as fuel, total	22,960	...
Coal tar consumed at coke-oven plants for roads and upkeep[1]	2,468	1,650
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	20,492	(3)

[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. For 1968, statistics include tar consumed other than by distillation or as fuel by tar distillers.
[3] Not publishable. (See footnote 2)

TABLE 3.--*Tar crudes: U.S. production and sales, 1968*

[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 4 lists separately all products for which data on production or sales were reported and identifies the manufacturers reporting to the U.S. Tariff Commission]

Product	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value[1]
				1,000 dollars	
Crude light oil:[2] Coke-oven operators	1,000 gal--	238,887	95,511	11,349	$0.12
Intermediate light oil: Coke-oven operators	1,000 gal--	5,560	1,828	216	.12
Light-oil distillates:					
Benzene, specification and industrial grades, total[2 3]	1,000 gal--	1,000,131	614,037	129,725	.21
Coke-oven operators	1,000 gal--	92,584	97,433	21,311	.22
Petroleum operators	1,000 gal--	907,547	516,604	108,414	.21
Toluene, all grades, total[2 3]	1,000 gal--	695,179	442,002	76,459	.17
Coke-oven operators	1,000 gal--	19,645	19,867	3,704	.19
Petroleum operators	1,000 gal--	675,534	422,135	72,755	.17
Xylene, all grades, total[2 3]	1,000 gal--	537,058	303,049	45,859	.15
Coke-oven operators	1,000 gal--	5,576	5,473	1,088	.20
Petroleum operators	1,000 gal--	531,482	297,576	44,771	.15
Solvent naphtha:[2] Coke-oven operators	1,000 gal--	3,714	2,921	460	.16
Naphthalene, crude (tar distillers and coke-oven operators), total[4]	1,000 lb---	525,711	333,810	15,379	.05
Solidifying at--					
Less than 74° C	1,000 lb---	75,849	59,492	2,565	.04
74° C. to less than 79° C	1,000 lb---	449,862	274,318	12,814	.05
Crude tar-acid oils:[2] Coke-oven operators	1,000 gal--	29,150	25,019	5,630	.22
Creosote oil (Dead oil) (tar distillers and coke-oven operators) (100% creosote basis), total[5]	1,000 gal--	126,894	113,694	[6]24,917	[6].22
Distillate as such (100% creosote basis)	1,000 gal--	106,036	94,277	19,110	.20
Creosote content of coal-tar solution (100% creosote basis)	1,000 gal--	20,858	19,417	[6] 5,807	[6].30
All other distillates, total	1,000 gal--	90,230	22,132	4,173	.19
Coke-oven operators, total	1,000 gal--	9,933	6,007	602	.10
From light oil	1,000 gal--	6,728	3,001	351	.12
Other[7]	1,000 gal--	3,205	3,006	251	.08
Tar distillers[8]	1,000 gal--	80,297	16,125	3,571	.22
Tar, road	1,000 gal--	56,262	52,615	6,428	.12
Tar (crude and refined) for other uses[9]	1,000 gal--	11,549	9,509	2,085	.22
Pitch of tar (tar distillers and coke-oven operators):					
Hard (water softening point above 160° F.)	1,000 tons	1,019	794	27,462	34.59
Other[10]	1,000 tons	914	425	13,519	31.81

[1] Unit value per gallon, 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 and xylene by tar distillers decreased in 1968, compared with 1967; production of toluene 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.

Footnotes for table 3--Continued

[4] 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.
[5] Statistics include data only for creosote oil sold for, or used in, wood preserving. In 1968, production of creosote in coal-tar solution (100% solution basis) amounted to 32,002 thousand gallons; sales were 30,335 thousand gallons, valued at 5,807 thousand dollars, with a unit value of $0.19 per gallon.
[6] Includes value of coal tar used in preparing creosote in coal-tar solution.
[7] Includes data for crude sodium phenolate.
[8] Includes data for crude light oil, benzene, toluene, xylene, solvent naphtha, ethylbenzene, rubber-reclaiming oils, pyridine crude bases, crude tar-acid oils, crude cresylic acid, neutral oils, methylnaphthalene, and crude tetralin.
[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.), 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.

TABLE 4.--*Tar crudes: Manufacturers' identification codes, by products, 1968*

[Tar crudes for which separate statistics are given in table 3 are marked with an asterisk (*); products not so marked do not appear in table 3 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2; these tables identify 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 (see Appendix, tables 1 and 2)
*Crude light oil[1]	CBT.
Light-oil distillates:	
*Benzene, specification and industrial grades[1]	ACY, KPP.
*Toluene, specification and other grades[1]	ACY, KPP.
*Xylene, all grades[1]	ACY.
*Solvent naphtha[1]	NEV, PAI.
*All other light-oil distillates[1]	ACP, KPT, PAI.
Pyridine crude bases[1]	ACP, KPT.
*Naphthalene, crude, solidifying at--	
*Less than 74° C[1]	COP.
*74° C. to less than 79° C--[1]	
74° C. to less than 76° C	KPT.
76° C. to less than 79° C	ACP, KPT, PRD, RIL.
Methylnaphthalene	KPT.
*Crude tar-acid oils--[1]	
Tar-acid content 5% to less than 24%	ACP, COP, KPT, RIL.
Tar-acid content 24% to 51%	ACP.
Cresylic acid, crude	ACP, KPT, PRD.
*Creosote oil (Dead oil):	
*Distillate as such[1]	ACP, CBT, COP, HUS, JEN, KPT, RIL, WTC.
*Creosote in coal-tar solution[1]	ACP, KPT, RIL.
*All other distillate products[1]	ACP, PAI.
*Tar, road	ACP, KPT, RIL, WTC.
*Tar for other uses:	
Crude	KPT, RIL.
Refined	ACP, KPT.
Pitch of tar:	
Soft and medium (water softening points less than 110° F., and 110°F. to 160° F).[1]	ACP, CBT, COP, KPT, RIL.
*Hard (water softening point above 160° F.)[1]	ACP, HUS, JEN, KPT, RIL.
Pitch-of-tar coke and pitch emulsion	JEN.

[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, February 4, 1969, entitled "Coke Producers in the U.S. in 1967."

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Crude products that are derived from petroleum and natural gas[1] are related to the intermediates and finished products made from such crudes in much the same way that crude products derived from the distillation of coal tar are related to their intermediates and finished products. Many of the crude products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and xylene). Considerable duplication exists in the statistics on the production and sales of petroleum crudes because some of these crude chemicals are converted to other crude products derived from petroleum and because data on some production and sales are reported at successive stages in the conversion processes. Notwithstanding these duplications, the statistics are sufficiently accurate to indicate trends in the industry and to serve as a basis for general comparsion. Many of the crude products for which data are included in the statistics may be used either as fuel or as basic materials from which to derive other chemicals, depending on prevailing economic conditions; but in this report every effort has been made to exclude data on materials that are used as fuel; however, data are included on toluene and xylene which are not used directly as fuel but in blending aviation and motor-grade gasolines.

The output of crude products derived from petroleum and natural gas as a group amounted to 62,017 million pounds in 1968, or 13.9 percent more than the 54,438 million pounds reported for 1967 (table 1). The larger output in 1968 is accounted for chiefly by increased production of ethylene, propylene, xylenes, toluene, and benzene. Sales of crude chemicals from petroleum in 1968 amounted to 34,189 million pounds, valued at $920 million, compared with 29,453 million pounds, valued at $858 million, in 1967.

The output of aromatic and naphthenic products from petroleum amounted to 18,285 million pounds in 1968, compared with 16,455 million pounds in 1967. Sales in 1968, which amounted to 11,583 million pounds, valued at $271 million, were 1,631 million pounds larger, and valued at $4 million more, than those in 1967. The output of 1° and 2° benzene from petroleum amounted to 6,698 million pounds in 1968--3.3 percent more than the 6,485 million pounds produced in 1967. The output of toluene in 1968 was 4,911 million pounds--8.2 percent more than the 4,540 million pounds produced in 1967. Production of xylene was 3,832 million pounds in 1968, compared with 3,240 million pounds in 1967. These figures include toluene and xylene used in blends in aviation and motor-grade gasolines. Production of naphthalene from petroleum sources in 1968 was 734 thousand pounds less than production in 1967. The output of 20.2 million pounds of naphthenic acids in 1968 was 4.3 million pounds less than that produced in 1967.

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[1] Statistics on aromatic chemicals from coal tar are given in the previous section, "Tar and Tar Crudes".

Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 43,733 million pounds in 1968, compared with 37,983 million pounds in 1967. Sales of these products were 22,606 million pounds, valued at $649 million, in 1968, compared with 19,501 million pounds, valued at $592 million, in 1967. The statistics on production of acetylene include only acetylene produced from hydrocarbons and used as a raw material in the production of other chemicals. Total production of acetylene for chemical synthesis is reported to the U.S. Bureau of the Census. In 1968, production of acetylene from hydrocarbon sources, amounted to 475 million pounds. Production of ethylene was 13,151 million pounds in 1968--10.9 percent more than the 11,855 million pounds produced in 1967. The output of propylene and propane-propylene mixture was 7,025 million pounds in 1968--10.0 percent more than the 6,389 million pounds produced in 1967. Production of 1,3-butadiene, one of the principal ingredients of S-type synthetic rubber, was 2,929 million pounds in 1968, compared with 2,660 million pounds in 1967. The output of 1,3-butadiene in 1968 was the largest on record.

Data for 1968 on crude products from petroleum and natural gas for chemical conversion was supplied by 72 companies and company divisions.

Table 2 lists crude products from petroleum and natural gas and identifies the manufacturers.

TABLE 1.--*Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1968*

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

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	62,017,206	34,189,278	919,950	$0.027
AROMATICS AND NAPHTHENES[2]				
Total	18,284,611	11,582,833	271,146	.023
Benzene (1° and 2°), total	6,697,697	3,812,537	108,414	.028
Benzene, 1°	5,908,207	...	...	...
Benzene, 2°	789,490	...	...	...
Naphthalene, all grades	375,945	243,944	17,135	.070
Naphthenic acid	20,210	...	...	...
Sodium carbolate and phenate, crude	9,475	9,991	349	.035
Toluene, all grades, total	4,911,132	3,068,920	72,755	.024
Nitration grade, 1°	3,148,288	2,272,856	58,850	.026
Pure commercial grade, 2°	555,944	217,249	2,225	.010
Solvent grade, 90%	177,875	...	...	...
All other[3]	1,029,025	578,815	11,680	.020
Xylenes, mixed, total	3,831,986	2,145,523	44,771	.021
Xylene, 3°	668,425	413,515	11,947	.029
Xylene, 5°	567,470	533,490	14,022	.026
All other[3]	2,596,091	1,198,518	18,802	.016
All other aromatics and naphthenes[4]	2,438,166	2,301,918	27,722	.012
ALIPHATIC HYDROCARBONS				
Total	43,732,595	22,606,445	648,804	.029
C_2 hydrocarbons, total	15,681,999	...	...	...
Acetylene[5]	475,193	...	...	...
Ethane	2,056,198	1,031,729	8,596	.008
Ethylene	13,150,608	3,367,284	115,574	.034
C_3 hydrocarbons, total	12,972,138	8,547,962	127,378	.015
Propane	5,947,586	5,300,403	52,700	.010
Propylene[6]	7,024,552	3,247,559	74,678	.023
C_4 hydrocarbons, total	10,591,992	7,025,126	277,876	.040
1,3-Butadiene, grade for rubbers (elastomers)	2,928,722	1,942,621	171,917	.088
Butadiene and butylene fractions	1,042,862	245,434	7,217	.029
n-Butane	2,105,108	1,120,473	12,336	.011
1-Butene	43,769	40,925	2,313	.057
1-Butene and 2-butene mixture[7]	1,465,701	1,319,993	35,059	.026
Isobutane	659,290	260,180	2,922	.011
Isobutylene	1,611,720	...	...	...
All other[8]	734,820	2,095,500	46,112	.022
C_5 hydrocarbons, total	457,295	192,813	5,086	.026
Isoprene	171,340	...	...	...
All other[9]	285,955	192,813	5,086	.026

See footnotes at end of table.

TABLE 1.--*Crude products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1968*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
ALIPHATIC HYDROCARBONS--Continued				
All other aliphatic hydrocarbons and derivatives, total	4,029,171	2,441,531	114,294	$0.047
Alpha olefins[10]	339,128	295,422	17,307	.058
Heptenes, mixed	274,965	178,208	7,170	.040
Hexane	232,360	201,944	6,395	.032
Nonene (Tripropylene)	172,690	135,535	4,887	.036
Polybutene[11]	153,932	145,307	12,876	.089
Tetrapropylene	384,171	220,576	9,357	.042
Hydrocarbon derivatives[12]	39,161	31,649	7,566	.239
All other[13]	2,432,764	1,232,890	48,736	.040

[1] Calculated from rounded figures.

[2] The chemical raw materials designated as aromatics are in some cases identical with those obtained from the distillation of coal tar; however, the statistics given in the table above relate only to such materials as are derived from petroleum and natural gas. Statistics on production or sales of benzene, toluene, xylene, and naphthalene from all sources are given in tables 1 and 3 of the preceding report on "Tar and Tar Crudes, 1968."

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

[4] Includes data for 90-percent benzene, crude cresylic acid, alkyl aromatics, distillates, solvents, and miscellaneous cyclic hydrocarbons.

[5] Production figures on acetylene from calcium carbide for chemical synthesis are collected by the U.S. Bureau of the Census.

[6] Includes data for propane-propylene mixture.

[7] The statistics represent principally the butene content of crude refinery gases from which butadiene is manufactured.

[8] Includes data for 2-butene, mixed butylenes, and mixed olefins.

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

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

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

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

[13] Includes data for ethane-ethylene mixture, heptane, isopentane, methane, octanes, n-paraffins, and hydrocarbon mixtures.

TABLE 2.--*Crude products from petroleum and natural gas for chemical conversion: Manufacturers' identification codes, by products, 1968*

[Crude products from petroleum and natural gas for chemical conversion for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
AROMATICS AND NAPHTHENES	
*Benzene (except motor grade):	
*Benzene, 1°----------	ACU, APR, ASH, ATR, CCP, COR, CSD, CSO, CSP, DLH, DXS, ENJ, GOC, GRS, MOC, MON, PLC, PPR, SHC, SHO, SIN, SKO, SM, SNT, SOG, SUN, TOC, TX, UOC, VEL, VPT.
*Benzene, 2°----------	ACC, CO, DOW, SHO, SOC, UCC.
Cresylic acid, crude----------	PRD.
*Naphthalene, all grades----------	ASH, COL, MON, SUN, TID.
*Naphthenic acids:	
Acid number lower than 150----------	ATR, SUN, TX.
Acid number 150-199----------	ATR, PRD, SOC, SUN.
Acid number 200-224----------	ATR, PRD, SOC.
Acid number 225-249----------	PRD.
*Sodium carbolate and phenate, crude----------	ATR, CSP, SIN.
*Toluene:	
*Nitration grade, 1°----------	ASH, ATR, CSD, CSP, DLH, DXS, ENJ, GOC, MOC, MON, PLC, PPR, SHC, SHO, SIN, SNT, SOG, SUN, TOC, TX, UCC, UOC, VEL, VPT.
*Pure commercial grade, 2°----------	COR, DOW, ENJ, LEN, MON.
*Solvent grade, 90%----------	CO, FG, SKO.
All other----------	ACC, CSD, DXS, ELP, GRS, PLC, SHC, SHO, SM, SOC, TOC, TX, VPT.
*Xylenes, mixed:	
Aviation grade----------	CSD, CSO.
*3° grade----------	ATR, DLH, MOC, PPR, UCC, UOC.
*5° grade----------	ASH, SIN, SOG, TX.
All other----------	CCP, COR, CSD, CSP, DXS, ENJ, GRS, LEN, MON, PPR, SHO, SM, SNT, SOC, SUN, TOC, VPT.
All other aromatics, naphthenes, distillates and solvents.	ACC, ACU, CBN, CPX, DUP, ELP, ENJ, FG, JCC, LEN, MOC, MON, OMC, PLC, PRD, SOC, SOG, SOI, TX, USI, VPT.
ALIPHATIC HYDROCARBONS	
C_1 hydrocarbon: Methane----------	CCP, MON.
*C_2 hydrocarbons:	
*Acetylene----------	DOW, DUP, MNO, MON, UCC, x.
*Ethane----------	ACU, CCP, ENJ, MON, PAN, PLC, SHO, SM, SOI, TX, USI.
*Ethylene----------	ACU, ATR, BFG, CBN, CCP, CO, CPX, DOW, DUP, EKX, ELP, ENJ, GOC, JCC, KPP, MON, OMC, PLC, SHC, SM, SNO, TX, UCC, USI.
C_2 and C_3 hydrocarbons, mixed----------	COR, CSO, ENJ, GYR, MON, PLC.
*C_3 hydrocarbons:	
*Propane----------	AMO, APR, ASH, CCP, CSD, CSO, DXS, ENJ, GOC, GRS, JCC, MOC, OMC, PAN, PLC, SHO, SIN, SM, SNT, SOG, SOI, SPI, TX, UOC, USI.
*Propane-propylene mixture----------	ENJ, GOC.
*Propylene----------	ACU, AMO, ASH, ATR, BFG, CBN, CCP, CPX, CSO, DOW, EKX, ELP, ENJ, GOC, JCC, KPP, MOC, MON, PLC, SHC, SHO, SIN, SIO, SM, SNT, SOG, SOI, SPI, SUN, TX, UCC, UOC.
*C_4 hydrocarbons:	
*1,3-Butadiene, grade for rubbers (elastomers)--	CBN, CPY, DOW, DUP, ELP, ENJ, FRS, GGC, MON, PLC, PTT, SBI, SHO, SM, SOC, SPI, TID, TUS, UCC.
*Butadiene and butylene fractions----------	ACU, DOW, GOC, GYR, KPP, MOC, PLC, PTT, SHC, SHO, SIN, SOC, SPI.
*n-Butane----------	COR, CSD, DXS, GRS, MOC, OMC, PAN, PLC, SHO, SM, SNT, SOC, SOG, USI.

TABLE 2.--*Crude products from petroleum and natural gas for chemical conversion: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ALIPHATIC HYDROCARBONS--Continued	
*C_4 hydrocarbons--Continued	
*1-Butene	GOC, PLC, PTT.
2-Butene	MON, PLC, PTT.
*1-Butene and 2-butene mixture	CSO, ENJ, GOC, PLC, PTT, SHO, SOC, SPI, TX.
*Isobutane	DXS, ELP, MOC, OMC, PAN, PLC, SHO, SOI, TX, USI.
*Isobutylene	ENJ, PTT, SHC, SHO, SIN.
All other	APR, BFG, CPX, ENJ, JCC, MON, PLC, SM, USI.
*C_5 hydrocarbons:	
Isopentane (2-Methylbutane)	PAN, PLC, SHO, SM.
*Isoprene (2-Methyl-1,3-butadiene)	ENJ, GYR, MON.
n-Pentane	APR, MOC, PLC.
All other	ENJ, GYR, MON, PLC, USI.
C_6 hydrocarbons:	
*Hexane	ENJ, PLC, SOG, UOC.
Neohexane (2,2-Dimethylbutane)	PLC.
All other	APR, PLC.
C_7 hydrocarbons:	
n-Heptane	EKX, PLC, SOG, UCC.
*Heptenes, mixed	CSD, ENJ, GOC, HOU, SIN, SOI, TID.
All other	ENJ, TX.
C_8 hydrocarbons:	
Diisobutylene (Diisobutene)	ATR, PTT, TX.
n-Octane	PLC, SOG.
2,2,4-Trimethylpentane (Iso-octane)	PLC.
All other	PLC.
Hydrocarbons, C_9 and above:	
*Nonene (Tripropylene)	ENJ, GOC, UOC.
*Polybutene	ACC, CSD, SOC, SOI.
*Tetrapropylene	ATR, CO, DXS, ENJ, GOC, SOC, SUN, TX, UOC.
Tridecene concentrate	ENJ.
Triisobutylene	ATR.
All other	ATR, CO, COR, ENJ, GOC, HOU, KEN, PLC, SHC, SIN, SOC, SPI, SUN, TID, TX, UCC.
*All other aliphatic hydrocarbons and derivatives:	
Hydrocarbons:	
*Alpha olefins--Molecular weight ranges:	
C_6-C_7	GOC, GYR, PLC, SOC.
C_8-C_{10}	GOC, SOC.
C_{11}-C_{15}	ENJ, GOC, SOC.
All other	EKX, GOC, KPP, SOC, TID.
*Hydrocarbon derivatives:	
1-Butanethiol	PAS, PLC.
tert-Butyl-mercaptan (2-Methyl-2-propanethiol).	PAS, PLC.
Cyclohexyl mercaptan	PAS, PLC.
Di-tert-butyl disulfide	PLC.
Di-tert-nonylpolysulfide	PAS.
Ethyl mercaptan (Ethanethiol)	PAS, PLC.
Isopropyl mercaptan	PAS.
Methyl mercaptan (Methanethiol)	ACC, PAS.
tert-Nonyl mercaptan	PAS.
tert-Octyl mercaptan	PAS.
n-Propyl mercaptan (1-Propanethiol)	PAS, PLC.
All other	EKX, PAS, PLC, UCC.

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 1968 nearly half of the total output of cyclic intermediates was sold; the rest was consumed chiefly by the producing plants in the manufacture of more advanced intermediates and finished products.

Total production of cyclic intermediates in 1968--25,014 million pounds--was the largest on record, and was 20.3 percent larger than the output of 20,793 million pounds reported for 1967. The larger output of cyclic intermediates in 1968 reflects the increased demand by the chemical products industries, particularly those industries that produce plastics materials, pesticides, dyes, and plasticizers, and an increase in exports. Sales of cyclic intermediates in 1968 amounted to 11,328 million pounds, valued at $1,131 million, compared with 9,461 million pounds, valued at $1,000 million, in 1967. In terms of quantity, sales of cyclic intermediates in 1968 were 19.7 percent larger than those in 1967 and in terms of value, 13.1 percent larger.

Production of ethylbenzene in 1968 was 4,034 million pounds, or 20.5 percent larger than the 3,347 million pounds reported for 1967. Output of styrene in 1968 was 3,698 million pounds, an increase of 12.8 percent over the 3,278 million pounds in 1967. Other intermediates whose production exceeded 1 billion pounds in 1968 were cyclohexane (2,039 million pounds), phenol (1,513 million pounds), cumene (1,347 million pounds), p-xylene (1,316 million pounds), and dimethyl terephthalate (1,309 million pounds). The output of other large-volume intermediates in 1968 compared with 1967 were: Ortho-xylene, 944 million pounds (91.4 percent larger than in 1967); terephthalic acid, 927 million pounds (33.5 percent larger); alkylbenzenes, 758 million pounds (10.7 percent larger); phthalic anhydride, 744 million pounds (2.2 percent larger); cyclohexanol, 717 million pounds (not published in 1967); and chlorobenzene, 576 million pounds (19.1 percent larger). Production of isocyanates amounted to 339 million pounds (31.8 percent larger than in 1967), and production of aniline was 263 million pounds, an increase of 16.8 percent over 1967. The above 15 chemicals accounted for 82 percent of the total output of cyclic intermediates in 1968.

Table 1 gives statistics on production and sales of cyclic intermediates in 1968. In general, the classification of a given chemical as an intermediate is determined by the way in which the greater part of its output is consumed. Individual statistics given in the table represent 90 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.

Table 2 lists these products alphabetically and identifies the manufacturers, and table 3 in the Appendix shows imports of intermediates and related products during 1967 and 1968.

Table 1.--Cyclic intermediates: U.S. production and sales, 1968

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

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	25,013,938	11,328,129	1,131,433	$0.10
Acetanilide, tech	3,621	534	146	.27
Acetophenone, tech	1,742	659	190	.29
Alkylbenzenes[2]	757,594	735,155	68,210	.09
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	746	...	...	...
1-Aminoanthraquinone and salt	1,189	...	...	...
2-Aminoanthraquinone and salt	962	...	...	...
1-Amino-4-benzamidoanthraquinone	47	...	...	...
7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid	23	...	...	...
2-Amino-p-benzenedisulfonic acid [SO_3H=1]	28	...	...	...
1-Amino-5-chloroanthraquinone	105	...	...	...
3-Amino-5-chloro-2-hydroxybenzenesulfonic acid	8	...	...	...
6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=1]	796	...	...	...
1-Amino-2,4-dibromoanthraquinone	339	...	...	...
1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfonamido-2-anthracenesulfonic acid, sodium salt	16	...	...	...
4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4-acid)	934	...	...	...
6-Amino-4-hydroxy-2-naphthalenesulfonic acid (Gamma acid), sodium salt	464	60	91	1.52
7-Amino-4-hydroxy-2-naphthalenesulfonic acid (J acid), sodium salt	727	...	...	...
N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide	12	...	...	...
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	927	...	...	...
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)	952	...	...	...
4-Amino-1-naphthalenesulfonic acid (Naphthionic acid)	173	...	...	...
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	95	...	...	...
8-Amino-1-naphthalenesulfonic acid (Peri acid)	187	...	...	...
2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	42	...	...	...
2-Amino-4-nitrophenol	192	...	...	...
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	200	...	...	...
p-[(p-Aminophenyl)azo]benzenesulfonic acid	259	...	...	...
4-Amino-m-toluenesulfonic acid [SO_3H=1]	233	...	...	...
Aniline (Aniline oil)	263,432	125,273	13,504	.11
7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid)	57	...	...	...
Anilinomethanesulfonic acid and salt	302	...	...	...
8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	268	...	...	...
o-Anisidine	1,706	1,051	744	.71
o-Anisidinomethanesulfonic acid	496	...	...	...
N,N'-(1,5-Anthraquinonylene)dianthranilic acid	34	...	...	...
Benzaldehyde, tech	3,737	3,932	1,665	.42
1-Benzamido-5-chloroanthraquinone	103	...	...	...
7H-Benz[de]anthracen-7-one (Benzanthrone)	1,914	...	...	...
Benzoic acid, tech	21,911	8,357	1,472	.18
o-Benzoylbenzoic acid	4,699	...	...	...
[3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow)	21	...	...	...
[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione	520	...	...	...
1,4-Bis[1-anthraquinonylamino]anthraquinone	100	...	...	...
3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone)	151	...	...	...
2-Bromo-4,6-dinitroaniline	112	...	...	...
1-Bromo-4-(methylamino)anthraquinone	45	...	...	...
1-Chloroanthraquinone	215	...	...	...
2-Chloroanthraquinone	863	...	...	...
Chlorobenzene, mono	575,751	142,654	8,501	.06
o-(p-Chlorobenzoyl)benzoic acid	1,485	...	...	...
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	6,626	2,192	341	.16

See footnotes at end of table.

Table 1.--Cyclic intermediates: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
6-Chlorometanilic acid	10	...	...	...
1-Chloro-2-methylanthraquinone	267	...	...	...
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	348	355	324	$0.91
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	...	491	403	.82
1-Chloro-5-nitroanthraquinone	110	...	...	...
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	...	14,623	1,172	.08
4-Chloro-3-nitrobenzenesulfonamide	372	...	...	...
4-Chloro-3-nitrobenzenesulfonic acid	174	...	...	...
4-Chloro-3-nitrobenzenesulfonyl chloride	390	...	...	...
α-Chlorotoluene (Benzyl chloride)	72,968	16,544	2,591	.16
[(4-Chloro-o-tolyl)thio]acetic acid	47	...	...	...
Cresols, total[3]	81,902	73,517	15,153	.21
o-Cresol	17,494	18,614	2,704	.15
(m,p)-Cresol	41,368	33,421	5,205	.16
All other[4]	23,040	21,482	7,244	.34
Cresylic acid, refined[3]	63,985	59,645	9,463	.16
Cumene	1,347,230	...	...	...
Cyclohexane	2,038,950	1,949,770	65,409	.03
Cyclohexanol	716,926	4,338	910	.21
Cyclohexanone	481,892	20,369	2,846	.14
1,4-Diaminoanthraquinone	55	...	...	...
2,6-Diaminoanthraquinone	306	...	...	...
1,4-Diamino-2,3-dihydroanthraquinone	754	...	...	...
4,4'-Diamino-2,2'-stilbenedisulfonic acid	7,775	...	...	...
4,5'-Dibenzamido-1,1'-iminodianthraquinone	143	...	...	...
1,5-Dibenzoylnaphthalene	559	...	...	...
3,9-Dibromo-7H-benz[de]anthracen-7-one	248	...	...	...
1,5-Dichloroanthraquinone	72	...	...	...
o-Dichlorobenzene	60,603	46,290	4,977	.11
p-Dichlorobenzene	70,338	69,117	6,646	.10
3,3'-Dichlorobenzidine base and salts	2,940	2,828	3,292	1.16
2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	293	...	...	...
3-(2',6'-Dichlorophenyl)-5-methyl-4-isoxazolecarbonyl chloride	...	26	420	16.15
Dicyclopentadiene (includes cyclopentadiene)	67,078	41,505	2,182	.05
N,N-Diethylaniline	1,452	1,113	581	.52
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt	460	...	...	...
9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt	318	...	...	...
9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt	622	...	...	...
9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt)	3,196	...	...	...
9,10-Dihydro-5-nitro-9,10-dioxo-1-anthracenesulfonic acid	151	...	...	...
1,4-Dihydroxyanthraquinone (Quinizarin)	2,322	416	503	1.21
1,5-Dihydroxyanthraquinone (Anthrarufin)	175	...	...	...
1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin)	159	...	...	...
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	397	...	...	...
N,N-Dimethylaniline	17,438	10,079	1,968	.20
2,2-Dimethyl-1,1'-bianthraquinone	135	...	...	...
2,4-Dinitroaniline	207	111	80	.72
3',4-Dinitrobenzanilide	15	...	...	...
2,4-Dinitrophenol, tech	863	...	...	...
4,4'-Dinitrostilbene-2,2'-disulfonic acid	11,319	...	...	...
Diphenylamine	32,165	28,956	6,026	.21
1,4-Di-p-toluidinoanthraquinone	126	...	...	
Divinylbenzene	2,845	2,193	1,584	.72
p-Dodecylphenol	5,556	...	...	...
α-(N-Ethylaniiino)-p-toluenesulfonic acid	299	...	...	...

See footnotes at end of table.

Table 1.--Cyclic intermediates: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Ethylbenzene[5]	4,033,529	506,572	19,097	$0.04
N-Ethyl-N-phenylbenzylamine	510	...	...	...
Hydroquinone, tech	...	11,193	7,959	.71
p-Hydroxybenzenesulfonic acid	7,844	7,123	799	.11
4-Hydroxymetanilamide	147	...	...	...
4-Hydroxymetanilic acid	104	...	...	...
3-Hydroxy-2-methylcinchoninic acid	141	...	...	...
3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt	1,385	919	801	.87
6-Hydroxy-2-naphthalenesulfonic acid and sodium salt	505	227	178	.78
N-(7-Hydroxy-1-naphthyl)acetamide	26	...	...	...
1,1'-Iminobis[4-aminoanthraquinone]	98	...	...	...
1,1'-Iminobis[4-nitroanthraquinone]	89	...	...	...
1,1'-Iminodianthraquinone (1,1'-Dianthrimide)	96	...	...	...
Isocyanic acid derivatives, total	338,944	298,932	90,177	.30
Diphenylmethane 4,4'-diisocyanate (MDI)	8,973	6,358	5,432	.85
Polymethylene polyphenylisocyanate	61,419	39,849	13,442	.34
Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	220,734	218,981	60,452	.28
Other isocyanic acid derivatives	47,818	33,744	10,851	.32
4,4'-Isopropylidenediphenol (Bisphenol A)	143,713	57,489	10,876	.19
Leuco quinizarin (1,4,9,10-Anthratetrol)	85	...	...	...
Melamine	61,949	48,780	10,824	.22
dl-p-Mentha-1,8-diene (Limonene)	11,691	8,128	546	.07
o-Mercaptobenzoic acid (Thiosalicylic acid)	13	9	66	7.33
Metanilic acid	1,418	...	...	...
4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)	900	457	264	.58
2-Methyl-1-nitroanthraquinone	45	...	...	...
p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	188	...	...	...
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO_3H=1]	15	...	...	...
3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	66	82	144	1.76
α-Methylstyrene	...	13,764	1,162	.08
Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude)	2,139	...	...	...
1-Naphthol	...	391	220	.56
Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid	766	...	...	...
p-Nitroaniline	11,029	...	...	...
Nitrobenzene	397,937	11,450	965	.08
m-Nitrobenzenesulfonic acid and sodium salt	3,464	2,289	832	.36
m-Nitrobenzoic acid and sodium salt	351	...	...	...
7(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid	676	...	...	...
p-Nitrophenol and sodium salt	33,594	14,451	5,526	.38
p-Nitrotoluene	17,750	...	...	...
3-Nitro-p-toluenesulfonic acid [SO_3H=1]	81	...	...	...
5-Nitro-o-toluenesulfonic acid [SO_3H=1]	6,735	...	...	...
5-Nitro-o-toluidine [NH_2=1]	218	179	241	1.35
Nonylphenol	62,059	28,570	3,091	.11
1-[(7-Oxo-7H-benz[de]anthracen-3-yl)amino]anthraquinone	266	...	...	...
1,1'-[(7-Oxo-7H-benz[de]anthracen-3,9-ylene)diimino]di-anthraquinone	319	...	...	...
5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T)	27	...	...	...
Phenol, grand total[3]	1,513,103	661,513	49,184	.07
Natural, total	49,754	46,592	3,817	.08
From coal tar	33,822	...	...	...
From petroleum	15,932	...	...	...
Synthetic, total	1,463,349	614,921	45,367	.07
From cumene	839,578	366,018	26,255	.07
Other synthetic	623,771	248,903	19,112	.08

See footnotes at end of table.

Table 1.--Cyclic intermediates: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Phenylacetonitrile (α-Tolunitrile)	...	439	222	$0.51
p-Phenylazoaniline (C.I. Solvent Yellow 1) and hydrochloride	275	...	...	...
p-Phenylenediamine	677	...	...	...
Phthalic anhydride	743,804	428,229	53,646	.13
Picolines, total[3]	2,629	1,971	787	.40
2-Picoline (α-Picoline)	1,071	1,190	548	.46
Other picolines	1,558	781	239	.31
Piperidine	470	...	...	...
Propiophenone	554	...	...	...
2° Pyridine[3]	7,421	7,554	3,773	.50
Salicylaldehyde	3,693	2,221	2,258	1.02
Salicylic acid, tech	29,614	6,446	2,190	.34
Styrene, all grades	3,697,890	1,733,909	116,037	.07
Terephthalic acid	926,597	...	...	...
Terephthalic acid, dimethyl ester	1,309,107	542,617	95,722	.18
1,4,5,8-Tetrachloroanthraquinone	17	...	...	...
1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative	185	...	...	...
Toluene-2,4-diamine (4-m-Tolylenediamine)	94,611	...	...	...
o-Toluidine	8,567	...	...	...
o-(p-Toluoyl)benzoic acid	432	...	...	...
4-(o-Tolylazo)-o-toluidine (C.I. Solvent Yellow 3)	...	26	25	.96
1,2,4-Trichlorobenzene	10,867	11,069	1,295	.12
1,3,3-Trimethyl-Δ^2,α-indolineacetaldehyde	208	...	...	...
1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)	479	...	...	...
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea)	259	...	...	...
Violanthrone (Dibenzanthrone)	362	...	...	...
o-Xylene	944,256	768,160	33,953	.04
p-Xylene	1,315,649	991,205	77,423	.08
All other cyclic intermediates	2,507,184	1,799,612	319,756	.18

[1] Calculated from rounded figures.

[2] Principally straight-chain dodecylbenzene, tridecylbenzene and other straight-chain alkylbenzenes, but includes lesser amounts of branched-chain compounds.

[3] 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.

[4] Figures include (o,m,p)-cresol from coal tar and some m-cresol and p-cresol.

[5] Does not include ethylbenzene produced and consumed in continuous-process styrene manufacture.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968

[Cyclic intermediates for which separate statistics are given in table 1 are marked with an asterisk (*); cyclic intermediates not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Aceanthryleno[2,1-a]aceanthrylene-5,13-dione	ICI.
S-Acetamido-2-aminobenzenesulfonic acid	GAF.
3-[(2-Acetamido-4-aminophenyl)azo]-1,S-naphthalenedisulfonic acid.	TRC.
1-Acetamido-4-bromoanthraquinone	AAP.
α-Acetamido-p-toluenesulfonamide	SDW.
*Acetanilide, tech	CTN, EKT, MRK, SAL, SW.
Acetic acid, phenyl ester	UCC.
Acetoacetanilide	FMP, UCC.
o-Acetoacetanisidide	FMP, SDH, UCC.
o-Acetoacetotoluidide	FMP, UCC.
2',4'-Acetoacetoxylidide	FMP, UCC.
1'-Acetonaphthone	GIV.
Acetone phenylhydrazone	DUP.
*Acetophenone, tech	ACP, SKO, UCC.
*2-Acetoxy-3,S-diiodo-4'-chlorbenzanilide	PCW.
N-Acetylanthranilic acid	DUP.
p-Acetylbenzenesulfonamide	LIL.
p-Acetylbenzenesulfonic acid, sodium salt	LIL.
p-Acetylbenzenesulfonylurethane	LIL.
N-Acetylsulfanilyl chloride	ACY, CTN, MRK, SAL.
Adenine	KF.
*Alkylbenzenes:	
Dodecylbenzene (including tridecylbenzene):	
Straight chain	ACS, ATR, CO, MON, PLC, UCC, WCC.
Other	CO, SOC.
Other alkylbenzenes: Straight chain	SOC.
Alkylphenols, mixed	GAF, ORO.
Alkylpiperazines, mixed	HOU.
Alkylpyridine	UCC.
α-dl-5-Allyl-5-(1-methyl-2-pentynyl)-1-methylbarbituric acid.	LIL.
Aminoaceanthryleno[2,1-a]aceanthrylene-5,13-dione	ICI.
3'-Aminoacetanilide	GAF, TRC.
*4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	ACS, DUP, GAF, TRC.
3'-Aminoacetophenone	CTN, SDH.
*S-Amino-2-(p-aminoanilino)benzenesulfonic acid	CMG, TRC, YAW.
1-Amino-4-(3-amino-4-sulfoanilino)-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid.	TRC.
1-Amino-4-(4-amino-3-sulfoanilino)-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid.	TRC.
*2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	ACS, CMG, TRC.
3-Amino-p-anisanilide	PCW.
S-Amino-2-o-anisidinobenzenesulfonic acid	TRC.
*1-Aminoanthraquinone and salt	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC.
*2-Aminoanthraquinone and salt	ACS, ACY, DUP, GAF, TRC.
N-(4-Amino-1-anthraquinonyl)anthranilic acid	GAF.
N-(S-Amino-1-anthraquinonyl)anthranilic acid	DUP.
N-(8-Amino-1-anthraquinonyl)anthranilic acid	DUP.
4-Aminoantipyrine	VPC.
6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9).	ACS, ACY.
p-Aminobenzamide	SDH.
*1-Amino-4-benzamidoanthraquinone	ACS, ACY, MAY, TRC.
1-Amino-5-benzamidoanthraquinone	ACS, GAF, ICI, TRC.
7-[p-(p-Aminobenzamido)benzamido]-4-hydroxy-2-naphthalenesulfonic acid.	CMG, DUP.
7-(m-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid.	TRC.
*7-(p-Aminobenzamido)-4-hydroxy-2-naphthalenesulfonic acid.	CMG, DUP, GAF, TRC.
4'-Aminobenzanilide	GAF.
3'-Aminobenzanilide-4'-sulfonic acid	TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*2-Amino-p-benzenedisulfonic acid [SO_3H=1]	ACS, DUP, GAF, ICC, TRC.
o-Aminobenzenethiol	FIS.
S-Amino-2-benzimidazolinone	DUP.
p-Aminobenzoic acid, tech	DUP.
p-Aminobenzoic acid, 2-(dimethylamino)ethyl ester	SDW.
4-Aminobenzophenone	DUP.
2-Amino-6-benzothiazolecarboxylic acid	DUP.
m-Aminobenzotrifluoride	NES.
2-(m-Aminobenzoyl)-o-acetanisidide	GAF.
N-(4-Amino-3-bromo-1-anthraquinonyl)-p-toluidine-sulfonic acid.	TRC.
2-Amino-1-bromo-3-chloroanthraquinone	ICI.
1-Amino-4-bromo-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid and sodium salt.	ICI, TRC.
1-Amino-2-bromo-4-hydroxyanthraquinone	AAP, DUP, ICC, TRC.
1-Amino-4-bromo-2-methylanthraquinone	ICI.
1-Amino-2-bromo-4-p-toluidinoanthraquinone	ICI, TRC.
*1-Amino-5-chloroanthraquinone	ACS, ACY, DUP, ICI, MAY, TRC.
1-Amino-8-chloroanthraquinone	DUP.
2-Amino-1-chloroanthraquinone	DUP.
2-Amino-3-chloroanthraquinone	GAF, ICI.
4-Amino-6-chloro-m-benzenedisulfonamide	ABB.
4-Amino-6-chloro-m-benzenedisulfonamide hydrochloride	ABB.
5-Amino-2-chlorobenzoic acid	TRC.
2-Amino-5-chlorobenzophenone	ICI.
2-Amino-6-chlorobenzothiazole hydrochloride	DUP.
o-(3-Amino-4-chlorobenzoyl)benzoic acid	AAP, GAF, ICI.
2-Amino-5-chloro-4-ethylbenzene	ACY.
1-Amino-2-chloro-4-hydroxyanthraquinone	TRC.
*3-Amino-5-chloro-2-hydroxybenzenesulfonic acid	ACS, CMG, TRC.
2-Amino-4-chlorophenol	GAF, MEE.
2-Amino-6-chloropyrazine	ACY.
3-Amino-6-chloropyridazine	ACY.
2-Amino-5-chloro-p-toluenesulfonic acid [SO_3H=1]	ACY, HSC, SW.
*6-Amino-4-chloro-m-toluenesulfonic acid [SO_3H=1]	DUP, HSC, SDH, SW.
2-Amino-p-cresol	TRC.
*1-Amino-2,4-dibromoanthraquinone	AAP, ACS, DUP, ICC, ICI, TRC.
1-Amino-2,4-dichloroanthraquinone	TRC.
Aminodichlorobenzenesulfonic acid	MEE.
2-Amino-4,6-dichlorobenzenesulfonic acid	SDC.
6-Amino-2,4-dichloro-m-cresol	x.
4'-Amino-2',5'-diethoxybenzanilide	ALL.
1-Amino-9,10-dihydro-9,10-dioxo-2-anthroic acid	DUP.
*1-Amino-9,10-dihydro-9,10-dioxo-4-p-toluenesulfon-amido-2-anthracenesulfonic acid, sodium salt.	AAP, DUP, GAF.
S-Amino-4,5'-dihydroxy-3,4'-[(2-methoxy-5-methyl-p-phenylene)bis(azo)]-di-2,7-naphthalenedi-sulfonic acid, 5'-benzenesulfonate.	TRC.
2-Amino-4-(α,α-dimethylbenzyl)phenol	TRC.
2-Amino-4,6-dinitrophenol and salt	GAF.
3-Amino-4-ethoxyacetanilide	AAP.
3-Amino-9-ethylcarbazole	SDC.
3-Amino-α-ethylhydrocinnamic acid	SDW.
p-Amino-N-ethyl-N-1-naphthylbenzamide	GAF.
2-Amino-N-ethyl-5-nitrobenzenesulfonanilide	GAF.
1-Amino-4-hydroxyanthraquinone	GAF.
2-Amino-3-hydroxyanthraquinone	ACS, GAF.
S-Amino-4-hydroxy-m-benzenedisulfonic acid	TRC.
1-Amino-4-hydroxy-2-methoxyanthraquinone	TRC.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
3-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (2R acid), monosodium salt.	ACS.
4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid (Chicago acid), monosodium salt.	ACS.
4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid (H acid), monosodium salt.	ACS, MON.
*4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1,2,4 acid).	ACS, ACY, GAF, TRC, VPC.
4-Amino-5-hydroxy-1-naphthalenesulfonic acid (S acid), sodium salt.	ACS.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*6-Amino-4-hydroxy-2-naphthalenesulfonic acid (Gamma acid), sodium salt.	ACS, DUP, TCD, TRC.
*7-Amino-4-hydroxy-2-naphthalenesulfonic acid (J acid), sodium salt.	ACS, CMG, DUP, TCD, 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	GAF.
3-Amino-2-mercaptobenzoic acid	SDH.
4-Amino-3-(β-methanesulfanamidoethyl)-N,N-diethylaniline hydrochloride.	EKT.
*N-(4-Amino-3-methoxy-1-anthraquinonyl)-p-toluenesulfonamide.	AAP, DUP, GAF.
5-Amino-6-methoxy-2-naphthalenesulfonic acid	TRC.
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid	DUP, TRC.
4-[(4-Amino-5-methoxy-o-tolyl)azo]-4-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate.	TRC.
3-[(4-Amino-5-methoxy-o-tolyl)azo]-1,5-naphthalenedisulfonic acid.	TRC.
7-[(4-Amino-5-methoxy-o-tolyl)azo]-1,3-naphthalenedisulfonic acid.	TRC.
4'-Amino-N-methylacetanilide	CMC, GAF.
1-Amino-2-methylanthraquinone	1Cl.
4'-Amino-6'-methyl-m-benzanisidide	GAF.
4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stilbenedisulfonic acid.	TRC.
2-Amino-3-methylpyridine	RIL.
2-Amino-5-methylpyridine	RIL.
2-Amino-6-methylpyridine	RIL.
2-Amino-4-methylpyrimidine (2-Amino-4-methyl-1,3-diazine).	ACY.
2-Amino-4-(methylsulfonyl)phenol	ACS, TRC.
2-Amino-5-methyl-1,3,4-thiadiazole	ACY.
1-Amino-2-methyl-4-p-toluidinoanthraquinone	ICI.
1-Aminonaphth[2,3-c]acridan-5,8,14-trione	DUP.
4-Aminonaphth[2,3-c]acridan-5,8,14-trione	DUP.
6-Aminonaphth[2,3-c]acridan-5,8,14-trione	GAF.
2-Amino-1,5-naphthalenedisulfonic acid	ACY, SDH.
3-Amino-1,5-naphthalenedisulfonic acid (C acid)	GAF, TCD, TRC.
3-Amino-2,7-naphthalenedisulfonic acid	TRC.
4-Amino-1,5-naphthalenedisulfonic acid	ACS.
4-Amino-1,6-naphthalenedisulfonic acid	DUP.
*6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	ACS, DUP, TCD, TRC.
*7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)	ACS, DUP, TCD, TRC.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid)	DUP.
2-Amino-1-naphthalenesulfonic acid (Tobias acid)	ACY, SW.
*4-Amino-1-naphthalenesulfonic acid (Naphthionic acid)	ACS, ACY, DUP.
4-Amino-1-naphthalenesulfonic acid, sodium salt	ACS, DUP.
5-Amino-1-naphthalenesulfonic acid (Laurent's acid)	ACS, DUP, TCD.
5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)	ACS, ALL, TRC.
5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid mixed).	DUP, TCD, TRC.
*6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	ACS, SNA, TRC.
6(and 7)-Amino-1-naphthalenesulfonic acid	VPC.
*8-Amino-1-naphthalenesulfonic acid (Peri acid)	ACS, DUP, SDC, TCD, TRC.
8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)	ACS, DUP.
7-Amino-1,3,6-naphthalenetrisulfonic acid	DUP.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid)	ACS.
5(and 8)-Amino-2-naphthol	GAF.
8-Amino-2-naphthol	DUP, TRC, VPC.
2-Amino-4-nitroacetanilide	SDC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
3-Amino-5-(m-nitrobenzamide)-p-toluenesulfonic acid	GAF.
*2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	ACS, DUP, GAF, TRC.
*2-Amino-4-nitrophenol	ACS, DUP, EK, TRC.
2-Amino-5-nitrophenol	ACS.
4-Amino-2-nitrophenol	ACY.
2-Amino-(p-nitrophenylazo)naphthalene	AAP.
d-2-Amino-1-(p-nitrophenyl)-1,3-propanediol	PD.
*4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	ACS, GAF, ICI, TRC.
2-Amino-5-nitrothiazole	ACY, PCW.
4'-Aminooxanilic acid	DUP.
3-Amino-2-oxazolidinone	NOR.
5-Amino-2-[(2-oxo-5-benzimidazolinyl)amino]benzenesulfonic acid.	DUP.
p-Aminophenethyl alcohol	EKT.
5-Amino-2-o-phenetidinobenzenesulfonic acid	ACS.
o-Aminophenol	SDC, TRC.
p-Aminophenol	DUP, SDC.
(p-Aminophenyl)acetic acid	EK.
m-[(p-Aminophenyl)azo]benzenesulfonic acid	DUP, TRC.
*p-[(p-Aminophenyl)azo]benzenesulfonic acid	ACS, ACY, DUP, GAF, TRC.
7-[(4-Aminophenyl)azo]-1,3-naphthalenedisulfonic acid.	TRC.
5-[(p-Aminophenyl)azo]salicylic acid	TRC, VPC.
2,2'-(m-Aminophenylimino)diethanol, diacetate ester	DUP.
2-(p-Aminophenyl)-6-methylbenzothiazole	ACS, DUP.
2-(p-Aminophenyl)-6-methyl-7-benzothiazolesulfonic acid and salt.	DUP, TRC.
1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid	TRC, VPC.
&-2-Amino-1-phenyl-1,3-propanediol	PD.
Aminopropiophenone hydrochloride	RSA.
3-Aminopyrazole-4-carboxamide sulfate	x.
2-Aminopyridine	NEP, RIL.
3-Aminopyridine	RIL.
4-Aminopyridine	NEP, RIL.
2-Aminopyrimidine	ACY.
5-Aminosalicylic acid	AAP.
N-(4-Amino-3-sulfo-1-anthraquinonyl)anthranilic acid	GAF.
1-Amino-2,3,6,7-tetrahydro-4,5,8-trihydroxyanthraquinone.	DUP.
2-Aminothiazole	ACY, MRK.
3-Amino-p-toluamide	SDH.
α-Amino-p-toluenesulfonamide	SDW.
5-Amino-o-toluenesulfonanilide	GAF.
*4-Amino-m-toluenesulfonic acid [SO_3H=1]	ACY, DUP, GAF.
5-Amino-o-toluenesulfonic acid [SO_3H=1]	TRC.
6-Amino-m-toluenesulfonic acid [SO_3H=1]	DUP, HSC, SNA.
5-Amino-2-p-toluidinobenzenesulfonic acid	DUP, TRC.
m-(4-Amino-m-tolylazo)benzenesulfonic acid	TRC.
3-[(4-Amino-o-tolyl)azo]-1,5-naphthalenedisulfonic acid	TRC.
7-[(4-Amino-o-tolyl)azo]-1,3-naphthalenedisulfonic acid	TRC.
5-Amino-2,4-xylenesulfonic acid	DUP.
t-Amylcyclopentadienylcyclopentadienyliron	ARA.
*Aniline (Aniline oil)	ACS, ACY, DUP, FST, MOB, RUC, USR.
Aniline hydrochloride	ACY.
1-Anilino-4-hydroxyanthraquinone	AAP.
6-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl gamma acid).	ACS, DUP.
*7-Anilino-4-hydroxy-2-naphthalenesulfonic acid (Phenyl J acid).	ACS, ALT, CMG, DUP, GAF, TRC.
*Anilinomethanesulfonic acid and salt	AAP, ACS, ACY, DUP, TRC, VPC.
*8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	ACS, DUP, SDC, TCD.
m-Anilinophenol	GAF.
p-Anilinophenol	SDC.
*o-Anisidine	AAP, DUP, MON.
p-Anisidine	DUP, MON.
1-p-Anisidino-4-hydroxyanthraquinone	AAP.
*o-Anisidinomethanesulfonic acid	DUP, GAF, TRC, VPC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
2-(o-Anisidino)-5-nitrobenzenesulfonic acid	TRC.
Anisole, tech	DUP, GIV, LIL.
p-Anisoyl chloride	ICO.
4-(o-Anisylazo)-o-anisidine	AAP.
Anthracene, refined	ACP.
Anthranilic acid (o-Aminobenzoic acid)[1]	ACS, DUP, LEM, MEE.
*Anthra[1,9-cd]pyrazol-6(2H)-one (Pyrazoleanthrone)	DUP, GAF.
Anthraquinone, 100%	ACY, DUP, GAF, TRC.
1,1'-[1,5(and 1,8)-Anthraquinonylenediamino]bis-naphth[2,3-c]acridan-5,8,14-trione.	DUP.
*N,N'-(1,5-Anthraquinonylene)dianthranilic acid	DUP, GAF, ICI, TRC.
N,N'-(1,5-Anthraquinonylene)dioxamic acid	GAF, MEE.
(1-Anthraquinonyl)-1,2-hydrazinedisulfonic acid, disodium salt.	DUP, GAF.
Anthrone	ICI.
Arsanilic acid and salt, tech	ABB, FLM.
Aryldiamines, mixed	DA.
4',4'''-Azobis[4-biphenylcarboxylic acid]	DUP, GAF, TRC.
3,3'-Azoxydianiline	GAF, VPC.
Barbituric acid	ABB, LIL.
Barbituric acid, sodium derivative	ABB, KF.
*Benzaldehyde, tech	BPC, HN, VEL.
4-[(4-Benzamido-1-anthraquinonyl)amino]naphth-[2,3-c]acridan-5,8,14-trione.	DUP.
N-(5-Benzamido-1-anthraquinonyl)-p-toluenesulfonamide	ACS, ICI.
1-Benzamido-4-bromoanthraquinone	AAP.
1-Benzamido-4-chloroanthraquinone	DUP, GAF.
*1-Benzamido-5-chloroanthraquinone	ACS, ACY, DUP, GAF, ICI, MAY, TRC.
1-(4-Benzamido-2,5-diethoxyphenyl)-3-[methyl-3-(2-sulfoethyl)triazene].	GAF.
4-Benzamido-5-hydroxy-2,7-naphthalenedisulfonic acid	TRC.
7-Benzamido-4-hydroxy-2-naphthalenesulfonic acid	TRC.
Benzanilide	DUP.
*7H-Benz[de]anthracen-7-one (Benzanthrone)	AAP, ACS, ACY, ATL, DUP, GAF, ICI, MAY, SDC, TRC.
m-Benzenedisulfonic acid	KPT, UPF.
Benzenesulfonamide	NES.
Benzenesulfonic acid	NES, UPF.
Benzenesulfonyl chloride	NES.
1,2,4,5-Benzenetetracarboxylic-1,2:4,5-dianhydride	DUP, PCR.
1,2,4-Benzenetricarboxylic acid	ACC, EK.
1,3,5-Benzenetrisulfonyl chloride	EK.
Benzhydrol (Diphenylmethanol)	PD, UOP.
Benzidine hydrochloride and sulfate	ACS, LAK.
Benzilic acid	BPC.
2-Benzoazolethiol	EK.
2-Benzofuranacetonitrile	EK.
*Benzoic acid, tech[1]	HK, HN, MON, PFZ, VEL.
Benzoic acid, hydrazide	UPJ.
Benzoin	BPC.
α-Benzoin oxime	RSA.
Benzonitrile	VEL.
Benzophenonetetracarboxylic dianhydride	GOC.
2-Benzothiazolethiol (2-Mercaptobenzothiazole), sodium salt.	ACY, GYR, MON.
1H-Benzotriazole	MEE.
2H-3,1-Benzoxazine-2,4(1H)-dione	MEE.
2-Benzoxazolinone-6-sulfonyl chloride	SDC.
*o-Benzoylbenzoic acid	ACY, DUP, GAF.
Benzoyl chloride	HK, VEL.
2-Benzoylpyridine	NEP.
2-Benzoyl-4-sulfobenzoic acid	DUP.
2-Benzoyl-4'-(p-toluenesulfonamido)acetanilide	EK.
N-Benzylacetamide	SDW.
Benzylamine	ICO, MLS.
4-(Benzylamino)-6-chloro-m-benzenedisulfonic acid	ABB.
2-(Benzylamino)ethanol	MLS.
p-(Benzylamino)phenol	EK.
4-Benzyl-6-chloro-3-keto-2-methyl-7-sulfamyl-1,2,4-benzylthiadiazine-1,1-dioxide.	ABB.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
4-Benzyl-6-chloro-3-keto-7-sulfamyl-1,2,4-benzylthiadiazine-1,1-dioxide.	ABB.
1-Benzyl-4,5-dimethyl-6-(p-methoxybenzyl)-1,2,3,6-tetrahydropyridine oxalate.	SDW.
Benzyl disulfide	CCW.
Benzyl ether (Dibenzyl ether)	BPC, UOP.
N-Benzyl-N-ethyl-m-toluidine	DUP.
3-Benzyl-1,2,3,4,5,6-hexahydro-8-hydroxy-cis-6,11-dimethyl-2,6-methano-3-benzazocine hydrobromide.	SDW.
4,4'-Benzylidenedi-o-toluidine	ACY.
1-(Benzyloxy)-4-nitrobenzene	GAF.
1-Benzyl-4-phenylisonipecotic acid	SDW.
1-Benzyl-4-phenylisonipecotonitrile	SDW.
Benzyltrimethylammonium hydroxide	MLS.
Benzyltrimethylammonium methoxide	MLS.
*[3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)dione (Pyrazoleanthrone yellow).	DUP, GAF, TRC.
[3,3'-Bi-7H-benz[de]anthracene]-7,7'-dione	ACS, DUP.
*[4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione	ACY, DUP, GAF, ICI, MAY.
[1,1'-Binaphthalene]-8,8'-dicarboxylic acid	ACS.
Biphenyl	DOW, MON.
2-Biphenylamine	NES.
3,3',4,4'-Biphenyltetramine	AAP.
2,2'-Biquinoline	EK.
*1,4-Bis[1-anthraquinonylamino]anthraquinone	ACY, DUP, GAF, MAY, TRC.
1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-Bis[5-chloro-1-anthraquinonylamino]anthraquinone (mixed).	TRC.
1,5-Bis[1-anthraquinonylamino]anthraquinone	ACS, DUP.
Bis[1-anthraquinonylamino]violanthrene	GAF.
1,4-Bis[(5-benzamido-1-anthraquinonyl)amino]-anthraquinone.	ICI.
2,3-Bis(bromomethyl)quinoxaline	EK.
α^2,α^6-Bis[5-tert-butyl-6-hydroxy-m-tolyl]mesitol	ACY.
Bis(chlorosulfonyl)phthalocyaninedisulfonic acid, copper derivative.	TRC.
4,4'-Bis(diethylamino)benzhydrol	GAF.
4,4'-Bis[diethylamino]benzhydrol, 2,6-naphthalene-disulfonate.	GAF.
4,4-Bis(diethylamino)benzhydrol salt, 2,7-naphthalenedisulfonic acid mixture.	TRC.
4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base)	DSC.
4-Bis[(p-diethylaminophenyl)methyl]-2,7-naphthalene-disulfonic acid, leuco form.	TRC.
4,4'-Bis[dimethylamino]benzhydrol (Michler's hydrol)	SDH.
4,4'-Bis[dimethylamino]benzophenone (Michler's ketone)	ACS, DSC, DUP.
Bis[p-dimethylamino)phenyl]methanesulfonic acid and salt	ACS
1,5-Bis[2,4-dinitrophenoxy]-4,8-dinitroanthraquinone	DUP.
1,5(and 1,8)-Bis[2,4-dinitrophenoxy]-4,8(and 4,5)dinitro-anthraquinone.	DUP.
3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester	DUP.
3'-[Bis(2-hydroxyethyl)amino]methanesulfonanilide, diacetate ester.	DUP.
4,4'-Bis[(p-hydroxyphenyl)azo]2,2'-stilbenedisulfonic acid (C.I. Direct Yellow 4).	TRC.
1,3-Bis(p-methoxyphenyl)-1,3-propanedione	BJL.
Bis(2-methyl-1-aziridinyl)phenylphosphine oxide	ICO.
2,4-Bis(1-methylbutyl)phenol	PAS.
1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene (Di-methyl-POPOP).	ARA.
Bis(o-nitrophenyl)sulfide	x.
1,4-Bis[2-(5-phenyloxazolyl)]benzene (POPOP)	ARA.
2-Bromoacetophenone	EK.
o-Bromoaniline	PIC.
p-Bromoaniline	EK.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
p-Bromoanisole	OPC.
*3-Bromo-7H-benz[de]anthracen-7-one (3-Bromobenzanthrone).	ACY, DUP, GAF, ICI, MAY.
Bromobenzene, mono-	DOW.
p-Bromobenzenesulfonyl chloride	EK.
o-Bromobenzoic acid	PD.
m-Bromobenzoyl chloride	EK.
Bromochlorobenzene	DOW.
6-Bromo-5-chlorobenzoxazolone	MEE.
Bromocyclopentane	LIL.
2-Bromodibenzofuran	GAF.
*2-Bromo-4,6-dinitroaniline	AAP, SDC, TRC.
Bromoethylbenzene	DOW, RSA.
2-Bromo-3'-hydroxyacetophenone benzoate	SDH.
*1-Bromo-4-(methylamino)anthraquinone	AAP, DUP, GAF, ICI.
6-Bromo-3-methyl-7H-dibenz[f,ij]isoquinoline-2,7-(3H)dione.	AAP.
3-(Bromomethyl)thiophene	SDW.
1-Bromonaphthalene	EK.
2-Bromo-4'-nitroacetophenone	GAF.
p-Bromophenol	EK.
(p-Bromophenyl)acetonitrile	BPC.
p-Bromophenylhydrazine hydrochloride	EK.
2-Bromopyridine	NEP, RIL.
α-Bromoresorcylic acid	ALL.
α-Bromotoluene	EK.
o-Bromotoluene	EK, RSA.
p-Bromotoluene	BPC, EK.
2-Bromo-1,3,5-triethylbenzene	DUP.
4-N-Butoxyphenyl-B-morpholine propyl ether	ABB.
1-(Butylamino)anthraquinone	AAP.
p-Butylaniline	DUP.
2-tert-Butylanthraquinone	DUP.
p-tert-Butylbenzaldehyde	GIV.
n-Butylbenzene	PLC.
sec-Butylbenzene	PLC.
tert-Butylbenzene	CTN, PLC.
p-tert-Butylbenzoic acid	SHC.
o-(p-tert-Butylbenzoyl)benzoic acid	DUP.
2-tert-Butyl-p-cresol	ACY, PRD.
6-tert-Butyl-m-cresol	KPT, PRD.
(n-Butylcyclopentadienyl)cyclopentadienyliron	ARA.
2'-tert-Butyl-4',6'-dimethylacetophenone	GIV.
4-Butyl-α-(dimethylamino)-o-cresol	RH.
Butyl-p-(p-ethoxyphenoxycarbonyl)phenyl carbonate	EK.
2-tert-Butyl-4-ethylphenol	ACY.
N'-Butyl-4-methoxymetanilamide	ALL.
2-tert-Butyl-5-methylanisole	GIV.
o-sec-Butylphenol	DOW, PRD, TNA.
p-sec-Butylphenol	DOW.
o-tert-Butylphenol	TNA.
p-tert-Butylphenol	DOW, PRD, UCC.
Butylphenols, mixed	DOW.
p-tert-Butyltoluene	GIV, SHC.
5-tert-Butyl-1,2,3-trimethylbenzene	GIV.
5-tert-Butyl-m-xylene	GIV.
6-tert-Butyl-2,4-xylenol	PRD.
Camphoric acid	FIN.
Camphoric anhydride	FIN.
d-10-Camphorsulfonic acid	OTC.
Camphosulfonic acid	LIL.
Carbamic acid, (1-methyl-5-nitroimidazol-2-yl)-methylester.	MRK.
Carbazole, refined	SDC.
1-(4-Carbonyl-o-anisyl)-3-methyl-3-(2-sulfoethyl) triazene.	GAF.
N,N'-Carbonylbis(4-methoxymetanilic acid)	GAF.
N,N'-Carbonylbis(4-methoxy-6-nitrometanilic acid)	GAF.
5'-(o-Carboxybenzoyl)-2'-chlorooxanilic acid	GAF.
N-[(3-Carboxy-4-chlorophenyl)-sulfonyl]anthranilic acid	TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate	ACS, GAF.
[(o-Carboxyphenyl)thio]ethylmercury	LIL.
Cedrene	GIV.
2'-Chloroacetoacetanilide	FMP.
2'-Chloroacetophenone	EK.
4'-Chloroacetophenone	LIL.
2-Chloro-2',6'-acetoxylidide	SDW.
4'-(Chloroacetyl)acetanilide	DUP.
m-Chloroaniline	DUP, GAF.
o-Chloroaniline	DUP, MON.
p-Chloroaniline	DUP, MON.
3-(o-Chloroanilino)propionitrile	DUP.
5-Chloro-o-anisidine [NH_2=1] (4-Chloro-o-anisidine [OCH_3=1]).	ALL, BUC.
5-Chloro-o-anisidine hydrochloride	BUC, GAF.
p-Chloroanisole	EK.
4-Chloroanthranilic acid	DUP.
*1-Chloroanthraquinone	ACY, DUP, GAF, MAY, TRC.
*2-Chloroanthraquinone	ACS, ACY, GAF, TRC.
N-(5-Chloro-1-anthraquinonyl)-p-toluenesulfonamide	ICI.
o-Chlorobenzaldehyde	HN, PD.
p-Chlorobenzaldehyde	HN.
4-(p-Chlorobenzamido)anthraquinone-1,2-acridone	GAF.
Chloro-7H-benz[de]anthracen-7-one (Chlorobenzanthrone).	ACY, TRC.
*Chlorobenzene, mono-	ACS, DOW, DVC, HK, HKD, MON, MTO, NEV, OMC, PPG, SCC.
p-Chlorobenzenesulfinic acid	TRC.
p-Chlorobenzenesulfonamide	ACY.
p-Chlorobenzenesulfonic acid	GAF.
p-Chlorobenzenesulfonyl chloride	NES.
o-Chlorobenzoic acid	HN, PD.
5-Chloro-2-benzoxazolinone	x.
*o-(p-Chlorobenzoyl)benzoic acid	ACS, ACY, DUP, GAF, HN, ICI.
p-Chlorobenzoyl chloride	HN.
4,4'-(o-Chlorobenzylidene)di-2,5-xylidine	GAF.
α-(p-Chlorobenzyl)-α-phenyl-1-pyrrolidinepropanol hydrochloride.	LIL.
Chloro(p-chlorophenyl)phenylmethane	OPC.
4-Chloro-3-(chlorosulfonyl)benzoic acid	TRC.
Chlorocyclohexane	ACY.
1-Chloro-2,5-diethoxy-4-nitrobenzene	GAF.
2-Chloro-N,N-diethyl-4-nitroaniline	DUP.
2-Chloro-3',4'-dihydroxyacetophenone	SDW.
2-Chloro-1,4-dihydroxyanthraquinone	HSH.
4'-Chloro-3,5-diiodosalicylanilide	x.
4'-Chloro-3,5-diiodosalicylanilide acetate	x.
4'-Chloro-2',5'-dimethoxyacetoacetanilide	PCW.
5-Chloro-4,7-dimethylbenzo[b]thiophen-3(2H)-one	ACS.
4-Chloro-N,N-dimethyl-3-nitrobenzenesulfonamide	EKT, SDC.
*1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	AAP, ACS, DUP, SDC.
1-Chloro-2,4-dinitrobenzene and 2-chloro-1,3-dinitrobenzene mixture.	DUP.
3-Chloro-4,6-dinitrobenzenesulfonic acid	TRC.
4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt	SDC.
3-Chlorodiphenylamine	SK.
Chlorodiphenylmethane	OPC.
2-Chloroethanol, p-toluenesulfonate	GAF.
N-(2-Chloroethyl)-N-ethylaniline	GAF.
Chloroformic acid, benzyl ester	RSA.
Chloroformic acid, p-nitrobenzyl ester	EK.
Chloroformic acid, phenyl ester	EK.
1-Chloro-4-hydroxyanthraquinone	ICI.
5'-Chloro-3-hydroxy-2-naphth-o-anisidide	BUC, PCW.
3-Chloro-4-hydroxyquinoline-3,4-carbonic acid	SDH.
6-Chloroisatoic anhydride	MEE.
4-Chlorometanilic acid	DUP, GAF.
5-Chlorometanilic acid	ACS.
*6-Chlorometanilic acid	AAP, DUP, GAF.
5-Chloro-2-methoxybenzenediazonium chloride	GAF.
N-[(5-Chloro-2-methoxyphenyl)azo]sarcosine	ATL.
p-(Chloromethyl)anisole	SDW.
*1-Chloro-2-methylanthraquinone	ACS, ACY, CMG, DUP, GAF, ICI, TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
6-Chloro-4-methylbenzo[b]thiophene-2-ol	ACY.
4-(Chloromethyl)-1,2-dimethylbenzene	BPC.
4-(Chloromethyl)-1,3-dimethylbenzene	BPC.
1-(Chloromethyl)naphthalene	BPC.
4-Chloro-N-methyl-3-nitrobenzenesulfonamide	TRC.
2-Chloro-5-(N-methylsulfamoyl)sulfanilamide	ABB.
5-Chloro-2-(n-methyl)-sulfamyl-4-sulfamyl-n-benzylamine	ABB.
Chloronaphthalenes	GAF, KPS.
*2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	DOW, DUP, SDC.
*4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	DOW, DUP, SDC, VPC.
*1-Chloro-5-nitroanthraquinone	ACS, ACY, DUP, MAY, TRC.
1-Chloro-8-nitroanthraquinone	DUP, MAY.
*1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	AAP, DUP, MON, UPM.
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)	DUP, GAF.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	AAP, DUP, MON, UPM.
2-Chloro-5-nitrobenzenesulfonamide	AAP.
*4-Chloro-3-nitrobenzenesulfonamide	AAP, DUP, EKT, GAF, ICC, TRC.
4-Chloro-3-nitrobenzenesulfonanilide	TRC.
2-Chloro-5-nitrobenzenesulfonic acid	ACS, CMG, TRC.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt	AAP, DUP, GAF.
*4-Chloro-3-nitrobenzenesulfonic acid	ACS, GAF, TRC.
*4-Chloro-3-nitrobenzenesulfonyl chloride	DUP, EKT, SDC.
2-Chloro-4-nitrobenzoic acid	SAL.
2-Chloro-5-nitrobenzoic acid	TRC.
o-(4-Chloro-3-nitrobenzoyl)benzoic acid	AAP, ACS, ICI.
4-Chloro-2-nitrophenol	DUP, MEE.
4-Chloro-3-nitrophenyl methyl sulfone	TRC.
2-Chloro-4-nitrotoluene	DUP.
2-Chloro-6-nitrotoluene	DUP.
4-Chloro-2-nitrotoluene	DUP.
4-Chloro-3-nitrotoluene	BUC.
α-Chloro-m-nitrotoluene	EK.
o-Chlorophenol	DOW, MON.
p-Chlorophenol	DOW, MON.
2-Chlorophenothiazine	SK.
4-(p-Chlorophenoxy)nitrobenzene	NES.
(p-Chlorophenyl)acetonitrile	OPC.
1-(p-Chloro-α-phenylbenzyl)-4-methylpiperazine	ABB.
4-Chloro-α-phenyl-o-cresol	MON.
4-Chloro-o-phenylenediamine	FMT.
p-Chlorophenyl isocyanate	MOB.
3-(o-Chlorophenyl)-5-methyl-4-isoxazolecarbonyl chloride.	ICO, OTC.
1-(m-Chlorophenyl)-3-methyl-2-pyrazolin-5-one	TRC.
1-(p-Chlorophenyl)-3-methyl-2-pyrazolin-5-one	DUP, TRC.
p-Chlorophenyl methyl sulfone	TRC.
2-Chloro-4-phenylphenol	DOW.
1-[4-(p-Chlorophenyl)-3-phenyl-2-butenyl]pyrrolidine-hydrobromide.	LIL.
[(o-Chlorophenyl)thio]acetic acid	PCW.
4-Chlorophthalic acid and sodium salt	HK, MEE, SW.
(3-Chloropropenyl)benzene (Cinnamyl chloride)	SDW.
1-(3-Chloropropyl)-4-methylpiperazine	SK.
N^1-(6-Chloro-3-pyridazinyl)sulfanilamide	ACY.
2-Chloropyridine	FMT, NEP.
6-Chloroquinaldine	DUP.
7-Chloro-4-quinoline	SDW.
2-(6-Chloro-2-quinonyl)-1,3-indandione	DUP.
4-Chlororesorcinol	AAP, GAF.
2-Chloro-5-sulfamoylbenzoic acid	TRC.
4-Chloro-3-sulfamoylbenzoic acid	TRC.
2-Chlorothiophene	FIS.
m-Chlorotoluene	HK.
o-Chlorotoluene	HN.
p-Chlorotoluene	HN.
*α-Chlorotoluene (Benzyl chloride)	BPC, HK, HN, MON, VEL.
3-Chloro-o-toluidine [NH_2=1]	DUP.
3-Chloro-p-toluidine [NH_2=1]	DUP.
4-Chloro-o-toluidine [NH_2=1] and hydrochloride	ACY, BUC.
5-Chloro-o-toluidine [NH_2=1] (4-Chloro-o-toluidine [CH_3=1]).	DUP, SDH.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
S-Chloro-o-toluidine hydrochloride [NH_2=1]	ATL, SDH.
N-[(S-Chloro-o-tolyl)azo]sarcosine	ATL.
1-(S-Chloro-o-tolyl)-1-tetrazene	GAF.
*[(4-Chloro-o-tolyl)thio]acetic acid	ACS, ACY, ALL, GAF.
p-Chloro-α,α,α-trifluorotoluene	HK.
4-Chloro-α,α,α-trifluoro-o-toluidine	MEE.
Chlorotriphenylmethane	EK.
α-Chloro-o-xylene	BPC.
α-Chloro-p-xylene	BPC.
2-Chloro-p-xylene	DUP.
4-Chloro-2,S-xylenesulfonyl chloride	ACS.
4-Chloro-3,S-xylenol	OTA.
[(4-Chloro-2,S-xylyl)thio]acetic acid	ACS.
Cholesteryl nonanoate	EK.
Cholesteryl oleyl carbonate (Misomorphic)	EK.
Cholestyramine resin	MRK.
Cholic acid	WIL.
Cinnamoyl chloride	ICO, UOP, x.
*Cresols:[2]	
m-Cresol	KPT, PRD.
*o-Cresol:	
From coal tar	KPT, PRD.
From petroleum	KPT, MER, NPC, PRD.
p-Cresol	HPC, SW.
Cresols, mixed:[2]	
*(m,p)-Cresol:	
From coal tar	ACP, KPT, PRD.
From petroleum	MER, NPC, PIT, PRD.
(o,m,p)-Cresol	ACP, KPT, SW.
*Cresylic acid, refined:[2]	
From coal tar	ACP, KPT.
From petroleum	MER, NPC, PIT.
*Cumene	CLK, CSP, DOW, GOC, HPC, MOC, MON, SHC, SKO, SNT, SOC, TX.
p-Cumylphenol	PCW.
2-[p-(Cyanoacetamido)phenyl]-6-methyl-7-benzothiazolesulfonic acid.	DUP.
dl-α-Cyanocyclohexaneacetic acid, ethyl ester	SDW.
4-[(2-Cyanoethyl)ethylamino]-o-tolualdehyde	DUP, GAF.
p-[(2-Cyanoethyl)methylamino]benzaldehyde	DUP, GAF.
Cycloaliphatic epoxides	UCC.
*Cyclohexane	ASH, ATR, CO, COR, CSD, ENJ, GOC, GRS, PLC, PPR, SOG, TX, UOC.
1,4-Cyclohexanedicarboxylic acid, dimethyl ester	EK.
1,2-Cyclohexanedicarboxylic anhydride	ACS.
1,3-Cyclohexanedione	PD.
1,4-Cyclohexanedione-2,S-dicarboxylic acid, diethyl ester	FMP.
*Cyclohexanol	ACP, CNP, DBC, DUP, EKT, MON.
*Cyclohexanone	ACP, CEL, CNP, DBC, DUP, MON.
Cyclohexanone oxime	ACP, CNP.
Cyclohexene	PLC.
α-1-Cyclohexene-1-acetic acid, ethyl ester	SDW.
4-Cyclohexene-1-carboxaldehyde	UCC.
4-Cyclohexene-1,2-dicarboximide	CHO.
4-Cyclohexene-1,2-dicarboxylic anhydride	ACS, PTT.
Cyclohexylamine	ABB, MON.
S-Cyclohexyl-3-oxo-1-indancarboxylic acid	BJL.
Cyclohexyl-2-propanone	GIV.
N-Cyclohexyltaurine, sodium salt	GAF.
Cyclopentamine base	LIL.
Cyclopentadienyliron	ARA.
Cyclopentanepropionic acid	ARA.
Cyclopentanol	LIL.
Cyclopentanonecarboxylic acid	ARA.
Cyclopentene	ARA, PLC.
Cyclopropanecarboxylic acid	HEX.
p-Cymene	ACS, HN, HPC.
Decachlorodicyclopentadiene	NES.
Deoxycholic acid	WIL.
1,S(and 1,8)-Diacetamidoanthraquinone	AAP.
3,S-Diacetamido-2,4,6-triiodobenzoic acid	SDW.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
3'-[Di(2-acetoxyethyl)amino]-p-acetophenetidide	TRC.
3-(Diallylcarbamoyl)-1,2,2-trimethylcyclopentane-carboxylic acid.	WYT.
N^2,N^2-Diallylmelamine	ACY.
*1,4-Diaminoanthraquinone	ACS, CMG, DUP, GAF, TRC.
1,5-Diaminoanthraquinone	DUP, GAF, TRC.
1,5(and 1,8)-Diaminoanthraquinone	AAP, ICI, TRC.
*2,6-Diaminoanthraquinone	AAP, ACS, GAF, ICI, TRC, VPC.
3,4-Diaminobenzanilide	DUP, TRC.
2,4-Diaminobenzenesulfonic acid [SO_3H=1]	ACS, DUP, TRC.
2,5-Diaminobenzenesulfonic acid [SO_3H=1]	TRC.
4,4'-Diamino-2,2'-biphenyldisulfonic acid	AAP, ACS, ACY.
1,5-Diamino-2,6-dibromo-4,8-di-p-toluidinoanthra-quinone.	ICI.
1,4-Diamino-2,3-dichloroanthraquinone	CMG, DUP.
*1,4-Diamino-2,3-dihydroanthraquinone	ACY, ATL, DUP, GAF, HSH, ICC, ICI, MAY, TRC.
4,8-Diamino-9,10-dihydro-1,5-dihydroxy-9,10-dioxo-2,6-anthracenedisulfonic acid.	TRC.
1,4-Diamino-9,10-dihydro-9,10-dioxo-2,3-anthracene-dicarbonitrile.	DUP.
1,4-Diamino-9,10-dihydro-9,10-dioxo-2,3-anthracene-dicarboximide.	DUP.
1,5-Diamino-4,8-dihydroxyanthraquinone	ICC, VPC.
1,5(and 1,8)-Diamino-4,8(and 4,5)-dihydroxyanthraquinone	DUP.
4,5-Diamino-1,8-dihydroxyanthraquinone	ICI.
4,4'-Diamino-5,5'-dimethyl-2,2'-biphenyldisulfonic acid	AAP.
2,4-Diamino-6-phenyl-s-triazine	RH, VEL.
2,6-Diaminopyridine	NEP, RIL.
6,7-Diamino-2,3-quinoxalinediol hydrochloride	BJL.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid	ACS, ACY, DUP, GAF, GGY, SDH, TRC, VPC.
1.5-Diamino-2,4,6,8-tetrabromoanthraquinone	ICI.
3,5-Diamino-p-toluenesulfonic acid [SO_3H=1]	GAF.
4,6-Diamino-m-toluenesulfonic acid [SO_3H=1]	ACS.
3,5-Diamino-2,4,6-triiodobenzoic acid	SDW.
1,4:3,6-Dianhydroglucitol	APD.
1,5-Dianilino-9,10-dihydro-9,10-dioxo-2,6-anthra-cenedicarboxylic acid.	ACS.
2,4-Dianilino-1-hydroxyanthraquinone	GAF.
6,8-Dianilino-1-naphthalenesulfonic acid	ACS.
2,5-Dianilinoterephthalic acid	SDC.
Diarylguanidine	DUP.
p-Diazo-N,N-dimethylaniline-1-amino-8-naphthol-3-sulfonate-6-sulfonic acid, sodium salt.	IDC.
5(and 3)-Diazo-6-oxo-1,3(and 1,4)-cyclohexadiene-1-carboxylic acid.	DUP.
1,5-Dibenzamidoanthraquinone	GAF, TRC.
6,11-Dibenzamido-16H-dinaphtho[2,3-α,2',3'-i]-carbazole-5,10,15,17-tetrone.	ICI.
*4,5'-Dibenzamido-1,1'-iminodianthraquinone	ACS, ACY, DUP, GAF, ICI, MAY, TRC.
Dibenzo[b,def]chrysene-7,14-dione	ICI.
Dibenzothiophene	EVN.
*1,5-Dibenzoylnaphthalene	ACY, DUP, GAF, HST, ICI, TRC, VPC.
3'-(N,N-Dibenzyl)amino-p-acetanisidide	SDC.
N,N'-Dibenzylethylenediamine	WYT.
N,N'-Dibenzylethylenediamine diacetate	WYT.
N,N'-Dibenzylidenetoluene-α,α-diamine	SDH.
N,N-Dibenzylsulfanilic acid	ICI.
2,4'-Dibromoacetophenone	EK.
*3,9-Dibromo-7H-benz[de]anthracen-7-one	DUP, GAF, MAY, TRC.
ar-Dibromobenzene	DOW.
p-Dibromobenzene	DOW.
2,6-Dibromo-1,5-naphthalenediol	EK.
2,6-Dibromo-4-nitrophenol	MEE.
5,13-Dibromo-8,16-pyranthrenedione	ICI.
Dibromoviolanthrone	GAF.
1,4-Dibutoxy-2-chloro-5-nitrobenzene	BJL.
2,5-Dibutoxy-4-morpholinobenzene sulfate diazoniumsulfate salt.	ALL.
1,1'-Di-n-Butyldicyclopentadienyliron	ARA.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
2,6-Di-tert-butyl-4-nonylphenol	GAF.
2,4-Di-tert-butylphenol	DOW.
Dibutyltin bis(cyclohexyl maleate)	x.
3',4'-Dichloroacetophenone	EK.
3,4-Dichloroaniline	DUP, MON.
2,5-Dichloroaniline and hydrochloride [NH_2=1]	ACS, BUC, DUP.
3-(2,4-Dichloroanilino)-1-(2,4,6-trichlorophenyl)-2-pyrazolin-5-one.	EK.
*1,5-Dichloroanthraquinone	ACS, DUP, GAF, ICI, TRC.
1,5(and 1,8)-Dichloroanthraquinone	DUP.
1,8-Dichloroanthraquinone	GAF, ICI.
2,6-Dichlorobenzaldehyde	DUP.
Dichlorobenzanthrone	ACY.
m-Dichlorobenzene	EK, OMC.
*o-Dichlorobenzene	ACS, CPD, DOW, DUP, DVC, HKD, MON, NEV, PPG, SCC, SVT.
*p-Dichlorobenzene	ACS, CPD, DOW, DVC, MON, NEV, PPG, SCC, SVT.
4,6-Dichloro-m-benzenedisulfonamide	ABB.
4,6-Dichloro-m-benzenedisulfonyl chloride	ABB.
*3,3'-Dichlorobenzidine base and salts	ACS, ALL, CWN, LAK.
2,2'-Dichlorobenzil	MTO.
2,4-Dichlorobenzoic acid	HN.
2,4-Dichlorobenzoyl chloride	HN.
2,5-Dichlorobenzoyl chloride	GAF.
2,4-Dichloro-m-cresol	EKT.
7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone.	ICI.
4,5-Dichloro-3,6-dioxo-1,4-cyclohexadiene-1,2-dicarbonitrile.	ARA.
Dichlorodiphenylsilane	DCC.
2',7'-Dichlorofluorescein	EK.
2-(5,8-Dichloro-1-hydroxy-2-naphthylazo)-1-hydroxybenzene-4-sulfonamide.	TRC.
5,14-Dichloroisoviolanthrone	ICI.
*2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)-benzenesulfonic acid.	ACY, CMG, PCW, SDH, TRC, VPC.
Dichloromethylphenylsilane	DCC.
2,6-Dichloro-4-nitroaniline	CWN, DUP, EKT, HSH, MEE.
1,2-Dichloro-4-nitrobenzene	DUP, MON, SDC.
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene).	AAP, DUP, SDC, VPC.
3,4-Dichloro-5(or 6)-nitrobenzenesulfonic acid	MEE.
2,5-Dichloro-3-nitrobenzoate, ammonium salt	GAF.
2,5-Dichloro-3-nitrobenzoic acid	GAF.
2,5-Dichloro-3-nitrobenzoic acid, ethyl ester	GAF.
2,4-Dichlorophenol	DOW, MON.
*3-(2',6'-Dichlorophenyl)-5-methyl-4-isoxazole carbonyl chloride.	BKL, ICO, OTC.
2,6-Dichloropyrazine	ACY.
3,6-Dichloropyridazine	ACY.
4,7-Dichloroquinoline	PD, SDW.
3,5-Dichlorosalicylic acid	ICO.
2,5-Dichlorosulfanilic acid [SO_3H=1]	CMG, DUP.
2,5-Dichloro-4-sulfobenzenediazonium sulfate	TRC.
p,α-Dichlorotoluene	HN.
α,α-Dichlorotoluene (Benzal chloride)	ACS, HK.
Dichloroxylene	BPC.
2,4-Dichloro-3,5-xylenol	OTA.
Dicyclohexylamine	ABB, MON.
1,3-Dicyclohexyl-2-thiourea	ABB.
*Dicyclopentadiene (includes cyclopentadiene)	ENJ, GOC, UCC, VEL.
Dicyclopentadiene dioxide	VEL.
2',5'-Diethoxybenzanilide	GAF.
p-Diethoxybenzene	GAF.
2,5-Diethoxy-4-morpholinobenzenediazonium chloride, zinc chloride.	ALL.
p-(Diethylamino)benzaldehyde	ACS, GAF.
3'-[2-(Diethylamino)ethyl]-4'-hydroxyacetanilide	PD.
α-[(2-Diethylamino)ethyl]-α-phenylcyclohexanemethanol, hydrochloride.	ACY.
m-(Diethylamino)phenol (N,N-Diethyl-3-aminophenol)	ACY.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
3-[(4-N,N-Diethylamino)phenylazo]-1H-1,2,4-triazole.	TRC.
3-(Diethylamino)propiophenone	ACY.
4-(Diethylamino)-o-tolualdehyde	DUP.
*N,N-Diethylaniline	ACS, ACY, DSC, DUP, SDH.
Diethylbenzene	DOW, KPP.
N,N-Diethylcyclohexylamine	DUP.
N,N-Diethylmetanilic acid	DUP.
α,α'-Diethyl-4,4'-dimethoxystilbene	LIL.
N^1,N^1-Diethyl-4-methoxymetanilamide	PCW.
N,N-Diethyl-p-nitrosoaniline	ESA, GAF.
N,N-Diethyl-4-nitroso-m-phenetidine	GAF.
N,N-Diethyl-m-phenetidine	GAF.
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.
9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid (2-Quinizarinsulfonic acid).	AAP, HSH, PAT.
N-(5,13-Dihydro-5,13-dioxoaceanthryleno[2,1-α]-aceanthrylen-7-yl)-9,10-dihydro-1-nitro-9,10-dioxo-2-anthramide.	ACS, ICI.
9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid	ACY, TRC.
*9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt.	GAF, ICI, TRC.
9,10-Dihydro-9,10-dioxo-1,5(and 1,8)-anthracenedisulfonic acid and salt.	DUP, TRC.
*9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt.	GAF, ICI, TRC.
*9,10-Dihydro-9,10-dioxo-2,6-anthracenedisulfonic acid and salt.	AAP, ACS, ACY, GAF, ICI, TRC, VPC.
*9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt (Gold salt).	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC.
9,10-Dihydro-9,10-dioxo-2-anthracenesulfonic acid and salt (Silver salt).	ACY, DUP.
9,10-Dihydro-9,10-dioxo-2-anthroic acid	ACS.
3,4-Dihydro-3,4-dioxo-1-naphthalenesulfonic acid, sodium salt.	EK.
[Dihydrogen 3,3''-phthalocyaninedisulfonato-(2-)]copper.	ICI.
10,11-Dihydro-5-[3-(methylaminopropyl)]-5H-dibenzo-[a,d]cyclohepten-5-ol.	LIL.
*9,10-Dihydro-5-nitro-9,10-dioxo-1-anthracenesulfonic acid.	ACS, DUP, MAY, TRC.
9,10-Dihydro-5(and 8)-nitro-9,10-dioxo-1-anthracenesulfonic acid.	ICI.
9,10-Dihydro-8-nitro-9,10-dioxo-1-anthracenesulfonic acid	MAY.
9,10-Dihydro-8,9,10-dioxo-1-anthracenesulfonic acid, sodium salt.	DUP.
9,10-Dihydro-1-nitro-9,10-dioxo-2-anthroic acid	DUP, GAF.
*1,4-Dihydroxyanthraquinone (Quinizarin)	AAP, ACS, ACY, CMG, DUP, GAF, HSH, ICC, ICI, JTC, MAY, TRC.
*1,5-Dihydroxyanthraquinone (Anthrarufin)	ACS, ACY, DUP, GAF, TRC.
1,5(and 1,8)-Dihydroxyanthraquinone	CMG, DUP, TRC.
1,8-Dihydroxyanthraquinone (Chrysazin)	GAF, TRC.
2,6-Dihydroxyanthraquinone (Anthraflavic acid)	DUP, GAF, TRC.
4,5-Dihydroxy-m-benzenedisulfonic acid, disodium salt	SDW.
2,5-Dihydroxybenzenesulfonic acid, potassium salt	NES.
2,4-Dihydroxybenzophenone	DUP, DVC.
1,5-Dihydroxy-4,8-dinitroanthraquinone	ICC, ICI, TRC, VPC.
*1,8-Dihydroxy-4,5-dinitroanthraquinone (4,5-Dinitrochrysazin).	DUP, GAF, ICC, ICI, TRC.
1,5-Dihydroxy-4,8-dinitro-2,6-anthraquinone-disulfonic acid.	DUP.
10,10'-(Dihydroxyethanediylidene)dianthrone	ICI.
Di-(β-hydroxyethyl)ether of hydroquinone	CTN.
3,4-Dihydroxyhydrocinnamic acid (Hydrocaffeic acid)	BJL.
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid).	ACS.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
6,7-Dihydroxy-2-naphthalenesulfonic acid	GAF, IDC.
11β,21-Dihydroxypregna-4,17(20)-cis-dien-3-one	UPJ.
11β,21-Dihydroxypregna-1,4,17(20)-cis-trien-3-one	UPJ.
4,5-Dihydroxy-3-(p-sulfophenylazo)-2,7-naphthalene-disulfonic acid, trisodium salt.	EK.
*16,17-Dihydroxyvioianthrone (Dihydroxydibenzanthrone)	ACY, DUP, GAF, ICI, MAY.
m-Diiodobenzene	EK.
o-Diiodobenzene	EK.
Diisopropylbenzene	DOW.
N,N'-Diisopropyl-p-phenylenediamine	DUP, USR.
2,5-Dimethoxyaniline	ALL, EKT.
1,5(and 1,8)-Dimethoxyanthraquinone	TRC.
m-Dimethoxybenzene	ACY.
3,3'-Dimethoxybenzidine (o-Dianisidine)	ALL, CWN, DUP, SDH.
3,3'-Dimethoxybenzidine hydrochloride	ALL, CWN.
2,4-Dimethoxybenzoic acid	ACY.
3,5-Dimethoxybenzoic acid	ICO.
N,N'-[(3,3'-Dimethoxy-4,4'-biphenylylene)bis-(azo)]bis-(N-methyltaurine).	GAF.
2,5-Dimethoxy-β-methyl-β-nitrostyrene	x.
2,5-Dimethoxy-α-methylphenethylamine	x.
N-(3,4-Dimethoxy-α-methylphenethyl)-2-(4-ethoxy-3-methoxyphenyl)acetamide.	LIL.
1,4-Dimethoxy-2-nitrobenzene	EKT.
2,5-Dimethoxy-4'-nitrostilbene	x.
3,4-Dimethoxyphenethylamine (Homoveratrylamine)	LIL.
4-(2',5'-Dimethoxyphenethyl)aniline hydrochloride	UPJ.
N-(3,4-Dimethoxyphenethyl)-2-(3,4-dimethoxyphenyl)-acetamide.	LIL.
(3,4-Dimethoxyphenyl)acetic acid	LIL.
(3,4-Dimethoxyphenyl)acetonitrile	LIL.
2,5-Dimethoxytetrahydrofuran	HEX.
16,17-Dimethoxyvioianthrone	GAF, ICI, MAY.
1,5-(Dimethylamino)anthraquinone	AAP.
p-Dimethylaminobenzanilide	DUP, TRC.
m-(Dimethylamino)benzoic acid	SDH.
α-(Dimethylamino)-p-cresol	TKL.
6-Dimethylamino-2-[2-(2,5-dimethyl-1-phenyl-3-pyrryl)-vinyl]-1-methyl-1-quinolinium methyl sulfate.	x.
2-[[2-(Dimethylamino)ethyl]-2-thenylamino]pyridine (nonmedicinal grade)	ABB.
2-[[2-(Dimethylamino)ethyl]-3-thenylaminopyridine	SDW.
m-(Dimethylamino)phenol	ACY.
N-(p-Dimethylaminophenyl)-1,4-naphthoquinoneimine	ACS.
*N,N-Dimethylaniline	ACS, ACY, DSC, DUP, SDH.
7,12-Dimethylbenz[a]anthracene	EK.
3,3'-Dimethylbenzidine (o-Tolidine)	ALL, CWN, DUP.
3,3'-Dimethylbenzidine hydrochloride	CWN, DUP, EK.
N,N-Dimethylbenzylamine	MLS, RH.
α,α-Dimethylbenzylhydroperoxide	ACP, CLK.
4-(α,α-Dimethylbenzyl)-2-phenylazophenol	TRC.
*2,2'-Dimethyl-1,1'-bianthraquinone	AAP, ACS, ACY, CMG, DUP, GAF, ICI, TRC.
N,N-Dimethylcyclohexylamine	ABB, DUP, EKT.
5,5-Dimethylhydantoin	GLY.
2,3-Dimethylindole	DUP.
2,5-Dimethyl-4(2)-morpholinylmethylphenol hydrochloride	IDC.
N,N-Dimethyl-p-nitrosoaniline	ACS, ACY, ESA.
N,N-Dimethyl-3-nitro-p-toluenesulfonamide	GAF.
6,6-Dimethyl-2-norpinene-2-ethanol	RDA.
5,5-Dimethyl-2,4-oxazolidinedione	EK.
N,N-Dimethyl-p-phenylenediamine	EKT.
N,N-Dimethyl-p-phenylenediamine hydrochloride	EK.
N,N-Dimethyl-p-phenylenediamine sulfate	EK.
1,4-Dimethylpiperazine	JCC.
N-[[4-(Dimethylsulfamoyl)-o-tolyl]azo]-N-methyl-S-sulfo-anthranilic acid.	GAF.
N,N-Dimethylsulfanilic acid	GAF.
2,4-Dimethythiazole	EK.
N,N-Dimethyl-p-toluidine	EK, RSA, SEL.
2,4-Dinitroacetanilide	SDC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*2,4-Dinitroaniline	AAP, ACY, SDC.
p-(2,4-Dinitroanilino)phenol	GAF, SDC.
1,5(and 1,8)-Dinitroanthraquinone	AAP, ICI, TRC.
N,N'-(2,4-Dinitro-1,5-anthraquinonylene)dioxamic acid.	TRC.
*3',4-Dinitrobenzanilide	AAP, DUP, TRC.
m-Dinitrobenzene	ACS, DUP.
2,4-Dinitrobenzenesulfonic acid	EK, TRC.
3,5-Dinitrobenzoic acid	FIS, SAL.
3,5-Dinitrobenzoyl chloride	EK.
3,3'-Dinitro-4,4'-biacetanilide	AAP.
10,10'-Dinitro[3,3'-bi-7H-benz[de]anthracene]-7,7'-dione	DUP, MAY.
Dinitrocaprylphenol	RH.
2,4-Dinitrocumene	DUP.
1-(3,5-Dinitro-2-hydroxyphenylazo)-2-naphthol	TRC.
*2,4-Dinitrophenol, tech	AAP, ACS, SDC.
(2,4-Dinitrophenyl)hydrazine	EK.
3,5-Dinitrosalicylic acid	EK, SAL.
*4,4'-Dinitrostilbene-2,2'-disulfonic acid	ACS, ACY, DUP, GAF, GGY, SDH, TCD, TRC.
2,4-Dinitrotoluene	ACS, DUP, RUC.
2,4(and 2,6)-Dinitrotoluene	DUP, MOB, UCC.
3,5-Dinitro-p-toluenesulfonic acid	GAF.
Dinonylphenol	GAF.
2,4-Di-tert-pentylphenol	PAS, x.
Di-tert-pentylphenoxyacetyl chloride	x.
1,5-Diphenoxyanthraquinone	DUP, VPC.
1,5(and 1,8)-Diphenoxyanthraquinone	DUP.
Diphenylacetic acid	ARA.
*Diphenylamine	ACY, DOW, DUP, FST, ORO, RUC, USR.
2,8-Diphenylanthra[1,2-d:6,5-d']bisthiazole-6,12-dione	ICI.
1,1-Diphenylethylene	EK.
N,N'-Diphenylethylenediamine	RPC.
2,5-Diphenyloxazole	ARA.
1,3-Diphenyl-1,3-propanedione	ALD, EK.
2,2'-Dithiodibenzoic acid	LIL, MEE.
*1,4-Di-p-toluidinoanthraquinone	ACS, ATL, GAF, ICI, TRC.
1,5-Di-p-toluidinoanthraquinone	ICI.
1,8-Di-p-toluidinoanthraquinone	ICI.
*Divinylbenzene	DOW, FG, KPP.
Dodecylbenzene. (See Alkylbenzenes.)	
Dodecylbenzene chloride	CO.
*p-Dodecylphenol	GAF, MON, UCC, x.
Eosin (2',4',5',7'-Tetrabromofluorescein)	ICC.
1,2-Epoxy-3-(2-biphenylyl)propane	NES.
(Epoxyethyl)benzene	UCC.
o-Ethoxybenzoic acid	ACY.
1-(4-Ethoxy-3-methoxybenzyl)-6,7-dimethoxy-3-methylisoquinone.	LIL.
2-Ethoxy-1-naphthoyl chloride	ICO, OPC, WYT.
4-Ethoxy-o-phenylenediamine	TRC.
3-(Ethylamino)-p-cresol	DUP.
3-(Ethylamino)-p-toluenesulfonic acid [SO_3H=1]	DUP.
N-Ethylaniline, refined	ACS, ACY, DUP, SDH.
2-(N-Ethylanilino)ethanol	DUP, EKT.
[2-(N-Ethylanilino)ethyl]trimethylammonium chloride	DUP.
3-(N-Ethylanilino)propionitrile	DUP, EKT.
α-(N-Ethylanilino)-m-toluenesulfonic acid	GAF, SDH.
*α-(N-Ethylanilino)-p-toluenesulfonic acid	ACS, TRC, VPC, WJ.
N-Ethyl-p-anisidine	EKT.
2-Ethylanthraquinone	ACS, DUP.
*Ethylbenzene	COR, CSD, DOW, ENJ, FG, KPP, MON, SHC, SIN, SKC, SNT, SOG, TOC, UCC.
o-(p-Ethylbenzoyl)benzoic acid	ACS, DUP.
Ethylbenzyl chloride	BPC.
9-Ethylcarbazole	SDC.
N-Ethyl-1-cyclohexen-1-ylamine	x.
N-Ethylcyclohexylamine	ABB.
3,3'-Ethylenedioxydiphenol	IDC.
Ethylene glycol dibenzenesulfonate	NES.
Ethylenimine	DOW.
2-[N-Ethyl-p-[(6-methoxy-2-benzothiazolyl)azo]-anilino]ethanol.	TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
N-Ethyl-N-(2-methylsulfonamidoethyl)-m-toluidine	WAY.
N-Ethyl-1-naphthylamine	DSC, DUP.
α-Ethyl-3-nitrocinnamic acid	SDW.
p-Ethylphenol	ACY.
*N-Ethyl-N-phenylbenzylamine	ACS, DUP, SDH.
Ethylphenylmalonic acid, diethyl ester	BPC, MAL.
1-(o-Ethylphenyl)-3-methyl-2-pyrazolin-5-one	TRC.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine) (MEP)	UCC.
1-Ethylpiperidine	RIL.
4-Ethylpyridine	RIL.
6-Ethyl-1,2,3,4-tetrahydro-1,1,4,4-tetramethyl-naphthalene.	GIV.
N-Ethyl-m-toluidine	DUP.
N-Ethyl-o-toluidine	DUP.
3-(N-Ethyl-m-toluidino)-1,2-propanediol	EKT.
3-(N-Ethyl-m-toluidino)propionitrile	DUP, EKT.
1-Ethynyl-1-cyclohexanol	ACS, CUC, EKT.
Fluoren-9-one	EK.
Fluorescein (3',6'-Dihydroxyfluoran)	ICC.
1-Fluoro-2,4-dinitrobenzene	EK.
o-Fluorotoluene	EK.
4-Formyl-m-benzenedisulfonic acid	GAF, SDH.
o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)	SDH, VPC.
Furan	DUP, QKO.
Furfuryl alcohol	QKO.
Furfurylamine	MLS.
2-Furoic acid, methyl ester	EK.
2-Furoyl chloride	EK.
N-Glycoloylarsanilic acid, sodium salt	SDW.
Hexachlorobenzene	DVC.
Hexachlorocyclopentadiene	HK, VEL.
1,4,5,6,7,7-Hexachloro-5-nitrobornene-2,3-dicarboxylic anhydride.	VEL.
1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic acid	HK, VEL.
Hexadecachlorophthalocyanine	ICC.
Hexafluorobenzene	WHC.
1,2,3,4,5,6-Hexahydro-8-hydroxy-cis-6,11-dimethyl-2,6-methano-2-benzazocine.	SDW.
Hexahydro-1-methyl-4-phenyl-1H-azepine-4-carbonitrile	WYT.
Hexa(2-methyl-1-aziridinyl)-1,3,5-phosphotriazine	ICO.
Hippuric acid	BPC.
p-Hydrazinobenzenesulfonic acid	GAF, WJ.
3-Hydrazino-5-nitro-p-toluenesulfonic acid [SO_3H=1]	STG.
4-Hydrazino-m-toluenesulfonic acid	GAF.
Hydrazobenzene	x.
Hydroabietyl alcohol	x.
*Hydroquinone, tech	CRS, DA, EKT.
3'-Hydroxyacetophenone	SDH.
3'-Hydroxyacetophenone benzoate	SDH.
6'-Hydroxy-m-acetotoluidide	TRC.
p-Hydroxybenzaldehyde	DOW.
*p-Hydroxybenzenesulfonic acid	DOW, MON, PRD.
p-Hydroxybenzoic acid	HN.
o-(p-Hydroxybenzoyl)benzoic acid	LIL.
3'-Hydroxy-2(N-benzyl-N-methylamino)acetophenone	SDW.
4-Hydroxycoumarin	ABB.
3-[N-(2-Hydroxyethyl)anilino]propionitrile	DUP, ICC.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, acetate	EKT.
3-[N-(2-Hydroxyethyl)anilino]propionitrile, benzoate ester.	DUP.
N-β-Hydroxyethyl-2,4-dihydroxybenzamide	IDC.
3-Hydroxy-N-(2-hydroxyethyl)-2-naphthamide	IDC.
N-[7-Hydroxy-8-[2-hydroxy-5-(methylsulfamoylphenyl)azo]-1-naphthyl]acetamide.	TRC.
6'-Hydroxy-5'-[(2-hydroxy-5-nitrophenyl)azo]-m-acetotoluidide.	TRC.
N-[7-Hydroxy-8-[(2-hydroxy-5-nitrophenyl)azo]-1-naphthyl]-acetamide.	TRC.
7-Hydroxy-8-[[4'-[(p-hydroxyphenyl)azo]-4-biphenylyl]azo]-1,3-naphthalenedisulfonic acid.	TRC.
7-Hydroxy-8-[[4'-[(p-hydroxyphenyl)azo]-3,3'-dimethyl-4-biphenylyl]azo]-1,3-naphthalenedisulfonic acid.	TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
2-Hydroxy-α^1,α^3-mesitylenediol	ACY.
*4-Hydroxymetanilamide	ACS, CMG, DUP, TRC, VPC.
*4-Hydroxymetanilic acid	ACS, CWN, DUP, TRC.
4-(4-Hydroxy-3-methoxybenzylidine)-1-methyl-2,3-pyrrolidinedione.	EK.
4-Hydroxy-1-methylcarbostyril	ICC.
*3-Hydroxy-2-methylcinchoninic acid	DUP, GAF, ICC, TRC.
4-Hydroxy-N^1-methylmetanilamide	TRC.
N-(Hydroxymethyl)phthalimide	ACY.
3-Hydroxy-N-(3-N-morpholinopropyl)-2-naphthamide	IDC.
3-Hydroxy-2,7-naphthalenedisulfonic acid	TCD.
*3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt.	ACS, ACY, GAF, TRC, WJ.
7-Hydroxy-1,3-naphthalenedisulfonic acid	DUP, TCD, TRC.
7-Hydroxy-1,3-naphthalenedisulfonic acid, disodium salt.	ACS, ACY.
4-Hydroxy-2-naphthalenesulfonamide	GAF.
4-Hydroxy-1-naphthalenesulfonic acid	ACS, DUP.
5-Hydroxy-1-naphthalenesulfonic acid	ACS, TRC.
*6-Hydroxy-2-naphthalenesulfonic acid	ACS, SNA, TMS.
*6-Hydroxy-2-naphthalenesulfonic acid, sodium salt	ACY, TRC, WJ.
7-Hydroxy-2-naphthalenesulfonic acid (Cassella's acid)	DUP.
8-Hydroxy-1-naphthalenesulfonic acid	GAF, VPC.
4-Hydroxy-2-naphthalenesulfonic acid, benzene sulfonate, sodium salt.	GAF.
8-Hydroxy-1-naphthalenesulfonic acid, γ-sultone	ACY.
3-Hydroxy-2-naphthanilide (Naphthol AS)	ATL, BUC, PCW.
1-Hydroxy-2-naphthoic acid	ACS.
3-Hydroxy-2-naphthoic acid (8.O.N.)	BUC, DUP, PCW.
3-Hydroxy-2-naphthoic acid, methyl ester	PCW.
3-Hydroxy-2-naphtho-o-toluidide	ATL, BUC, PCW.
N-(2-Hydroxy-1-naphthyl)acetamide	ACY.
*N-(7-Hydroxy-1-naphthyl)acetamide	CMG, GAF, TRC.
1-(2-Hydroxy-1-naphthylazo)-6-nitro-2-naphthol-4-sulfonic acid.	TRC.
4-Hydroxy-7-(p-nitrobenzamido)-2-naphthalenesulfonic acid	DUP, GAF.
2-Hydroxy-5-nitrometanilic acid	TRC.
1-(2-Hydroxy-4-nitrophenylazo)-2-naphthol	TRC.
2-(m-Hydroxyphenoxy)ethanol	BJL.
3-[4-(4'-Hydroxyphenylazo)-2,5-dimethoxyphenylazo]-benzenesulfonic acid.	TRC.
3-Hydroxy-4-(phenylazo)-2-naphthoic acid	ICC.
11α-Hydroxyprogesterone	UPJ.
4-Hydroxypropiophenone	MLS.
α,α'-[(α-Hydroxy-p-sulfobenzylidene)bis[(3-methyl-p-phenylene)(ethylimino)]]di-m-toluenesulfonic acid.	TRC.
1-Hydroxy-4-p-toluidinoanthraquinone	ICI.
2-Imidazolidinone modifications	RH.
*1,1'-Iminobis[4-aminoanthraquinone]	ACY, DUP, GAF, ICI, MAY, TRC.
1,1'-Iminobis[4-benzamidoanthraquinone]	ACY, MAY.
1,1'-Iminobis[5-benzamidoanthraquinone]	ICI, TRC.
7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid]	ACS, DUP.
*1,1'-Iminobis[4-nitroanthraquinone]	ACY, DUP, ICI, MAY, TRC.
*1,1'-Iminodianthraquinone (1,1'-Dianthrimide)	ACY, DUP, GAF, ICI, TRC.
Indole-3-acetonitrile	BJL.
Indole-2,3-dione	ACS.
5-Iodoanthranilic acid	SDW.
Isobutylbenzene	PLC.
*Isocyanic acid derivatives:	
Bitolylene diisocyanate (TODI)	UPJ.
Cyclohexyl isocyanate	OTC.
Dianisidine diisocyanate (DADI)	CWN, UPJ.
3,4-Dichlorophenyl ester	DUP.
Dicyclohexylmethane-4,4'-diisocyanate	DUP.
*Diphenylmethane-4,4'-diisocyanate (MDI)	ACS, DUP, MOB, UPJ.
Phenylisocyanate	CWN, MOB.
Polyisocyanates (complex)	MOB.
*Polymethylene polyphenylisocyanate	KAI, MOB, UPJ.
Toluene 2,4-diisocyanate	DUP, MOB, UCC.
Toluene 2,4- and 2,6-diisocyanate (65/35 mixture)	DUP, MOB.
*Toluene 2,4- and 2,6-diisocyanate (80/20 mixture)	ACS, DUP, MOB, OMC, RUC, UCC, WYN.
p-Tolyl ester	EK.
Other	DUP, EK, MOB, OTC, UCC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Isonicotinic acid, methyl ester	RIL.
Isonicotinonitrile	RIL.
Isooctylphenol	PRD.
Isophthalic acid (Benzene-1,3-dicarboxylic acid)	ACC, SOC.
Isophthalic acid, diallyl ester	FMP.
Isophthalic acid, dimethyl ester	MTR.
Isophthalic acid, diphenyl ester	BJL.
Isophthaloyl chloride	DUP.
Isopropylbenzyl chloride	BPC.
Isopropylcresol	KPT.
4,4'-Isopropylidenebis[2,6-dibromophenol] (Tetrabromobisphenol A).	DOW.
4,4'-Isopropylidenebis[2,6-dichlorophenol] (Tetrachlorobisphenol A).	DVC.
5,5'-Isopropylidenebis(2-hydroxy-m-xylene-α,α'-diol)	ARK.
*4,4'-Isopropylidenediphenol (Bisphenol A)	DOW, GE, MON, SHC, UCC.
4,4'-Isopropylidenediphenol, ethoxylated	APD.
4,4'-Isopropylidenediphenol, propoxylated	APD.
o-Isopropylphenol	TNA.
4-Isopropyl-m-phenylenediamine	DUP.
Isoviolanthrone (Isodibenzanthrone)	ACY, DUP, GAF.
*Leuco quinizarin (1,4,9,10-Anthratetrol)	AAP, ACS, ACY, EKT, ICC, TRC.
2,4-Lutidine	ACP, KPT, RIL.
3,4-Lutidine	RIL.
Mandelonitrile	KF.
*Melamine	ACP, ACY, FIS, RCI.
*dl-p-Mentha-1,8-diene (Limonene)	ARZ, GIV, HN, NCI.
p-Mentha-1,4(8)-diene	GIV.
p-Menth-1-ene	GIV.
*o-Mercaptobenzoic acid (Thiosalicylic acid)	EVN, LIL, MED, WAY.
Metanilamide	CMG, VPC.
*Metanilic acid (m-Aminobenzenesulfonic acid)	ACY, DUP, TRC.
1-Methoxyanthraquinone	GAF.
6-(2'-Methoxybenzenesulfonamido)-2-benzoxazolinone	SDC.
4-Methoxymetanilic acid	ACY, VPC.
N-(2-Methoxy-1-naphthyl)acetamide	TRC.
(m-Methoxyphenyl)acetic acid	SDW.
(p-Methoxyphenyl)acetic acid	CTN.
5-[n-(2'-Methoxy)phenyl]-2-aminophenol	SDC.
4-Methoxy-m-phenylenediamine sulfate	WAY.
4'-Methoxypropiophenone	LIL.
1-(Methylamino)anthraquinone	AAP, ACS, ACY, DUP, GAF, ICI.
1-(Methylamino)-4-p-toluidinoanthraquinone	GAF, ICI.
N-Methylaniline	ACY, DUP.
2-(N-Methylaniline)ethanol	GAF.
3-(N-Methylanilino)propionitrile	DUP.
5-Methyl-o-anisidine [NH_2=1]	DUP, SDC.
m-Methylanisole	GIV.
N-Methylanthranilic acid	GIV, ICC.
2-Methylanthraquinone	ACS, ACY.
3-Methylbenzo[f]quinoline	ACY.
3-Methylbenzo[f]quinoline-8,10-disulfonic acid	DUP.
2-Methylbenzothiazole	FMT.
2-Methylbenzyl alcohol	UCC.
N-Methylbenzylamine	MLS, SDW.
Methylbenzyl ether	UCC.
5-(1-Methylbutyl)barbituric acid	LIL.
3-Methylcholanthrene	EK.
Methylcyclohexane	PLC.
Methylcyclopentadiene	ENJ, VEL.
N-Methyldicyclohexylamine	ABB.
4-Methyl-α,α-diphenyl-1-piperazineethanol, dihydrochloride.	ABB.
N-Methyleneaniline	DUP.
4,4'-Methylenebis[2-chloroaniline]	DUP.
4,4'-Methylenebis[N,N-diethylaniline]	ACY, GAF, TRC.
*4,4'-Methylenebis[N,N-dimethylaniline] (Methane base)	ACY, DSC, DUP, GAF, SDH, x.
4,4'-Methylenebis[N,N-dimethyl-3-nitroaniline]	GAF.
2,2'-Methylenebis(6-nonyl-p-cresol)	ACY.
4,4'-Methylenedianiline	ACS, DOW, DUP, MOB.
5,5'-Methylenedisalicylic acid	HN.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
N-Methylformanilide	MLS.
Methylhydroquinone	EKT.
6-Methyl-2-(2-methyl-6-quinolyl)-7-benzothiazolesulfonic acid.	DUP.
5-Methyl-4-nitro-o-anisidine	PCW.
4-Methyl-2-nitroanisole	SDC.
*2-Methyl-1-nitroanthraquinone	ACS, DUP, GAF, ICI.
2-Methyl-5-nitroimidazole	RDA.
N-Methyl-N-nitroso-p-toluenesulfonamide	ALD, EK.
2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	VEL.
Methylnorbornene-2,3-dicarboxylic anhydride, isomers	ACS.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide	CMG, VPC.
m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	TRC, VPC.
*p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid	AAP, ACY, CMG, DUP, GAF, TRC, VPC.
3-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,5-naphthalenedisulfonic acid.	TRC.
6-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-1,3-naphthalene disulfonic acid.	TRC.
*4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid [SO_3H=1].	CMG, GAF, TRC, VPC.
2-Methyl-5-phenylbenzoxazole	EK.
1-Methyl-1-phenylhydrazine	EK.
1-Methyl-4-phenylisonipecotic acid	SDW.
5-Methyl-3-phenyl-4-isoxazolecarboxylic acid	ICO.
*3-Methyl-1-phenyl-2-pyrazolin-5-one (Developer Z)	ACS, ACY, DUP, GAF, SDC, SDH, SDW, VPC.
3-Methylphthalic anhydride	EK.
1-Methylpiperazine	WTC.
4-Methyl-1-piperazineacetic acid, methyl ester	ABB.
N-Methyl-N-(2-propynl)benzylamine	ABB.
3-Methyl-2-pyrazolin-5-one	DUP.
1-Methylpyrrole	DUP.
8-Methylquinoline	EK.
*α-Methylstyrene	ACP, CLK, DOW, HPC, SKO, WTC.
ar-Methylstyrene (Vinyltoluene)	DOW.
2-(Methylsulfonyl)-4-nitroaniline	EKT.
4-(Methylthio)-m-cresol	CRZ.
3-Methylthiophene	SDW.
p-(Methylthio)phenol	CRZ.
3-Methyl-6-p-toluidino-7H-dibenz[f,ij]isoquinoline-2,7(3H)-dione.	GAF, IC1.
3-Methyl-1-m-tolyl-2-pyrazolin-5-one	DUP.
*Naphthalene, solidifying at 79° C. or above (refined flake) (from domestic crude).	ACS, KPT, RIL.
1,5-Naphthalenediol (1,5-Dihydroxynaphthalene)	ACS.
1,5-Naphthalenedisulfonic acid	ACS.
2,7-Naphthalenedisulfonic acid	ACS, DUP.
1-Naphthalenesulfonic acid	TRC.
1-Naphthalenesulfonic acid, sodium salt	TRC.
2-Naphthalenesulfonic acid	ACS, ACY.
2-Naphthalenesulfonic acid, sodium salt	ACY.
1-Naphthalenesulfonyl chloride	EK.
2-Naphthalenesulfonyl chloride	DUP.
1,4,5,8-Naphthalenetetracarboxylic acid	GAF, HST, TRC.
1,3,6-Naphthalenetrisulfonic acid	GAF.
Naphthalic anhydride	DUP.
Naphthalimide	ACS, DUP, GAF.
*1-Naphthol (α-Naphthol)	ACS, DUP, UCC.
2-Naphthol, tech. (β-Naphthol)[1]	ACS, ACY, DUP, SW.
p-Naphtholbenzein	EK.
1,2-Naphthoquinone	EK.
Naphthostyril	ACS.
*Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid	ACS, CMG, GAF, TRC, VPC.
1-Naphthylamine (α-Naphthylamine)	ACS, DUP.
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenol)-2-naphthylamine).	SDC.
2-(Naphthylthio)acetic acid	ACY.
Nicotinonitrile (3-Cyanopyridine)	NEP, RIL.
Nitro-aceanthra[2,1-a]aceanthrylene-5,13-dione	ICI.
3'-Nitroacetanilide	GAF, TRC.
4'-Nitroacetanilide	GAF, SAL, TRC.
4'-Nitro-o-acetanisidide	DUP.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
3'-Nitro-p-acetophenetidide	AAP.
3'-Nitroacetophenone	CTN, SDH.
m-Nitroaniline	ACY, x.
o-Nitroaniline	AAP, MON.
*p-Nitroaniline	AAP, MON, UPM.
p-Nitroaniline bisulfate	BJL.
2-(o-Nitroaniline)ethanol	MED.
2-Nitro-p-anisidine [NH_2=1]	DUP, SDH.
4-Nitro-o-anisidine [NH_2=1]	DUP, SDH.
5-Nitro-o-anisidine [NH_2=1]	ACY, ALL, BUC, DUP.
o-Nitroanisole	DUP, MON.
p-Nitroanisole	DUP.
4-Nitroanthranilic acid	DUP.
5-Nitroanthranilic acid	TRC.
1-Nitroanthraquinone	ACY, MAY.
2-(4-Nitro-2-anthraquinonyl)anthra[2,3-d]-oxazole-5,10-dione.	ACS, GAF.
m-Nitrobenzaldehyde	SDH.
*Nitrobenzene	ACS, ACY, DUP, FST, MOB, MON, RUC.
*m-Nitrobenzenesulfonic acid	ACS, ACY, DUP.
*m-Nitrobenzenesulfonic acid, sodium salt	GAF, MON, MRA.
p-Nitrobenzenesulfonyl chloride	EK.
5-Nitro-2-benzimidazolinone	DUP.
*m-Nitrobenzoic acid	HK, SAL, SDH, WAY.
*m-Nitrobenzoic acid, sodium salt	SAL, WAY.
p-Nitrobenzoic acid	DUP, SAL.
m-Nitrobenzotrifluoride	NES.
m-Nitrobenzoyl chloride	HK, ICO.
p-Nitrobenzoyl chloride	HK.
4-(p-Nitrobenzyl)pyridine	EK.
4'-Nitro-4-biphenylcarboxylic acid	DUP, TRC.
4-Nitro-sec-butylbenzene	WAY.
2-Nitro-p-cresol	SW.
2-Nitro-p-cymene	EK.
Nitrodiphenylamine	ACY, MON.
5-Nitro-2-furanmethanediol, diacetate	NOR.
5-Nitroimidazole	PCW.
5-Nitroisophthalic acid	FIS, GAF.
1-Nitronaphthalene	ACS, DUP.
3-Nitro-1,5-naphthalenedisulfonic acid	GAF, TRC.
4-Nitronaphthalic anhydride	ACS, GAF.
*7(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid.	ACS, GAF, TRC, VPC.
4-Nitrooxanilic acid	DUP.
p-Nitrophenetole	PCW.
o-Nitrophenol	DUP, MON.
*p-Nitrophenol	DUP, MON, SDC, UPM.
*p-Nitrophenol, sodium salt	DUP, MON, UPM.
(p-Nitrophenyl)acetic acid	BPC.
4'-(p-Nitrophenyl)acetophenone	DUP, GAF.
4-[(p-Nitrophenyl)azo]-o-anisidine	AAP.
2-Nitro-p-phenylenediamine	FIS.
4-Nitro-o-phenylenediamine	DUP, FMT.
2-Nitro-1,4-phenylenediamine	WAY.
(p-Nitrophenyl)hydrazine	EK, RSA.
2,2'-(m-Nitrophenylimino)diethanol	DUP.
2,2'-(m-Nitrophenylimino)diethanol, diacetate ester	DUP.
2-(p-Nitrophenyl)-2H-naphtho[1,2-d]triazole-6,8-di-sulfonic acid.	TRC.
2-(p-Nitrophenyl)-1-octadecyl-5-benzimidazolesulfonic acid.	GAF.
1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid	DUP, VPC.
3-Nitrophthalic anhydride	EK.
4-Nitrophthalimide	SDC.
5-Nitrosalicylaldehyde	EK.
3(and 5)-Nitrosalicylic acid	GAF.
L-Nitroso-2-naphthol	EK.
p-Nitrosophenol	ACS, ACY, DUP, SDC.
β-Nitrostyrene	CWN.
4-Nitro-4'-(5-sulfo-2H-naphthol[1,2-d]triazol-2-yl)-2,2'-stilbenedisulfonic acid.	TRC.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
m-Nitrotoluene	ACS, DUP, FST.
o-Nitrotoluene	ACS, DUP, FST.
*p-Nitrotoluene	ACS, DUP, FST.
Nitrotoluene mixtures	ACS, DUP, FST.
S-Nitro-o-toluenesulfonanilide	GAF.
p-Nitrotoluenesulfonic acid	GGY.
*3-Nitro-p-toluenesulfonic acid [SO_3H=1]	AAP, CMG, TRC.
*5-Nitro-o-toluenesulfonic acid [SO_3H=1]	ACS, ACY, DUP, GAF, SDH, TRC.
3-Nitro-p-toluic acid, methyl ester	SDH.
2-Nitro-p-toluidine [NH_2=1]	DUP, SW.
*5-Nitro-o-toluidine [NH_2=1]	BUC, DUP, PCW, SDH.
5-Nitro-2-p-toluidinobenzenesulfonic acid	TRC.
3-Nitrotoluoyl chloride	x.
16-Nitroviolanthrone	ICI, MAY.
4-Nitro-m-xylene	DUP.
Nitroxylenes, mixed	ACS.
Nonyl-dinonylphenol, mixture	GAF, JCC.
*Nonylphenol	GAF, JCC, MON, PRD, RH, STP.
5-Norbornene-2,3-dicarboxylic anhydride	VEL.
Octylphenol	RH.
Octylphenyl acid phosphate	SM.
Oxalacetic acid, diethyl ester, (p-sulfophenyl)hydrazone	TRC.
Oxanilide	EK, WSN.
*1-[(7-Oxo-7H-benz[de]anthracen-3-yl)amino]anthraquinone	ACY, DUP, GAF, IC1, MAY, TRC.
*1,1'-[(7-Oxo-7H-benz[de]anthracen-3,9-ylene)diimino]di-anthraquinone.	DUP, GAF, ICI, MAY, TRC.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid	ACS.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester.	GAF, SDW.
*5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	AAP, GAF, VPC.
4,4'-Oxydianiline	x.
Penicillin, N-ethylpiperidine salt	MRK.
1,1,3,3,5-Pentamethylindan	GIV.
Pentylnaphthalenes (Amylnaphthalenes)	PAS.
o-Pentylphenol (o-Amylphenol)	PAS.
p-tert-Pentylphenol	x.
3,4,9,10-Perylenetetracarboxylic acid	ACS, GAF.
3,4,9,10-Perylenetetracarboxylic 3,4:9,10-diimide	ACS, DUP, GAF.
Phenethylamine	MLS.
Phenethylamine sulfate	MLS.
o-Phenethylbenzoic acid	LIL.
o-Phenetidine	MON.
p-Phenetidine	MON.
*Phenol:	
*Natural:	
*From coal tar:[2]	
39° C., m.p	KPT, PRD.
82%-84%	ACP, KPT.
All other	ACP, KPT.
*From petroleum	MER, NPC, PIT, PRD, SW.
*Synthetic:	
By caustic fusion: U.S.P	MAL, MON, RCI.
From chlorobenzene by liquid-phase hydrolysis: U.S.P	DOW.
From chlorobenzene by vapor-phase hydrolysis: U.S.P	HKD, UCC.
*From cumene by oxidation: U.S.P	ACP, CLK, HPC, MON, SHC, SKO, SOC, UCC.
1-Phenol-4-sulfonic acid	UPF.
Phenolsulfonaphthalein	EK.
Phenolsulfonaphthalein, sodium salt	EK.
Phenothiazin-2-yl-1-propane 1-(Phenothiazin-2-yl)-propanone.	WYT.
Phenoxyacetic acid, sodium salt	BPC.
2-Phenoxypropanol	ICO.
2-Phenoxypropionic acid	ICO.
2-Phenoxypropionyl chloride	ICO, OPC.
Phenylacetic acid (α-Toluic acid)	BPC, GIV, MAL.
Phenylacetic acid, ethyl ester, tech	BPC.
Phenylacetic acid, methyl ester	BPC.
Phenylacetic acid, potassium salt	BPC, OPC.
Phenylacetic acid, sodium salt	BPC, OPC.
*Phenylacetonitrile (α-Tolunitrile)	BPC, OPC, SDW, UOP.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
4'-Phenylacetophenone	DUP.
Phenacetyl chloride	ICO.
N-Phenylanthranilic acid	SDW.
2-Phenylanthra[2,3-d]oxazole-5,10-dione	GAF.
*p-Phenylazoaniline (C.i. Solvent Yellow 1) and hydrochloride.	ACS, ACY, DUP, GAF.
p-Phenylazoaniline sulfate	DUP.
4-(Phenylazo)diphenylamine	EK, SDH.
4-(Phenylazo)-1-naphthylamine	DUP.
S-(Phenylazo)salicylic acid	TRC.
1-Phenyl-1,3-butanedione	EK.
2-Phenylbutyric acid	BPC.
α-Phenyl-o-cresol	RBC.
1-Phenylcyclopentanecarboxylic acid	SK.
1-Phenyldecane (Decylbenzene)	ACS.
1-Phenyldodecane	EK.
m-Phenylenediamine	ACS, ACY, DUP, GAF.
o-Phenylenediamine	DUP, FMT, MEE, TRC.
*p-Phenylenediamine	ACY, BFG, SDC.
d-Phenylephrine base	SDW.
dl-Phenylephrine base	SDW.
Phenyl-1,2-ethanediol	ARA.
2-Phenylethenesulfonic acid, sodium salt (β-Styrenesulfonic acid, sodium salt).	SHL.
Phenyl ether (Diphenyl oxide)	DOW.
Phenyl ether, chloromethylated	BPC.
d-Phenylglycine	OTC.
d-(-)-2-Phenylglycine and derivatives	KF.
d-(-)Phenylglycine, N-carboxy anhydride	OTC.
dl-2-Phenylglycine (racemic)	KF.
Phenylglycine, sodium salt	ACS.
Phenylglycol ethers	UCC.
d-(-)-2-Phenylglycyl chloride	UPJ.
d-(-)-2-Phenylglycyl hydrochloride	OTC.
S-Phenylhydantoin	ABB.
Phenylhydrazine hydrochloride	EK, VPC.
2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine)	EKT, GAF.
3,3'-[(Phenyl)imino]dipropionitrile	DUP.
Phenylmagnesium bromide	ARA.
Phenylmalonic acid, diethyl ester	BPC.
o-Phenylphenol	DOW, RCI, RSA.
o-Phenylphenol, chlorinated	DOW.
o-Phenylphenol, sodium salt	DOW.
p-Phenylphenol	DOW.
N-Phenyl-p-phenylenediamine	USR, x.
Phenylphosphinic acid	SFI.
Phenylphosphonothioic dichloride	SFI.
Phenylphosphonous acid	SFI.
Phenylphosphonous acid, sodium salt	SFI.
Phenylphosphorous dichloride	SFI.
1-Phenylpiperazine	RSA.
1-Phenyl-1,2-propanedione, 2-oxime	NEP, ORT.
Phenyl-2-propanone	ORT, SK.
N-3-Phenylpropyl-p-toluidine	EK.
dl-Phenylsuccinic acid	PD.
Phenyl sulfone	NES.
1-Phenyl-2-thiourea	EK.
Phenylundecanoic acid	EK.
Phloroglucinol	MRT.
1(2H)-Phthalazinone	ACS, x.
Phthalic acid	EK, KF, MEE.
Phthalic acid, diallyl ester	FMP.
*Phthalic anhydride	ACP, GRH, KPS, MON, PCC, PTO, RCI, SOC, STP, SW, UCC, WTC.
Phthalide	FMT.
Phthalimide	DUP, MEE.
Phthalimide, potassium salt	EK.
[Phthalocyaninato(2-)]aluminum	GAF.
[Phthalocyaninato(2-)]cobalt	GAF.
[Phthalocyaninato(2-)]copper	GAF, ICC, ICI.
[Phthalocyaninato(2-)]iron	DUP.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Phthalocyaninetetrasulfonyl chloride, copper derivative	DUP.
Phthaloyl chloride (Phthalyl chloride)	DUP, MON.
3-Picoline-N-oxide	RIL.
4-Picoline-N-oxide	RIL.
*Picolines:[2]	
*2-Picoline (α-Picoline)	ACP, KPT, RIL, UCC.
3-Picoline (β-Picoline)	NEP, RIL.
4-Picoline (γ-Picoline)	NEP, RIL, UCC.
Picoline (3,4-mixture)	ACP, KPT.
Picolinic acid	NEP.
Picolinonitrile (2-Cyanopyridine)	NEP.
3-Picolylamine	RIL.
Picric acid (Trinitrophenol)	SDC.
2,5-Piperazinedione	EK.
Piperazine mixture, crude[1]	JCC.
*Piperidine	ABB, DUP, MRK, RIL.
3-Piperidinopropiophenone hydrochloride	ACY.
Polybromochloro[phthalocyaninato(2-)]copper	GAF.
Polychlorobiphenyl	MON.
Polychloro[phthalocyaninato(2-)]copper	GAF.
Poly (Methylenephenylene) polyamine	KAI.
Primuline base	ACS, DUP.
Primulinesulfonic acid	ATL.
N-Propionylphenothiazine	ABB.
*Propiophenone	LIL, OPC, ORT, UOP.
Propargyl - benzene - sulfonate	ABB.
2-Propyl-4-amino-5-methoxymethylpyrimidine amino	MRK.
n-Propylbenzene	TNA.
8,16-Pyranthrenedione	CMG, ICI, TRC.
Pyrazole	LIL.
Pyridine, refined:[2]	
*2° Pyridine	ACP, KPT, NEP, RIL.
Other grades	KPT.
Pyridine hydrochloride	EK.
3-Pyridinemethanol	RIL.
Pyridine-N-oxide	RIL.
2-Pyridinol	NEP.
3-Pyridinol	NEP.
2(1H)-Pyridone	FMT.
2-Pyrimidinol	GGY.
2-Pyrrolidinone	GAF.
Quinaldine	ACS, ACY.
Quinoline:	
1° and 2° Quinoline	ACP, KPT.
Other grades	EK.
2,4-Quinolinediol	DUP.
8-Quinolinol (8-Hydroxyquinoline, tech.)	FIS.
Quinophthalone (Quinoline yellow, base)	ACS, DUP.
Resorcinol, monoacetate (nonmedicinal grade)[1]	AAP.
Resorcinol, tech[1]	KPT, UPF.
β-Resorcylic acid	ACY, KPT.
β-Resorcylic acid, lead salt	ACY.
*Salicylaldehyde	DOW, HN, MTR, RDA.
Salicylaldehyde oxime	EK.
Salicylanilide	CFC.
*Salicylic acid, tech	CFC, DOW, HN, MON, SDH.
Salicylic acid, ammonium chromium complex	TRC.
Salicylic acid, sodium salt (crude)	DOW.
Salicylideneaminoguanidine oleate	DUP.
Sodium phenoxide	DUP.
*Styrene, all grades	ACC, CSD, DOW, ELP, ENJ, FG, KPP, MCB, MON, SHC, SKC, SNT, UCC.
5-Sulfamoylanthranilic acid	TRC.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt	ACS, ACY, CTN, DUP.
Sulfapyridine, tech[1]	AAC.
4-Sulfoanthranilic acid	CMG, TRC.
5-Sulfoanthranilic acid	ICI.
5-Sulfoisophthalic acid, 1,3-dimethyl ester	PCW.
5-Sulfoisophthalic acid, sodium salt	PCW.
N,5'-Sulfonyldianthranilic acid	TRC.
4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)	MON, UPF, x.
4-Sulfophthalic acid	HSC.

See footnotes at end of table.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables I and 2)
*Terephthalic acid	ACC, DUP, EKT.
Terephthalic acid, dihydrazide	DUP.
*Terephthalic acid, dimethyl ester	ACC, DUP, EKT, HPC.
Terephthalic acid, diphenyl ester	BJL.
Terephthalonitrile	EK.
Terephthaloyldiacetic acid, diethyl ester	PCW.
Terphenyl (Phenylbiphenyl)	MON.
1,2,4,5-Tetraaminobenzene tetrahydrochloride	BJL.
[4,4',4'',4'''-Tetraaminophthalocyaninato(2-)]copper	DUP, SDC.
3',3'',5',5''-Tetrabromophenolphthalein, ethyl ester	EK.
Tetrabromophthalic anhydride	MCH.
Tetrabromo-8,16-pyranthrenedione	ACS.
*1,4,5,8-Tetrachloroanthraquinone	ACS, DUP, GAF.
1,2,4,5-Tetrachlorobenzene	DOW, HK.
1,2,4,5-Tetrachloro-3-nitrobenzene	SDH.
Tetrachlorophthalic acid, di(2-ethyl-hexyl)ester	SDW.
Tetrachlorophthalic anhydride	MON.
α,α,2,6-Tetrachlorotoluene	DUP.
Tetrachloroviolanthrone	GAF.
Tetrafluoro-meta-phenylenediamine	WHC.
Tetrahydrofuran	DUP, QKO.
Tetrahydrofurfuryl methacrylate	SAR.
1,2,3,4-Tetrahydro-4-oxo-2-naphthoic acid	BJL.
*1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative	ACS, GAF, ICC, TRC.
1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone (Pentanthrimide).	ACS, GAF.
2-(1,1,3,3-Tetramethylbutyl)-p-cresol	ACY.
p-(1,1,3,3-Tetramethylbutyl)phenol	GAF.
3,3',5,5'-Tetramethyldiphenoquinone	DUP.
N,N,N',N'-Tetramethyl-p-phenylenediamine	EK.
[4,4',4'',4'''-Tetranitrophthalocyaninato(2-)]copper	DUP, SDC.
2-(2-Thenylamino)pyridine	ABB.
3,3'-Thiobis[7H-benz[de]anthracen-7-one]	DUP, GAF, ICI.
4,4'-Thiodianiline	ACY.
6,6'-Thiodimetanilic acid	ACS, GAF.
Thiopheneacetic acid	BPC.
2-Thiopheneacetyl chloride	LIL.
2-Thiophenecarboxaldehyde	ABB.
Thiosalicyclic acid	AMB.
sym-Thymol	GIV.
*Toluene-2,4-diamine (4-m-Tolylenediamine)	ACS, ACY, DUP, GAF, OMC, RUC, UCC.
Toluene-2,5-diamine sulfate	EK, WAY.
Toluene-2,4-disulfonic acid	GAF, SDH.
o-Toluenesulfonamide	MON.
p-Toluenesulfonamide	MON.
o(and p)-Toluenesulfonic acid	ACS, MON, UPF.
p-Toluenesulfonic acid	UPF, x.
p-Toluenesulfonic acid, methyl ester	ICI.
p-Toluenesulfonic acid, monohydrate	NES.
p-Toluenesulfonyl chloride	MON.
m-Toluic acid	CWL.
o-Toluic acid	CWL.
p-Toluic acid	CWL, EK.
m-Toluidine	ACS, DUP.
*o-Toluidine	ACS, DUP, FST.
o-Toluidine hydrochloride	AAP.
p-Toluidine	DUP.
p-Toluidine hydrochloride	EK.
Toluidines, mixed	DUP.
m-Toluidinomethanesulfonic acid	VPC.
o-Toluidinomethanesulfonic acid	TRC, VPC.
B-p-Toluidino-1-naphthalenesulfonic acid	ACS.
*o-(p-Toluoyl)benzoic acid	ACS, ACY, DUP.
N-(p-Tolylazo)sarcosine	BUC, GAF.
*4-(o-Tolylazo)-o-toluidine (C.I. Solvent Yellow 3)	ACS, ALL, DUP, SDH.
4-(o-Tolylazo)-o-toluidine hydrochloride	GAF.
1-p-Tolyldodecane	x.
2,2'-(m-Tolylimino)diethanol	EKT.
p-Tolylmercuric chloride	EK.
N,N,N-Tribenzylamine	MLS.
3,4',5-Tribromosalicylanilide	PCW.
1,2,3(and 1,2,4)-Trichlorobenzene	PPG.

TABLE 2.--Cyclic intermediates: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables I and 2)
*1,2,4-Trichlorobenzene	DOW, DVC, HK, SVT.
N,2,6-Trichloro-p-benzoquinoneimine	EK.
Trichlorophenylsilane	DCC, UCC.
α,α,α-Trichlorotoluene (Benzotrichloride)	HK, VEL.
α,2,4-Trichlorotoluene	HN.
α,2,4(and α,2,6)-Trichlorotoluene	BPC.
α,3,4-Trichlorotoluene	HN.
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	ACY, GGY, NIL.
1,3,5-Triethylbenzene	DUP.
2-(Trifluoromethyl)phenothiazine	SK.
α,α,α-Trifluoro-N-phenyl-m-toluidine (3-(Trifluoromethyl)-diphenylamine).	SK.
α,α,α-Trifluorotoluene	HK.
α,α,α-Trifluoro-m-toluidine	MEE.
α,α,α-Trifluoro-o-toluidine	MEE.
1,2,4-Trihydroxyanthraquinone	GAF.
2,3,5-Triiodobenzoic acid	GAF.
2,4,5-Trimethylaniline (Pseudocumidine)	ACS.
2,3,3-Trimethyl-3H-indole	GAF.
*1,3,3-Trimethyl-Δ^2,α-indolineacetaldehyde	DUP, GAF, VPC.
*1,3,3-Trimethyl-2-methyleneindoline (Trimethyl base)	ACS, DUP, GAF, VPC.
Trimethylphenylammonium iodide	EK.
α,α',2-Trimethyl-1,4-piperazinediethanol	WYN.
2,4,6-Trimethylpyridine	KPT, RIL.
1,3,5-Trinitrobenzene	EK.
2,4,6-Trinitrobenzenesulfonic acid	EK.
2,4,7-Trinitrofluoren-9-one	EK.
Triphenylamine	EK.
Triphenylmethane	EK.
Triphenylmethanol	EK.
α,α',α''-Tris(dimethylamino)mesitol	RH, TKL.
Tris(2-isocyanata-para-tolyl)isocyanurate	DUP.
Tris(2-methyl-1-aziridinyl)phosphine oxide	ICC, ICO.
Tri-p-tolyphosphine	EK.
m-Ureidoaniline	ICI.
*7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J Acid Urea).	ACS, ACY, CMG, GAF, TCD, TRC, VPC.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	GIV, LIL, SLV.
Veratryl alcohol (3,4-Dimethoxybenzyl alcohol)	LIL.
p-Vinylbenzenesulfonic acid (Styrene sulfonate sodium)	DUP.
2-Vinylcyclohexene	UCC.
4-Vinylcyclohexene	PLC.
2,2'-Vinylenebis[benzimidazole]	TRC.
5-Vinyl-2-picoline (MVP)	PLC.
2-Vinylpyridine	NEP, RIL.
4-Vinylpyridine	RIL.
*Violanthrone (Dibenzanthrone)	ACY, ATL, DUP, GAF, ICI, MAY, SDC, TRC.
Xanthene-9-carboxylic acid	MAL.
m-Xylene	SOC.
*o-Xylene	ASH, CCP, COR, CSD, CSO, CSP, DLH, ENJ, GRS, MON, PPR, SIN, SKC, SNT, SOC, TOC.
*p-Xylene	ACC, CSD, ENJ, HCR, PPR, SHC, SHO, SIN, SNT, SOC, SOG, TOC.
2,5-Xylenesulfonic acid	EK, NES.
Xylenol crystals	ACP.
2,6-Xylenol, synthetic	KPT.
Xylenols:	
Medium b.p	NPC, PRD.
Not classified as to b.p	GE, PRD.
Xylidines:	
2,4-Xylidine (m-4-Xylidine)	ACS, DUP.
2,5-Xylidine (p-Xylidine)	ACS, DUP.
2,6-Xylidine	DUP.
Original mixture	ACS, DUP.
4-(2,4-Xylylazo)-o-toluidine	ACS.
4-(2,5-Xylylazo)-o-toluidine	ACY.
4-(2,4-Xylylazo)-2,5-xylidine	ACS.
All other cyclic intermediates	ARA, BPC, CUC, CWN, DUP, FG, GAF, ICC, LIL, MON, PAS, PCW, PIC, SFA, VEL, x.

[1] See report on Medicinals for data on medicinal grade of this item.

[2] 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 1967*, Feb. 4, 1969.

Domestic synthetic dyes are derived in whole or in part from cyclic intermediates. Approximately two-thirds of the dyes consumed in the United States are used by the textile industry to dye natural and synthetic fibers or fabrics; about one-sixth is used for coloring paper; and the rest is used chiefly in the production of organic pigments and in the dyeing of leather and plastics. Of the several thousand different synthetic dyes that are known, more than one thousand are manufactured by one or more domestic producers. The large number of dyes results from the many different types of materials to which dyes are applied, the different conditions of service for which dyes are required, and the costs that a particular use can bear. Dyes are sold as pastes, powders, lumps, and solutions; concentrations vary from 6 percent to 100 percent. The concentration, form, and purity of a dye are determined largely by the use for which it is intended.

Total domestic production of dyes in 1968 amounted to 226 million pounds, or 9.8 percent more than the 206 million pounds produced in 1967 (table 1). Sales of dyes in 1968 amounted to 215 million pounds, valued at $370 million, compared with 199 million pounds, valued at $332 million, in 1967. In terms of quantity, sales of dyes in 1968 were 8.1 percent larger than in 1967 and in terms of value, 11.5 percent larger. The average unit value of sales of all dyes in 1968 was $1.72 a pound, or 3.0 percent greater than the $1.67 a pound reported in 1967.

For many important dyes, for which statistics are given in table 1, production was larger in 1968 than in 1967. The output of Mordant Black 11 more than tripled in 1968, from 359,000 pounds in 1967 to 1,217,000 pounds in 1968. The output of Disperse Yellow 42 and Vat Orange 15 nearly doubled in 1968 compared with 1967. Disperse Yellow 42 production increased from 650,000 pounds to 1,223,000 pounds and Vat Orange 15 production increased from 639,000 pounds to 1,206,000 pounds. Other important dyes whose output in 1968 was substantially larger than in 1967 were Acid Blue 9 (83.3 percent), Vat Yellow 2 (49.4 percent), Direct Green 6 (47.7 percent), Acid Red 1 (45.7 percent),Direct Brown 95 (42.2 percent), Direct Orange 72 (29.1 percent), Vat Orange 1 (28.1 percent), Basic Violet 1 (28.0 percent), Direct Blue 2 (25.6 percent), and Direct Black 38 (19.5 percent).

On the other hand, the output of a few important dyes was smaller in 1968 than in 1967. Production of Vat Green 8 was 959,000 pounds in 1968, or 61.5 percent less than the 2,489,000 pounds produced in 1967. The output of Disperse Yellow 34 was 31.6 percent smaller in 1968 than in 1967; that of Disperse Yellow 33 was 31.2 percent smaller; that of Vat Black 25 was 29.8 percent smaller; and that of Vat Green 3 was 15.5 percent smaller.

Table 2 summarizes production and sales of dyes in 1968, by class of application. Five application classes of dyes accounted for approximately three-fourths of all the dyes produced. Vat dyes accounted for 24.2 percent of the total; direct dyes, for 16.2 percent; fluorescent brighteners, for 13.8 percent; acid dyes, for 9.9 percent; and disperse dyes, for 9.8 percent. Of these five classes of dyes, the output of acid dyes was 28.3 percent larger in 1968 than in 1967; the output of disperse dyes was 21.3 percent larger; the output of direct

dyes was 13.6 percent larger; and the output of fluorescent brighteners was 13.3 percent larger. The output of vat dyes, however, was 3.5 percent less in 1968 than in 1967.

Of the remaining classes, the output of basic dyes in 1968 was 9.8 percent more than the 1967 production; that of azoic compositions was 34.3 percent larger in 1968 than in 1967; fiber-reactive dyes, 38.5 percent larger; food, drug and cosmetic colors, 10.7 percent larger; mordant dyes, 95.3 percent larger; and solvent dyes, 3.2 percent larger.

Table 3 shows production and sales of dyes, by chemical class. In 1968, three chemical classes of dyes accounted for more than two-thirds of all the dyes produced: Azo dyes accounted for 31.4 percent of the total; anthraquinone dyes, for 24.3 percent; and stilbene dyes, for 14.6 percent. The output of the azo dyes was 19.9 percent larger in 1968 than in 1967, that of the stilbene dyes was 15.7 percent larger, and that of the anthraquinone dyes, 6.6 percent larger. Of the remaining chemical classes for which statistics are published, the output of quinoline dyes was 59.5 percent larger in 1968 than in 1967; thiazole dyes, 16.9 percent larger; phthalocyanine dyes, 12.3 percent larger; nitro dyes, 11.3 percent larger; azoic dyes, 10.6 percent larger; and triarylmethane dyes, 6.0 percent larger. On the other hand, the output of xanthene dyes was 23.2 percent smaller in 1968 than in 1967; cyanine dyes, 21.3 percent smaller, and methine dyes, 2.6 percent smaller.

Table 4 lists all dyes for which data on production or sales were reported and identifies the manufacturer of each. Imports of dyes during 1967 and 1968 are included in table 3 of the Appendix.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*

[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 4 lists all dyes for which data on production or sales were reported and identifies the manufacturer of each]

Dye	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	226,498	214,661	370,196	$1.72
ACID DYES				
Total	22,510	20,789	48,232	2.32
Acid yellow dyes, total	4,942	4,471	10,982	2.46
Acid Yellow 3	18	26	75	2.88
Acid Yellow 11	50	59	118	2.00
Acid Yellow 17	545	512	1,110	2.17
Acid Yellow 23	479	346	814	2.35
Acid Yellow 36	...	210	317	1.51
Acid Yellow 40	140	179	507	2.83
Acid Yellow 42	72	66	117	1.77
Acid Yellow 44	31	29	88	3.03
Acid Yellow 54	112	90	192	2.13
Acid Yellow 65	72	...	...	...
Acid Yellow 73	...	137	337	2.46
Acid Yellow 99	110	94	215	2.29
Acid Yellow 124	102	105	280	2.67
Acid Yellow 151	556	525	1,251	2.38
All other	2,655	2,093	5,561	2.66
Acid orange dyes, total	3,366	3,247	5,741	1.77
Acid Orange 1	63	47	114	2.43
Acid Orange 7	580	486	541	1.11
Acid Orange 8	371	377	479	1.27
Acid Orange 10	329	358	451	1.26
Acid Orange 24	549	531	757	1.43
Acid Orange 60	124	113	273	2.42
Acid Orange 74	...	71	157	2.21
Acid Orange 116	548	543	1,219	2.24
All other	802	721	1,750	2.43
Acid red dyes, total	3,240	2,847	6,344	2.23
Acid Red 1	555	522	429	.82
Acid Red 4	75	81	148	1.83
Acid Red 14	94	71	119	1.68
Acid Red 18	86	104	116	1.12
Acid Red 26	89	47	65	1.38
Acid Red 37	56	57	182	3.19
Acid Red 73	240	243	595	2.45
Acid Red 80	12	11	36	3.27
Acid Red 85	135	129	224	1.74
Acid Red 87	...	37	81	2.19
Acid Red 88	162	136	189	1.39
Acid Red 89	17	22	32	1.45
Acid Red 99	91	74	158	2.14
Acid Red 114	164	171	393	2.30

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
ACID DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Acid red dyes--Continued				
Acid Red 137	204	170	537	$3.16
Acid Red 151	269	273	575	2.11
Acid Red 182	76	53	165	3.11
Acid Red 186	16	18	60	3.33
All other	899	628	2,240	3.57
Acid violet dyes, total	487	416	915	2.20
Acid Violet 1	60	48	80	1.67
Acid Violet 3	97	70	147	2.10
Acid Violet 7	40	55	75	1.36
Acid Violet 12	19	21	35	1.67
Acid Violet 17	89	...	...	...
Acid Violet 49	80	71	183	2.58
All other	102	151	395	2.62
Acid blue dyes, total	4,667	4,206	12,882	3.06
Acid Blue 7	47	55	210	3.82
Acid Blue 9	781	...	...	...
Acid Blue 25	246	224	1,207	5.39
Acid Blue 27	90	54	207	3.83
Acid Blue 40	104	82	345	4.21
Acid Blue 41	61	67	235	3.51
Acid Blue 43	...	8	65	8.13
Acid Blue 45	781	596	1,847	3.10
Acid Blue 62	40	31	210	6.77
Acid Blue 78	41	25	177	7.08
Acid Blue 113	729	722	1,357	1.88
Acid Blue 158 and 158A	167	179	363	2.03
All other	1,580	2,163	6,659	3.08
Acid green dyes, total	972	885	2,717	3.07
Acid Green 1	83	70	146	2.09
Acid Green 3	175	145	210	1.45
Acid Green 9	...	15	63	4.20
Acid Green 16	71	98	476	4.86
Acid Green 20	40	39	80	2.05
Acid Green 25	439	344	1,175	3.42
All other	164	174	567	3.26
Acid brown dyes, total	1,076	1,000	2,281	2.28
Acid Brown 14	433	410	607	1.48
All other	643	590	1,674	2.84
Acid black dyes, total	3,760	3,717	6,370	1.71
Acid Black 1	885	892	1,218	1.37
Acid Black 24	96	92	168	1.83
Acid Black 48	...	17	106	6.24
Acid Black 52	730	796	1,356	1.70
Acid Black 60	135	141	486	3.45
Acid Black 107	194	210	562	2.68
All other	1,720	1,569	2,474	1.58

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
AZOIC DYES AND COMPONENTS	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Azoic Compositions				
Total	2,336	2,051	3,255	$1.59
Azoic Yellow 2	114	...	...	...
Azoic Orange 3	85	64	85	1.33
Azoic Red 1	316	287	333	1.16
Azoic Red 2	81	42	57	1.36
Azoic Red 6	160	70	110	1.57
Azoic Violet 1	...	14	36	2.57
Azoic Blue 3	119	80	170	2.13
Azoic Brown 9	254	208	402	1.93
Azoic black dyes	747	832	1,359	1.63
All other azoic compositions	460	454	703	1.55
Azoic Diazo Components, Bases (Fast Color Bases)				
Total	826	724	1,050	1.45
Azoic Diazo Component 4, base	...	11	15	1.36
Azoic Diazo Component 9, base	...	28	24	.86
Azoic Diazo Component 12, base	167	162	171	1.06
Azoic Diazo Component 32, base	137	160	242	1.51
Azoic Diazo Component 48, base	...	39	76	1.95
All other azoic diazo components, bases	522	324	522	1.61
Azoic Diazo Components, Salts (Fast Color Salts)				
Total	1,648	1,604	1,473	.92
Azoic Diazo Component 1, salt	...	5	6	1.20
Azoic Diazo Component 3, salt	378	387	211	.55
Azoic Diazo Component 5, salt	42	47	51	1.09
Azoic Diazo Component 6, salt	...	59	65	1.10
Azoic Diazo Component 8, salt	31	38	37	.97
Azoic Diazo Component 9, salt	125	127	81	.64
Azoic Diazo Component 12, salt	78	75	79	1.05
Azoic Diazo Component 13, salt	244	239	164	.69
Azoic Diazo Component 28, salt	266	254	228	.90
Azoic Diazo Component 49, salt	99	92	232	2.52
All other azoic diazo components, salts	385	281	319	1.14
Azoic Coupling Components (Naphthol AS and Derivatives)				
Total	2,151	1,712	2,913	1.70
Azoic Coupling Component 2	397	392	367	.94
Azoic Coupling Component 3	8	8	26	3.25
Azoic Coupling Component 4	23	10	22	2.20
Azoic Coupling Component 7	420	360	696	1.93
Azoic Coupling Component 8	...	19	56	2.95
Azoic Coupling Component 14	170	125	266	2.13
Azoic Coupling Component 15	...	8	48	6.00
Azoic Coupling Component 17	104	...	...	...

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
AZOIC DYES AND COMPONENTS--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Azoic Coupling Components (Naphthol AS and Derivatives)--Continued				
Azoic Coupling Component 18	458	303	340	$1.12
Azoic Coupling Component 20	...	38	70	1.84
Azoic Coupling Component 29	...	11	26	2.36
Azoic Coupling Component 43	7	6	16	2.67
All other azoic coupling components	564	432	980	2.27
BASIC DYES				
Total	13,061	12,697	33,868	2.67
Basic yellow dyes, total	3,031	2,856	8,975	3.14
Basic Yellow 2	...	414	912	2.20
Basic Yellow 11	850	818	3,072	3.76
Basic Yellow 13	109	...	...	...
All other	2,072	1,624	4,991	3.07
Basic orange dyes, total	1,740	1,546	3,314	2.14
Basic Orange 1	...	386	456	1.18
Basic Orange 2	615	463	750	1.62
Basic Orange 21	614	529	1,520	2.87
All other	511	168	588	3.50
Basic red dyes, total	1,650	1,726	5,923	3.43
Basic Red 9	7	11	45	4.09
Basic Red 13	47	29	83	2.86
Basic Red 14	408	398	1,177	2.96
All other	1,188	1,288	4,618	3.59
Basic violet dyes, total	3,128	2,867	5,929	2.07
Basic Violet 1	1,243	954	1,281	1.34
Basic Violet 4	30	34	113	3.32
Basic Violet 10	260	297	1,083	3.65
Basic Violet 16	127	117	391	3.34
All other	1,468	1,465	3,061	2.09
Basic blue dyes, total	1,955	2,066	6,399	3.10
Basic Blue 1	46	43	149	3.47
Basic Blue 5	...	17	119	7.00
Basic Blue 9	...	500	1,078	2.16
Basic Blue 26	60	45	145	3.22
All other	1,849	1,461	4,908	3.36
Basic Green 1	87	71	236	3.32
Basic Green 4	502	675	1,723	2.55
Basic Brown 1	214	167	300	1.80
Basic Brown 4	595	554	733	1.32
All other basic dyes	159	169	336	1.99

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
DIRECT DYES	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	36,643	35,872	56,606	$1.58
Direct yellow dyes, total	10,296	9,837	17,556	1.78
Direct Yellow 4	490	484	992	2.05
Direct Yellow 5	228	211	640	3.03
Direct Yellow 6	530	557	901	1.62
Direct Yellow 11	1,250	1,153	1,112	.96
Direct Yellow 12	364	347	953	2.75
Direct Yellow 26	...	11	29	2.64
Direct Yellow 28	307	317	617	1.95
Direct Yellow 29	84	87	178	2.05
Direct Yellow 44	900	794	1,447	1.82
Direct Yellow 50	525	429	947	2.21
Direct Yellow 105	327	371	926	2.50
Direct Yellow 106	1,439	1,508	2,617	1.74
All other	3,852	3,568	6,197	1.74
Direct orange dyes, total	2,410	2,260	5,322	2.35
Direct Orange 1	29	29	64	2.21
Direct Orange 8	128	120	200	1.67
Direct Orange 15	242	262	284	1.08
Direct Orange 26	83	67	141	2.10
Direct Orange 29	107	101	244	2.42
Direct Orange 34	127	104	249	2.39
Direct Orange 37	23	40	91	2.28
Direct Orange 39	252	232	476	2.05
Direct Orange 72	532	498	1,101	2.21
Direct Orange 73	97	99	411	4.15
Direct Orange 81	87	74	220	2.97
Direct Orange 102	285	257	704	2.74
All other	418	377	1,137	3.02
Direct red dyes, total	3,541	3,676	7,991	2.17
Direct Red 1	176	168	297	1.77
Direct Red 2	192	215	419	1.95
Direct Red 4	45	31	92	2.97
Direct Red 10	...	15	23	1.53
Direct Red 13	67	53	99	1.87
Direct Red 16	...	138	278	2.01
Direct Red 23	273	263	622	2.36
Direct Red 24	232	253	509	2.01
Direct Red 26	125	155	364	2.35
Direct Red 28	195	226	326	1.44
Direct Red 31	24	14	67	4.79
Direct Red 37	85	111	303	2.73
Direct Red 39	72	95	273	2.87
Direct Red 75	9	15	50	3.33
Direct Red 79	105	141	364	2.58
Direct Red 80	472	432	757	1.75
Direct Red 81	471	474	1,189	2.51
Direct Red 83	125	117	195	1.67
Direct Red 122	...	3	12	4.00
Direct Red 149	...	12	36	3.00
All other	873	745	1,716	2.30

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
DIRECT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Direct violet dyes, total	170	184	590	$3.21
Direct Violet 1	13	12	17	1.42
Direct Violet 9	78	90	208	2.31
All other	79	82	365	4.45
Direct blue dyes, total	7,241	7,404	11,442	1.55
Direct Blue 1	385	365	780	2.14
Direct Blue 2	1,300	1,355	1,227	.91
Direct Blue 6	483	539	361	.67
Direct Blue 8	59	41	86	2.10
Direct Blue 15	38	20	34	1.70
Direct Blue 22	...	11	21	1.91
Direct Blue 24	...	10	13	1.30
Direct Blue 25	48	67	169	2.52
Direct Blue 67	43	31	122	3.94
Direct Blue 71	50	56	159	2.84
Direct Blue 76	189	177	268	1.51
Direct Blue 78	120	125	373	2.98
Direct Blue 80	544	556	855	1.54
Direct Blue 86	1,255	1,197	1,820	1.52
Direct Blue 98	161	162	307	1.90
Direct Blue 100	47	...	...	...
Direct Blue 120 and 120A	87	102	229	2.25
Direct Blue 126	...	150	421	2.81
Direct Blue 191	86	78	145	1.86
Direct Blue 218	909	893	1,644	1.84
All other	1,437	1,469	2,408	1.64
Direct green dyes, total	1,405	1,235	2,704	2.19
Direct Green 1	323	223	258	1.16
Direct Green 6	616	610	801	1.31
Direct Green 8	24	20	27	1.35
All other	442	382	1,618	4.24
Direct brown dyes, total	2,009	1,906	2,583	1.36
Direct Brown 1	106	97	128	1.32
Direct Brown 1A	86	101	150	1.49
Direct Brown 2	186	187	279	1.49
Direct Brown 6	...	109	121	1.11
Direct Brown 31	99	103	313	3.04
Direct Brown 74	80	61	101	1.66
Direct Brown 95	815	762	757	.99
Direct Brown 111	40	40	141	3.52
Direct Brown 154	332	310	309	1.00
All other	265	136	284	2.09
Direct black dyes, total	9,571	9,370	8,418	.90
Direct Black 4	161	199	217	1.09
Direct Black 9	...	52	65	1.25
Direct Black 19	98	100	160	1.60
Direct Black 22	844	810	535	.66
Direct Black 38	6,338	6,253	4,937	.79
Direct Black 51	70	71	238	3.35
Direct Black 80	1,247	1,081	941	.87
All other	813	804	1,325	1.65

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
DISPERSE DYES	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	22,215	20,098	49,327	$2.45
Disperse yellow dyes, total	5,917	5,672	10,305	1.82
Disperse Yellow 3	2,305	2,377	3,460	1.46
Disperse Yellow 5	...	51	173	3.39
Disperse Yellow 8	...	33	119	3.61
Disperse Yellow 23	548	480	899	1.87
Disperse Yellow 33	243	220	365	1.66
Disperse Yellow 34	229	246	419	1.70
Disperse Yellow 42	1,223	1,130	1,705	1.51
Disperse Yellow 54	422	368	1,385	3.76
All other	947	767	1,780	2.32
Disperse orange dyes, total	2,638	2,088	3,726	1.78
Disperse Orange 3	139	137	231	1.69
Disperse Orange 5	...	142	348	2.45
Disperse Orange 17	242	127	204	1.61
Disperse Orange 25	126	129	158	1.22
All other	2,131	1,553	2,785	1.79
Disperse red dyes, total	2,554	2,196	7,199	3.28
Disperse Red 1	303	279	466	1.67
Disperse Red 5	96	70	94	1.34
Disperse Red 11	32	35	214	6.11
Disperse Red 13	11	17	24	1.41
Disperse Red 15	73	...	...	...
Disperse Red 17	139	123	160	1.30
Disperse Red 60	239	227	784	3.45
Disperse Red 65	...	40	82	2.05
All other	1,661	1,405	5,375	3.83
Disperse violet dyes, total	358	307	1,017	3.31
Disperse Violet 1	51	41	124	3.02
Disperse Violet 4	14	16	54	3.38
Disperse Violet 27	97	80	134	1.68
All other	196	170	705	4.15
Disperse blue dyes, total	8,482	7,701	23,749	3.08
Disperse Blue 1	340	252	1,004	3.98
Disperse Blue 3	1,825	1,644	2,692	1.64
Disperse Blue 7	531	482	3,409	7.07
Disperse Blue 64	130	...	...	...
Disperse Blue 79	1,138	928	3,484	3.75
All other	4,518	4,395	13,160	2.99
Disperse black dyes, total	1,960	1,864	2,663	1.43
Disperse Black 1	188	202	356	1.76
All other	1,772	1,662	2,307	1.39
All other disperse dyes	306	270	668	2.47

See footnotes at end of table.

TABLE 1--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
FIBER-REACTIVE DYES	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Fiber-reactive dyes, total	2,815	2,369	10,569	$4.46
Reactive yellow dyes	783	651	2,686	4.13
Reactive orange dyes	555	...	...	...
Reactive blue dyes	873	770	4,271	5.55
Reactive black dyes	84	97	304	3.13
All other reactive dyes	520	851	3,308	3.89
FLUORESCENT BRIGHTENING AGENTS				
Total	31,297	28,892	52,674	1.82
Fluorescent Brightening Agent 9	234	259	316	1.22
Fluorescent Brightening Agent 28	1,420	1,512	2,398	1.59
All other fluorescent brightening agents	29,643	27,121	49,960	1.84
FOOD, DRUG, AND COSMETIC COLORS				
Total	3,579	3,630	13,574	3.74
Food, Drug, and Cosmetic Dyes				
Total	3,373	3,430	12,261	3.57
FD&C Blue No. 1	86	78	897	11.50
FD&C Blue No. 2	26	24	247	10.29
FD&C Red No. 2	1,111	1,152	3,112	2.70
FD&C Red No. 3	103	131	1,688	12.89
FD&C Red No. 4	27	34	145	4.26
FD&C Yellow No. 5	971	962	2,869	2.98
FD&C Yellow No. 6	872	872	2,359	2.71
All other food, drug, and cosmetic dyes	177	177	944	5.33
Drug and Cosmetic and External Drug and Cosmetic Dyes				
Total	206	200	1,313	6.57
D&C Red No. 7	13	12	49	4.08
D&C Red No. 19	11	10	61	6.10
D&C Red No. 21	17	18	60	3.33
D&C Red No. 36	10	8	27	3.38
D&C Yellow No. 5	...	15	44	2.93
All other drug and cosmetic and external drug and cosmetic dye	155	137	1,072	7.82
MORDANT DYES				
Total	2,861	2,508	3,925	1.56
Mordant yellow dyes	211	189	332	1.76
Mordant orange dyes, total	143	133	213	1.60
Mordant Orange 1	33	...	...	...
All other	110	...	...	...

See footnotes at end of table.

TABLE 1--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MORDANT DYES--Continued				
Mordant red dyes, total	110	86	231	$2.69
Mordant Red 7	...	56	120	2.14
All other	...	30	111	3.70
Mordant blue dyes	79	76	218	2.87
Mordant brown dyes, total	476	262	631	2.41
Mordant Brown 1	204	48	112	2.33
Mordant Brown 33	32	42	89	2.12
Mordant Brown 40	...	12	33	2.75
All other	240	160	397	2.48
Mordant black dyes, total	1,833	1,754	2,276	1.30
Mordant Black 3	...	15	21	1.40
Mordant Black 11	1,217	1,206	1,486	1.23
Mordant Black 13	...	28	66	2.36
Mordant Black 17	397	308	329	1.07
All other	219	197	374	1.90
All other mordant dyes	9	8	24	3.00
SOLVENT DYES				
Total	11,400	11,090	19,804	1.79
Solvent yellow dyes, total	1,151	1,147	2,342	2.04
Solvent Yellow 2	22	26	46	1.77
Solvent Yellow 3	53	39	61	1.56
Solvent Yellow 14	695	741	717	.97
All other	381	341	1,518	4.45
Solvent orange dyes, total	460	469	1,155	2.46
Solvent Orange 3	68	40	80	2.00
Solvent Orange 7	101	109	158	1.45
All other	291	320	917	2.87
Solvent red dyes, total	1,571	1,758	3,976	2.26
Solvent Red 24	343	...	...	...
Solvent Red 26	326	295	588	1.99
Solvent Red 49	78	43	284	6.60
All other	824	1,420	3,104	2.19
Solvent violet dyes, total	335	418	921	2.20
Solvent Violet 8	206	285	464	1.63
All other	129	133	457	3.44
Solvent blue dyes, total	1,324	1,435	5,711	3.98
Solvent Blue 11	9	...	...	...
Solvent Blue 38	126	125	613	4.90
All other	1,189	1,310	5,098	3.89
Solvent brown dyes, total	89	81	276	3.41
Solvent Brown 12	36	16	49	3.06
All other	53	65	227	3.49
All other solvent dyes	6,470	5,782	5,423	.94

See footnotes at end of table.

TABLE 1--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
SULFUR DYES[2]	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	17,788	17,939	10,772	$0.60
Sulfur black dyes, total	9,720	10,217	3,851	.38
Sulfur Black 1	...	668	228	.34
Sulfur Black 2	...	350	99	.28
All other	9,720	9,199	3,524	.38
All other sulfur dyes	8,068	7,722	6,921	.90
VAT DYES				
Total	54,824	52,182	61,081	1.17
Vat yellow dyes, total	8,296	7,919	10,972	1.39
Vat Yellow 2, 8-1/2	4,394	4,114	3,839	.93
Vat Yellow 4, 12-1/2	2,280	...	...	...
All other	1,622	3,805	7,133	1.87
Vat orange dyes, total	4,754	4,328	11,237	2.60
Vat Orange 1, 20%	1,653	1,483	4,059	2.74
Solubilized Vat Orange 1, 26%	...	8	70	8.75
Vat Orange 2, 12%	479	397	832	2.10
Vat Orange 3, 13-1/2%	35	49	146	2.98
Vat Orange 5, 10%	...	40	68	1.70
Solubilized Vat Orange 5, 30%	3	5	45	9.00
Vat Orange 9, 12%	235	190	452	2.38
Vat Orange 15, 10%	1,206	1,059	2,273	2.15
All other	1,143	1,097	3,292	3.00
Vat red dyes, total	1,390	1,140	2,429	2.13
Vat Red 1, 13%	535	506	835	1.65
Vat Red 13, 11%	55	76	249	3.28
Vat Red 32, 20%	72	68	262	3.85
All other	728	490	1,083	2.21
Vat violet dyes, total	698	717	1,577	2.20
Vat Violet 1, 11%	170	253	704	2.78
Vat Violet 2, 20%	44	42	110	2.62
Vat Violet 9, 12%	...	74	233	3.15
Vat Violet 13, 6-1/4%	371	300	394	1.31
All other	113	48	136	2.83
Vat blue dyes, total	17,017	16,474	11,765	.71
Vat Blue 4, 10%	71	57	120	2.11
Vat Blue 6, 8-1/3%	3,410	3,414	3,904	1.14
Vat Blue 18, 13%	879	731	1,259	1.72
Vat Blue 20, 14%	769	615	895	1.46
All other	11,888	11,657	5,587	.48
Vat green dyes, total	11,384	10,224	8,065	.79
Vat Green 1, 6%	5,259	3,824	2,731	.71
Vat Green 3, 10%	3,552	3,590	2,853	.79
Vat Green 8, 8-1/2%	959	1,226	1,089	.89
Vat Green 9, 12-1/2%	935	...	...	...
All other	679	1,584	1,392	.88

See footnotes at end of table.

TABLE 1.--*Benzenoid dyes: U.S. production and sales, 1968*--Continued

Dye	Production	Sales		
		Quantity	Value	Unit Value[1]
VAT DYES--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Vat brown dyes, total	4,296	4,223	7,735	$1.83
Vat Brown 1, 11%	860	869	1,408	1.62
Vat Brown 3, 11%	1,337	1,102	2,090	1.90
Vat Brown 5, 13%	56	84	142	1.69
All other	2,043	2,168	4,095	1.89
Vat black dyes, total	6,989	7,157	7,301	1.02
Vat Black 25, 12-1/2%	3,685	3,881	3,109	.80
Vat Black 27, 12-1/2%	988	988	1,368	1.38
All other	2,316	2,288	2,824	1.23
All other dyes[3]	544	504	1,073	2.13

[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 2--*Benzenoid dyes: U.S. production and sales, by class of application, 1968*

Class of application	Production	Sales		
		Quantity	Value	Unit Value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	226,498	214,661	370,196	$1.72
Acid	22,S10	20,789	48,232	2.32
Azoic dyes and components:				
Azoic compositions	2,336	2,0S1	3,255	1.S9
Azoic diazo components, bases (Fast color bases)	826	724	1,0S0	1.45
Azoic diazo components, salts (Fast color salts)	1,648	1,604	1,473	.92
Azoic coupling components (Naphthol AS and derivatives)	2,151	1,712	2,913	1.70
Basic	13,061	12,697	33,868	2.67
Direct	36,643	35,872	56,606	1.58
Disperse	22,215	20,098	49,327	2.45
Fiber-reactive	2,815	2,369	10,569	4.46
Fluorescent brightening agents	31,297	28,892	52,674	1.82
Food, drug, and cosmetic colors	3,579	3,630	13,574	3.74
Mordant	2,861	2,508	3,925	1.56
Solvent	11,400	11,090	19,804	1.79
Sulfur[2]	17,788	17,939	10,772	.60
Vat	54,824	52,182	61,081	1.17
All other[3]	544	504	1,073	2.13

[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 3.--*Benzenoid dyes: U.S. production and sales, by chemical class, 1968*

Chemical class	Production	Sales		
		Quantity	Value	Unit value [1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	226,498	214,661	370,196	$1.72
Anthraquinone	55,099	51,020	95,760	1.88
Azo, total	71,121	68,133	131,789	1.93
Monoazo	29,775	28,064	62,854	2.24
Disazo	22,665	21,954	41,404	1.89
Trisazo	11,359	10,956	11,822	1.08
Polyazo	2,452	2,439	3,752	1.54
Not specified	4,870	4,720	11,957	2.53
Azoic	6,961	6,091	8,691	1.43
Cyanine	521	481	1,433	2.98
Indigoid	...	5,432	3,400	.63
Methine	2,091	1,928	6,340	3.29
Nitro	1,990	1,869	3,002	1.61
Oxazine	273	278	1,178	4.23
Phthalocyanine	2,327	2,203	5,474	2.48
Quinoline	1,241	1,114	3,603	3.24
Stilbene	33,157	31,007	47,826	1.54
Sulfur [2]	17,788	17,939	10,772	.60
Thiazine	...	500	1,078	2.16
Thiazole	520	504	1,158	2.30
Triarylmethane	7,264	6,873	16,766	2.44
Xanthene	1,360	1,137	5,984	5.26
All other [3]	24,785	18,152	25,942	1.43

[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 production and sales of acridine, aminoketone, azine, coumarin, indophenol, ketone imine, nitroso, oxidation bases, vat sulfur, and miscellaneous dyes; and production of indigoid and thiazine dyes. Statistics for these groups of dyes may not be published separately because publication would disclose information received in confidence.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*

Dyes for which separate statistics are given in table 1 are marked below with an asterisk (*); dyes not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ACID DYES	
Acid yellow dyes:	
Acid Yellow 1	ACY.
Acid Yellow 2	DUP.
*Acid Yellow 3	ACS, ACY, DUP.
Acid Yellow 4	SDH.
*Acid Yellow 11	BDO, CMG, DUP, VPC.
Acid Yellow 14	TRC.
*Acid Yellow 17	ACS, ACY, ATL, BDO, CMG, DUP, PDC, SDH, TCD, TRC, VPC.
*Acid Yellow 23	AAP, ACS, ACY, GAF, MRX, SDH, TRC, VPC.
Acid Yellow 25	GAF.
Acid Yellow 29	GAF, TRC.
Acid Yellow 34	ACS.
*Acid Yellow 36	ACS, DUP, TRC.
Acid Yellow 38	ACS, GAF.
*Acid Yellow 40	ATL, DUP, GAF, TRC, VPC.
*Acid Yellow 42	AAP, ACY, GAF, VPC.
*Acid Yellow 44	AAP, ACS, GAF, VPC.
Acid Yellow 49	VPC.
*Acid Yellow 54	ACS, ACY, CMG, GAF, TCD, TRC, VPC.
Acid Yellow 59	VPC.
Acid Yellow 63	AAP, ACS.
*Acid Yellow 65	ACS, ALT, TRC.
*Acid Yellow 73	ACS, DUP, GAF, SDH, TCD.
Acid Yellow 76	ACS, TRC.
Acid Yellow 79	VPC.
Acid Yellow 95	CMG.
*Acid Yellow 99	ACS, CMG, GAF, TRC, VPC.
Acid Yellow 114	BDO, CMG, TRC.
Acid Yellow 121	GAF.
*Acid Yellow 124	ACS, DUP, TCD.
Acid Yellow 127	TRC.
Acid Yellow 128	ALT, TRC.
Acid Yellow 129	TRC.
*Acid Yellow 151	ACY, DUP, TCD, TRC, VPC.
Acid Yellow 152	ACY.
Acid Yellow 159	ACS, ALT, TRC.
Acid Yellow 174	DUP.
Acid Yellow 175	DUP.
Acid Yellow 186	VPC.
Other acid yellow dyes	ACY, ALT, ATL, CMG, DUP, GAF, TRC, VPC.
Acid orange dyes:	
*Acid Orange 1	ATL, GAF, TCD.
Acid Orange 2	ACS.
Acid Orange 5	ACY.
Acid Orange 6	ACS.
*Acid Orange 7	AAP, ACS, ACY, CPC, GAF, PDC, TCD, TRC, YAW.
*Acid Orange 8	ACS, ACY, ATL, DUP, GAF, TCD, TRC.
*Acid Orange 10	ACS, ACY, ATL, DUP, GAF, PDC, TRC, VPC, YAW.
Acid Orange 12	ACS.
Acid Orange 19	GAF.
*Acid Orange 24	ACS, ACY, DUP, GAF, TRC, YAW.
Acid Orange 28	ACS.
Acid Orange 31	AAP.
Acid Orange 34	ACY.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ACID DYES--Continued	
*Acid orange dyes--Continued	
Acid Orange 45	ACS, TRC.
Acid Orange 51	CMG, DUP, TRC.
Acid Orange 52	ACS.
Acid Orange 56	GAF.
*Acid Orange 60	CMG, DUP, GAF, TCD, TRC.
Acid Orange 62	TRC.
Acid Orange 63	GAF, TRC.
Acid Orange 64	ACS, ACY, DUP.
Acid Orange 69	ACY.
Acid Orange 72	GAF.
*Acid Orange 74	ACS, CMG, GAF, TRC.
Acid Orange 76	ACS, TRC.
Acid Orange 85	ACS.
Acid Orange 86	ACS, ALT, TRC.
Acid Orange 114	ACY.
*Acid Orange 116	ACS, ALT, FAB, GAF, TCD, TRC.
Acid Orange 119	TRC.
Acid Orange 128	DUP.
Acid Orange 132	DUP.
Other acid orange dyes	ALT, ATL, GAF, TRC, VPC.
*Acid red dyes:	
*Acid Red 1	AAP, ACS, ACY, BDO, BL, DUP, GAF, SDH, TCD, TRC, VPC, YAW.
*Acid Red 4	ATL, BDO, CMG, DUP, GAF, PDC, TRC, VPC, YAW.
*Acid Red 14	ACS, ATL, DUP, GAF, PDC, YAW.
Acid Red 17	ACS, TRC, YAW.
*Acid Red 18	ACS, ACY, ATL, BDO, DUP, GAF, PDC, TRC.
*Acid Red 26	ACS, ACY, ATL, CPC, GAF.
Acid Red 27	ACS.
Acid Red 32	ACS, GAF.
Acid Red 33	YAW.
Acid Red 34	ACS, DUP.
Acid Red 35	AAP, GAF.
*Acid Red 37	ACS, CMG, DUP, GAF, TCD, TRC.
Acid Red 42	GAF.
Acid Red 51	TCD.
Acid Red 52	GAF.
Acid Red 57	TRC.
Acid Red 66	AAP.
*Acid Red 73	ACS, ACY, ATL, DUP, GAF, PSC, TRC.
Acid Red 76	ACS.
*Acid Red 80	GAF, ICI, TCD.
*Acid Red 85	ACS, ACY, ATL, CMG, DUP, GAF, PDC, TRC, VPC, YAW.
*Acid Red 87	AMS, SDH, TCD.
*Acid Red 88	ACS, ACY, ATL, DUP, GAF, TRC, YAW.
*Acid Red 89	AAP, BDO, GAF, VPC.
Acid Red 92	TCD.
Acid Red 94	TCD.
Acid Red 97	ATL, GAF.
*Acid Red 99	ATL, CMG, FAB, TCD, TRC, VPC, YAW.
Acid Red 100	VPC.
Acid Red 106	YAW.
Acid Red 113	DUP.
*Acid Red 114	ACS, ALT, ATL, DUP, GAF, PDC, TRC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ACID DYES--Continued	
*Acid red dyes--Continued	
Acid Red 115	ACS, GAF.
Acid Red 119	ACS, ALT.
Acid Red 133	GAF.
Acid Red 134	DUP, TRC.
*Acid Red 137	ACS, ATL, DUP, GAF, TRC.
Acid Red 138	ALT.
*Acid Red 151	AAP, ACY, ALT, ATL, DUP, TCD, TRC, YAW.
Acid Red 167	ACS, DUP, TRC.
Acid Red 175	DUP.
Acid Red 178	DUP.
Acid Red 179	CMG, TRC.
*Acid Red 182	ACS, ACY, CMG, DUP, GAF, TCD.
Acid Red 183	CMG, TRC.
*Acid Red 186	ATL, CMG, GAF, TCD.
Acid Red 191	TRC.
Acid Red 194	TRC.
Acid Red 201	TRC.
Acid Red 207	ACS.
Acid Red 211	DUP.
Acid Red 212	TRC.
Acid Red 213	TRC.
Acid Red 217	ALT.
Acid Red 266	DUP.
Acid Red 292	ACY.
Acid Red 299	ALT, GAF, TRC.
Acid Red 309	TRC.
Acid Red 337	DUP.
Acid Red 345	DUP.
Other acid red dyes	ACY, ALT, ATL, CMG, GAF, TRC, VPC.
*Acid violet dyes:	
*Acid Violet 1	ACS, BDO, CMG, GAF.
*Acid Violet 3	ACS, ACY, TRC, YAW.
Acid Violet 6	ACS.
*Acid Violet 7	AAP, ACS, BDO, CMG, DUP, GAF, TRC, VPC.
Acid Violet 11	GAF.
*Acid Violet 12	BDO, CMG, DUP, GAF.
*Acid Violet 17	DUP, GAF, SDH.
Acid Violet 29	HSH.
Acid Violet 34	DUP, ICI.
Acid Violet 41	CMG.
Acid Violet 43	HSH, ICI.
*Acid Violet 49	ACS, ACY, TRC.
Acid Violet 56	CMG, GAF.
Acid Violet 76	ACS.
Other acid violet dyes	DUP, GAF, TRC.
*Acid blue dyes:	
Acid Blue 1	ACS, GAF, SDH.
*Acid Blue 7	ACS, ACY, GAF, SDH.
*Acid Blue 9	ACS, GAF, SDH, VPC.
Acid Blue 10	ACS.
Acid Blue 15	DUP, GAF.
Acid Blue 20	ACS.
Acid Blue 22	TCD.
Acid Blue 23	ACS, TRC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ACID DYES--Continued	
*Acid blue dyes--Continued	
*Acid Blue 25	ACS, ATL, BDO, CMG, DUP, GAF, TRC, VPC.
*Acid Blue 27	ALT, BDO, CMG, GAF.
Acid Blue 29	PDC.
Acid Blue 34	ACS.
*Acid Blue 40	ACS, ALT, ATL, DUP, GAF, ICI.
*Acid Blue 41	ACS, BDO, CMG, GAF.
*Acid Blue 43	ACS, ACY, GAF, TRC.
*Acid Blue 45	ACS, ACY CMG, DUP, GAF, TRC.
Acid Blue 47	ICI.
Acid Blue 48	HSC.
Acid Blue 55	ACS.
Acid Blue 58	DUP.
Acid Blue 59	ACS.
*Acid Blue 62	ACS, ALT, BDO, GAF, VPC.
Acid Blue 63	ACS.
Acid Blue 67	CMG.
Acid Blue 69	GAF.
Acid Blue 74	ACS, DUP.
*Acid Blue 78	ACS, DUP, GAF, ICI, TRC.
Acid Blue 80	ACS, TRC.
Acid Blue 81	ICI.
Acid Blue 83	GAF.
Acid Blue 89	ACS, GAF.
Acid Blue 90	ACS, TRC.
Acid Blue 92	ACS, YAW.
Acid Blue 93	ACY, HSC.
Acid Blue 102	ACS, TRC.
Acid Blue 104	ACS, GAF.
*Acid Blue 113	ACS, ALT, ATL, BDO, CMG, DUP, FAB, GAF, TCD, TRC.
Acid Blue 118	ACS, GAF, TCD.
Acid Blue 120	ACS, GAF.
Acid Blue 122	DUP.
Acid Blue 145	ACS, DUP.
*Acid Blue 158 and 158A	ACS, ACY, BDO, DUP, GAF, TCD, TRC, VPC.
Acid Blue 165	DUP.
Acid Blue 179	GAF.
Acid Blue 198	VPC.
Acid Blue 203	VPC.
Acid Blue 230	DUP, TRC.
Acid Blue 231	TRC.
Acid Blue 232	VPC.
Acid Blue 255	DUP
Acid Blue 263	DUP.
Other acid blue dyes	ACY, ALT, ATL, CMG, DUP, GAF, TCD, TRC, VPC.
*Acid green dyes:	
*Acid Green 1	ACS, ACY, ATL, DUP.
*Acid Green 3	ACS, ACY, DUP, GAF, TRC.
Acid Green 5	GAF.
*Acid Green 9	ACS, ACY, GAF.
Acid Green 10	ACS.
Acid Green 12	ACS, GAF.
*Acid Green 16	ACS, DUP, GAF, SDH, TRC.
*Acid Green 20	ACS, ATL, BDO, DUP, GAF, PDC, TRC.
Acid Green 22	GAF.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ACID DYES--Continued	
*Acid green dyes--Continued	
*Acid Green 25	ACS, ATL, DUP, GAF, HSH, ICI, TRC, VPC.
Acid Green 35	TRC.
Acid Green 41	ICI, VPC.
Acid Green 44	VPC.
Acid Green 50	ACY, GAF.
Acid Green 58	TRC.
Acid Green 70	TRC.
Other acid green dyes	ALT, VPC.
*Acid brown dyes:	
Acid Brown 1	GAF.
Acid Brown 6	GAF.
*Acid Brown 14	AAP, ACS, ACY, DUP, GAF, TRC, YAW.
Acid Brown 19	TRC.
Acid Brown 22	DUP.
Acid Brown 28	TRC.
Acid Brown 29	DUP.
Acid Brown 31	GAF.
Acid Brown 45	TRC.
Acid Brown 96	ACY.
Acid Brown 97	ACY.
Acid Brown 98	ACY, TRC.
Acid Brown 152	GAF.
Acid Brown 158	GAF.
Acid Brown 223	GAF.
Acid Brown 243	GAF.
Other acid brown dyes	CMG, DUP, GAF, VPC.
*Acid black dyes:	
*Acid Black 1	AAP, ACS, ACY, ATL, DUP, FAB, GAF, HSH, PDC, TCD, TRC, YAW.
Acid Black 2	ACS, ACY.
Acid Black 12	ACS.
*Acid Black 24	ACS, CMG, DUP, GAF.
Acid Black 26, 26A, and 26B	ACS, DUP, TRC.
Acid Black 29	ACS, GAF.
Acid Black 41	ACS.
*Acid Black 48	ACY, DUP, GAF, ICI, TRC.
*Acid Black 52	ACS, DUP, GAF, TCD, TRC.
Acid Black 53	ACS.
Acid Black 58	DUP, TRC.
*Acid Black 60	BDO, CMG, TRC.
Acid Black 92	ACY.
*Acid Black 107	ACS, GAF, TRC.
Acid Black 108	GAF.
Acid Black 138	VPC.
Other acid black dyes	ALT, DUP, PDC.
AZOIC DYES AND COMPONENTS	
Azoic Compositions	
Azoic yellow dyes:	
Azoic Yellow 1	ALL, ATL.
*Azoic Yellow 2	ALL, BUC, x.
Azoic Yellow 3	BUC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Compositions--Continued	
Azoic orange dyes:	
*Azoic Orange 3	ALL, ATL, BUC, GAF, x.
Azoic Orange 4	GAF.
Azoic Orange 10	BUC.
*Azoic red dyes:	
*Azoic Red 1	ALL, ATL, BUC, GAF, x.
*Azoic Red 2	ALL, ATL, BUC, GAF, x.
*Azoic Red 6	ALL, ATL, BUC, GAF, VPC, x.
Azoic Red 13	GAF.
Azoic Red 15	GAF.
Azoic Red 16	ATL.
Azoic Red 74	GAF.
Other azoic red dyes	ALL, SDC, x.
*Azoic violet dyes: Azoic Violet 1	ATL, BUC, GAF.
Azoic blue dyes:	
Azoic Blue 2	ATL, GAF.
*Azoic Blue 3	ATL, BUC, GAF, HST, x.
Azoic Blue 6	ATL, GAF.
Azoic Blue 7	ATL, GAF.
Other azoic blue dyes	ALL.
Azoic green dyes:	
Azoic Green 1	ATL.
Other azoic green dyes	ATL, GAF, VPC.
Azoic brown dyes:	
Azoic Brown 3	x.
Azoic Brown 7	BUC.
*Azoic Brown 9	ALL, BUC, GAF, HST, VPC, x.
Azoic Brown 10	BUC.
Azoic Brown 26	GAF.
Other azoic brown dyes	GAF, VPC.
*Azoic black dyes:	
Azoic Black 1	HST.
Azoic Black 4	ATL, BUC, GAF.
Azoic Black 15	GAF.
Other azoic black dyes	ALL, GAF, PCW, VPC.
Azoic Diazo Components, Bases (Fast Color Bases)	
Azoic Diazo Component 2, base	ATL, BUC.
Azoic Diazo Component 3, base	BUC.
*Azoic Diazo Component 4, base	BUC, GAF, SDH.
Azoic Diazo Component 5, base	GAF, SDH.
Azoic Diazo Component 8, base	DUP, SDH.
*Azoic Diazo Component 9, base	AAP, DUP, VPC.
Azoic Diazo Component 10, base	BUC, GAF.
Azoic Diazo Component 11, base	PCW.
*Azoic Diazo Component 12, base	BUC, PCW, SDH.
Azoic Diazo Component 13, base	ALL, BUC.
Azoic Diazo Component 14, base	AAP.
Azoic Diazo Component 20, base	GAF.
Azoic Diazo Component 27, base	ALL.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Diazo Components, Bases--Continued *(Fast Color Bases)*	
Azoic Diazo Component 28, base	BUC.
*Azoic Diazo Component 32, base	AAP, ATL, BUC, DUP, SDH.
Azoic Diazo Component 34, base	GAF.
Azoic Diazo Component 41, base	GAF.
Azoic Diazo Component 42, base	PCW.
Azoic Diazo Component 44, base	AAP, BUC.
*Azoic Diazo Component 48, base	CWN, DUP, GAF.
Azoic Diazo Component 49, base	PCW.
Azoic Diazo Component 121, base	PCW.
Azoic Diazo Components, Salts (Fast Color Salts)	
*Azoic Diazo Component 1, salt	AAP, GAF, SDH.
Azoic Diazo Component 2, salt	ALL, GAF.
*Azoic Diazo Component 3, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 5, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 6, salt	AAP, BUC, GAF, SDH.
*Azoic Diazo Component 8, salt	AAP, ALL, BUC, GAF.
*Azoic Diazo Component 9, salt	AAP, ALL, BUC, GAF, SDH, VPC.
Azoic Diazo Component 10, salt	GAF, SDH.
Azoic Diazo Component 11, salt	AAP, ALL.
*Azoic Diazo Component 12, salt	AAP, ALL, BUC, GAF, SDH.
*Azoic Diazo Component 13, salt	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 14, salt	AAP.
Azoic Diazo Component 20, salt	ALL, GAF.
*Azoic Diazo Component 28, salt	ALL, BUC, GAF, SDH.
Azoic Diazo Component 32, salt	ALL, SDH.
Azoic Diazo Component 34, salt	ALL, GAF.
Azoic Diazo Component 35, salt	GAF.
Azoic Diazo Component 36, salt	AAP, GAF.
Azoic Diazo Component 37, salt	GAF.
Azoic Diazo Component 41, salt	GAF.
Azoic Diazo Component 42, salt	ALL, GAF.
Azoic Diazo Component 44, salt	BUC, GAF.
Azoic Diazo Component 48, salt	GAF, SDH.
*Azoic Diazo Component 49, salt	AAP, ALL, BUC, GAF, SDH.
Azoic Diazo Component 121, salt	GAF.
Other azoic diazo components, salts	SDH.
Azoic Coupling Components (Naphthol AS and Derivatives)	
*Azoic Coupling Component 2	AAP, ACY, ATL, BUC, GAF, PCW.
*Azoic Coupling Component 3	BUC, GAF, PCW.
*Azoic Coupling Component 4	BUC, GAF, PCW.
*Azoic Coupling Component 7	AAP, BUC, PCW.
*Azoic Coupling Component 8	BUC, GAF, PCW.
Azoic Coupling Component 11	BUC, GAF, PCW.
Azoic Coupling Component 12	BUC, GAF, PCW.
Azoic Coupling Component 13	GAF, SDH.
*Azoic Coupling Component 14	ACS, ATL, BUC, GAF, PCW.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
AZOIC DYES AND COMPONENTS--Continued	
Azoic Coupling Components--Continued (Naphthol AS and Derivatives)	
*Azoic Coupling Component 15	BUC, GAF, PCW.
Azoic Coupling Component 16	BUC, GAF.
*Azoic Coupling Component 17	ACY, BUC, PCW.
*Azoic Coupling Component 18	ACY, ATL, BUC, DUP, GAF, PCW.
Azoic Coupling Component 19	GAF, PCW.
*Azoic Coupling Component 20	ATL, BUC, GAF, PCW.
Azoic Coupling Component 21	BUC, PCW, SDH.
Azoic Coupling Component 23	GAF, PCW.
Azoic Coupling Component 24	GAF, PCW.
*Azoic Coupling Component 29	ATL, BUC, GAF,PCW.
Azoic Coupling Component 34	BUC, PCW.
Azoic Coupling Component 35	GAF, PCW.
Azoic Coupling Component 36	GAF.
*Azoic Coupling Component 43	ATL, BUC, GAF.
Azoic Coupling Component 44	PCW.
Other azoic coupling components	ATL, GAF, VPC.
BASIC DYES	
*Basic yellow dyes:	
Basic Yellow 1	DUP.
*Basic Yellow 2	ACS, ACY, DUP.
*Basic Yellow 11	ACS, DUP, EKT, GAF, VPC.
*Basic Yellow 13	ACS, DUP, GAF.
Basic Yellow 15	DUP.
Basic Yellow 16	DUP.
Basic Yellow 24	BAS.
Basic Yellow 25	BAS.
Basic Yellow 26	ACY.
Basic Yellow 28	VPC.
Basic Yellow 29	VPC.
Basic Yellow 31	DUP.
Basic Yellow 37	ACY, DUP.
Basic Yellow 41	ACY.
Other basic yellow dyes	DUP, VPC.
*Basic orange dyes:	
*Basic Orange 1	ACS, ACY, DUP, GAF, TRC.
*Basic Orange 2	ACS, ACY, DSC, DUP, GAF, PSC, TRC.
Basic Orange 10	VPC.
Basic Orange 14	GAF.
Basic Orange 17	ACS.
*Basic Orange 21	ACS, DUP, GAF, VPC.
Basic Orange 22	ACS, GAF.
Basic Orange 24	DUP.
Basic Orange 25	DUP.
Basic Orange 26	DUP.
Basic Orange 27	VPC.
Basic Orange 31	ACY.
*Basic red dyes:	
Basic Red 1	BAS, DUP.
Basic Red 2	ACS, DUP.
*Basic Red 9	ACY, DSC, HSC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
BASIC DYES--Continued	
*Basic red dyes--Continued	
Basic Red 12	ACY, DUP.
*Basic Red 13	ACS, GAF, VPC.
*Basic Red 14	ACS, ACY, DUP, GAF, VPC.
Basic Red 15	DUP, GAF.
Basic Red 16	DUP.
Basic Red 17	DUP.
Basic Red 18	DUP, VPC.
Basic Red 19	DUP.
Basic Red 22	ACY, TRC.
Basic Red 29	BAS.
Basic Red 30	ACY.
Basic Red 47	DUP.
Basic Red 48	DUP.
Basic Red 49	DUP.
Other basic red dyes	GAF, VPC.
*Basic violet dyes:	
*Basic Violet 1	ACS, ACY, DSC, DUP, HSC.
Basic Violet 2	DSC, DUP, TCD.
Basic Violet 3	ACS, DSC, DUP, SDH.
*Basic Violet 4	ACS, DSC, DUP, GAF.
Basic Violet 7	GAF.
*Basic Violet 10	ACY, DUP, GAF.
Basic Violet 13	DSC.
Basic Violet 14	ACY, DSC.
Basic Violet 15	DUP.
*Basic Violet 16	DUP, GAF, VPC.
Basic Violet 18	ACY.
Basic Violet 24	DUP.
*Basic blue dyes:	
*Basic Blue 1	DSC, GAF, SDH, VPC.
Basic Blue 2	DSC.
Basic Blue 3	DUP, GAF.
*Basic Blue 5	DSC, SDH, VPC.
Basic Blue 6	ACS, ACY.
Basic Blue 7	DSC, DUP, SDH.
*Basic Blue 9	ACS, ACY, DUP, SDH.
Basic Blue 11	DSC, DUP, SDH.
Basic Blue 21	DUP.
Basic Blue 22	ACS, DUP.
*Basic Blue 26	ACS, DSC, DUP, SDH.
Basic Blue 35	DUP.
Basic Blue 38	ACY, DUP.
Basic Blue 39	BAS, DUP.
Basic Blue 41	TRC.
Basic Blue 45	VPC.
Basic Blue 47	VPC.
Basic Blue 54	ACY.
Basic Blue 76	ACY.
Basic Blue 77	DUP, EKT.
Basic Blue 82	DUP.
Basic Blue 87	DUP.
Other basic blue dyes	DUP, GAF, VPC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
BASIC DYES--Continued	
Basic green dyes:	
*Basic Green 1	ACS, ACY, DSC, DUP, SDH.
Basic Green 3	DUP.
*Basic Green 4	ACS, ACY, DSC, DUP, SDH.
Basic Green 7	DSC.
Other basic green dyes	DUP, VPC.
Basic brown dyes:	
*Basic Brown 1	ACS, ACY, DUP, GAF, TRC.
Basic Brown 2	GAF.
*Basic Brown 4	ACS, ACY, DSC, DUP, GAF, PSC, TRC.
Basic black dyes:	
Basic Black 3	GAF.
Other basic black dyes	DSC, VPC.
DIRECT DYES	
*Direct yellow dyes:	
*Direct Yellow 4	ACS, ACY, DUP, GAF, TCD, TRC, VPC.
*Direct Yellow 5	ACS, ACY, GAF.
*Direct Yellow 6	ACS, ACY, ATL, DUP, GAF, TRC.
Direct Yellow 7	ATL.
Direct Yellow 8	ACS, GAF, YAW.
Direct Yellow 9	DUP.
*Direct Yellow 11	ACS, ACY, DUP, GAF, TCD, TRC.
*Direct Yellow 12	ACS, ATL, DUP, FAB, GAF, TCD, TRC.
Direct Yellow 20	TRC.
Direct Yellow 23	DUP.
*Direct Yellow 26	ACS, ALT, TCD.
Direct Yellow 27	GAF.
*Direct Yellow 28	ACS, ATL, DUP, GAF, TRC.
*Direct Yellow 29	ATL, DUP, GAF.
Direct Yellow 39	TRC.
*Direct Yellow 44	ACS, ALT, ATL, DUP, FAB, GAF, TRC, TCD, VPC.
*Direct Yellow 50	ACS, ATL, DUP, FAB, GAF, TRC, TCD, VPC.
Direct Yellow 59	ACS, DUP.
Direct Yellow 63	DUP.
Direct Yellow 84	ACS, TCD, TRC.
Direct Yellow 103	ACS.
*Direct Yellow 105	ALT, GAF, TCD, TRC.
*Direct Yellow 106	ACS, ALT, FAB, GAF, TCD, TRC.
Direct Yellow 107	GAF.
Direct Yellow 114	ACY.
Direct Yellow 117	TRC.
Direct Yellow 118	TRC.
Direct Yellow 119	DUP.
Direct Yellow 120	DUP.
Direct Yellow 121	TRC.
Direct Yellow 123	DUP.
Direct Yellow 125	ACY.
Direct Yellow 127	DUP.
Direct Yellow 128	DUP.
Other direct yellow dyes	AAP, ALT, ATL, DUP, GAF, TRC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DIRECT DYES--Continued	
*Direct orange dyes:	
*Direct Orange 1	AAP, ACS, ATL, BDO, CMG, VPC.
Direct Orange 6	ACS.
*Direct Orange 8	ACS, ATL, DUP, GAF, TRC.
Direct Orange 10	AAP, ACS.
Direct Orange 11	GAF.
*Direct Orange 15	ACS, ACY, DUP, GAF, TRC.
*Direct Orange 26	ACS, ATL, DUP, GAF, TRC.
*Direct Orange 29	ATL, FAB, TCD, TRC.
*Direct Orange 34	ACS, ATL, CMG, DUP, GAF.
*Direct Orange 37	ACY, CMG, DUP, GAF, TRC.
*Direct Orange 39	ACY, ALT, ATL, DUP, GAF, TCD.
Direct Orange 42	ATL.
Direct Orange 59	DUP, GAF.
Direct Orange 61	TRC.
Direct Orange 67	ACS, VPC.
Direct Orange 70	TRC.
*Direct Orange 72	ACS, ALT, ATL, FAB, TCD, TRC, VPC.
*Direct Orange 73	DUP, GAF, TRC, VPC.
Direct Orange 74	DUP.
Direct Orange 76	DUP.
Direct Orange 78	VPC.
Direct Orange 79	DUP.
Direct Orange 80	DUP, VPC.
*Direct Orange 81	ACS, DUP, GAF, VPC.
Direct Orange 83	GAF.
Direct Orange 88	DUP.
*Direct Orange 102	ACS, ACY, DUP, GAF.
Direct Orange 110	TRC.
Direct Orange 114	DUP.
Other direct orange dyes	ALT, ATL, DUP, VPC.
*Direct red dyes:	
*Direct Red 1	AAP, ACS, ATL, DUP, GAF, TRC, YAW.
*Direct Red 2	ATL, DUP, FAB, TCD, TRC.
*Direct Red 4	ACS, ATL, TRC, VPC.
Direct Red 5	ACS.
Direct Red 7	ATL.
*Direct Red 10	AAP, ACS, ATL.
*Direct Red 13	ACS, ATL, DUP, GAF, TRC, YAW.
*Direct Red 16	ACS, ATL, DUP, GAF, TRC.
Direct Red 20	ACS, GAF.
*Direct Red 23	ACS, ATL, CMG, DUP, FAB, GAF, TCD, TRC.
*Direct Red 24	AAP, ATL, FAB, TCD, TRC, VPC.
*Direct Red 26	AAP, ACS, ATL, DUP, GAF, TCD, TRC, VPC.
*Direct Red 28	ACS, ATL, DUP, TRC, YAW.
*Direct Red 31	ACS, ATL, DUP, GAF.
Direct Red 32	ACS, DUP.
*Direct Red 37	ACS, ACY, ATL, DUP, GAF, TRC, YAW.
*Direct Red 39	ACS, ATL, DUP, GAF, TRC, YAW.
Direct Red 46	ATL.
Direct Red 62	ATL, TRC.
Direct Red 67	ACS.
Direct Red 72	ACS, GAF, TRC.
Direct Red 73	ACS, DUP.
*Direct Red 75	ACS, CMG, DUP, GAF.

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TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DIRECT DYES--Continued	
*Direct red dyes--Continued	
Direct Red 76	ACS, GAF.
*Direct Red 79	ATL, CMG, TCD, TRC, VPC.
*Direct Red 80	AAP, ACS, ATL, BDO, BL, CMG, DUP, FAB, SDH, TCD, TRC, VPC.
*Direct Red 81	AAP, ACS, ACY, ALT, ATL, BL, CMG, DUP, GAF, TCD, TRC, VPC, YAW.
*Direct Red 83	ACS, ALT, ATL, BL, CMG, DUP, FAB, TCD, TRC, VPC.
Direct Red 84	GAF, TCD.
Direct Red 95	VPC.
Direct Red 111	GAF.
Direct Red 117	DUP.
*Direct Red 122	CMG, TRC, VPC.
Direct Red 123	GAF.
Direct Red 139	VPC.
*Direct Red 149	ATL, CMG, DUP, GAF.
Direct Red 152	CMG, DUP.
Direct Red 153	ATL.
Direct Red 209	TRC.
Direct Red 212	VPC.
Other direct red dyes	ALT, ATL, BL, GAF, TCD, TRC, VPC.
*Direct violet dyes:	
*Direct Violet 1	AAP, ACS, ATL.
Direct Violet 7	ACS, GAF.
*Direct Violet 9	ACS, ATL, DUP, GAF, TCD, TRC.
Direct Violet 14	ACS.
Direct Violet 22	DUP.
Direct Violet 47	DUP, GAF.
Direct Violet 48	ACS, DUP.
Direct Violet 49	ACS.
Direct Violet 51	ACS, DUP.
Direct Violet 62	ACY.
Direct Violet 66	ATL, TRC.
Direct Violet 67	DUP.
*Direct blue dyes:	
*Direct Blue 1	AAP, ACS, ACY, ATL, BL, DUP, FAB, GAF, TCD, TRC, VPC, YAW.
*Direct Blue 2	AAP, ACS, ATL, BL, DUP, FAB, GAF, TCD, TRC, VPC, YAW.
*Direct Blue 6	AAP, ACS, ACY, ATL, BL, DUP, GAF, TCD, TRC, YAW.
*Direct Blue 8	ACS, ATL, DUP, GAF, YAW.
Direct Blue 14	ACS, ATL, DUP, TCD, TRC.
*Direct Blue 15	ACS, ATL, DUP, YAW.
*Direct Blue 22	ACS, ATL, CMG, DUP.
*Direct Blue 24	ACS, TCD, YAW.
*Direct Blue 25	ACS, ATL, DUP, GAF, TRC, YAW.
Direct Blue 26	ATL.
*Direct Blue 67	ACS, ATL, DUP, TRC.
*Direct Blue 71	ACS, DUP, GAF, TRC.
Direct Blue 74	DUP.
Direct Blue 75	TRC.
*Direct Blue 76	ACS, ALT, ATL, BL, DUP, FAB, GAF, TCD, TRC, VPC.
*Direct Blue 78	ACS, ATL, CMG, DUP, TRC.
*Direct Blue 80	ACS, ALT, ATL, BL, DUP, FAB, GAF, TCD, TRC.
Direct Blue 81	ATL.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DIRECT DYES--Continued	
*Direct blue dyes--Continued	
*Direct Blue 86	AAP, ACS, ACY, ALT, ATL, DUP, FAB, GAF, ICC, ICI, SDH, TCD, TMS, TRC, VPC.
Direct Blue 87	ICI.
Direct Blue 91	TRC.
*Direct Blue 98	ALT, ATL, GAF, TRC, VPC.
*Direct Blue 100	ALT, ATL, TCD.
Direct Blue 104	DUP.
*Direct Blue 120 and 120A	DUP, GAF, TCD, TRC.
*Direct Blue 126	BL, DUP, GAF, TRC, VPC.
Direct Blue 133	GAF.
Direct Blue 136	GAF.
Direct Blue 143	DUP.
Direct Blue 151	ACS, ATL, TRC.
Direct Blue 160	TRC.
Direct Blue 189	TCD, TRC.
*Direct Blue 191	AAP, ALT, GAF.
Direct Blue 199	GAF.
*Direct Blue 218	ACS, DUP, FAB, GAF, TCD, TRC.
Direct Blue 224	ALT, ATL.
Direct Blue 238	ACY.
Other direct blue dyes	ALT, BL, GAF, TCD, YAW.
*Direct green dyes:	
*Direct Green 1	AAP, ACS, ACY, ALT, DUP, FAB, GAF, TCD, TRC, YAW.
*Direct Green 6	AAP, ACS, ATL, DUP, FAB, GAF, TCD, TRC, YAW.
*Direct Green 8	ACS, ATL, TRC.
Direct Green 12	ACS, TRC.
Direct Green 15	DUP.
Direct Green 26	DUP, TRC.
Direct Green 27	DUP, TRC.
Direct Green 28	TRC.
Direct Green 38	DUP, GAF.
Direct Green 39	GAF.
Direct Green 41	DUP.
Direct Green 45	VPC.
Direct Green 47	DUP, GAF.
Direct Green 51	TRC.
Direct Green 69	TRC.
Other direct green dyes	ACY, ATL, BL, DUP.
*Direct brown dyes:	
*Direct Brown 1	ACY, ATL, DUP, TCD.
*Direct Brown 1A	GAF, TRC, YAW.
*Direct Brown 2	AAP, ACS, ACY, ATL, BL, DUP, GAF, TCD, TRC, YAW.
*Direct Brown 6	ACS, DUP, GAF, TRC.
Direct Brown 25	DUP.
Direct Brown 27	ATL, GAF.
*Direct Brown 31	AAP, ACS, ATL, DUP, GAF, TRC, YAW.
Direct Brown 32	GAF.
Direct Brown 33	DUP.
Direct Brown 40	AAP.
Direct Brown 44	GAF, YAW.
Direct Brown 48	AAP.
Direct Brown 59	ACY.
*Direct Brown 74	AAP, ACS, DUP.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DIRECT DYES--Continued	
*Direct brown dyes--Continued	
*Direct Brown 95	AAP, ACS, ALT, ATL, DUP, FAB, GAF, TCD, TRC, YAW.
Direct Brown 105	DUP.
Direct Brown 106	ACS, GAF.
*Direct Brown 111	DUP, GAF, TRC, VPC.
Direct Brown 112	ATL.
Direct Brown 125	GAF.
*Direct Brown 154	ACS, DUP, FAB, GAF, TRC, YAW.
Other direct brown dyes	ACS, ALT, ATL, DUP, VPC, YAW.
*Direct black dyes:	
Direct Black 3	DUP.
*Direct Black 4	ACS, ATL, GAF, TCD, TRC, YAW.
Direct Black B	TRC, YAW.
*Direct Black 9	ACS, DUP, GAF, TCD.
Direct Black 17	GAF, TRC.
*Direct Black 19	ATL, GAF, TCD, TRC.
*Direct Black 22	AAP, ACS, ALT, ATL, CMG, DUP, FAB, GAF, TCD, TRC, VPC YAW.
Direct Black 36	AAP, ATL.
Direct Black 37	AAP, ACS.
*Direct Black 38	AAP, ACS, ACY, ATL, BL, DUP, FAB, GAF, TCD, TRC, YAW.
Direct Black 44	TRC.
*Direct Black 51	AAP, ACS, ATL, DUP, GAF, TRC.
Direct Black 56	ACS, TRC.
Direct Black 67	DUP.
Direct Black 71	ATL, VPC.
Direct Black 75	GAF.
Direct Black 78	ACS, TCD.
*Direct Black 80	AAP, ACS, ATL, BL, FAB, TCD, TRC, VPC, YAW.
Direct Black 109	GAF.
Direct Black 130	ACY.
Direct Black 190	TCD.
Other direct black dyes	ACY, ALT, ATL, BL, YAW.
DISPERSE DYES	
*Disperse yellow dyes:	
Disperse Yellow 1	DUP, GAF.
Disperse Yellow 2	DUP.
*Disperse Yellow 3	AAP, ACS, ALT, BL, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
*Disperse Yellow 5	GAF, ICC, TCD.
*Disperse Yellow 8	DUP, EKT, TRC.
*Disperse Yellow 23	AAP, ALT, DUP, EKT, GAF, ICC, TCD.
Disperse Yellow 31	GAF.
Disperse Yellow 32	DUP.
*Disperse Yellow 33	AAP, EKT, GAF, ICC, TRC.
*Disperse Yellow 34	AAP, EKT, GAF, ICC.
*Disperse Yellow 42	AAP, DUP, EKT, ICC, GAF, MAY, SDC, TCD, TRC.
Disperse Yellow 50	TRC.
*Disperse Yellow 54	AAP, DUP, GAF, ICC, TRC.
Disperse Yellow 67	DUP.
Disperse Yellow 69	ACY.
Disperse Yellow 77	VPC.
Disperse Yellow 85	EKT.
Disperse Yellow 86	AAP, EKT.
Disperse Yellow 87	EKT.
Disperse Yellow 88	EKT.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DISPERSE DYES--Continued	
*Disperse yellow dyes--Continued	
Disperse Yellow 89	EKT.
Other disperse yellow dyes	AAP, EKT, GAF, ICC, MAY, SDC, TCD, TRC, VPC.
*Disperse orange dyes:	
*Disperse Orange 3	AAP, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
*Disperse Orange 5	AAP, EKT, GAF.
Disperse Orange 16	AAP.
*Disperse Orange 17	AAP, ACS, EKT, GAF, HSH, ICC, MAY, TCD.
Disperse Orange 21	TCD, TRC.
*Disperse Orange 25	DUP, EKT, TRC.
Disperse Orange 26	DUP.
Disperse Orange 28	AAP.
Disperse Orange 29	AAP.
Disperse Orange 30	ICC, TRC.
Disperse Orange 40	DUP.
Disperse Orange 41	DUP.
Disperse Orange 44	DUP.
Disperse Orange 57	EKT.
Disperse Orange 58	EKT.
Disperse Orange 59	EKT.
Disperse Orange 62	DUP.
Disperse Orange 75	DUP.
Other disperse orange dyes	AAP, GAF, ICC, MAY, SDC, TRC.
*Disperse red dyes:	
*Disperse Red 1	AAP, ACS, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
Disperse Red 4	GAF, TCD, TRC.
*Disperse Red 5	AAP, EKT, GAF, HSH, ICC, TCD.
Disperse Red 7	AAP.
*Disperse Red 11	AAP, DUP, GAF, ICC.
*Disperse Red 13	AAP, DUP, GAF, ICC, TCD.
Disperse Red 14	MAY.
*Disperse Red 15	AAP, GAF, HSH, ICC.
*Disperse Red 17	AAP, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
Disperse Red 20	ACS.
Disperse Red 21	EKT.
Disperse Red 30	EKT, TRC.
Disperse Red 31	ICC.
Disperse Red 35	EKT.
Disperse Red 54	ICC.
Disperse Red 55	AAP, DUP, TCD, TRC.
Disperse Red 56	DUP.
Disperse Red 59	ACY, DUP, GAF.
*Disperse Red 60	AAP, DUP, EKT, VPC.
Disperse Red 61	DUP.
*Disperse Red 65	DUP, EKT, ICC, TRC.
Disperse Red 66	AAP.
Disperse Red 73	TRC.
Disperse Red 78	ICC, TRC.
Disperse Red 86	EKT.
Disperse Red 88	EKT.
Disperse Red 96	ACY.
Disperse Red 135	EKT.
Disperse Red 136	EKT.
Disperse Red 137	EKT.
Disperse Red 139	DUP.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DISPERSE DYES--Continued	
*Disperse red dyes--Continued	
Disperse Red 140	DUP.
Other disperse red dyes	EKT, GAF, ICC, MAY, SDC, TCD, TRC.
*Disperse violet dyes:	
*Disperse Violet 1	AAP, EKT, GAF, HSH, ICC, TRC.
*Disperse Violet 4	AAP, GAF, ICC.
Disperse Violet 8	GAF.
Disperse Violet 14	DUP.
Disperse Violet 18	DUP, TRC.
Disperse Violet 26	DUP.
*Disperse Violet 27	AAP, ACY, BL, DUP, EKT, GAF, ICC.
Disperse Violet 43	EKT.
Disperse Violet 44	EKT.
Other disperse violet dyes	EKT, GAF, TCD.
*Disperse blue dyes:	
*Disperse Blue 1	AAP, GAF, TRC.
*Disperse Blue 3	AAP, ACS, DUP, EKT, GAF, HSH, ICC, TCD, TRC.
*Disperse Blue 7	BDO, EKT, GAF, ICC, TCD, TRC.
Disperse Blue 9	DUP, GAF, ICC.
Disperse Blue 27	DUP, EKT.
Disperse Blue 34	EKT.
Disperse Blue 3S	ICI.
Disperse Blue S5	TRC.
Disperse Blue S9	DUP.
Disperse Blue 60	DUP.
Disperse Blue 61	DUP.
Disperse Blue 62	DUP, EKT, SDC.
Disperse Blue 63	DUP.
*Disperse Blue 64	DUP, EKT, GAF, TRC.
Disperse Blue 70	AAP.
Disperse Blue 71	VPC.
Disperse Blue 73	TRC.
*Disperse Blue 79	AAP, EKT, TRC.
Disperse Blue 81	VPC.
Disperse Blue 94	BAS.
Disperse Blue 109	DUP.
Disperse Blue 112	EKT.
Disperse Blue 116	ACY.
Disperse Blue 117	EKT.
Disperse Blue 118	EKT.
Disperse Blue 119	EKT.
Disperse Blue 120	EKT.
Disperse Blue 121	EKT.
Disperse Blue 122	EKT.
Disperse Blue 123	EKT.
Disperse Blue 132	DUP.
Disperse Blue 133	DUP.
Disperse Blue 1S0	DUP.
Other disperse blue dyes	EKT, GAF, HSH, ICC, MAY, SDC, TCD, TRC.
Disperse green dyes	GAF, ICC, TRC.
Disperse brown dyes:	
Disperse Brown 1	TRC.
Disperse Brown 2	DUP, EKT, GAF.
Disperse Brown 7	EKT.
Other disperse brown dyes	EKT, GAF, ICC, SDC, TCD.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
DISPERSE DYES--Continued	
*Disperse black dyes:	
*Disperse Black 1	AAP, DUP, GAF, TRC.
Disperse Black 2	DUP, TRC.
Disperse Black 6	AAP, DUP.
Disperse Black 7	YAW.
Disperse Black 9	AAP, BL, DUP, EKT, GAF.
Other disperse black dyes	DUP, EKT, GAF, ICC, TCD, VPC, 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 13	HST.
Reactive Yellow 14	HST.
Reactive Yellow 15	DUP, HST.
Reactive Yellow 17	HST.
Reactive Yellow 18	ICI.
Reactive Yellow 22	ICI.
Reactive Yellow 24	HST.
Reactive Yellow 37	HST.
Other reactive yellow dyes	ACY, HST, VPC.
*Reactive orange dyes:	
Reactive Orange 1	ICI.
Reactive Orange 2	TRC.
Reactive Orange 4	ICI.
Reactive Orange 5	TRC.
Reactive Orange 12	ICI.
Reactive Orange 13	ICI.
Reactive Orange 14	ICI.
Reactive Orange 16	HST.
Other reactive orange dyes	ACY, 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 21	HST.
Reactive Red 29	ICI.
Reactive Red 31	HST, ICI.
Reactive Red 33	ICI.
Other reactive red dyes	ACY.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FIBER-REACTIVE DYES--Continued	
Reactive violet dyes:	
Reactive Violet 1	ICI.
Reactive Violet 2	TRC.
Reactive Violet 4	HST.
Reactive Violet 5	HST.
Other reactive violet dyes	HST.
*Reactive blue dyes:	
Reactive Blue 1	ICI.
Reactive Blue 2	TRC.
Reactive Blue 3	ICI.
Reactive Blue 4	ICI.
Reactive Blue 5	TRC.
Reactive Blue 7	TRC.
Reactive Blue 9	ICI.
Reactive Blue 18	TRC.
Reactive Blue 19	DUP, HST.
Reactive Blue 21	HST.
Reactive Blue 25	ICI.
Reactive Blue 27	HST.
Reactive Blue 30	VPC.
Other reactive blue dyes	ACY, DUP, GAF, HST, VPC.
Reactive green dyes	HST.
Reactive brown dyes:	
Reactive Brown 1	TRC.
Reactive Brown 10	ICI.
*Reactive black dyes:	
Reactive Black 1	TRC.
Reactive Black 5	HST.
Reactive Black 9	ICI.
FLOURESCENT BRIGHTENING AGENTS	
Fluorescent Brightening Agent 1	GGY.
Fluorescent Brightening Agent 6	ACY.
Fluorescent Brightening Agent 8	ACY.
*Fluorescent Brightening Agent 9	ACY, GAF, SDH.
Fluorescent Brightening Agent 22	GGY.
Fluorescent Brightening Agent 24	GGY.
Fluorescent Brightening Agent 25	GAF.
*Fluorescent Brightening Agent 28	ACY, CCW, DUP, SDH.
Fluorescent Brightening Agent 30	GAF.
Fluorescent Brightening Agent 33	GAF.
Fluorescent Brightening Agent 34	Dup.
Fluorescent Brightening Agent 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 54	GGY.
Fluorescent Brightening Agent 59	GGY.
Fluorescent Brightening Agent 61	ACY.
Fluorescent Brightening Agent 68	CCW, GAF.
Fluorescent Brightening Agent 71	ACY, GAF.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLUORESCENT BRIGHTENING AGENTS--Continued	
Fluorescent Brightening Agent 75	GAF.
Fluorescent Brightening Agent 102	DUP, VPC.
Fluorescent Brightening Agent 108	GAF.
Fluorescent Brightening Agent 109	GAF.
Fluorescent Brightening Agent 113	VPC.
Fluorescent Brightening Agent 114	VPC.
Fluorescent Brightening Agent 125	ACY.
Fluorescent Brightening Agent 126	SDH.
Fluorescent Brightening Agent 128	SDH.
Fluorescent Brightening Agent 130	SDH.
Fluorescent Brightening Agent 134	CIB.
Fluorescent Brightening Agent 135	CIB.
Fluorescent Brightening Agent 136	CIB.
Fluorescent Brightening Agent 139	CIB.
Fluorescent Brightening Agent 158	ACY.
Fluorescent Brightening Agent 159	ACY.
Fluorescent Brightening Agent 161	ACY.
Other fluorescent brightening agents	ACY, CCW, CIB, DUP, GAF, GGY, S, VPC.
FOOD, DRUG, AND COSMETIC COLORS	
Food, Drug, and Cosmetic Dyes	
*FD&C Blue No. 1	ACS, KON, SDH, WJ.
*FD&C Blue No. 2	ACS, KON, SDH.
FD&C Green No. 3	WJ.
*FD&C Red No. 2	ACS, ALT, KON, SDH, STG, WJ.
*FD&C Red No. 3	ACS, KON, SDH, STG.
*FD&C Red No. 4	ALT, KON, SDH, STG, WJ.
FD&C Violet No. 1	ACS, SDH.
*FD&C Yellow No. 5	ACS, ALT, KON, SDH, STG, WJ.
*FD&C Yellow No. 6	ACS, ALT, KON, SDH, STG, WJ.
Other food, drug, and cosmetic dyes	STG, WJ.
Drug and Cosmetic Dyes	
D&C Blue No. 6	ACS, KON.
D&C Blue No. 9	ACS.
D&C Brown No. 1	ACS.
D&C Green No. 5	ACS, KON.
D&C Green No. 6	ACS, KON.
D&C Green No. 8	KON, SDH.
D&C Orange No. 4	KON, SNA, TMS.
D&C Orange No. 5	SNA, TMS.
D&C Orange No. 10	TMS.
D&C Orange No. 17	SNA.
D&C Red No. 2	KON.
D&C Red No. 3	KON, TMS.
D&C Red No. 6	KON, SNA, TMS.
*D&C Red No. 7	KON, SNA, TMS.
D&C Red No. 8	KON, SNA.
D&C Red No. 9	KON, SNA, TMS.
D&C Red No. 10	KON, SNA.
D&C Red No. 11	KON, SNA.
D&C Red No. 12	SNA, TMS.
D&C Red No. 13	SNA, TMS.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FOOD, DRUG, AND COSMETIC COLORS--Continued	
Drug and Cosmetic Dyes--Continued	
D&C Red No. 17	KON.
*D&C Red No. 19	ACS, KON, SNA, TMS.
*D&S Red No. 21	KON, SNA, TMS.
D&C Red No. 22	KON.
D&C Red No. 27	TMS.
D&C Red No. 28	ACS.
D&C Red No. 30	KON, TMS.
D&C Red No. 31	KON.
D&C Red No. 33	ACS.
D&C Red No. 34	KON.
*D&C Red No. 36	ALT, KON, SNA, TMS.
D&C Red No. 37	ACS.
D&C Violet No. 2	ACS.
*D&C Yellow No. 5	KON, SNA, TMS.
D&C Yellow No. 6	KON.
D&C Yellow No. 7	KON.
D&C Yellow No. 8	KON, TMS.
D&C Yellow No. 10	KON.
D&C Yellow No. 11	ACS, KON.
Drug and Cosmetic Dyes, External	
Ext. D&C Green No. 1	ACS, KON.
Ext. D&C Orange No. 3	ACS.
Ext. D&C Yellow No. 1	ACS, KON.
Ext. D&C Yellow No. 7	KON.
INGRAIN DYES	
Ingrain blue dyes:	
Ingrain Blue 1	ICI.
Ingrain Blue 2	VPC.
Ingrain Blue 3	ICI.
Ingrain Blue 6	VPC.
MORDANT DYES	
*Mordant yellow dyes:	
Mordant Yellow 1	ATL, GAF, PDC.
Mordant Yellow 3	ACS, ATL.
Mordant Yellow 5	TRC.
Mordant Yellow 8	ACS, DUP, PDC.
Mordant Yellow 10	DUP.
Mordant Yellow 14	ACS.
Mordant Yellow 16	ACS, ACY.
Mordant Yellow 20	ACS.
Mordant Yellow 26	VPC.
Mordant Yellow 29	GAF.
Mordant Yellow 30	TRC, VPC.
Mordant Yellow 36	PDC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MORDANT DYES--Continued	
*Mordant orange dyes:	
*Mordant Orange 1	ACY, GAF, PDC, TRC.
Mordant Orange 4	GAF, PDC.
Mordant Orange 6	ATL, GAF, TRC.
Mordant Orange 8	TRC.
Mordant Orange 30	ACS.
*Mordant red dyes:	
Mordant Red 3	ACS, ACY.
Mordant Red 5	PDC.
Mordant Red 6	GAF.
*Mordant Red 7	ACS, ACY, BDO, CMG, GAF, PDC, TRC, VPC.
Mordant Red 9	ACS, GAF, MRX.
Mordant Red 11	ACY.
Mordant Red 64	PDC.
Mordant violet dyes:	
Mordant Violet 5	PDC.
Mordant Violet 11	GAF.
Mordant Violet 20	GAF.
*Mordant blue dyes:	
Mordant Blue 1	ACS, DUP, GAF.
Mordant Blue 3	GAF.
Mordant Blue 7	TRC.
Mordant Blue 9	ACS, GAF, PDC.
Mordant Blue 13	ACS, HSH.
Mordant Blue 19	CMG.
Mordant green dyes:	
Mordant Green 11	ACY.
Mordant Green 36	PDC.
*Mordant brown dyes:	
*Mordant Brown 1	ACS, CMG, DUP, GAF, TRC, YAW.
Mordant Brown 12	PDC.
Mordant Brown 13	ACS.
Mordant Brown 15	GAF.
Mordant Brown 18	ACS, DUP.
Mordant Brown 19	GAF.
Mordant Brown 21	GAF, VPC.
*Mordant Brown 33	ACS, DUP, GAF, PDC, TRC.
*Mordant Brown 40	ACS, CMG, DUP, GAF, VPC.
Mordant Brown 50	TRC.
Mordant Brown 63	TRC.
Mordant Brown 70	DUP, PDC.
*Mordant black dyes:	
Mordant Black 1	ACS.
*Mordant Black 3	ACS, GAF, TRC.
Mordant Black 5	ACS.
Mordant Black 7	GAF.
Mordant Black 8	VPC.
Mordant Black 9	ACS, VPC.
*Mordant Black 11	ACS, GAF, TRC, VPC.
*Mordant Black 13	ACS, GAF, HSH.
*Mordant Black 17	ACS, ACY, DUP, GAF, TRC.
Mordant Black 19	PDC.
Mordant Black 26	TRC.
Mordant Black 38	ACS, CMG.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
OXIDATION BASES	
Oxidation Base 8 and 8A	ACY.
Oxidation Base 10 and 10A	SDH.
Oxidation Base 21	PDC.
Oxidation Base 22	ACY.
Oxidation Base 25	ACY.
Other oxidation bases	ACY, CMG.
SOLVENT DYES	
*Solvent yellow dyes:	
Solvent Yellow 1	AAP, ACY.
*Solvent Yellow 2	AAP, DUP, FH, GAF, PAT, PSC.
*Solvent Yellow 3	ACS, DUP, FH, PSC.
Solvent Yellow 13	ACY, GAF.
*Solvent Yellow 14	AAP, ACS, ACY, DUP, FH, GAF, PAT, PSC.
Solvent Yellow 16	PAT.
Solvent Yellow 19	GAF.
Solvent Yellow 29	GAF.
Solvent Yellow 30	ACS, PSC.
Solvent Yellow 33	ACS, ACY.
Solvent Yellow 34	DUP.
Solvent Yellow 40	ACS.
Solvent Yellow 42	ACS.
Solvent Yellow 44	ACS, GAF.
Solvent Yellow 45	ACS, DUP.
Solvent Yellow 47	ACY, DUP, GAF.
Solvent Yellow 56	ACS, ACY, FH.
Solvent Yellow 71	ACY.
Solvent Yellow 72	ACY.
Solvent Yellow 87	ACY.
Other solvent yellow dyes	AAP, DSC, PAT, x.
*Solvent orange dyes:	
Solvent Orange 1	PAT.
Solvent Orange 2	AAP, PSC.
*Solvent Orange 3	ACS, ACY, DSC, GAF, PSC.
Solvent Orange 5	GAF.
*Solvent Orange 7	ACS, ACY, GAF.
Solvent Orange 20	ACY, DUP, GAF.
Solvent Orange 23	ACS.
Solvent Orange 24	DUP.
Solvent Orange 25	ACY, DUP.
Solvent Orange 31	ACS.
Solvent Orange 47	FH.
Solvent Orange 48	ACY.
Solvent Orange 51	ACY.
Other solvent orange dyes	AAP, ACY, DSC, DUP, PAT.
*Solvent red dyes:	
Solvent Red 1	PSC.
Solvent Red 8	GAF.
Solvent Red 22	GAF.
*Solvent Red 24	ACY, DUP, FH, GAF, PAT, SDH.
*Solvent Red 26	AAP, ACS, ACY, PSC.
Solvent Red 27	ACS.
Solvent Red 33	DUP, GAF.
Solvent Red 35	GAF.
Solvent Red 36	ACS.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
SOLVENT DYES--Continued	
*Solvent red dyes--Continued	
Solvent Red 40	GAF.
Solvent Red 41	DSC.
*Solvent Red 49	ACY, DSC, DUP, GAF.
Solvent Red 52	GAF, ICI.
Solvent Red 65	ACS.
Solvent Red 68	ACS.
Solvent Red 69	DSC, DUP.
Solvent Red 74	ACS.
Solvent Red 75	ACS.
Solvent Red 76	ACS.
Solvent Red 80	ACS, ACY.
Solvent Red 105	ACY.
Solvent Red 108	ACY.
Solvent Red 111	ACY.
Solvent Red 115	ACY.
Solvent Red 126	ACY.
Other solvent red dyes	AAP, ACY, ATL, DSC, DUP, GAF, ICI, PAT.
*Solvent violet dyes:	
*Solvent Violet 8	ACS, ACY, DSC, DUP.
Solvent Violet 9	DSC.
Solvent Violet 13	AAP, HSH.
Solvent Violet 14	ICI.
Solvent Violet 17	ACS.
Other solvent violet dyes	AAP, DSC, PAT.
*Solvent blue dyes:	
Solvent Blue 3	ACY, SW.
Solvent Blue 4	DSC, DUP, SDH.
Solvent Blue 5	DSC.
Solvent Blue 7	ACY.
Solvent Blue 9	GAF.
*Solvent Blue 11	BDO, GAF, ICI.
Solvent Blue 12	ACS, DUP.
Solvent Blue 16	ACS.
Solvent Blue 32	AAP.
Solvent Blue 36	ACS, DUP.
Solvent Blue 37	DUP.
*Solvent Blue 38	ACS, ACY, DUP GAF.
Solvent Blue 43	ACS.
Solvent Blue 58	ACY.
Solvent Blue 59	ACY.
Solvent Blue 60	ACY.
Solvent Blue 74	ACS.
Other solvent blue dyes	AAP, ACY, DSC, GAF, ICI, PAT, SDH.
Solvent green dyes:	
Solvent Green 1	ACY, DSC, SDH.
Solvent Green 2	GAF.
Solvent Green 3	AAP, ACS, ACY, ATL, GAF, HSH, ICI.
Solvent Green 10	DSC, DUP.
Other solvent green dyes	ACY, DSC, GAF.
*Solvent brown dyes:	
Solvent Brown 11	GAF.
*Solvent Brown 12	ACY, DSC, GAF.
Solvent Brown 17	DUP.
Solvent Brown 19	DUP.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
SOLVENT DYES--Continued	
*Solvent brown dyes--Continued	
Solvent Brown 20	ACY, DUP.
Solvent Brown 22	DUP, FH.
Solvent Brown 38	ACY.
Other solvent brown dyes	DSC.
Solvent black dyes:	
Solvent Black 3	ACS.
Solvent Black 5	ACS, ACY, DSC, DUP.
Solvent Black 7	ACS, ACY, DSC, FH.
Solvent Black 12	ACS.
Solvent Black 13	ACS.
Solvent Black 17	DUP.
Solvent Black 26	ACY.
Other solvent black dyes	DSC.
SULFUR DYES	
Sulfur yellow dyes:	
Leuco Sulfur Yellow 1	SDC.
Leuco Sulfur Yellow 2	ACY, SDC, STC.
Solubilized Sulfur Yellow 2	STC.
Sulfur Yellow 4	SDC.
Leuco Sulfur Yellow 4	SDC.
Leuco Sulfur Yellow 9	STC.
Leuco Sulfur Yellow 15	ACY.
Other sulfur yellow dyes	ACY, SDC.
Sulfur red dyes:	
Sulfur Red 1	ACS, ACY.
Leuco Sulfur Red 5	SDC.
Sulfur Red 6	ACS, ACY, SDC.
Sulfur blue dyes:	
Sulfur Blue 5	ACY.
Sulfur Blue 7	ACS, ACY, SDC.
Leuco Sulfur Blue 7	ACS, ACY, SDC.
Solubilized Sulfur Blue 7	SDC.
Sulfur Blue 8	SDC.
Leuco Sulfur Blue 8	SDC.
Sulfur Blue 9	ACS, ACY.
Sulfur Blue 11	SDC.
Leuco Sulfur Blue 11	SDC.
Leuco Sulfur Blue 13	ACY.
Sulfur Blue 15	DUP.
Sulfur Blue 16	ACY.
Other sulfur blue dyes	ACY, SDC.
Sulfur green dyes:	
Sulfur Green 2	SDC.
Leuco Sulfur Green 2	SDC.
Sulfur Green 3	ACS.
Leuco Sulfur Green 3	SDC.
Sulfur Green 14	DUP.
Leuco Sulfur Green 16	SDC.
Solubilized Sulfur Green 16	SDC.
Sulfur Green 28	ACY.
Other sulfur green dyes	ACY, SDC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
SULFUR DYES--Continued	
Sulfur brown dyes:	
Leuco Sulfur Brown 1	STC.
Solubilized Sulfur Brown 1	STC.
Sulfur Brown 3	SDC.
Leuco Sulfur Brown 3	SDC.
Sulfur Brown 10	ACS, DUP, SDC.
Leuco Sulfur Brown 10	SDC.
Solubilized Sulfur Brown 10	SDC.
Sulfur Brown 12	SCD.
Sulfur Brown 14	SDC.
Leuco Sulfur Brown 14	ACY, SDC.
Sulfur Brown 20	DUP.
Sulfur Brown 21	DUP.
Leuco Sulfur Brown 21	STC.
Solubilized Sulfur Brown 21	STC.
Sulfur Brown 26	ACY.
Sulfur Brown 30	ACY.
Sulfur Brown 37	SDC.
Leuco Sulfur Brown 37	SDC.
Sulfur Brown 44	ACS.
Sulfur Brown 4S	ACS.
Sulfur Brown S0	ACS.
Leuco Sulfur Brown 81	ACY.
Leuco Sulfur Brown 82	ACY.
Other sulfur brown dyes	ACY, SDC.
*Sulfur black dyes:	
*Sulfur Black 1	ACS, ACY, DUP, SDC.
Leuco Sulfur Black 1	ACS, ACY, SDC, STC.
Solubilized Sulfur Black 1	SDC, STC.
*Sulfur Black 2	ACS, ACY, DUP, SDC.
Leuco Sulfur Black 2	ACS, ACY, SDC.
Solubilized Sulfur Black 2	SDC.
Leuco Sulfur Black 6	ACS.
Sulfur Black 10	ACY, DUP.
Leuco Sulfur Black 10	ACS, ACY.
Sulfur Black 11	SDC.
Leuco Sulfur Black 11	SDC.
Other sulfur black dyes	SDC.
VAT DYES	
*Vat yellow dyes:	
Vat Yellow 1, 12-1/2%	ACS.
*Vat Yellow 2, 8-1/2%	AAP, ACS, ACY, GAF, ICI, TRC, VPC.
Solubilized Vat Yellow 2, 2S%	GAF, ICI.
Vat Yellow 3, 12-1/2%	DUP.
*Vat Yellow 4, 12-1/2%	ACY, ATL, GAF, HST, ICI, VPC.
Solubilized Vat Yellow 4, 37-1/2%	GAF, HST, ICI.
Vat Yellow 10, 10%	GAF.
Vat Yellow 14, 12-1/2%	TRC.
Vat Yellow 15, 11-1/2%	ACY.
Vat Yellow 21, 9-1/2%	ATL.
Vat Yellow 22, 10%	DUP.
Vat Yellow 27	VPC.
Vat Yellow 33, 15%	TRC, VPC.
Other vat yellow dyes	ACS, GAF, MAY, VPC.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
VAT DYES--Continued	
*Vat orange dyes:	
*Vat Orange 1, 20%	ACS, ACY, CMG, GAF, HST, ICI, TRC, VPC.
*Solubilized Vat Orange 1, 26%	GAF, HST, ICI.
*Vat Orange 2, 12%	AAP, ACS, ACY, CMG, DUP, GAF, ICI, TRC.
*Vat Orange 3, 13-1/2%	CMG, DUP, GAF, HST.
Vat Orange 4, 6%	ACY, CMG, DUP.
*Vat Orange 5, 10%	AAP, ACY, HST.
*Solubilized Vat Orange 5, 30%	GAF, HST, ICI.
Vat Orange 7, 11%	GAF, HST, TRC.
*Vat Orange 9, 12%	AAP, ACS, ACY, CMG, DUP, GAF, ICI, TRC.
Vat Orange 11, 6%	ACS, DUP.
*Vat Orange 15, 10%	AAP, ACS, GAF, ICI, TRC, VPC.
Vat Orange 23, 17-1/2%	ACY, DUP.
Vat Orange 24	DUP.
Other vat orange dyes	GAF, SDC.
*Vat red dyes:	
*Vat Red 1, 13%	AAP, ACY, HST, ICI.
Solubilized Vat Red 1, 37%	GAF, HST, ICI.
Vat Red 10, 18%	ACS, GAF.
Solubilized Vat Red 10, 31%	GAF.
Vat Red 12, 8-1/2%	DUP.
*Vat Red 13, 11%	DUP, GAF, TRC.
Vat Red 14, 10%	GAF, HST.
Vat Red 15, 10%	GAF, HST, TRC.
Vat Red 16, 11%	DUP.
Vat Red 17, 10%	GAF.
Vat Red 23	DUP.
Vat Red 29, 18%	GAF.
*Vat Red 32, 20%	ACS, DUP, GAF.
Vat Red 35, 12-1/2%	ACS, TRC.
Vat Red 41, 20%	HST.
Vat Red 44, 17%	TRC.
Vat Red 52, 10%	DUP.
Vat Red 56, 15-1/2%	ACY.
Other vat red dyes	GAF, TRC, VPC.
*Vat violet dyes:	
*Vat Violet 1, 11%	ACS, ACY, DUP, GAF, ICI, TRC.
Solubilized Vat Violet 1, 26%	GAF.
*Vat Violet 2, 20%	ACS, ACY, GAF, HST.
Vat Violet 3, 15%	GAF, HST.
*Vat Violet 9, 12%	DUP, GAF, ICI, TRC.
*Vat Violet 13, 6-1/4%	ACS, DUP, GAF, ICI, TRC.
Vat Violet 14, 12-1/2%	ACS, DUP.
Vat Violet 17, 12-1/2%	DUP, GAF.
Vat Violet 21	VPC.
Other vat violet dyes	GAF, MAY.
*Vat blue dyes:	
Vat Blue 1, 20%	ACS.
Solubilized Vat Blue 1, 25%	GAF.
Vat Blue 3, 16%	HST.
*Vat Blue 4, 10%	ACY, DUP, GAF.
Vat Blue 5, 16%	ACS, ATL, DUP, HST.
Solubilized Vat Blue 5, 38%	GAF, HST.
*Vat Blue 6, 8-1/3%	ACS, ACY, DUP, GAF, ICI, TRC.
Solubilized Vat Blue 6, 17-1/2%	GAF, HST, ICI.

TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
VAT DYES--Continued	
*Vat blue dyes--Continued	
Vat Blue 12, 6-1/2%----------	DUP.
Vat Blue 14, 8-1/3%----------	ACS, DUP, GAF, TRC.
Vat Blue 16, 16-1/2%----------	ACY, DUP.
*Vat Blue 18, 13%----------	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC.
*Vat Blue 20, 14%----------	AAP, ACY, ATL, DUP, GAF, ICI, MAY, SDC, TRC.
Vat Blue 26, 24%----------	GAF.
Vat Blue 29----------	GAF.
Vat Blue 39, 12%----------	GAF.
Vat Blue 43----------	DUP, SDC.
Vat Blue 53, 20-1/2%----------	GAF.
Vat Blue 60----------	DUP.
Other vat blue dyes----------	GAF, MAY, x.
*Vat green dyes:	
*Vat Green 1, 6%----------	AAP, ACS, ACY, ATL, DUP, GAF, ICI, MAY.
Solubilized Vat Green 1, 12-1/2%----------	GAF, HST, ICI.
*Vat Green 3, 10%----------	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC.
Solubilized Vat Green 3, 26%----------	GAF, HST, ICI.
*Vat Green 8, 8-1/2%----------	ACS, DUP, GAF, ICI.
*Vat Green 9, 12-1/2%----------	ACS, ACY, ATL, DUP, GAF, MAY, SDC, TRC.
Vat Green 15, 17%----------	ACS.
Vat Green 20, 6%----------	DUP.
Other vat green dyes----------	GAF, MAY, SDC.
*Vat brown dyes:	
*Vat Brown I, 11%----------	ACS, ACY, DUP, GAF, ICI, MAY, TRC.
Solubilized Vat Brown 1, 17%----------	GAF, ICI.
*Vat Brown 3, 11%----------	AAP, ACS, ACY, DUP, GAF, ICI, MAY, TRC, VPC.
*Vat Brown S, 13%----------	AAP, ACY, GAF, HST, VPC.
Vat Brown 11, 12%----------	DUP, MAY, TRC.
Vat Brown 12, 12-1/2%----------	DUP.
Vat Brown 13, 17%----------	MAY.
Vat Brown 20, 10-1/2%----------	ACS, GAF.
Vat Brown 28, 22%----------	ICI.
Vat Brown 29, 13%----------	ACY.
Vat Brown 31, 28%----------	AAP.
Vat Brown 38, 20%----------	ICI.
Vat Brown 40, 14%----------	DUP.
Vat Brown 57, 15%----------	GAF, HST, TRC.
Other vat brown dyes----------	ACS, GAF, SDC, VPC.
*Vat black dyes:	
Solubilized Vat Black 1, 27-1/2%----------	GAF, HST.
Vat Black 9, 16%----------	ACS, GAF, MAY, TRC.
Vat Black 11, 17-1/2%----------	ACY.
Vat Black 13, 14%----------	ACS, DUP.
Vat Black 14, 11-1/2%----------	DUP.
Vat Black 15----------	AAP.
Vat Black 18, 15-1/2%----------	ACS, GAF.
Bat Black 21, 18-1/2%----------	ACY.
Vat Black 22, 19%----------	ACY, TRC.
*Vat Black 25, 12-1/2%----------	AAP, ACY, DUP, GAF, ICI, MAY, TRC.
*Vat Black 27, 12-1/2%----------	ACS, ACY, BDO, DUP, GAF, ICI, MAY, TRC.

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TABLE 4.--*Benzenoid dyes: Manufacturers' identification codes, by products, 1968*--Continued

Dye	Manufacturers' identification codes (see Appendix, tables 1 and 2)
VAT DYES--Continued	
*Vat black dyes--Continued	
Vat Black 34, 16%	1C1.
Vat Black 37	GAF.
Vat Black 38, 20%	GAF.
Vat Black 52, 18-1/2%	ACY.
Other vat black dyes	DUP, GAF, SDC, TRC.
All other dyes	ACY, PAT, SDC.

As the terms are used in this report, benzenoid 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 1968 are given in table 1. Statistics on sales of a few selected pigments by commercial forms (dry full-strength form, dry extended form, dry dispersions, aqueous dispersions, and flushed colors) are given in table 2. Prior to 1961, statistics for toners included the quantities and values of extenders and diluents. Beginning in 1961, data were collected for both 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.

Total production of benzenoid pigments in 1968 was 53.7 million pounds --0.8 percent more than the 53.3 million pounds produced in 1967 and 5.1 percent more than the 51.1 million pounds produced in 1966. Total sales of benzenoid pigments in 1968 amounted to 45.8 million pounds, valued at $119.9 million, compared with 42.9 million pounds, valued at $108.4 million, in 1967 and 43.3 million pounds, valued at $107.6 million, in 1966. In terms of quantity, sales of benzenoid pigments in 1968 were 6.9 percent larger than in 1967 and 5.8 percent larger than in 1966; in terms of value, sales in 1968 were 10.7 percent larger than in 1967 and 11.5 percent larger than in 1966.

Production of toners in 1968 amounted to 49.9 million pounds--1.5 percent more than the 49.2 million pounds reported for 1967. Sales in 1968 were 42.2 million pounds, valued at $116.3 million, compared with 39.0 million pounds, valued at $104.7 million, in 1967. Sales in 1968 were thus 8.2 percent larger than those in 1967 in terms of quantity and 11.1 percent larger in terms of value. The individual toners listed in the report which were produced in the largest quantities in 1968 were Pigment Yellow 12, 4.8 million pounds; Pigment Blue 15, beta form, 4.3 million pounds; Pigment Blue 15, alpha form, 4.0 million pounds; Pigment Red 49, barium toner, 3.6 million pounds; Pigment Green 7, 3.5 million pounds; Pigment Blue 19, 3.0 million pounds; Pigment Red 48, 2.5 million pounds; Pigment Red 53, barium toner, 2.2 million pounds; and Pigment Red 90, 2.0 million pounds. The production of Pigment Blue 15, alpha form, appears to have decreased in 1968 compared with 1967, due to a correction in reporting procedures by two producers. The net result of these statistical corrections is to decrease 1968 totals for Pigment Blue 15, compared with those of earlier years, and to increase the statistics for the beta form while correspondingly decreasing the statistics for the alpha form.

Production of lakes totaled 3.8 million pounds in 1968--7.8 percent less than the 4.2 million pounds reported for 1967. Sales of lakes in 1968 amounted to 3.6 million pounds, valued at $3.6 million, compared with sales in 1967 of 3.9 million pounds, valued at $3.7 million. Sales in 1968 were thus 6.7 percent smaller than those in 1967 in terms of quantity, and 2.1 percent smaller in terms of value.

For each of 15 selected pigments, or groups of pigments, table 2 gives data on sales by commercial forms. Pigment Yellow 12, Pigment Red 90, and Pigment Blue 19 were sold principally in the flushed form. The remaining 12 pigments, or groups of pigments, for which statistics are published were sold principally in the dry full-strength form. Statistics on sales by commercial forms could not be published for Pigment Red 49, sodium toner, without revealing the operations of individual companies.

Table 3 lists benzenoid pigments and identifies the manufacturers; imports of pigments during 1967 and 1968 are shown in table 3 of the Appendix.

TABLE 1.--*Benzenoid pigments: U.S. production and sales, 1968*

[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 2 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	53,749	45,810	119,934	$2.62
TONERS				
Total	49,919	42,202	116,337	2.76
Yellow toners, total	9,499	6,560	17,924	2.73
Hansa yellows, total	1,526	1,217	3,032	2.49
Pigment Yellow 1, C.I. 11 680	730	566	1,023	1.81
Pigment Yellow 3, C.I. 11 710	175	106	239	2.25
Pigment Yellow 73	309	...	...	...
Pigment Yellow 74, C.I. 11 741	203	172	628	3.65
Other Hansa yellows	109	373	1,142	3.06
Benzidine yellows, total	7,663	5,196	13,193	2.54
Pigment Yellow 12, C.I. 21 090	4,768	2,983	6,414	2.15
Pigment Yellow 14, C.I. 21 095	1,829	1,456	3,624	2.49
Pigment Yellow 17, C.I. 21 105	393	288	849	2.95
Other benzidine yellows	673	469	2,306	4.92
All other	310	147	1,699	11.56
Orange toners, total	924	836	2,820	3.37
Pigment Orange 2, C.I. 12 060	67	57	89	1.56
Pigment Orange 5, C.I. 12 075	274	218	348	1.60
Pigment Orange 13, C.I. 21 110	175	164	525	3.20
Pigment Orange 16, C.I. 21 160	257	245	646	2.64
Pigment Orange 34, C.I. 21 115	72	63	201	3.19
All other	79	89	1,011	11.36
Red toners, total	20,571	18,338	37,649	2.05
Naphthol reds, total	1,209	1,013	3,430	3.39
Pigment Red 2, C.I. 12 310	52	43	117	2.72
Pigment Red 5, C.I. 12 490	80	48	236	4.92
Pigment Red 17, C.I. 12 390	65	55	172	3.13
Pigment Red 18, C.I. 12 350	7	...	...	...
Pigment Red 22, C.I. 12 315	96	107	312	2.92
Pigment Red 23, C.I. 12 355	...	629	1,962	3.12
Other naphthol reds	909	131	631	4.82
Pigment Red 1, C.I. 12 070, dark	133	106	134	1.26
Pigment Red 1, C.I. 12 070, light	173	155	196	1.26
Pigment Red 3, C.I. 12 120	1,699	1,508	2,404	1.59
Pigment Red 4, C.I. 12 085	300	219	322	1.47
Pigment Red 6, C.I. 12 090	55	...	...	...
Pigment Red 38, C.I. 21 120	224	183	792	4.33
Pigment Red 48, C.I. 15 865	2,467	2,409	4,564	1.89
Pigment Red 49, C.I. 15 630:				
Barium toner	3,587	3,432	3,634	1.06
Calcium toner	1,387	1,288	1,424	1.11
Sodium toner	208	256	287	1.12
Pigment Red 52, C.I. 15 860	1,568	1,591	2,427	1.53
Pigment Red 53, C.I. 15 585, barium toner	2,227	1,952	2,668	1.37
Pigment Red 54, C.I. 14 830, calcium toner	71	78	178	2.28

See footnotes at end of table.

TABLE 1.--*Benzenoid pigments: U.S. production and sales, 1968*--Continued

Pigment	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
TONERS--Continued				
Red toners--Continued				
Pigment Red 57, C.I. 15 850, calcium toner	1,044	943	1,429	$1.52
Pigment Red 63, C.I. 15 880	48	44	76	1.73
Pigment Red 81, C.I. 45 160, PMA	479	389	2,411	6.20
Pigment Red 81, C.I. 45 160, PTA	159	132	885	6.70
Pigment Red 90, C.I. 45 380	1,991	1,143	2,505	2.19
All other	1,542	1,497	7,883	5.27
Violet toners, total	2,122	2,040	12,747	6.25
Pigment Violet 1, C.I. 45 170, PMA	127	122	402	3.30
Pigment Violet 1, C.I. 45 170, PTA	76	70	472	6.74
Pigment Violet 3, C.I. 42 535, fugitive	558	552	740	1.34
Pigment Violet 3, C.I. 42 535, PMA	399	379	1,067	2.82
Pigment Violet 3, C.I. 42 535, PTA	51	47	222	4.72
All other	911	870	9,844	11.31
Blue toners, total	11,969	10,192	30,905	3.03
Pigment Blue 1, C.I. 42 595, PMA	158	145	789	5.44
Pigment Blue 1, C.I. 42 595, PTA	19	17	100	5.88
Pigment Blue 9, C.I. 42 025, PTA	3	3	18	6.00
Pigment Blue 14, C.I. 42 600, PMA	98	77	620	8.05
Pigment Blue 15, C.I. 74 160, alpha form	4,019	3,428	10,113	2.95
Pigment Blue 15, C.I. 74 160, beta form	4,315	3,305	10,525	3.18
Pigment Blue 19, C.I. 42 750A	3,078	2,969	7,269	2.45
Pigment Blue 25, C.I. 21 180	91	71	213	3.00
All other	188	177	1,258	7.11
Green toners, total	4,415	3,833	13,688	3.57
Pigment Green 1, C.I. 42 040, PTA	...	9	48	5.33
Pigment Green 2, C.I. 42 040 and 49 005, PMA	69	66	341	5.17
Pigment Green 2, C.I. 42 040 and 49 005, PTA	69	54	231	4.28
Pigment Green 4, C.I. 42 000, PTA	5	5	24	4.80
Pigment Green 7, C.I. 74 260	3,499	3,109	10,781	3.47
Pigment Green 8, C.I. 10 006	173	132	166	1.26
Pigment Green 36, C.I. 74 265	250	207	711	3.43
All other	350	251	1,386	5.52
Brown toners, total	154	135	335	2.48
Pigment Brown 5, C.I. 15 800	110	90	141	1.57
All other	44	45	194	4.31
Black toners	265	268	269	1.00
LAKES				
Total	3,830	3,608	3,597	1.00
Red lakes:				
Pigment Red 60, C.I. 16 105	240	178	284	1.60
Pigment Red 83, C.I. 58 000	37	63	229	3.63
(Acid Red 26), C.I. 16 150	479	479	223	.47

See footnotes at end of table.

TABLE 1.--*Benzenoid pigments: U.S. production and sales, 196[illegible]*--Continued

Pigment	Production	Sales		
		Quantity	Value	Unit value[1]
LAKES--Continued				
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Violet lakes:				
Pigment Violet 5, C.I. 58 055	192	176	388	$2.20
Blue lakes, total	1,914	1,771	1,813	1.02
All other lakes[2]	968	941	660	.70

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

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

TABLE 2.--*Benzenoid pigments: U.S. sales of selected dry full-strength colors, dry extended colors, dry dispersions, aqueous dispersions, and flushed colors, 1968*

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	2,983	6,672	$2.24
Dry full-strength toner	516	1,067	2.07
Dry extended toner, dry dispersions, and aqueous dispersions[3] [4]	179	397	2.22
Flushed color	2,288	5,208	2.28
Pigment Yellow 13, C.I. 21 100; Pigment Yellow 14, C.I. 21 095; Pigment Yellow 17, C.I. 21 105; and other benzidine yellows, total	2,213	6,799	3.07
Dry full-strength toner	1,560	5,050	3.24
Dry extended toner and dry dispersions[4]	33	83	2.52
Aqueous dispersions[3]	302	817	2.71
Flushed color	318	849	2.67
Pigment Red 3, C.I. 12 120, total	1,508	2,461	1.63
Dry full-strength toner and dry extended toner[4]	949	1,478	1.56
Aqueous dispersions[3]	84	117	1.39
Flushed color	475	866	1.82
Pigment Red 48, C.I. 15 865, total	2,409	4,564	1.89
Dry full-strength toner	2,213	4,146	1.87
Dry extended toner and dry dispersions[4]	80	155	1.94
Aqueous dispersions[3]	40	115	2.88
Flushed color	76	148	1.95
Pigment Red 49, C.I. 15 630, barium toner, total	3,432	3,727	1.09
Dry full-strength toner and dry extended toner[4]	2,616	2,767	1.06
Aqueous dispersions[3] and flushed color[4]	816	960	1.18
Pigment Red 49, C.I. 15 630, calcium toner, total	1,288	1,543	1.20
Dry full-strength toner	1,059	1,177	1.11
Dry dispersions and aqueous dispersions[3] [4]	16	23	1.44
Flushed color	213	343	1.61
Pigment Red 49, C.I. 15 630, sodium toner[4]	256	301	1.18
Pigment Red 53, C.I. 15 585, barium toner, total	1,952	2,723	1.39
Dry full-strength toner, dry extended toner, and dry dispersions[4]	1,179	1,599	1.36
Aqueous dispersions[3] and flushed color[4]	773	1,124	1.45
Pigment Red 90, C.I. 45 380, total	1,143	2,646	2.31
Dry full-strength toner, dry extended toner, and dry dispersions[4]	25	52	2.08
Aqueous dispersions[3] and flushed color[4]	1,118	2,594	2.32
Pigment Violet 3, C.I. 42 535, fugitive, total	552	740	1.34
Dry full-strength toner and dry extended toner[4]	271	385	1.42
Flushed color	281	355	1.26
Pigment Violet 3, C.I. 42 535, permanent (PMA and PTA), total	426	1,354	3.18
Dry full-strength toner	312	943	3.02
Dry extended toner, aqueous dispersions[3] and flushed color[4]	114	411	3.61
Pigment Blue 15, C.I. 74 160, alpha form, total	3,428	10,131	2.96
Dry full-strength toner	1,328	3,980	3.00
Dry extended toner	832	2,753	3.31
Dry dispersions	124	404	3.26
Aqueous dispersions[3]	970	2,527	2.61
Flushed color	174	467	2.68

See footnotes at end of table.

TABLE 2.--*Benzenoid pigments: U.S. sales of selected dry full-strength colors, dry extended colors, dry dispersions, aqueous dispersions, and flushed colors, 1968*--Continued

Selected pigments by commercial forms	Sales		
	Quantity[1]	Value	Unit value[2]
	1,000 pounds	*1,000 dollars*	*Per pound*
Pigment Blue 15, C.I. 74 160, beta form, total	3,305	10,525	$3.18
Dry full-strength toner	1,205	4,023	3.34
Dry extended toner and dry dispersions[4]	451	1,579	3.50
Aqueous dispersions[3]	850	2,414	2.84
Flushed color	799	2,509	3.14
Pigment Blue 19, C.I. 42 750A, total	2,969	7,270	2.45
Dry full-strength toner and dry extended toner[4]	315	766	2.43
Aqueous dispersions[3] and flushed color[4]	2,654	6,504	2.45
Pigment Green 7, C.I. 74 260, total	3,109	10,781	3.47
Dry full-strength toner	1,217	4,335	3.56
Dry extended toner and dry dispersions[4]	641	2,530	3.95
Aqueous dispersions[3]	1,076	3,289	3.06
Flushed color	175	627	3.58

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

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

TABLE 3.-- *Benzenoid pigments: Manufacturers' identification codes, by products, 1968*

[Benzenoid pigments for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Pigment	Manufacturers' identification codes (see Appendix, tables 1 and 2)
TONERS	
*Yellow toners:	
*Hansa yellows:	
*Pigment Yellow 1, C.I. 11 680	ACS, ACY, AMS, CPC, DUP, FCL, GAF, HSC, HSH, ICI, IMP, KON, PPG, ROM, S, SDH, SNA, SW.
*Pigment Yellow 3, C.I. 11 710	ACS, HSC, HSH, IMP, KCW, KON, PPG, S, SW.
Pigment Yellow 4, C.I. 11 665	ACS, SNA.
Pigment Yellow S, C.I. 11 660	IMP.
Pigment Yellow 6, C.I. 11 670	IMP.
Pigment Yellow 9, C.I. 11 720	SNA.
Pigment Yellow 49, C.I. 11 76S	ICI, IMP.
Pigment Yellow 65, C.I. 11 740	SW.
*Pigment Yellow 73	ACS, SNA, SW, x.
*Pigment Yellow 74, C.I. 11 741	DUP, HSC, IMP, SDH, SW.
Pigment Yellow 75	IMP.
All other Hansa yellows	DUP, KCW.
*Benzidine yellows:	
*Pigment Yellow 12, C.I. 21 090	ACS, ACY, AMS, DUP, FCL, HSC, HSH, ICC, IMP, KON, LVY, S, SDH, SNA, SW.
Pigment Yellow 13, C.I. 21 100	BUC, FCL, GAF, HSC, HSH, HST, ICC, IMP, ROM, SDH, SNA, SW.
*Pigment Yellow 14, C.I. 21 095	ACS, ACY, AMS, BUC, CIK, CPC, DUP, FCL, GAF, HSC, HSH, HST, ICC, IMP, KON, ROM, S, SDH, SNA. SW, x.
*Pigment Yellow 17, C.I. 21 10S	AMS, ACY, BUC, FCL, HSH, HSC, HST, ICC, IMP, SDH, SNA, SW.
Pigment Yellow 76	x.
Pigment Yellow 83	HST.
Pigment Yellow 97	HST.
All other benzidine yellows	HSH, ICC, ROM, SW.
Pigment Yellow 18, C.I. 49 005	IMP.
Pigment Yellow 19	GAF.
Pigment Yellow 60, C.I. 12 705	SW.
Pigment Yellow 112 C.I. 70 600	ACS, TRC.
(Basic Yellow 2), C.I. 41 000 fugitive	MRX.
All other	ACY, ICC, IMP, S, SW.
*Orange toners:	
Pigment Orange 1, C.I. 11 72S	ACS, KCW.
*Pigment Orange 2, C.I. 12 060	FCL, IMP, SDH, SW, UHL.
*Pigment Orange 5, C.I. 12 075	ACY, HSC, IMP, SNA, SW.
*Pigment Orange 13, C.I. 21 110	ACS, ACY, AMS, DUP, IMP, KON, S, SNA, SW.
Pigment Orange 15, C.I. 21 130	ACS, GAF.
*Pigment Orange 16, C.I. 21 160	ACS, BUC, DUP, FCL, HSC, HSH, HST, ICC, IMP, ROM, SDH, SNA, SW.
*Pigment Orange 34, C.I. 21 11S	BUC, ICC, ROM, SDH, SNA.
*Pigment Orange 43, C.I. 71 105	GAF, HST.
(Vat Orange 1), C.I. S9 10S	HST.
(Vat Orange 4), C.I. 59 710	ACS.
(Vat Orange 1S), C.I. 69 025	ACS, TRC.
All other	GAF, KON.
*Red toners:	
*Naphthol reds:	
*Pigment Red 2, C.I. 12 310	ACS, GAF, HSC, IMP, KCW, KON, MRX, SDH, SW.
*Pigment Red S, C.I. 12 490	ACS, DUP, GAF, HSH, ICC, ICI, IMP, ROM, S, SDH, 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.

TABLE 3.--*Benzenoid pigments: Manufacturers' identification codes, by products, 1968*--Continued

Pigment	Manufacturers' identification codes (see Appendix, tables I and 2)
TONERS--Continued	
*Red toners--Continued	
*Naphthol reds--Continued	
Pigment Red 13, C.I. 12 395	IMP, KCW.
Pigment Red 14, C.I. 12 380	DUP.
Pigment Red 15, C.I. 12 465	DUP.
*Pigment Red 17, C.I. 12 390	ACY, FCL, ICC, IMP, S, SNA, SW. UHL.
*Pigment Red 18, C.I. 12 350	ACS, IMP, SW.
*Pigment Red 22, C.I. 12 315	ACY, DUP, FCL, GAF, IMP, MRX, SNA, SW.
*Pigment Red 23, C.I. 12 355	ACY, BUC, DUP, FCL, ICC, IMP, SDH, SNA, SW.
Pigment Red 31, C.I. 12 360	SNA.
Pigment Red 112, C.I. 12 370	x.
All other naphthol reds	KCW, ROM, S, SDH, SW, x.
*Pigment Red 1, C.I. 12 070, dark	ACY, HSC, HSH, IMP, KON, LVY, SDH, SW.
*Pigment Red 1, C.I. 12 070, light	ACY, HSC, HSH, IMP, KON, PPG, SDH, SW.
*Pigment Red 3, C.I. 12 120	ACY, CIK, CPC, DUP, HSC, HSH, IMP, KCW, KON, PPG, SDH, SNA, SW, UHL.
*Pigment Red 4, C.I. 12 085	ACY, AMS, FCL, HSC, IMP, KON, MRX, SDH, SNA, SW, UHL.
*Pigment Red 6, C.I. 12 090	DUP, HSC, HSH, KON, SW.
*Pigment Red 38, C.I. 21 120	ACS, DUP, GAF, ICC, SNA, SW.
Pigment Red 41, C.I. 21 200	ACS.
*Pigment Red 48, C.I. 15 865	ACS, ACY, AMS, DUP, FCL, GAF, HSC, HSH, ICC, IMP, KON, LVY, MRX, S, SNA, SW.
Pigment Red 49, C.I. 15 630:	
*Barium toner	ACY, AMS, CIK, FCL, HSC, IMP, KON, LVY, SDH, SW, UHL.
*Calcium toner	ACY, AMS, FCL, HSC, IMP, LVY, PPG, SDH, SW.
*Sodium toner	ACY, AMS, HSC, KON, SDH, SW.
Other	GAF.
*Pigment Red 52, C.I. 15 860	AMS, FCL, HSC, HSH, IMP, SNA, SW.
*Pigment Red 53, C.I. 15 585, barium toner	ACY, AMS, CIK, FCL, HSC, IMP, KON, LVY, MGR, MRX, SDH, SNA, SW.
Pigment Red 53, C.I. 15 585, sodium toner	KON.
*Pigment Red 54, C.I. 14 830, calcium toner	HSH, IMP, SDH.
Pigment Red 55, C.I. 15 820	ACS, DUP.
*Pigment Red 57, C.I. 15 850, calcium toner	ACS, AMS, CIK, DUP, FCL, HSC, HSH, IMP, KON, LVY, MGR, SDH, SNA, SW.
Pigment Red 58, C.I. 15 825	DUP, GAF, IMP.
*Pigment Red 63, C.I. 15 880	ACS, HSH, IMP, KON, SNA, SW.
Pigment Red 64, C.I. 15 800	ACS.
Pigment Red 77, C.I. 15 826	SW.
Pigment Red 79, PMA	GAF.
Pigment Red 81, C.I. 45 160, fugitive	KCW, MGR.
*Pigment Red 81, C.I. 45 160, PMA	CPC, DUP, FCL, GAF, IMP, KON, LVR, LVY, MGR, MRX, S, SNA, TCD, UHL.
*Pigment Red 81, C.I. 45 160, PTA	ACY, AMS, DUP, FCL, GAF, HSC, IMP, KCW, KON, MGR, MRX, S, SDH, SNA, UHL.
Pigment Red 87, C.I. 73 310	ACS.
Pigment Red 88	ACS, SDH.
*Pigment Red 90, C.I. 45 380	AMS, FCL, ICC, IMP, LVR, LVY, SDH, TCD.
Pigment Red 91	TCD.
Pigment Red 117, C.I. 15 603	SW.
Pigment Red 122	ACS, ACY.
Pigment Red 123, C.I. 71 145	ACS, HSC.
Pigment Red 168, C.I. 59 300	ACS, TRC.
Pigment Red 179, C.I. 71 130	ACS.

TABLE 3.--*Benzenoid pigments: Manufacturers' identification codes, by products, 1968*--Continued

Pigment	Manufacturers' identification codes (see Appendix, tables 1 and 2)
TONERS--Continued	
*Red toners--Continued	
Pigment Red 190, C.I. 71 140	ACS, GAF, HSC, SNA.
(Vat Red 1), C.I. 73 360	HST.
(Vat Red 10), C.I. 67 000	ACS.
All other	DUP, HAM, HSC, TRC, x.
*Violet toners:	
Pigment Violet 1, C.I. 45 170, fugitive	UHL.
*Pigment Violet 1, C.I. 45 170, PMA	GAF, IMP, LVR, MGR, MRX, S, SNA.
*Pigment Violet 1, C.I. 45 170, PTA	ACY, AMS, DUP, FCL, GAF, HSC, IMP, KON, MGR, MRX, SNA.
*Pigment Violet 3, C.I. 42 535, fugitive	ACY, AMS, HAM, HSC, IMP, KON, LVY, MGR, UHL.
*Pigment Violet 3, C.I. 42 535, PMA	AMS, CIK, DUP, GAF, HSC, IMP, KON, LVR, LVY, MGR, MRX, PPG, SDH, SNA, SW, UHL.
*Pigment Violet 3, C.I. 42 535, PTA	ACY, AMS, GAF, HSC, IMP, KON, MRX, SNA, SW, TCD.
Pigment Violet 19, C.I. 46 500	ACS, DUP, SNA.
Pigment Violet 23, C.I. 51 319	ACS, ACY, GAF, HST, TRC.
Pigment Violet 31, C.I. 60 010	ACS, DUP, ICI.
(Vat Violet 2), C.I. 73 385	ACS.
(Vat Violet 3), C.I. 73 395	ACS.
All other	BUC, ICC, IMP, ROM.
*Blue toners:	
*Pigment Blue 1, C.I. 42 595, PMA	DUP, GAF, IMP, KON, LVR, LVY, MGR, MRX, SNA, SW, TCD, UHL.
*Pigment Blue 1, C.I. 42 595, PTA	AMS, DUP, GAF, HAM, IMP, KON, MGR, SNA, SW.
Pigment Blue 2, C.I. 44 045, PMA	GAF.
Pigment Blue 2, C.I. 44 045, PTA	GAF, HAM, KON.
Pigment Blue 3, C.I. 42 140, PMA	LVR.
Pigment Blue 9, C.I. 42 025, PMA	MRX.
*Pigment Blue 9, C.I. 42 025, PTA	GAF, IMP, MGR, 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, GAF, IMP.
Pigment Blue 14, C.I. 42 600, PTA	DUP.
*Pigment Blue 15, C.I. 74 160, alpha form	ACS, ACY, DUP, GAF, HSC, ICC, ICI, IMP, MGR, SNA, SW, TMS, TRC.
*Pigment Blue 15, C.I. 74 160, beta form	ACY, AMS, BUC, DUP, FCL, GAF, HSC, ICC, IMP, LVY, SNA, SW, TMS.
*Pigment Blue 19, C.I. 42 750A	ACY, AMS, HSC, SW, TCD.
Pigment Blue 22, C.I. 69 810	ACS, DUP, TRC.
*Pigment Blue 25, C.I. 21 180	ACS, DUP, GAF, ICC, S, SW.
(Vat Blue 6), C.I. 69 825	ICI, TRC.
All other	GAF, IMP, S, SDH.
*Green toners:	
Pigment Green 1, C.I. 42 040, PMA	GAF, IMP, UHL.
*Pigment Green 1, C.I. 42 040, PTA	IMP, MGR, S.
*Pigment Green 2, C.I. 42 040 and 49 005, PMA	AMS, GAF, IMP, KON, LVY, MGR, MRX, UHL.
*Pigment Green 2, C.I. 42 040 and 49 005, PTA	ACY, DUP, GAF, IMP, KON, LVY, MRX, S, SDH.
Pigment Green 4, C.I. 42 000, fugitive	GAF.
Pigment Green 4, C.I. 42 000, PMA	GAF, MGR.
*Pigment Green 4, C.I. 42 000, PTA	ACY, AMS, HAM, IMP, KON, MGR.
*Pigment Green 7, C.I. 74 260	ACS, ACY, CIK, DUP, FCL, GAF, HSC, ICC, IMP, SNA, SW, TMS, TRC.
*Pigment Green 8, C.I. 10 006	HSH, IMP, KCW.
Pigment Green 10, C.I. 12 775	DUP, GAF, HSC, IMP, SW.

TABLE 3.--*Benzenoid pigments: Manufacturers' identification codes, by products, 1968*--Continued

Pigment	Manufacturers' identification codes (see Appendix, tables I and 2)
TONERS--Continued	
*Green toners--Continued	
*Pigment Green 36, C.I. 74 265	ACY, GAF, SNA.
Pigment Green 38	ACS, SNA.
All other	IMP, SW.
*Brown toners:	
Pigment Brown 1, C.I. 12 480	ICI.
Pigment Brown 2, C.I. 12 071	HSH, SDH.
Pigment Brown 3, C.I. 21 010, PMA	KCW, KON.
*Pigment Brown 5, C.I. 15 800	ACS, BUC, HSH, ICC, ROM, SNA.
(Vat Brown 3), C.I. 69 015	GAF.
All other	GAF, ICC, SDH, SW.
*Black toners:	
Pigment Black 1, C.I. 50 440	SNA.
Pigment Black 7, C.I. 77 266	GAF.
All other	DUP, GAF, 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, MRX.
Orange lakes:	
Pigment Orange 17, C.I. 15 510	CPC, IMP, KCW, KON.
All other	HAM.
Red Lakes:	
*Pigment Red 60, C.I. 16 105	HSH, KON, MRX, SNA.
*Pigment Red 83, C.I. 58 000	HSH, IMP, KON, MRX, UHL.
(Acid Red 17), C.I. 16 180	IMP, KCW.
*(Acid Red 26), C.I. 16 150	CPC, HAM, IMP, KCW.
(Acid Red 27), C.I. 16 185	KON.
(Natural Red 4), C.I. 75 470	KON.
All other	HAM, IMP, SNA.
*Violet lakes:	
*Pigment Violet 5, C.I. 58 055	ACS, DUP, HSH, IMP, KON, UHL.
Pigment Violet 20, C.I. 58 225	SW.
All other	HAM.
Blue lakes:	
Pigment Blue 17, C.I. 74 180	CPC, KCW.
Pigment Blue 24, C.I. 42 090	AMS, KON, LVY, SDH.
(Acid Blue 93), C.I. 42 780	LVR.
(Acid Blue 104), C.I. 42 735	CPC, KCW.
Green lakes	IMP.
Brown lakes	HAM, KON.
Black lakes:	
(Natural Black 3), C.I. 75 291	CPC, KON.
All other	HAM.

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

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

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

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

Table 1 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class, while table 2 lists separately each product for which data were reported and identifies the manufacturers. The statistics shown in table 1 are for bulk chemicals only; finished pharmaceutical preparations and products put up in pills, capsules, tablets, or other measured doses are excluded.[1] The difference between production and sales reflects inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the difference may also include quantities of medicinal grade products used as intermediates, e.g., penicillin G salts used as intermediates in the manufacture of semisynthetic penicillins. All quantities are given in terms of 100-percent content of the pure bulk drug.

Total U.S. production of bulk medicinal chemicals in 1968 amounted to 177 million pounds, or 1.6 percent less than the 180 million pounds produced in 1967 and 4.4 percent less than the 185 million pounds produced in 1966. Total sales of bulk medicinal chemicals in 1968 amounted to 123 million pounds, valued at $415 million, compared with sales in 1967 of 127 million pounds, valued at $385 million, and sales in 1966 of 136 million pounds, valued at $398 million. In terms of quantity, sales in 1968 were thus 3.5 percent smaller than in 1967 and 10.2 percent smaller than in 1966. In terms of value, however, sales in 1968 were 7.7 percent larger than in 1967 and 4.1 percent larger than in 1966.

Production of the more important groups of medicinal chemicals in 1968 was as follows: Antibiotics, 10.3 million pounds (8 percent larger than in 1967), of which 6.0 million pounds was for medicinal use and 4.3 million pounds was for other uses; anti-infective agents other than antibiotics, 34.2 million pounds (9 percent larger than in 1967); central

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

nervous system depressants and stimulants, 43.1 million pounds (1 percent smaller); gastrointestinal agents, 48.0 million pounds (8 percent smaller); and vitamins, 17.0 million pounds (3 percent smaller). Production of some of the more important individual products listed in table 1 was as follows: Choline chloride, 35.0 million pounds (9 percent smaller than in 1967); aspirin, 30.9 million pounds (2 percent larger); salicylic acid, 11.6 million pounds (1 percent larger); methionine and its hydroxy analogue, 10.1 million pounds (8 percent smaller); piperazine base and salts, 8.7 million pounds (2 percent smaller); ascorbic acid, 6.7 million pounds (9 percent smaller); anti-infective sulfonamides, 4.8 million pounds (5 percent smaller); penicillins, 2,473 trillion units (74 percent larger); tetracyclines, 1.3 million kilograms (16 percent smaller); vitamin A, 1,064 trillion units (10 percent larger); and vitamin E, 414 billion units (20 percent larger).

Table 3 in the Appendix includes imports of benzenoid medicinal chemicals and pharmaceuticals during 1967 and 1968.

TABLE 1.--*Medicinal chemicals: U.S. production and sales, 1968*

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

Chemical	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	177,221	122,533	414,924	$3.39
Acyclic	64,021	45,349	31,354	.69
Benzenoid[3]	95,414	64,886	296,301	4.57
Cyclic nonbenzenoid[4]	17,786	12,298	87,269	7.10
Antibiotics, total[5]	10,262	4,383	93,589	21.35
For medicinal use, total	5,981	2,417	70,846	29.31
Antifungal and antitubercular antibiotics	992	711	10,770	15.15
Bacitracin[6]	16	10	894	89.40
Penicillin G, potassium[7]	1,564	...	...	...
Semi-synthetic penicillins, total[7]	360	...	...	...
Ampicillin	252	...	...	...
Dicloxacillin, sodium	26	...	...	...
All other	82	...	...	...
Other antibiotics for medicinal use	3,049	1,696	59,182	34.90
For other uses, total	4,281	1,966	22,743	11.57
Bacitracin	260	247	4,069	16.47
All other	4,021	1,719	18,674	10.86
Antihistamines, total	442	265	7,239	27.32
Antinauseants	54	...	...	...
Chlorpheniramine maleate	43	21	296	14.10
All other	345	244	6,943	28.45
Anti-infective agents (except antibiotics), total	34,201	25,365	96,480	3.80
Arsenic, bismuth, and mercury compounds, total	3,756	...	...	...
Thimerosal	5	4	428	107.00
All other	3,751	...	...	...
Phenolic antiseptics and disinfectants	177	181	311	1.72
Piperazine base and salts, total	8,709	5,865	3,954	.67
Piperazine	4,571	1,185	1,029	.87
All other	4,138	4,680	2,925	.62
Quinoline derivatives, total	929	...	...	...
Diiodohydroxyquin	31	16	70	4.38
Oxyquinoline benzoate	4	3	11	3.67
All other	894	...	...	...
Sulfonamides, total	4,794	...	...	...
Phthalylsulfathiazole	...	7	27	3.86
Sulfapyridine	...	30	114	3.80
All other	4,794	...	...	...
Groups listed above for which separate sales data may not be shown	...	4,862	15,820	3.25

See footnotes at end of table.

TABLE 1.--*Medicinal chemicals: U.S. production and sales, 1968*--Continued

Chemical	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Anti-infective agents (except antibiotics)--Continued				
Other anti-infective agents, total	15,836	14,397	75,745	$5.26
Anthelmintic agents	7,420	7,744	36,294	4.69
Antibacterial agents and general antiseptics, total	2,808	1,406	3,456	2.46
Antileprotic and antitubercular agents	262	...	...	...
Urinary antiseptics, total	837	693	1,496	2.16
Methenamine salts	507	...	...	...
All other	330	693	1,496	2.16
Other antibacterial agents and general antiseptics	1,709	713	1,960	2.75
Antifungal agents[8]	1,365	1,129	650	.58
Antiprotozoan agents	4,243	4,118	35,345	8.58
Autonomic drugs, total	572	449	7,982	17.78
Parasympatholytic (anticholinergic) agents (except tropane derivatives), total	76	37	2,114	57.14
Quaternary ammonium compounds	35	14	992	70.86
Tertiary amines	41	23	1,122	48.78
Sympathomimetic (adrenergic) agents, total	486	408	5,688	13.94
Epinephrine hydrochloride (racemic)	2	2	126	63.00
Phenylpropanolamine hydrochloride	266	262	1,657	6.32
All other	218	144	3,905	27.12
Other autonomic drugs	10	4	180	45.00
Cardiovascular agents, total	936	...	...	...
Cardiac drugs	...	7	130	18.57
Rauwolfia and veratrum alkaloids	([9])	...	...	...
Other cardiovascular agents	936	...	...	...
Central depressants and stimulants, total	43,079	31,939	62,375	1.95
Amphetamines, total	98	75	623	8.31
Amphetamine base and sulfate (racemic)	28	28	120	4.29
Methamphetamine hydrochloride (dextro)	21	...	...	...
All other	49	47	503	10.70
Analgesics and antipyretics, total	37,909	27,959	36,751	1.31
Aspirin	30,902	...	...	...
Salicylates (except aspirin)	2,704	...	...	...
All other	4,303	27,959	36,751	1.31
Antidepressants	95	...	...	...
Antitussives, total	42	...	...	...
Hydrocodone bitartrate	2	...	...	...
All other	40	...	...	...
Barbiturates, total	802	497	2,451	4.93
Phenobarbital, sodium	12	...	...	...
All other	790	497	2,451	4.93
Hypnotics, and sedatives (except barbiturates)[10]	552	...	...	...
Skeletal muscle relaxants, total	194	138	761	5.51
Succinylcholine chloride	6	...	...	...
All other	188	138	761	5.51
Tranquilizers, total	1,142	978	5,233	5.35
Meprobamate	733	922	2,362	2.56
Other tranquilizers[10]	409	56	2,871	51.27
Other central depressants and stimulants	2,245	2,292	16,556	7.22

See footnotes at end of table.

TABLE 1.--*Medicinal chemicals: U.S. production and sales, 1968*--Continued

Chemical	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Dermatological agents and local anesthetics, total[11]	13,536	7,233	4,471	$.62
Bismuth subgallate	32	26	137	5.27
Lidocaine	28	9	184	20.44
Salicylic acid	11,562	5,737	2,152	.38
All other	1,914	1,461	1,998	1.37
Expectorants and mucolytic agents, total	1,941	2,048	3,471	1.69
Ethylenediamine dihydriodide	...	850	1,350	1.59
Guaiacol and its derivatives	969	...	...	...
All other	972	1,198	2,121	1.77
Gastrointestinal agents, total	48,042	35,195	13,161	.37
Choleretics and hydrocholeretics	90	...	...	...
Choline chloride (all grades)	34,978	23,383	3,547	.15
Methionine and its hydroxy analogue	10,147	10,196	6,615	.65
Other gastrointestinal agents	2,827	1,616	2,999	1.86
Hematological agents, total	30	20	1,502	75.10
Sodium heparin	3	2	1,161	580.50
All other	27	18	341	18.94
Hormones and synthetic substitutes, total	1,647	358	18,263	51.01
Corticosteroids	45	...	...	...
Synthetic hypoglycemic agents	1,436	280	1,045	3.73
Other hormones and synthetic substitutes	166	78	17,218	220.74
Renal-acting and edema-reducing agents, total	1,489	171	4,080	23.86
Mercurial diuretics	7	1	31	31.00
Theobromine and theophylline derivatives, total	109	86	241	2.80
Aminophylline	37	...	...	...
All other	72	86	241	2.80
Other renal-acting and edema-reducing agents	1,373	84	3,808	45.33
Therapeutic nutrients, total	1,747	1,665	1,872	1.12
Amino acids and salts	865	806	1,129	1.40
Calcium gluconate	371	519	335	.65
Other therapeutic nutrients	511	340	408	1.20
Vitamins, total	16,982	12,324	67,939	5.51
Vitamin A alcohol and esters, total[12]	1,186	829	18,593	22.43
Vitamin A palmitate (feed grade)	873	573	10,239	17.87
All other	313	256	8,354	32.63
Vitamin B-complex, total	6,232	4,996	25,544	5.11
Cyanocobalamin (all grades)[12]	3	3	9,213	3,071.00
Niacin (all grades)	2,066	...	...	...
Niacinamide	805	802	1,526	1.90
Pantothenic acid and derivatives, total	1,528	1,107	2,909	2.63
Calcium pantothenate (racemic) (feed grade)	969	582	1,356	2.33
All other	559	525	1,553	2.96
Riboflavin (all grades)	951	928	6,145	6.62
Other B-complex vitamins	879	2,156	5,751	2.67

See footnotes at end of table.

TABLE 1.--*Medicinal chemicals: U.S. production and sales, 1968*--Continued

Chemical	Production[1]	Sales[1]		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Vitamins--Continued				
Vitamin C, total	8,560	5,859	9,925	$1.69
Ascorbic acid	6,712	4,291	6,794	1.58
All other	1,848	1,568	3,131	2.00
Vitamin D_2 (Ergocalciferol)[12]	1	1	210	210.00
Vitamin E[12]	768	542	10,434	19.25
Vitamin K: Menadione sodium bisulfite	149	74	614	8.30
Other vitamins	86	23	2,619	113.87
Miscellaneous medicinal chemicals[13]	2,315	1,111	32,370	29.14

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

[2] Calculated from rounded figures.

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

[4] Includes antibiotics of unknown structure.

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

Antibiotic	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Bacitracin, total	---BU---	6,274	5,844	4,963	$849.25
For medicinal use	---BU---	371	237	894	3,772.15
For other uses	---BU---	5,903	5,607	4,069	725.70
Neomycin, for all uses	---Kg---	141,312	34,254	1,451	42.36
Penicillins, total	---BU---	2,473,189	930,133	33,427	35.94
Penicillin G, potassium, for medicinal use	---BU---	1,130,993	...	...	...
Penicillin G, procaine, for all uses	---BU---	825,082	579,210	9,981	17.23
Semi-synthetic penicillins, for medicinal use, total	---BU---	262,984	...	...	...
Ampicillin	---BU---	194,138	...	...	...
Dicloxacillin, sodium	---BU---	14,101	...	...	...
All other	---BU---	54,745	...	...	...
All other penicillins, for all uses	---BU---	254,130	350,923	23,446	66.81
Tetracyclines, for all uses	---Kg---	1,273,484	388,810	19,913	51.22

[6] Because of a clerical error, the quantities and unit value for medicinal grade bacitracin shown in the 1967 report were incorrect. Production should have been shown as 9,000 pounds (203 billion units); sales should have been shown as 9,000 pounds (211 billion units); and the average unit value of sales should have been $107.67 per pound ($4,592.42 per billion units).

Footnotes for table 1--Continued

[7] Total production of all penicillins, for all uses, amounted to 4,113,000 pounds; sales amounted to 1,775,000 pounds, valued at $33,427,000.

[8] The p-hydroxybenzoic acid esters formerly reported as antifungal agents have been transferred to the report on Miscellaneous Chemicals.

[9] Production of rauwolfia and veratrum alkaloids amounted to 363 pounds.

[10] Includes 2 or more of the following 6 drugs which are subject to Federal control under the Drug Abuse Control Act: Chlordiazepoxide hydrochloride, diazepam, ethchlorvynol, ethinamate, glutethimide, and methyprylon. U.S. production of these 6 drugs amounted to 561 thousand pounds in 1968.

[11] Sunscreens, which were formerly reported as dermatological agents, have been transferred to the report on Miscellaneous Chemicals.

[12] All quantities for vitamins A, B_{12}, D, and E were reported in terms of grams or units, but were converted to pounds for inclusion in the main statistical table (1.317 billion units of vitamin A acetate, 0.824 billion units of vitamin A palmitate, 453.6 grams of vitamins B_{12}, 18.14 billion units of vitamin D, 617,000 units of d-alpha tocopheryl acetate, 454,000 units of dl-alpha tocopheryl acetate, etc. = 1 pound). The following tabulation shows statistics for these vitamins, except for D_3, which was not separately publishable, in terms of grams, millions of international units (MU), or billions of U.S.P. units (BU):

Vitamin	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value
				1,000 dollars	
Vitamin A alcohol and esters, total	---BU---	1,063,766	740,231	18,593	$25.12
Vitamin A palmitate (feed grade)	---BU---	719,447	472,099	10,239	21.69
All other	---BU---	344,319	268,132	8,354	31.16
Vitamin B_{12} (Cyanocobalamin)	--grams-	1,152,000	1,356,000	9,213	6.79
Vitamin D_2 (Ergocalciferol)	---BU---	21,604	22,600	210	9.29
Vitamin E	---MU---	414,163	305,164	10,434	34.19

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

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*

[Medicinal chemicals for which separate statistics are given in table 1 are marked below with an asterisk (*); medicinal chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Antibiotics:	
*For medicinal use:	
*Antifungal and antitubercular antibiotics:	
Antifungal antibiotics:	
Amphotericin B	OMS.
Candicidin	x.
Nystatin	OMS.
Antitubercular antibiotics:	
Cycloserine	COM.
Dihydrostreptomycin	MRK, PFZ.
Streptomycin	LIL, MRK, PFZ.
Viomycin	PFZ.
*Bacitracin	COM, PEN, PFZ, PMP.
*Penicillin G, potassium	LIL, OMS, PFZ, WYT.
*Semi-synthetic penicillins:	
*Ampicillin	BEE, BRS, WYT.
*Dicloxacillin, sodium	BEE, BRS, WYT.
*Other semi-synthetic penicillins:	
Ampicillin, sodium	OMS.
Cloxacillin, sodium	BEE, BRS.
Hetacillin	BRS.
Methicillin, sodium	BRS.
Nafcillin, sodium	WYT.
Oxacillin, sodium	BRS.
Phenethicillin, potassium	BRS, PFZ.
*Other antibiotics for medicinal use:	
Cephaloridine	LIL.
Cephalothin, sodium	LIL.
Chloramphenicol	PD, RLS.
Erythromycin	ABB, LIL.
Fumagillin	ABB.
Gentamycin	SCH.
Gramicidin	x.
Kanamycin	BRS.
Lincomycin	x.
Neomycin	OMS, PEN, PFZ, UPJ.
Novobiocin	MRK, UPJ.
Oleandomycin	PFZ.
Paromomycin	MRK.
Penicillins:	
Penicillin G, benzathine	WYT.
Penicillin G, procaine	LIL, OMS, PFZ, WYT.
Penicillin G, sodium	OMS.
Penicillin O, sodium	PFZ.
Phenoxymethylpenicillin (Penicillin V)	LIL.
Phenoxymethylpenicillin, benzathine	WYT.
Phenoxymethylpenicillin, hydrabamine	ABB.
Phenoxymethylpenicillin, potassium	ABB, LIL, OMS.
Polymyxin B	PFZ.
Spectinomycin	ABB.
Tetracyclines:	
Chlortetracycline	ACY, RLS.
Demeclocycline	ACY.
Doxycycline	PFZ.
Methacycline	PFZ.
Oxytetracycline	PFZ, RLS.
Tetracycline	ACY, BRS, PFZ, RLS.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Antibiotics--Continued	
*For medicinal use--Continued	
*Other antibiotics for medicinal use--Continued	
Thiostrepton	OMS.
Troleandomycin	PFZ.
Tyrothricin	x.
Vancomycin	LIL.
*For other uses:	
*Bacitracin	COM, DLI, GPR, PEN, PMP.
Chlortetracycline	ACY.
Cycloheximide	UPJ.
Hygromycin B	LIL.
Neomycin	PEN, PFZ.
Novobiocin	UPJ.
Oxytetracycline	PFZ.
Penicillin G, benzathine	WYT.
Penicillin G, procaine	LIL, MRK, OMS.
Streptomycin	LIL, MRK, PFZ.
Tylosin	LIL.
*Antihistamines:	
*Antinauseants:	
Cyclizine hydrochloride	BUR.
Dimenhydrinate	HEX, SRL.
Meclizine hydrochloride	PFZ.
Trimethobenzamide hydrochloride	HOF.
Bromodiphenhydramine hydrochloride	PD.
Brompheniramine maleate	SCH.
Carbinoxamine	SCH.
Chlorcyclizine hydrochloride	ABB, BUR.
Chlorothen citrate	ACY.
*Chlorpheniramine maleate	HEX, LEM, RLS, SCH, SK, x.
Cyproheptadine hydrochloride	MRK.
Dexbrompheniramine maleate	SCH.
Dexchlorpheniramine maleate	SCH.
Diphenhydramine hydrochloride	GAN, PD, RLS.
Doxylamine succinate	BKC.
Methapyrilene fumarate	ABB.
Methapyrilene hybenzate	LIL.
Methapyrilene hydrochloride	ABB.
Phenindamine tartrate	HOF.
Pheniramine maleate	HEX, LEM, SCH, x.
Phenyltoloxamine citrate	BRS.
Pyrilamine maleate	HEX, MRK, RSA.
Pyrilamine resin adsorbate	MRK.
Pyrrobutamine phosphate	LIL.
Thenyldiamine hydrochloride	SDW.
Thonzylamine hydrochloride	NEP.
Tripelennamine	CBP.
Tripelennamine citrate	CBP.
Tripelennamine hydrochloride	CBP, x.
Triprolidine hydrochloride	BUR.
*Anti-infective agents (except antibiotics):	
*Arsenic, bismuth, and mercury compounds:	
Arsanilic acid[1]	SAL, WHL.
Bismuth dipropylacetate	x.
Bismuth sodium triglycollamate	BPC.
Bismuth subsalicylate	MAL, NOR, PEN.
Carbarsone	LIL, PYL, WHL.

See footnotes at end of table.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Anti-infective agents (except antibiotics)--Continued	
*Arsenic, bismuth, and mercury compounds--Continued	
Glycobiarsol	PYL, SDW.
Merbromin	HYN.
Mercuric salicylate	MRK.
Nitarsone	SAL.
Nitromersol	ABB.
Nitromersol chloride	ABB.
Phenylmercuric benzoate	MRK.
Phenylmercuric borate	MRK.
Phenylmercuric chloride	MRK.
Phenylmercuric nitrate	MRK.
Roxarsone	SAL.
Roxarsone sodium	SAL.
Sodium arsanilate[1]	PYL, SAL.
*Thimerosal	LIL, MED, PYL, SEL.
*Phenolic antiseptics and disinfectants:	
Betanaphthol[1]	ACY.
Bithionol	SDH.
Resorcinol[1]	KPT, LEM.
Thymol	GIV.
Thymol iodide	MAL.
*Piperazine base and salts:	
*Piperazine[1]	DOW, FLM, JCC, UCC.
Piperazine adipate	JCC, PYL.
Piperazine citrate	BUR, JCC.
Piperazine dihydrochloride	DOW, FLM, JCC, WHL.
Piperazine dithiocarbamate	SEL.
Piperazine hexahydrate	JCC.
Piperazine hydrochloride	DOW, JCC, SEL.
Piperazine phosphate	BUR, JCC, PYL, SEL.
Piperazine sulfate	JCC.
Piperazine tartrate	PYL.
*Quinoline derivatives:	
Amodiaquin	PD.
Amodiaquin hydrochloride	PD.
Buquinolate	UOP.
Chloroquine phosphate	SDW.
*Diiodohydroxyquin	CBP, FIN, LEM, PYL, RSA, SRL.
Hydroxychloroquine sulfate	SDW.
8-Hydroxy-5-quinolinesulfonic acid	MRK.
Iodochlorhydroxyquin	CBP, PYL.
Oxyquinoline	LEM, MRK.
*Oxyquinoline benzoate	FIS, LEM, MRK.
Oxyquinoline citrate	FIS.
Oxyquinoline sulfate	FIS, LEM, MRK, PYL.
Primaquine phosphate	PD, SDW.
*Sulfonamides:	
Acetyl sulfamethoxypyridazine	ACY.
Acetyl sulfisoxazole	HOF.
Dinsed	SAL.
Mafenide acetate	SDW.
Mafenide hydrochloride	SDW.
Phthalylsulfacetamide	LEM, PYL.
*Phthalylsulfathiazole	LEM, MRK, PYL.
Succinylsulfathiazole	LEM, MRK.

See footnotes at end of table.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by product, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Anti-infective agents (except antibiotics)--Continued	
*Sulfonamides--Continued	
Sulfabenzamide	ACY.
Sulfabenzamide, sodium	ACY.
Sulfabromomethazine, sodium	MRK.
Sulfacetamide	CTN, LEM.
Sulfacetamide, sodium	LEM.
Sulfachloropyridazine, sodium	CBP.
Sulfachloropyrazine, sodium	ACY.
Sulfadiazine	ACY.
Sulfadiazine, sodium	ACY.
Sulfadimethoxine	HOF.
Sulfaethidole	ACY.
Sulfaguanidine	ACY.
Sulfamerazine	ACY, CTN, LEM.
Sulfamerazine, sodium	ACY, CTN.
Sulfamethazine	ACY, CTN, LEM.
Sulfamethazine, sodium	CTN.
Sulfamethizole	ACY, CTN.
Sulfamethoxazole	HOF.
Sulfamethoxypyridazine	ACY.
Sulfanilamide	LEM, MRK, SAL.
Sulfanitran	SAL.
*Sulfapyridine	ACY, CTN, MRK.
Sulfapyridine, sodium	ACY.
Sulfaquinoxaline	MRK.
Sulfathiazole	ACY, LEM, MRK.
Sulfathiazole, sodium	ACY, MRK.
Sulfisoxazole	HOF.
Sulfisoxazole, sodium	HOF.
*Other anti-infective agents:	
*Anthelmintic agents:	
Cadmium anthranilate	MAL.
2,2-Dichlorovinyl dimethyl phosphate	SHC.
Diethylcarbamazine citrate	ACY.
Gentian violet	ACS, SDH.
Hexylresorcinol	HEX, MRK.
Phenothiazine	CLV, ISC.
Pyrvinium pamoate	x.
Thiabendazole	MRK.
*Antibacterial agents and general antiseptics:	
*Antileprotic and antitubercular agents:	
Aminosalicylic acid	MLS, PD.
Dapsone	SDW.
Ethionamide	RDA.
Isoniazid	RIL.
Potassium aminosalicylate	MLS.
Pyrazinamide	MRK.
Sodium aminosalicylate	MLS.
Sodium sulfoxone	ABB.
*Urinary antiseptics:	
Calcium mandelate	MAL.
Ethoxazene hydrochloride	KON.
Mandelic acid	MAL.
Methenamine	HN.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Anti-infective agents (except antibiotics)--Continued	
*Other anti-infective agents--Continued	
*Antibacterial agents and general antiseptics--Continued	
*Urinary antiseptics--Continued	
*Methenamine salts:	
Methenamine hippurate	RIK.
Methenamine mandelate	ARN, LEM, NEP, PYL.
Methenamine sulfosalicylate	x.
Methylene blue	ACS, ACY.
Nitrofurantoin	NOR.
Phenazopyridine hydrochloride	HOF, KON, NEP.
*Other antibacterial agents and general antiseptics:	
Acriflavine	ACS.
Aminacrine	SDW.
Aminacrine hydrochloride	SDW.
Benzalkonium chloride	SDH.
Bromoform	DOW.
Camphor, monobromated	MAL, PEN.
Cetalkonium chloride	FIN, SDW.
Cetylpyridinium chloride	FIN, HEX, NEP.
Chloramine T	MON.
Chlorobutanol	BPC, PD.
Iodoform[2]	MAL, PEN.
Nalidixic acid	SDH.
Nifuraldezone	NOR.
Nitrofurazone	NOR.
Oxolinic acid	NEP.
Povidone - iodine complex	GAF.
*Antifungal agents:	
Benzoic acid	MON, PFZ.
Calcium undecylenate	WTL.
Fuchsin, basic	ACS.
Salicylanilide	LEM.
Sodium caprylate	LEM.
Sodium undecylenate	BAC.
Undecylenic acid	BAC, CFC.
Zinc undecylenate	BAC, LEM, WTL.
*Antiprotozoan agents:	
Aklomide	SAL.
Aminitrozole	ACY.
Amprolium	MRK.
Chlorbetamide	SDW.
3,5-Dinitro-o-toluamide	DOW.
Furazolidone	NOR.
Metronidazole	RDA.
Nihydrazone	NOR.
Nithiazide	MRK.
Nitromide	SAL.
Pyrimethamine	BUR.

See footnotes at end of table.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Autonomic drugs:	
*Parasympatholytic (anticholinergic) agents (except tropane derivatives):	
*Quaternary ammonium compounds:	
Ambutonium bromide	BJL, ICO.
Diphemanil methylsulfate	SCH.
Hexocyclium methylsulfate	ABB.
Isopropamide iodide	SK.
Mepenzolate bromide	LKL.
Methantheline bromide	SRL.
Pipenzolate bromide	LKL.
Propantheline bromide	SRL.
Thihexinol methylbromide	SCH.
Tridihexethyl iodide	ACY.
*Tertiary amines:	
Adiphenine hydrochloride	CBP.
Caramiphen edisylate	SK.
Dicyclomine hydrochloride	BKC.
Orphenadrine citrate	RIK.
Orphenadrine hydrochloride	RIK.
Oxyphencyclimine hydrochloride	PFZ.
Piperidolate hydrochloride	LKL.
Thiphenamil hydrochloride	BJL.
Trihexyphenidyl hydrochloride	ACY, SDW.
*Sympathomimetic (adrenergic) agents:	
Arterenol hydrochloride (racemic)	SDW.
Cyclopentamine hydrochloride	LIL.
Epinephrine bitartrate (levo)	SDW.
*Epinephrine hydrochloride (racemic)	ECL, VB, x.
Isoproterenol hydrochloride	SDW.
Levarterenol bitartrate	SDW.
Methoxyphenamine hydrochloride	x.
Naphazoline hydrochloride	CBP.
Nordefrin hydrochloride	SDW.
Nylidrin hydrochloride	BKL.
Phenylephrine	GAN, SDW.
Phenylephrine bitartrate	GAN.
Phenylephrine hydrochloride	CTN, GAN, HEX, ORT, SDW.
*Phenylpropanolamine hydrochloride	BKL, GAN, ICO, NEP, ORT.
Propylhexedrine	HEX, SK.
Protokylol hydrochloride	LKL.
Pseudoephedrine hydrochloride	BUR, GAN.
Pseudoephedrine sulfate	GAN.
Tetrahydrozoline hydrochloride	PFZ.
*Other autonomic drugs:	
Ganglionic blocking agents:	
Hexamethonium chloride	RSA.
Tetraethylammonium chloride	RSA.
Parasympatholytic tropane derivatives:	
Anisotropine methylbromide	x.
Benztropine mesylate	x.
Homatropine	CTN.
Homatropine hydrobromide	CTN, HEX.
Homatropine methylbromide	CTN, HEX.

TABLE 2.--*Medicinal chemicals : Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Autonomic drugs--Continued	
*Other autonomic drugs--Continued	
Parasympathomimetic (cholinergic) agents:	
Acetylcholine chloride	MRK.
Methacholine chloride	MRK, RSA.
Neostigmine bromide	HEX, HOF.
Physostigmine salicylate	PEN.
Pyridostigmine bromide	HOF.
Sympatholytic (antiadrenergic) agent: Ergonovine maleate.	LIL.
*Cardiovascular agents:	
*Cardiac drugs:	
Calcium camphorsulfonate	FIN.
Procainamide hydrochloride	LEM, OMS.
Quinidine gluconate	HEX.
Quinidine sulfate	HEX.
Sodium camphorsulfonate	FIN.
*Rauwolfia and veratrum alkaloids:	
Alkavervir	RIK.
Alseroxylon	RIK.
Reserpine	PEN.
Raunormine	PEN.
Syrosingopine	CBP.
*Other cardiovascular agents:	
Antihypertensive agents (except rauwolfia and veratrum alkaloids):	
Guanethidine sulfate	CBP.
Hydralazine hydrochloride	CBP.
Methyldopa	MRK.
Pargyline hydrochloride	ABB.
Bioflavonoids:	
Hesperidin	SKG.
Hesperidin methyl chalcone	SKG.
Lemon bioflavonoid	SKG.
Naringin	SKG.
Rutin	PEN.
Sclerosing agent: Sodium morrhuate	MED.
Vasodilators:	
Dioxyline phosphate	LIL.
Ethyl nitrite	MAL.
Glyceryl trinitrate	APD.
Isosorbide dinitrate	APD.
Mannitol hexanitrate	APD.
Nicotinyl alcohol tartrate	HOF.
Pentaerythritol tetranitrate	APD.
*Central depressants and stimulants:	
*Amphetamines:	
*Amphetamine base and sulfate (racemic):	
Amphetamine (racemic)	HEX, ORT.
Amphetamine sulfate (racemic)	ARN, HEX, SK.
Dextroamphetamine	HEX.
Dextroamphetamine carboxymethylcellulose	ARN.
Dextroamphetamine hydrochloride	ARN, HEX.
Dextroamphetamine phosphate	ARN.
Dextroamphetamine sulfate	ARN, HEX, SK.
Dextroamphetamine tannate	ARN.
Levamphetamine succinate	ARN.
Methamphetamine (dextro)	HEX.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Central depressants and stimulants--Continued	
*Amphetamines--Continued	
Methamphetamine (levo)	ABB, HEX.
Methamphetamine (racemic)	HEX.
*Methamphetamine hydrochloride (dextro)	ARN, GAN, HEX.
Methamphetamine hydrochloride (racemic)	ARN, HEX.
*Analgesics and antipyretics:	
*Aspirin	DOW, MLS, MON, NOR, SDG.
*Salicylates (except aspirin):	
Aluminum aspirin	ABB, SCH.
Magnesium salicylate	MAL.
Phenyl salicylate	DOW, MAL.
Potassium salicylate	HN, PEN.
Salicylamide	CFC, x.
Salicylsalicylic acid	CFC, HN.
Sodium salicylate	DOW, HN.
Strontium salicylate	CFC.
*Other analgesics and antipyretics:	
Acetaminophen	ATP, MLS, NEP, x.
p-Aminobenzoic acid and salts:	
Aminobenzoic acid	LEM.
Calcium aminobenzoate	GAN.
Magnesium aminobenzoate	LEM.
Potassium aminobenzoate	GAN, LEM.
Sodium aminobenzoate	GAN, LEM.
Anileridine hydrochloride	MRK.
Calcium succinate	LEM.
Colchicine	PEN.
Ethoheptazine citrate	WYT.
Indomethacin	MRK.
Mefenamic acid	PD.
Meperidine hydrochloride	SDW, WYT.
Methadone hydrochloride	LIL.
Oxycodone hydrochloride	EN.
Oxyphenbutazone	GGY.
Pentazocine	SDW.
Pentazocine hydrochloride	SDW.
Phenacetin	MON.
Phenylbutazone	GGY.
Phenyramidol hydrochloride	OTC.
Propoxyphene hydrochloride	LIL.
*Antidepressants:	
Amitriptyline	MRK.
Desipramine hydrochloride	LKL.
Imipramine hydrochloride	GGY.
Nialamide	PFZ.
Nortriptyline	LIL.
Phenelzine sulfate	NEP.
Protriptyline	MRK.
*Antitussives:	
Benzonatate	CBP.
Carbetapentane citrate	PFZ.
Chlophedianol hydrochloride	RIK.
Codeine	MRK.
Dextromethorphan hydrobromide	HOF.
Dimethoxanate hydrochloride	BKL.
Ethylmorphine hydrochloride	MAL, MRK.
*Hydrocodone bitartrate	MAL, MRK, PEN.
Thebaine	MRK.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Central depressants and stimulants--Continued	
*Barbiturates:	
Allylbarbituric acid	GAN.
Allylbarbituric acid, sodium	GAN.
5-Allyl-5-(2-cyclopenten-1-yl)barbituric acid	GAN.
Amobarbital	LIL.
Amobarbital, sodium	GAN, LIL.
Barbital	GAN.
Barbital, sodium	GAN.
Butabarbital	ABB, GAN.
Butabarbital, sodium	ABB, BPC, GAN.
Cyclobarbital	SDW.
Cyclobarbital, calcium	SDW.
Hexobarbital	GAN, SDW.
Hexobarbital, sodium	SDW.
Mephobarbital	SDW.
Metharbital	ABB.
Methohexital, sodium	LIL.
Pentobarbital	ABB, GAN.
Pentobarbital, sodium	ABB, GAN, PD.
Phenobarbital	GAN, MAL.
*Phenobarbital, sodium	GAN, MAL, SDW.
Secobarbital	GAN.
Secobarbital, sodium	GAN, LIL.
Talbutal	SDW.
Thiamylal, sodium	PD.
Thiopental, sodium	ABB.
Vinbarbital	x.
*Hypnotics and sedatives (except barbiturates):	
Carbromal	PD.
Ethchlorvynol	ABB.
Ethinamate	LIL.
Glutethimide	CBP.
Mecloqualone	NEP.
Methyprylon	HOF.
*Skeletal muscle relaxants:	
Carisoprodol	BKL.
Chlorphenesin carbamate	UPJ.
Mephenesin	BKL, HEX, OMS.
Mephenesin carbamate	OMS.
Phenaglycodol	LIL.
Styramate	ARP.
*Succinylcholine chloride	ABB, BUR, SDW.
Tubocurarine	ABB.
*Tranquilizers:	
Azacyclonol hydrochloride	BKC.
Buclizine hydrochloride	PFZ.
Chlordiazepoxide hydrochloride	HOF.
Chlormezanone	SDW.
Chlorprothixene	HOF.
Diazepam	HOF.
Ethomoxane hydrochloride	LIL.
Hydroxyphenamate	ARP.
Hydroxyzine hydrochloride	PFZ.
Hydroxyzine pamoate	PFZ.
Mebutamate	BKL.
*Meprobamate	ABB, BKL, x.
Methaqualone	HEX.
Oxazepam	WYT.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Central depressants and stimulants--Continued	
*Tranquilizers--Continued	
Phenothiazine derivatives:	
Carphenazine maleate	WYT.
Chlorpromazine hydrochloride	SK.
Fluphenazine hydrochloride	SCH.
Perphenazine	SCH.
Prochlorperazine maleate	SK.
Promazine hydrochloride	WYT.
Promethazine hydrochloride	WYT.
Propiopromazine hydrochloride	ABB.
Trifluoperazine hydrochloride	SK.
Tybamate	BKL.
*Other central depressants and stimulants:	
Anticonvulsants:	
Diphenylhydantoin	PD.
Diphenylhydantoin, sodium	PD.
Ethosuximide	PD.
Ethotoin	ABB.
Methsuximide	PD.
Phenacemide	ABB.
Phensuximide	PD.
General anesthetics:	
Tribromoethanol	SDW.
Vinyl ether	MRK.
Stimulants:	
Benzphetamine hydrochloride	x.
Caffeine:	
Natural	GNF.
Synthetic	PFZ.
Caffeine, citrated	MAL.
Caffeine sodium benzoate	GAN, MAL.
Chlorphentermine hydrochloride	NEP.
Deanol acetamidobenzoate	RIK.
Diethylpropion hydrochloride	BKC, x.
Nikethamide	CBP.
Phendimetrazine tartrate	x.
Phentermine	HEX.
*Dermatological agents and local anesthetics:	
*Bismuth subgallate	BKC, MAL, PEN.
*Lidocaine	AST, LEM, RLS, SDW.
*Salicylic acid[1]	DOW, HN, MON, SDH.
*Other dermatological agents and local anesthetics:	
Dermatological agents:	
Allantoin	FIN, HFT.
Aluminum phenolsulfonate	MAL.
Ammonium phenolsulfonate	SAL.
Glycol salicylate	RDA.
Scarlet red	ACS.
Sodium phenolsulfonate	SAL.
Zinc phenolsulfonate	MAL.
Local anesthetics:	
Butacaine sulfate	ABB.
Butamben picrate	ABB.
Butyl aminobenzoate (Butamben)	ABB, ICO.
Dibucaine	CBP.
Dibucaine hydrochloride	CBP.
Ethyl aminobenzoate (Benzocaine)	ABB, ICO, LEM.

See footnotes at end of table.

TABLE 2.--*Medicinal chemicals : Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Dermatological agents and local anesthetics--Continued	
*Other dermatological agents and local anesthetics--Continued	
Local anesthetics--Continued	
Isobutyl aminobenzoate	ICO.
Oxethazaine	WYT.
Phenacaine hydrochloride	GAN, SDW.
Piperocaine hydrochloride	LIL.
Pramoxine hydrochloride	ABB.
Procaine hydrochloride	ABB, LEM, PFZ.
Proparacaine hydrochloride	OMS.
Tetracaine	SDW.
Tetracaine hydrochloride	SDW.
*Expectorants and mucolytic agents:	
*Ethylenediamine dihydriodide	CLV, ISC, WHL.
*Guaiacol and its derivatives:	
Glyceryl guaiacolate	GAN, HEX, x.
Guaiacol	MON.
Potassium guaiacolsulfonate	HN.
Iodinated glycerol	x.
Iodobrassid	CBP.
Lobeline sulfate	ABB.
Terpin hydrate	LEM, PEN.
Thonzonium bromide	NEP.
*Gastrointestinal agents:	
*Choleretics and hydrocholeretics:	
Bile acids, oxidized	SRL, WIL.
Dehydrocholic acid	WIL.
Florantyrone	SRL.
Iron bile salts	LIL.
Ox bile extract	ABB.
Sodium dehydrocholate	WIL.
Tocamphyl	x.
*Choline chloride (all grades):	
Feed grade	COM, DA, DLI, HFT, TMH.
Medicinal grade	HFT.
Technical grade	GAF, RH.
*Methionine and its hydroxy analogue:	
Methionine (feed grade)	DOW.
Methionine (medicinal grade)	DOW, LEM.
Methionine, hydroxy analogue, calcium salt	DUP, MON.
*Other gastrointestinal agents:	
Betaine base	HFT, MAL.
Betaine hydrochloride	HFT, LEM.
Calcium polycarbophil	SCH.
Choline bicarbonate	COM.
Choline bitartrate	ACY, HFT.
Choline citrate (Tricholine citrate)	ACY, HFT.
Choline dihydrogen citrate	ACY, HFT.
Danthron	GAF.
Dihydroxy aluminum aminoacetate	CHT.
Magnesium citrate	MAL.
Pectin	SKG.
Phenolphthalein	MON.
Phenolphthalein, yellow	SCH.
Podophyllum	ABB, PEN.
Polycarbophil	SCH.
Sitosterols	UPJ.
Sodium tartrate	MAL.

TABLE 2.--*Medicinal chemicals : Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Hematological agents:	
Aminocaproic acid	ACY.
Ammonium heparin	ABB, WIL.
Anisindione	SCH.
Bishydroxycoumarin	ABB, FIN.
Cellulose, oxidized	EKT.
Dextran	PHR.
Phenindione	GAN.
*Sodium heparin	ABB, RIK, WIL.
Sodium warfarin	EN.
*Hormones and synthetic substitutes:	
*Corticosteroids:	
Betamethasone	SCH.
Betamethasone acetate	SCH.
Betamethasone phosphate	SCH.
Betamethasone valerate	SCH.
Cortisone	UPJ.
Cortisone acetate	MRK, UPJ.
Dexamethasone	MRK, SCH.
Dexamethasone acetate	SCH.
Dexamethasone phosphate	MRK.
Dichlorisone acetate	SCH.
Fludrocortisone acetate	UPJ.
Fluorometholone	UPJ.
9-Fluoroprednisolone acetate	UPJ.
Fluprednisolone	UPJ.
Hydrocortisone	MRK, PFZ, UPJ.
Hydrocortisone acetate	MRK, UPJ.
Methylprednisolone	UPJ.
Prednisolone	MRK, UPJ.
Prednisolone acetate	SCH, UPJ.
Prednisone	MRK, UPJ.
Prednisone phosphate	MRK.
Triamcinolone	ACY, OMS.
*Synthetic hypoglycemic agents:	
Acetohexamide	LIL.
Chlorpropamide	PFZ.
Phenformin hydrochloride	BKL.
Tolazamide	x.
Tolbutamide	HST, x.
*Other hormones and synthetic substitutes:	
Anabolic agents and androgens:	
Fluoxymesterone	UPJ.
Testosterone cypionate	UPJ.
Antithyroid agents:	
Methimazole	LIL.
Propylthiouracil	ACY.
Thiouracil	ACY.
Estrogens:	
Chlorotrianisene	BKC.
Dienestrol diacetate	SCH.
Diethylstilbestrol	CTN, LIL.
Diethylstilbestrol diphosphate	x.
Estrogenic substances, conjugated	ORG.
Natural estrogenic substance	ORG.
Piperazine estrone sulfate	ABB.

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TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Hormones and synthetic substitutes--Continued	
*Other hormones and synthetic substitutes--Continued	
Progestogens:	
11-β-Hydroxy-6α-methylprogesterone	UPJ.
Medroxyprogesterone acetate	x.
Progesterone	x.
Other hormones:	
Corticotropin (ACTH) (pituitary)	ARP, ORG.
Insulin (pancreas)	ARP, LIL.
*Renal-acting and edema-reducing agents:	
*Mercurial diuretics:	
Meralluride	LKL.
Mersalyl acid	SDW.
Sodium mercaptomerin	WYT.
*Theobromine and theophylline derivatives:	
Ambuphylline	GAN, LEM.
*Aminophylline	GAN, LEM, SRL.
Aminophylline sodium biphosphate	GAN.
Oxtriphylline	NEP.
Theobromine sodium salicylate	GLY.
Theophylline sodium glycinate	CHT.
*Other renal-acting and edema-reducing agents:	
Acetazolamide	ACY.
Benzothiadiazine derivatives:	
Bendroflumethiazide	OMS.
Benzthiazide	PFZ.
Chlorothiazide	MRK.
Flumethiazide	OMS.
Hydrochlorothiazide	ABB, CBP, MRK.
Methyclothiazide	ABB.
Polythiazide	PFZ.
Trichlormethiazide	SCH.
Chlorthalidone	GGY.
Dichlorphenamide	MRK.
Ethacrynic acid	MRK.
Probenecid	MRK.
Spironolactone	SRL.
Triamterene	ACY, SK.
*Therapeutic nutrients:	
*Amino acids and salts:	
Amino acid mixtures	ABB, CUT, STA.
Arginine glutamate	ABB.
Aspartic acid and salts:	
Aspartic acid	HEX.
Magnesium aspartate	WYT.
Potassium aspartate	WYT.
Beta-alanine	DA.
Glutamic acid and salts:	
Ammonium glutamate	IMC, LEM.
Glutamic acid	IMC, LEM.
Glutamic acid hydrochloride	IMC, LEM.
Potassium glutamate	IMC, LEM.
Lysine (feed grade)	MRK.
Lysine hydrochloride	MRK.
Phenylalanine	SDW.
*Calcium gluconate	MAL, PFZ, WHL.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Therapeutic nutrients--Continued	
*Other therapeutic nutrients:	
Calcium glucoheptonate	PFN.
Calcium levulinate	PYL.
Calcium phytate	STA.
Copper gluconate	PFZ.
Ferrous gluconate	PFZ, SDW.
Fructose	DLI.
Liver concentrate	WIL.
Liver, desiccated	WIL.
Magnesium gluconate	PFZ.
Manganese gluconate	PFZ.
Potassium gluconate	PFZ.
*Vitamins:	
*Vitamin A alcohol and esters:	
Vitamin A acetate (feed grade)	HOF, PFZ.
Vitamin A acetate (medicinal grade)	CW, HOF, PFZ.
Vitamin A alcohol	CW, HOF, PFZ.
Vitamin A natural esters	CW.
*Vitamin A palmitate (feed grade)	EKT, HOF, PFZ.
Vitamin A palmitate (medicinal grade)	EKT, HOF, PFZ.
*Vitamin B-complex:	
*Cyanocobalamin (all grades):	
Cyanocobalamin (feed grade)	GPR, IMC, MRK, PMP.
Cyanocobalamin (medicinal grade)	MRK.
Cyanocobalamin (U.S.P. crystalline)	MRK.
Cyanocobalamin with intrinsic factor concentrate.	WIL.
*Niacin (all grades):	
Feed grade	MRK, NEP, RIL.
Medicinal grade	DA, MRK, RIL, SCR.
*Niacinamide	MRK, NEP, PD, SCR.
*Pantothenic acid and derivatives:	
Calcium pantothenate (dextro)	x.
*Calcium pantothenate (racemic) (feed grade)	CKL, DA, DLI, HFT.
Calcium pantothenate (racemic) (medicinal grade).	DA.
Calcium pantothenate (racemic) - calcium chloride complex.	CKL, DA, HFT.
Dexpanthenol	HOF.
Panthenol (racemic)	HOF, PD.
Sodium pantothenate	PD.
*Riboflavin (all grades):	
Feed grade	COM, DA, GPR, HOF, MRK.
Medicinal grade	HOF, MRK.
*Other B-complex vitamins:	
Biotin	HOF.
Folic acid	ACY.
Inositol	STA.
Magnesium nicotinate	NEP.
Niacinamide hydrochloride	NEP.
Pyridoxine	HOF.
Riboflavin-5-phosphate, sodium	HOF.
Sodium nicotinate	NEP.
Thiamine hydrochloride	HOF, MRK.
Thiamine mononitrate	HOF, MRK.

TABLE 2.--*Medicinal chemicals: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
*Vitamins--Continued	
*Vitamin C:	
*Ascorbic acid	HOF, MRK, PFZ.
Calcium ascorbate	PFZ.
Sodium ascorbate	HOF, MRK, PFZ.
*Vitamin D_2 (Ergocalciferol)	DLI, PHF, SCR, VTM.
*Vitamin E:	
d-Alpha tocopherol	CW, EKT.
dl-Alpha tocopherol	HOF.
d-Alpha tocopheryl acetate	CW, EKT.
dl-Alpha tocopheryl acetate	HOF.
dl-Alpha tocopheryl acetate (feed grade)	HOF.
d-Alpha tocopheryl acid succinate	CW, EKT.
dl-Alpha tocopheryl acid succinate	HOF.
*Vitamin K: Menadione sodium bisulfite	ABB, DA, DLI, HET, HFT, WHL.
*Other vitamins:	
Beta-carotene (Provitamin A)	EKT, HOF.
Cholecalciferol (Vitamin D_3)	DA, DLI, PHF, VTM.
7-Dehydrocholesterol (Provitamin D_3)	VTM.
Menadiol sodium diphosphate	HOF.
Menadione	ABB, HET, HFT, WHL.
Phytonadione (Vitamin K_1)	MRK.
*Miscellaneous medicinal chemicals:	
Antineoplastic agents:	
Mercaptopurine	BUR.
Thioguanine	BUR.
Vinblastine sulfate	LIL.
Vincristine sulfate	LIL.
Diagnostic agents:	
Roentgenographic contrast media:	
Acetrizoate, sodium	MAL.
Diatrizoate, meglumine	SDW.
Diatrizoate, sodium	SDW.
Iodohippurate, sodium	MAL.
Iodopyracet	SDW.
Iopanoic acid	SDW.
Iophendylate	x.
Iothalamate, meglumine	MAL.
Iothalamate, sodium	MAL.
Methiodal, sodium	SDW.
Other diagnostic agents:	
Evans blue (blood volume determination)	NEP.
Indocyanine green (cardiac output test)	x.
Metyrapone (pituitary function test)	CBP.
Smooth muscle relaxants:	
Alverine	CTN.
Alverine citrate	CTN.
Alverine hydrochloride	CTN.
Papaverine hydrochloride	LIL, MRK.
Sodium benzyl succinate	LEM.
Unclassified medicinal chemicals:	
Allopurinol	BUR.
Hydrastine hydrochloride	PEN.
Penicillamine (copper chelating agent)	MRK.

[1] For producers of the technical grade, see report on cyclic intermediates.
[2] For producers of the technical grade, see report on miscellaneous chemicals.

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

Total domestic production of flavor and perfume materials in 1968 amounted to 117.5 million pounds, or 5.3 percent more than the 111.5 million pounds produced in 1967 (table 1). Sales of these materials in 1968 amounted to 108.8 million pounds, valued at $97.3 million, compared with 96.6 million pounds, valued at $93.4 million in 1967.

Production of cyclic flavor and perfume materials in 1968 amounted to 60.3 million pounds; sales amounted to 49.7 million pounds, valued at $52.4 million. The individual chemical in the cyclic group produced in the greatest volume in 1967 again was benzyl alcohol (5.8 million pounds). Production of synthetic sweeteners amounted to 19.7 million pounds in 1968, compared with 17.5 million pounds in 1967.

U.S. output of acyclic flavor and perfume materials in 1968 amounted to 57.2 million pounds; sales of these materials amounted to 59.1 million pounds, valued at $44.8 million. Monosodium glutamate was by far the most important of the acyclic chemicals, and the individual flavor and perfume chemical produced in the greatest volume; output of this chemical totaled 47.7 million pounds in 1968, compared with 45.2 million pounds in 1967.

Information on 1968 production, sales (quantity and total value), and unit value of sales of the individual products covered by this report is given in table 1. Table 2 lists all flavor and perfume materials for which data on production and sales were reported and identifies the manufacturer of each. Table 3 of the Appendix includes imports of these products during 1967 and 1968.

TABLE 1.--*Flavor and perfume materials: U.S. production and sales, 1968*

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

Material	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	117,459	108,766	97,260	$0.89
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total	60,271	49,708	52,435	1.05
Benzenoid and Naphthalenoid				
Total	50,862	42,708	40,700	.95
4-Allyl-2-methoxyphenol (Eugenol)	325	290	714	2.47
4-Allyl-1,2-(methylenedioxy)-benzene (Safrole)	...	44	37	.86
p-Anisaldehyde	1,173	...	...	...
Anisyl acetate	...	5	18	3.98
Benzophenone[2]	245	217	192	.88
Benzyl acetate	1,616	1,537	674	.44
Benzyl alcohol[2]	5,818	6,741	2,735	.41
Benzyl benzoate	570	...	...	...
Benzyl butyrate	...	8	12	1.52
Benzyl cinnamate	...	6	23	3.82
Benzyl, ether	...	94	15	.16
Benzyl phenylacetate	2	3	7	2.63
Benzyl propionate	...	15	16	1.07
Benzyl salicylate	283	359	457	1.27
Cinnamyl acetate	...	5	12	2.63
Cinnamyl alcohol	222	165	230	1.39
Cinnamyl anthranilate	...	1	5	9.77
Cinnamyl propionate	...	1	10	7.52
Hydrocoumarin	28	26	109	4.18
Isobutyl phenylacetate	23	27	25	.91
Isobutyl salicylate	72	52	44	.84
Isopentyl salicylate	778	582	392	.67
2-Methoxy-4-propenylphenol (Isoeugenol)	132	126	438	3.48
Methyl anthranilate	...	266	448	1.69
α-Methylcinnamaldehyde	...	12	22	1.84
Methyl cinnamate	84	75	139	1.86
Methyl salicylate	5,434	4,819	2,271	.47
α-Pentylcinnamaldehyde	470	426	520	1.22
2-Phenethyl phenylacetate	21	17	37	2.16
p-Propenylanisole (Anethole)	2,273	2,472	1,301	.53
Sweeteners, synthetic	19,661	13,995	8,879	.63
p-Tolualdehyde	8	...	...	...
p-Tolyl acetate (p-Cresyl acetate)	...	4	21	4.72
All other benzenoid and naphthalenoid materials	11,624	10,318	20,897	2.02

See footnotes at end of table.

Table 1.--*Flavor and perfume materials: U.S. production and sales, 1968*--Continued

Material	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued				
Terpenoid, Heterocyclic, and Alicyclic				
Total	9,409	7,000	11,735	$1.68
Cedryl acetate	160	121	343	2.83
Essential oils, chemically modified	375	246	1,180	4.79
Ionones	396	...	...	...
Isobornyl acetate	973	...	...	...
p-Methan-3-one (Menthone)	23	...	...	...
Menthol, synthetic, tech. & U.S.P	473	516	1,876	3.63
Methylionones	571	392	1,605	4.09
Terpineols	2,957	2,894	978	.34
α-Terpinyl acetate	645	596	356	.60
Vetivenyl acetate	32	18	279	15.49
All other terpenoid, heterocyclic and alicyclic materials	2,804	2,217	5,118	2.31
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total	57,188	59,058	44,825	.76
Allyl hexanoate	11	...	...	...
Citral a (Geranial)	154	79	294	3.74
Citronellyl formate	...	18	35	1.90
Citronellyl isobutyrate	...	6	17	2.83
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	25	10	40	4.08
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	1,495	1,323	1,402	1.06
3,7-Dimethyl-1-octanol (Dihydrocitronellol)	6	5	12	2.52
3,7-Dimethyl-6-octen-1-ol (Citronellol)	909	693	1,083	1.56
Ethyl butyrate	400	363	245	.67
Ethyl hexanoate (Ethyl caproate)	11	...	...	...
Ethyl nonanoate	2	3	8	3.27
Geranyl acetate	120	93	153	1.65
Glutamic acid, monosodium salt (Monosodium glutamate)	47,674	51,426	31,632	.62
Hydroxycitronellal	609	539	2,044	3.79
Isopentyl butyrate	80	59	48	.81
Isopentyl formate	4	4	6	1.47
Rhodinol	18	11	301	28.22
All other acyclic materials	5,670	4,426	7,505	1.70

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

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

[Flavor and perfume materials for which separate statistics are given in table 1 are marked below with an asterisk (*); those not so marked do not appear in table 2 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
Benzenoid and Naphthalenoid	
2'Acetonaphthone	GIV.
Acetophenone	GIV.
Acetyl cedrene	GIV.
5-Acetyl-1,1,2,3,3,6-hexamethylidan	PFW.
p-Allylanisole	GIV.
Allyl cinnamate	RT.
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	GIV.
*4-Allyl-2-methoxyphenol (Eugenol)	FB, GIV, ICO, IFF, LUE, PEN, RT, UOP, VLY.
4-Allyl-2-methoxyphenol acetate (Eugenyl acetate)	GIV.
*4-Allyl-1,2-(methylenedioxy)-benzene (Safrole)	FB, GIV, OPC.
Allyl phenoxyacetate	GIV, RT.
Allyl phenyl acetate	RT.
*p-Anisaldehyde	GIV, OPC, UOP.
Anisole (Methyl phenyl ether)	GIV.
*Anisyl acetate	GIV, RT, UOP.
Anisyl butyrate	RT.
Anisyl formate	RT.
Anisyl esters, other	RT.
*Benzophenone	GAF, GIV, ICO, NEO, PD, UOP.
*Benzyl acetate	GIV, IFF, OPC, SHL, UOP.
*Benzyl alcohol	BPC, OPC, SHL, UOP, VEL.
*Benzyl benzoate	MON, NEO, PFZ, UOP, VEL.
*Benzyl butyrate	FB, GIV, UOP.
*Benzyl cinnamate	FB, GIV, UOP.
*Benzyl ether	OPC, SHL, VEL.
Benzyl formate	GIV, RT, UOP.
Benzyl glyceryl acetal	GIV, RT, VLY.
Benzyl isopentyl ether	GIV.
1-(Benzyloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether).	GIV, UOP.
*Benzyl phenylacetate	GIV, MYW, RT, UOP.
*Benzyl propionate	FB, GIV, UOP.
*Benzyl salicylate	GIV, OPC, RT, UNG, UOP.
4-tert-Butyl-2',6'-dimethyl-3',5'-dinitroacetophenone (Musk ketone).	GIV.
6-tert-Butyl-3-methyl-2,4-dinitroanisole (Musk ambrette).	GIV.
p-tert-Butyl-α-methyl hydrocinnamaldehyde	GIV.
1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene	GIV.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)	GIV.
Carvacrol	GIV.
Cinnamaldehyde	FB, UOP.
Cinnamic acid	BPC.
*Cinnamyl acetate	GIV, RT, UOP.
*Cinnamyl alcohol	FB, GIV, NEO, UOP.
*Cinnamyl anthranilate	FEL, GIV, RT.
Cinnamyl cinnamate	FB.
*Cinnamyl propionate	GIV, RT, UOP.
Citral dimethyl acetal	GIV.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
Coumarin	DOW, RDA.
Cuminyl alcohol	GIV.
trans-Decahydro-β-naphthol	IFF.
Dihydronordicyclopentadienyl acetate	GIV.
p-Dimethoxybenzene (Dimethylhydroquinone)	ICO.
1,2-Dimethoxy-4-propenylbenzene (4-Propenyl-veratrole).	GIV.
p-α-Dimethylbenzyl alcohol	GIV.
3,7-Dimethyl-1,6-octadien-3yl anthranilate (Linalylanthranilate).	FMT.
3,7-Dimethyl-1,6-octadien-3yl benzoate (Linalyl benzoate).	HOF.
3,7-Dimethyl-2,6-octadienylphenylacetate (Geranyl phenylacetate).	GIV, UOP.
α,α-Dimethylphenethyl acetate	GIV, IFF.
α,α-Dimethylphenethyl alcohol	IFF.
Diphenylmethane (Benzylbenzene)	ARA.
1,3-Diphenyl-2-propanone (Dibenzyl ketone)	GIV.
1-Ethoxy-2-hydroxy-4-propenylbenzene	SHL.
3-Ethoxy-4-hydroxybenzaldehyde (Ethylvanillin)	MON, RDA.
2-Ethoxynaphthalene	GIV, UOP.
Ethyl anisate (Ethyl p-methoxybenzoate)	ICO.
Ethyl anthranilate	FB.
Ethyl cinnamate	GIV, UOP.
Ethyl α,β-expoxy-β-methylhydrocinnamate	GIV, RT.
2-Ethylhexyl salicylate	FEL.
Ethyl phenylacetate	GIV.
Ethyl phenylglycidate	GIV, RT, UOP.
Ethyl salicylate	FB, UOP.
3'-Ethyl-5',6',7',8'-tetrahydro-5',5',8',8',-tetramethyl-2'-acetonaphthone.	GIV, UOP.
Geranyl benzoate	GIV.
α-Hexylcinnamaldehyde	GIV, IFF, UOP, VLY.
Hydratropaldehyde	GIV, IFF, UOP.
Hydratropaldehyde, dimethyl acetal	GIV, IFF, RT.
*Hydrocoumarin	GIV, ICO, UOP.
Hydroxycitronellalmethyl anthranilate	GIV.
4-(4-Hydroxy-3-methoxyphenyl)-2-butanone	GIV.
Indole	GIV.
Isoamyl phenylacetate	GIV.
Isobutyl benzoate	GIV.
Isobutyl cinnamate	RT.
*Isobutyl phenylacetate	FB, GIV, OPC, RT, UOP.
3-Isobutylquinoline	FMT.
Isocyclocitral	OPC.
*Isobutyl salicylate	FB, GIV, UOP.
*Isopentyl salicylate	FB, GIV, OPC, UOP.
p-Isopropylbenzaldehyde (Cumaldehyde)	GIV.
Isopropyl cinnamate	RT.
p-Isopropyl-α-methylhydrocinnamaldehyde (Cyclamen aldehyde).	GIV, RDA.
6-Isopropylquinoline	FMT.
p-Mentha-,8-diene (Limonene)	RT, SKG.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
4'-Methoxyacetophenone (Acetanisole)	GIV, ICO, UOP.
p-Methoxybenzyl alcohol (Anisyl alcohol)	GIV, UOP.
o-Methoxycinnamaldehyde	x.
2-Methoxynaphthalene	GIV, UOP.
1-(p-Methoxyphenyl)-1-pentene-3-one	GIV.
*2-Methoxy-4-propenylphenol (Isoeugenol)	GIV, SHL, UOP, VLY.
4'-Methylacetophenone	UOP.
Methyl anisate (Methyl p-methoxybenzoate)	ICO.
p-Methylanisole	GIV, OPC, UOP.
*Methyl anthranilate	FB, MEE, OPC, PFW, SHL, UNG.
Methyl benzoate	HN, VLY.
α-Methylbenzyl acetate (Styralyl acetate)	GIV, UNG, UOP.
*α-Methylcinnamaldehyde	FB, GIV, UOP, VLY.
*Methyl cinnamate	FB, ICO, UOP.
6-Methylcoumarin	GIV.
1,2-(Methylenedioxy)-4-propenylbenzene (Isosafrole).	GIV.
1,2-(Methylenedioxy)-4-propylbenzene	VLY.
p-Methylhydratropaldehyde	GIV.
Methyl N-methylanthranilate	GIV, OPC.
Methyl phenylacetate	GIV.
*Methyl salicylate	CFC, DOW, HN, MON, PEN.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan	GIV.
*α-Pentylcinnamaldehyde	FB, GIV, IFF, UOP, VLY.
Phenethyl acetate	GIV, IFF, NEO.
Phenethyl alcohol	IFF.
Phenethyl formate	IFF, RT, UOP.
Phenethyl isobutyrate	GIV, IFF, RT.
Phenethyl isovalerate	GIV, RT, UOP.
Phenethyl isovalerate benzoate	IFF.
*2-Phenethyl phenylacetate	GIV, IFF, RT, UOP, VLY.
Phenethyl propionate	GIV, IFF, UOP.
Phenethyl salicylate	GIV, UOP.
Phenethyl salicylate butyrate	IFF.
2-Phenoxyethyl isobutyrate	IFF.
2-Phenoxyethyl propionate	IFF.
Phenylacetaldehyde	GIV, UOP.
Phenylacetaldehyde, dimethyl acetal	GIV, UOP.
o-Phenylanisole (2-Methoxybiphenyl)	GIV, OPC.
4-Phenyl-3-buten-2-one (Methyl styryl ketone)	FB, UOP.
Phenylethyl acetal	GIV.
Phenylethyl tiglate	FB.
3-Phenyl-1-propanol (Hydrocinnamic alcohol)	FB, GIV.
3-Phenylpropyl acetate	GIV, UOP.
3-Phenylpropyl cinnamate	FB.
Piperonal (Heliotropin)	GIV, SHL, UOP.
*p-Propenylanisole (Anethole)	ARZ, FB, GLD, HN, HPC, NCI, UOP.
p-Propylanisole (Dihydroanethole)	FB, GIV.
*Sweeteners, synthetic:	
Cyclohexanesulfamic acid	ABB.
Cyclohexanesulfamic acid, calcium salt	ABB, MON, PBY, PFZ, UNS
Cyclohexanesulfamic acid, sodium salt	ABB, MON, PBY, PFZ, UNS.
Saccharin (1,2-Benzisothiazolin-3-one,-1,1-dioxide.	MEE, MON.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968* --Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
*Sweeteners, synthetic--Continued	
Saccharin, calcium salt	LAK, MEE, MON, PBY.
Saccharin, sodium salt	LAK, MEE, MON.
*p-Tolualdehyde	GIV, HN, TCC.
p-Tolylacetaldehyde	GIV.
*p-Tolyl acetate	FB, GIV, ICO, UOP.
Tolylaldehyde	ICO.
p-Tolyl phenylacetate	GIV.
α-(Trichloromethyl)benzyl acetate (Rosetone)	ICO.
Vanillin (4-Hydroxy-3-methoxybenzaldehyde)	MON, SLV.
Verdyl propionate	GIV.
Terpenoid, Heterocyclic, and Alicyclic	
Allyl cyclohexyl propionate	GIV.
Amyris acetate	GIV.
Bornyl acetate	FEL.
p-tert-Butylcyclohexanone	DOW, IFF.
p-tert-Butylcyclohexyl acetate	IFF, VLY.
ß-Caryophyllene	GIV.
Caryophyllene alcohol	FB.
Cedrenol	GIV.
Cedrol	GIV, IFF, UOP.
*Cedryl acetate	GIV, IFF, UNG, UOP.
Cedryl formate	IFF.
2-Cyclohexylcyclohexanone	GIV.
Cyclopentanone carboxylic acid	ARA.
Dihydroterpinyl acetate	GIV.
*Essential oils, chemically modified:	
Acetyl cedrene	IFF.
Citronella oil, acetylated	FB.
Clove leaf oil terpenes	SHL.
Ethyl oxyhydrate	FEL, FLO, LUE, PFW, VND.
Guaiacwood acetate	FB, GIV.
Jasmal and Jessemac	IFF.
Lavandin, acetylated	FEL, GIV, UNG.
Piperonal terpenes	SHL.
Sassafrass oil, hydrogenated	GIV.
Synthetic indane musk	IFF.
Ethylene brassylate	RDA, VLY.
Ethylene glycol tridecandiote	RDA.
16-Hydroxyhexadecanoic acid, o-lactone (Hexadecanolide).	IFF.
2-Hydroxy-3-methyl-2-cyclopenten-1-one (Methyl cyclopentanolone).	DOW, RT.
2-Hydroxy-3-methyl-2-cyclopenten-1-one isovalerate.	RT.
3-Hydroxy-2-ethyl-4-pyrone (Ethyl maltol)	PFZ.
3-Hydroxy-2-methyl-4-pyrone (Maltol)	DOW, PFZ.
4-Hydroxynonanoic acid, γ-lactone (γ-Nonalactone)	GIV.
4-Hydroxyoctanoic acid, γ-lactone (γ-Octalactone)	GIV, RT.
4-Hydroxyundecanoic acid, γ-lactone (γ-Undecalactone.	FB.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*Ionones:	
α-Ionone	GIV, HOF, IFF, MYW, UOP.
β-Ionone	HOF, MYW, UOP.
Ionone (α- and β-)	GIV, MYW, UNG, UOP.
Isoborneol	RDA.
*Isobornyl acetate	FB, GIV, OPC, PFW, RDA.
Isobornyl propionate	GIV, OPC.
Isohexenyl cyclohex-3-ene carboxaldehyde	OPC.
Isomenthone	GIV, UOP.
2-Isopropylcyclohexanol	GIV.
Menthadiene-7-carbinol	RT.
p-Mentha-6,8-dien-2-ol (Carveol)	FB.
p-Mentha-6,8-dien-2-one (Carvone)	FB, FRM.
*p-Mentha-3-one (Menthone)	GIV, HN, NEO, OPC.
p-Menth-8-en-3-ol (Isopulegol)	GIV.
1,1-p-Menthen-6-yl-1-propanone	GIV.
*Menthol, synthetic:	
Tech	GIV, NEO, PFW.
U.S.P	GIV, GLD, HN, NEO.
Menthyl acetate	GIV.
Methylcyclohexyl propionate	GIV.
*Methylionones:	
6-Methyl-α-ionone	GIV, IFF, MYW.
6-Methyl-β-ionone	NEO
Methylionone (α- and β-)	GIV, IFF, MYW, UNG, UOP.
Methyl-2-nonanoate	GIV.
Methyl nicotinate	ICO.
2-(2-Methyl-1-propenyl)-4-methyl-tetrahydropyrane (Rose oxide).	GIV.
Neryl acetate prime	GIV.
Nopyl acetate	RT, SHL, VLY.
Santalol	GIV, IFF.
Santalyl acetate	GIV.
*Terpineols:	
α-Terpineol	GLD, HPC.
β-Terpineol	HN.
Terpineol (α- and β-)	GIV, NEO.
Terpinol hydrate (terpin hydrate), tech	HPC.
*α-Terpinyl acetate	GIV, IFF, NEO, PFW, RDA, UNG.
α-Terpinyl propionate	GIV, UOP.
3,3,5-Trimethylcyclohexanol (m-Homomenthol)	ICO.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl-α-ionone).	GIV.
4-(2,6-Trimethyl-1-cyclohexen-1-yl)-3-methyl-3-buten-2-one (β-Isomethylionone).	HOF.
Vernaldehyde	GIV.
Vetivenol	GIV, UOP.
*Vetivenyl acetate	FB, GIV, IFF, NEO, UOP.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (See Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
Acetylbutyryl (2,3-Hexanedione)	RT.
Acetyl propionyl	FB.
Acetylvaleryl (2,3-Heptanedione)	RT.
Allyl cinnamate	RT.
Allyl furoate	RT.
Allyl hexadienoate	RT.
*Allyl hexanoate	FB, GIV, PFW.
Allyl isothiocyanate (Synthetic mustard oil)	MRT.
Allylmercaptan	RT.
Allyl octanoate (Allyl caprylate)	RT.
Allyl sulfide	RT.
Amyl acetoacetate	RT.
Amyl propionate	GIV.
Brazinol	RDA.
Butyl butyryl lactate	ICO, RT.
Butyl 10-undecylenate	GIV.
Cadinene	FB.
*Citral (Geranial)	FB, FEL, GIV, LUE, RT, UOP, VLY.
Citronellyl acetate	GIV, IFF, UOP.
Citronellyl butyrate	GIV, UOP.
*Citronellyl formate	GIV, RT, UOP, VLY.
*Citronellyl isobutyrate	GIV, RT, UOP.
Citronellyl propionate	IFF, VLY.
Decanal (Capraldehyde)	GIV, IFF.
Diethyl sebacate	FEL, UOP.
Diethyl succinate	ICO, UCC, UOP.
Dihydro myrcenol	IFF.
1,1-Dimethoxy-3,7-dimethyl-2,6-octadiene	VLY.
2,6-Dimethyl-5-hepten-1-al	GIV.
3,7-Dimethyl-1,6-nonadien-3-ol	HOF.
3,7-Dimethyl-1,6-nonadien-3-ol, acetate	HOF.
3,6-Dimethyl-2,6-octadienal (citral)	HOF.
*3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	FB, GIV, GLD, IFF, UOP.
*3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	FB, FEL, GIV, GLD, IFF, NCI, NEO, UNG, UOP, VLY.
3,7-Dimethyl-1,6-octadien-3-ol (Linalyl alcohol)	FB, FEL, GIV, GLD, HOF, LUE, SHL, UNG.
3,7-Dimethyl-1,6-octadien-3-ol acetate (Linalyl acetate).	FB, GIV, GLD, HOF, SHL, UNG.
3,7-Dimethyl-1,6-octadien-3-ol cinnamate	HOF.
3,7-Dimethyl-1,6-octadien-3-yl butyrate (Linalyl butyrate).	GIV.
3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate).	GIV, HOF.
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate).	GIV, HOF.
3,7-Dimethyloctan-1-al	HOF.
*3,7-Dimethyl-1-octanol (Dihydrocitronellol)	FB, GIV, VLY.
3,7-Dimethyl-3-octanol (Tetrahydrolinalool)	GIV, HOF.
3,7-Dimethyl-6-octen-1-al (Citronellal)	FB, GIV, IFF, UOP.
*3,7-Dimethyl-6-octen-1-ol (Citronellol)	FB, GIV, GLD, IFF, NEO, OPC, UOP, VLY.
Dimyrcetal	IFF.
*Ethyl butyrate	FB, NW, RT, UOP.
Ethyl formate	FB, PFW.
Ethyl heptanoate	FEL, RT, UOP.
*Ethyl hexanoate (Ethyl caproate)	FB, NW, RT.
Ethyl isohexanoate	PFW.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Ethyl isovalerate	FB, PFW.
Ethyl laurate	FB, UOP.
Ethyl myristate	PFW, RT.
*Ethyl nonanoate	FB, FEL, GIV, RT, UOP.
Ethyl octanoate	FB, RT.
Ethyl propionate	FB.
Ethyl valerate	PFW.
Fleuramone	IFF.
Geranic acid	FB.
Geranonitrile	IFF.
*Geranyl acetate	FEL, GIV, IFF, UNG, UOP, VLY.
Geranyl butyrate	GIV, UOP.
Geranyl formate	GIV, RT, VLY.
Geranyl isobutyrate	IFF.
Geranyl isovalerate	FB.
Geranyl neryl formate	IFF.
Geranyl propionate	IFF.
Geranyl tiglate and isotiglate	FB, FMT.
*Glutamic acid, monosodium salt (Monosodium glutamate).	COM, GRW, IMC, MRK.
Heptanal (Enanthaldehyde)	BAC.
Heptyl alcohol (1-Heptanol)	BAC.
2-Hexenal	GIV.
Hexanoic acid (caproic acid)	FB.
cis-3-Hexen-1-ol	x.
cis-3-Hexen-1-ol lactate	RT.
Hex-2-enyl	OPC.
3-Hydroxy-2-butanone (Acetoin)	FMT.
*7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxy-citronellal).	GIV, GLD, IFF, OPC, UOP, VLY.
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal).	GIV, IFF.
4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-10-carboxaldehyde.	IFF.
Isobutyl acetate	FB.
Isobutyl hexanoate	GIV.
Isononyl acetate	VLY.
Isopentyl acetate	FB.
*Isopentyl butyrate	FB, GIV, NW, PFW, RT, UOP.
*Isopentyl formate	FB, GIV, RT, UOP.
Isopentyl heptoate	RT.
Isopentyl isovalerate	FB, PFW.
Isopentyl propionate	FB.
Lauraldehyde	GIV, IFF.
Methyl isobutyrate	PFW.
Methyl-β-methyl thiopropionate	RT.
Methyl-2-nonenoate	RT.
Methylol methyl hexyl ketone	GIV.
β-Methylthiopropionaldehyde	RT.
2-Methylundecanal	GIV.
Mugual and tetrahydro muguol	IFF.
Myrcenyl acetate	IFF.
Myristaldehyde	GIV, IFF.
Nonamethylene glycol diacetate	VLY.
Nonanal	GIV.
Nonane-1,3-diol monoacetate	GIV.

Table 2.--*Flavor and perfume materials: Manufacturers' identification codes, by products, 1968*--Continued

Material	Manufacturers' identification codes (see Appendix, tables 1 and 2)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
Nonanol	GIV.
Nonyl acetate	GIV.
Ocimenol and acetate	IFF.
Octanal	GIV, IFF.
3-Octanone (Ethyl amyl ketone)	GIV.
n-Octyl alcohol	GIV.
n-Octyl formate	RT.
*Rhodinol	FB, FEL, GIV, IFF, LUE, NEO, SHL.
Rhodinyl acetate	GIV, IFF.
Sodium allyl sulfonate	SHL.
Tepyl acetate	IFF, UOP.
3,7,9-Trimethyl-1,6-decadien-3-ol	HOF.
Trimethylhexyl acetate	OPC.
2,6,10-Trimethyl-9-undecen-1-al	GIV.
Undecanal	GIV, IFF.
9-Undecenal	GIV.
γ-Valerolactone	GIV.
All other	GIV.

Plastics and resin materials are condensation and polymerization products or organic chemicals, containing necessary plasticizers, fillers, extenders, stabilizers, and coloring agents. At some stage in their manufacture they exist in such physical condition that they can be shaped or otherwise processed by the application of heat and pressure. Some types of plastics materials may be molded, cast, or extruded into semifinished or finished forms. Other types are used as adhesives, for the treatment of textiles and paper, and for protective coatings. Statistics on U.S. production and sales of synthetic plastics and resin materials for 1968 are given in table 1[1]. In general, the statistics follow the outline of the Tariff Commission's monthly report on the production and sales of synthetic plastics and resin materials (S.O.C. Series P-68). However, the data given include some companies which were not covered in the monthly reports, and also some adjusted figures supplied by the original reporting companies, and, consequently, many of the figures given in table 1 are revised from those shown in the Commission's monthly release dated April 15, 1969, which contained year-end cumulative monthly totals for 1968. The end use breakdowns shown were developed with the advice of representatives of the plastics industry, and the data reported reflect producers' determinations of the use categories for their materials.

Total U.S. production of synthetic plastics and resin materials in 1968 amounted to 16,360 million pounds--19 percent more than the 13,793 million pounds reported for 1967. Sales in 1968 were 14,397 million pounds, valued at $2,907 million. Production of benzenoid plastics and resin materials in 1968 amounted to 5,899 million pounds and that of nonbenzenoid materials to 10,461 million pounds. These figures compare with the benzenoid production in 1967 of 5,033 million pounds, and with nonbenzenoid production of 8,759 million pounds.

The 1968 output of all types of thermosetting resins totaled 3,573 million pounds, compared with 3,231 million pounds in 1967. This latter figure is exclusive of coumarone-indene and petroleum polymer resins which were previously classified as thermosetting. In 1968 phenolic and other tar acid resins were produced in the largest quantity in the thermosetting group. Output of phenolic resins amounted to 1,097 million pounds in 1968, compared with 983 million pounds in 1967. Production of urea and melamine resins in 1968 was 816 million pounds, and that of alkyd resins was 692 million pounds. Other thermosetting resins produced in significant amounts in 1968 were polyester resins (615 million pounds); epoxy resins (158 million pounds); and polyurethane resins (76 million pounds).

[1] See also table 2 which lists these products by chemical types and by end uses, and identifies the manufacturers.

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The total output of thermoplastic resins in 1968 amounted to 12,787 million pounds, compared with 10,562 million pounds in 1967. The 1968 figure includes data for coumarone-indene and petroleum polymer resins which were previously classified as thermosetting. In 1968, as in previous years, polyethylene, polystyrene, and polyvinyl chloride were the resins produced in the largest volume. The output of high-pressure polyethylene in 1968 was 3,306 million pounds, which corresponds to the output of 2,716 million pounds reported for 1967. Production of low-pressure polyethylene in 1968 was 1,261 million pounds, corresponding to the 1,082 million pounds produced in 1967. Total output of polyvinyl chloride resins in 1968 was 2,635 million pounds, and that of polystyrene resins was 2,896 million pounds.

TABLE 1.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1968*

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	16,359,665	14,397,451	2,906,971	$0.20
Plastics and resin materials, benzenoid	5,898,645	4,901,793	1,121,366	.23
Plastics and resin materials, nonbenzenoid	10,461,020	9,495,658	1,785,605	.19
THERMOSETTING RESINS				
Total	3,572,741	2,827,318	732,652	.26
Alkyd resins, total	691,560	350,157	90,820	.26
Domestic:				
Phthalic anhydride type	581,345	281,422	77,868	.28
Polybasic acid type	110,215	64,910	12,225	.19
Sales for export	...	3,825	727	.19
Epoxy resins:				
Unmodified, total	157,959	157,582	78,882	.50
Bonding and adhesive	...	18,488	...	...
Protective coatings	...	62,380	...	...
Reinforced plastics	...	33,755	...	...
All other uses	...	22,910	...	...
Sales for export	...	20,049	...	...
Modified	5,208	3,665	4,155	1.13
Polyester resins,[3] total	615,408	543,266	149,671	.28
Reinforced plastics:				
Sheets, flat and corrugated	...	50,901	...	...
All other	...	334,509	...	...
Surface coatings	...	14,326	...	...
All other uses	...	132,102	...	...
Sales for export	...	11,428	...	...
Phenolic and other tar acid resins, total	1,096,816	917,998	205,682	.22
Molding materials	291,547	265,093	...	...
Bonding and adhesive resins for:				
Laminating	136,457	83,198	...	...
Coated and bonded abrasives	28,757	19,133	...	...
Friction materials	46,852	43,365	...	...
Thermal insulation	114,559	59,509	...	...
Foundry or shell molding	87,712	78,197	...	...
Plywood	193,828	174,591	...	...
Fibrous and granulated wood	46,605	39,234	...	...
Protective coatings, unmodified and modified	37,716	28,548	...	...
All other uses	112,783	108,347	...	...
Sales for export	...	18,783	...	...
Polyurethane and diisocyanate resins	76,319	51,976	28,873	.56
Rosin modifications, total	86,410	85,252	16,219	.19
Rosin and rosin esters, unmodified (ester gums)	19,135	18,468	3,882	.21
All other	67,275	66,784	12,337	.18

See footnotes at end of table.

TABLE 1.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1968*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value [1]
	1,000 pounds dry basis [2]	*1,000 pounds dry basis* [2]	*1,000 dollars*	*Per pound*
THERMOSETTING RESINS--Continued				
Urea and melamine resins, total	816,077	694,839	133,928	$0.19
Textile treating and coating resins	85,565	73,408	...	...
Paper treating and coating resins	67,757	45,287	...	...
Bonding and adhesive resins for:				
Laminating	61,269	39,641	...	...
Plywood	152,396	136,322	...	...
Fibrous and granulated wood	216,950	200,624	...	...
Protective coatings	64,381	41,793	...	...
All other uses (including molding)	167,759	143,281	...	...
Sales for export	...	14,483	....	...
All other thermosetting resins [4]	26,984	22,583	24,422	1.08
THERMOPLASTIC RESINS				
Total	12,786,924	11,570,133	2,174,319	.19
Cellulose plastics materials, total	187,346	185,559	120,389	.65
Sheets, continuous:				
Under 0.003 gage	17,259	17,549	...	...
0.003 gage and over	44,640	53,640	...	...
All other sheets, rods, and tubes	8,949	7,861	...	...
Molding and extrusion materials	116,498	106,509	...	...
Coumarone-indene and petroleum polymer resins, total	348,750	344,713	24,236	.07
Floor tile	44,857	44,846	...	...
Rubber compounding	81,789	80,200	...	...
All other uses	222,104	179,194	...	...
Sales for export	...	40,473	...	...
Polyamide resins, nylon type	88,285	69,731	57,297	.82
Polyolefin plastics materials:				
Polyethylene, density 0.940 and below: [5]				
Production and sales	3,306,455	3,110,794	377,503	.12
Sales and use, total	...	3,105,308	...	...
Injection molding	...	412,349		...
Blow molding	...	52,026	...	...
Film and sheet	...	1,418,928	...	...
Extrusion coating on paper and other substrates	...	348,404	...	...
Wire and cable	...	284,581	...	...
All other extruded products, including pipe and conduit	...	25,074	...	...
All other domestic uses	...	281,547	...	...
Export sales	...	372,399	...	...
Polyethylene, density over 0.940:				
Production and sales	[6] 1,261,267	1,117,609	173,475	.16
Sales and use, total	...	1,223,691	...	...
Injection molding	...	236,444	...	...
Blow molding	...	488,749	...	...
Film and sheet	...	49,373	...	...
Extrusion coating on paper and other substrates	...	15,422	...	...
Wire and cable	...	39,152	...	...
Pipe and conduit	...	43,898	...	...
Other extruded products	...	16,577	...	...
All other domestic uses	...	181,359	...	...
Export sales	...	152,717	...	...

See footnotes at end of table.

TABLE 1.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1968*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value [1]
	1,000 pounds dry basis [2]	*1,000 pounds dry basis* [2]	*1,000 dollars*	*Per pound*
THERMOPLASTIC RESINS--Continued				
Polyolefin plastics materials--Continued				
Polypropylene: Production and sales	878,168	925,333	190,895	$0.21
Styrene type plastics materials, total	2,895,738	2,501,421	467,768	.23
ABS and SAN resins: [7]				
Production and sales	508,670	303,116	86,045	.28
Sales and use, total	...	483,108	...	...
Molding	...	239,961	...	...
Extrusion	...	134,603	...	...
All other domestic uses	...	68,464	...	...
Export sales	...	40,080	...	...
Styrene and styrene copolymer resins:				
Production and sales	[8] 2,387,068	2,198,305	381,723	.17
Sales and use, total	...	2,466,964	...	...
Molding	...	1,188,029	...	...
Textile and paper treating and coating	...	293,889	...	...
Emulsion paint	...	40,043	...	...
Extrusion	...	332,471	...	...
All other domestic uses (including foam and foamable materials)	...	527,601	...	...
Export sales	...	84,931	...	...
Vinyl resins (resin content):				
Polyvinyl chloride amd copolymers:				
Production and sales [9], total	2,635,394	2,329,541	326,566	.14
Suspension homopolymers	1,713,471	...	...	...
Suspension copolymers	577,816	...	...	...
Dispersion (paste)	344,107	...	...	...
Sales and use, total	...	2,550,426	...	...
Calendering, except flooring	...	406,464		
Flooring:				
Calendered	...	244,243	...	...
Coated	...	57,483	...	...
Paper and textile coating, and other paper and textile uses	...	108,127	...	...
Protective coatings and adhesives	...	82,797	...	...
Wire and cable	...	288,875	...	...
Extruded film and sheet	...	134,496	...	...
Other extruded products	...	315,522	...	...
Sound records	...	122,014	...	...
Injection and blow molding	...	77,705	...	...
Plastisol formulating and molding	...	107,901	...	...
All other domestic uses	...	491,209	...	...
Export sales	...	113,590	...	...

See footnotes at end of table.

TABLE 1.--*Plastics and resin materials: U.S. production and sales, by chemical classes and uses, 1968*--Continued

Kind and use	Production	Sales		
		Quantity	Value	Unit value [1]
	1,000 pounds dry basis [2]	*1,000 pounds dry basis* [2]	*1,000 dollars*	*Per pound*
THERMOPLASTIC RESINS--Continued				
Vinyl resins (resin content)--Continued				
Polyvinyl acetate:				
Production and sales, total	383,569	306,226	77,846	$0.25
Latexes	270,628	...	...	...
Resins	112,941	...	...	...
Sales and use, total	...	358,075	...	...
Emulsion paints	...	120,625	...	...
Adhesives	...	133,562	...	...
Paper treating	...	28,544	...	...
Textile treating	...	11,859	...	...
All other domestic uses	...	60,809	...	...
Export sales	...	2,676	...	...
Polyvinyl alcohol	45,168	39,083	16,555	.42
Other vinyl resins [10]	150,984	89,338	35,576	.40
All other thermoplastic resins [11]	605,800	550,785	306,213	.56

[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] 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.

[4] Includes data for acetone-formaldehyde resins; styrene-alkyd polyesters; toluenesulfonamide resins; silicone resins; and other thermosetting resins which were produced in small quantities. Also included are saturated polyesters for urethanes.

[5] Represents data for polyethylene produced by the high-pressure process and for ethylene copolymers.

[6] Represents production of polyethylene by the low-pressure process.

[7] ABS resins are polymers of acrylonitrile, styrene, and butadiene. SAN resins are polymers of styrene and acrylonitrile.

[8] Includes straight polystyrene, 979 million pounds; rubber-modified polystyrene, 882 million pounds; styrene-butadiene copolymers, 366 million pounds; and all other, 160 million pounds.

[9] Includes data not reported monthly during 1968.

[10] Includes data for polyvinyl butyral; polyvinylidene chloride; and certain copolymers.

[11] Includes data for acrylic; fluorocarbon; non-nylon polyamides; polycarbonate; polyoxymethylene; polyterpene; and other thermoplastic resins.

TABLE 2.--*Plastics and resin materials: Manufacturers' identification codes, by products, 1968*

[Plastics and resin materials for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
THERMOSETTING RESINS	
*Alkyd resins, domestic:	
*Phthalic anhydride type	ACP, ACY, APT, APV, ASH, BAL, BEN, BOY, BRU, CEL, CIK, CM, COM, CPV, DEG. DSO, DUN, DUP, EW, FAR, FBR, FCD, FLW, FOC, FSH, GEI, GIL, GLD, GRC, GRV, HAN, HPC, HRS, ICF, JOB, JSC, JWL, KEL, KMC, KMP, KPT, KPS, KYN, MCC, MID, MMM, MNP, NCI, NON, NPV, OBC, ORO, OSB, PER, PFP, PLS, PPG, PRT, PRX, PTP, QCP, RCI, RED, REL, RH, SCN, SED, SIP, SM, SVC, SW, SYV, TV, TXT, x, x, x, x.
*Polybasic acid type	ACP, ACY, APV, ASH, BEN, CGL, CM, COM, CPV, DEG, DUN, DUP, EW, FAR, FBR, FCD, FOC, GEI, GLD, GRV, HAN, HPC, HYC, ICF, KMC, KYN, MCC, MID, MMM, MOB, NCI, NON, NPV, ORO, OSB, PPG, PTP, RCI, RED, RH, SCN, SHA, SW, TV.
Epoxy resins:	
*Unmodified:	
*Bonding and adhesives	CBA, CEL, DOW, SHC, UCC.
*Protective coatings	CBA, CEL, DOW, RCI, SHC, UCC.
*Reinforced plastics	CBA, CEL, DOW, RCI, SHC, UCC.
*All other uses (including export)	CBA, CEL, DOW, RCI, SHC, UCC.
*Modified	AMR, BEN, CM, EW, FAR, HAP, IOC, MID. MMM, MNP, MRB. NON, NPV. OCF, ORO, OSB, PRX, PYR, REL, REZ, SCN, SED, x.
*Polyester resins:	
Reinforced plastics:	
*Sheets, flat and corrugated	ACY, APD, DA, GLD, HKD, ICF, LAS, MFG, ORO, PPG, RCI, RH, SIC, SW.
*All other	ACP, ACY, ASH, CGL, CPV, DA, DEG, DSO, GLD, GNT, GRV, HKD, ICF, IPC, KPS, KPT, LAS, MFG, MRO, PLU, PPG, RCI, SIC, SW, VAL, x.
*Surface coatings	ACP, ACY, APD, DA, GLD, GYR, ORO, OSB, PPG, SW, SYV.
*All other uses (including export)	ACP, ACR, ACY, APD, DA, EKX, FMP, GEI, GLD, GNT, GRG, GYR, HKD, LAS, PLU, PPG, RCI, RH, SCN, SIC, SW, x.
*Phenolic and other tar acid resins:	
*Molding materials	GE, HER, HKD, HVG, MON, MRB, NPI, PLS, RCI, RGC, UCC, VSV.
Bonding and adhesive resins for:	
*Laminating	ACP, AMR, ASH, BOR, CBR, CD, EW, FOM, GE, HKD, IRI, MON, NPP, NTC, NVF, PGU, PPL, PYZ, RCD, RCI, SCN, SPL, UCC.
*Coated and bonded abrasives	AMR, ASH, BME, BOR, CBM, HKD, MMM, MON, PYZ, RCI, SCN, UCC.
*Friction materials	ABS, ASH, BME, BOR, FRL, GE, HKD, MMM, PYZ, RAB, RCI, SCN, SYV, UCC.
*Thermal insulation	ACP, AMR, ASH, BOR, HKD, MON, OCF, PYZ, RCI, UCC.
*Foundry or shell molding	ACP, ACR, AMR, ASH, BOR, GE, HKD, MON, PYZ, RCI, SCN, UCC.
*Plywood	ASH, BOR, CBC, CBD, HPC, MON, PGU, PYZ, RCI, RH, SIM, WCA, WRD.
*Fibrous and granulated wood	AMR, BOR, CBC, CBD, HKD, MON, PYZ, RCI, UCC, UPL.
*Protective coatings, unmodified and modified	ASH, BOR, CGL, CIK, CM, CPV, DSO, EW, FAR, FCD, GE, GEI, GRG, GRV, HAN, HER, HKD, ICF, INL, KYN, MID, MMM, MON, MRB, NPV, ORO, PRX, PYZ, RCI, REL, RH, SHA, SM, SW, UCC, x.

TABLE 2.--*Plastics and resin materials: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
THERMOSETTING RESINS--Continued	
*Phenolic and other tar acid resins--Continued	
*All other uses (including export)	ACP, ACR, AMR, ASH, BME, BOR, CBR, EW, FRL, GE, GEI, HER, HKD, HVG, IOC, IRC, KND, KPT, MCA, MMM, MON, MRB, NCI, PLS. PTP, PYR, RAB, RCI, REZ, RGC, RH, RPC, SCN, SNC, SW, UCC, UNO, USR, WTC.
*Polyurethane and diisocyanate resins	ARK, ASH, BFG, CGL, DUP, EW, FAR, GPM, HAP, HYC, ICI, IPI, JWL, KMC, MCC, MID, PEL, PTP, PVI, PYR, QUN, RCI, REZ, SCN, SKT, UPJ, x.
*Rosin modifications:	
*Rosin and rosin esters, unmodified (ester gums)	ASH, CBY, DPP, FAR, FRP, MCC, NCI, PTP.
*All other	ASH, CBY, DPP, EW, FAR, FRP, NCI, OSB, RH, SCF.
*Silicone resins	ACP, ASH, DCC, RCI, SPD, UCC.
Styrene-alkyd polyesters	ASH, CGL, EW, FLW, MCC.
*Urea and melamine resins:	
*Textile treating and coating resins	ACY, APX, ASH, CBR, DAN, DUP, HNC, HRT, JSC, MON, MRA, ONX, PC, QCP, RCI, RH, RPC, S, SBC, SED, SNW, STC, TXT, USO, VAL, WIC.
*Paper treating and coating resins	ACY, AMR, BME, BOR, CBC, CBD, DUP, HPC, MMM, MON, RCI, RH, SIM, x.
Molding materials	ACP, ACY, BOR, CAP, FMB, PMC, SFA.
Bonding and adhesive resins for:	
*Laminating	ACY, ASH, BOR, CBR, FOM, GE, MON, NPP, NTC, PGU, PMC, PPL, RCI.
*Plywood	ACP, ACY, ASH, BOR, CBC, CBD, HPC, MON, NTC, PGU, RCI, RH, SAC, SOR, WRD.
*Fibrous and granulated wood	ACY, AMR, BOR, CBC, CBD, IPR, MON, PGU, RCI, SOR, SYV, UPL.
*Protective coatings	ACP, ACY, CEL, CPV, DSO, DUP, GLD, GRV, HAN, KPS, MID, MON, NON, PPG, RCI, REL, RH, SCN, SED, SW.
*All other uses (including export)	ACP, ACY, AMR, ASH, BOR, CIB, CMP, DEP, DUP, EFH, FMB, HPC, IRI, MON, RCI, REN, RH, RPC, S, SBC, SEY, TV, UNO, VAL.
*All other thermosetting resins	ACP, ACY, DCC, HVG, MID, MOB, MON, NTC, OCF, PPG.
THERMOPLASTIC RESINS	
Acrylic resins	ACY, ASH, CEL, CIB, DUP, EFH, FLH, GLC, GLX, HRT, JNS, JSC, ORO, PCI, PVI, QUN, RH, RPC, SAR, SED, SEY, SH, SNW, UCC, VAL, VPC, WIC, x, x.
*Cellulose plastics materials:	
Sheets, continuous:	
*Under 0.003 gage	CEL, DUP, EKT.
*0.003 gage and over	CEL, DOW, EKT, HN, MON, MPP, SPY, x.
*All other sheets, rods, and tubes	CEL, HN, MPP, RSB, SPY, x.
*Molding and extrusion materials	CBN, CEL, DOW, EKT, MON, RSB.
*Coumarone-indene and petroleum polymer resins:	
*Floor tile	ACP, NEV, PAI, RCI, VEL.
*Rubber compounding	ACC, ACP, KPI, NEV, PAI, RCI, VEL.
*All other uses (including export)	ACC, ACP, DSO, DUP, ENJ, GLD, MCA, MID, NEV, ORO, PAI, PPG, RCI, VEL, VSV.

TABLE 2.--*Plastics and resin materials: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
THERMOPLASTIC RESINS--Continued	
Polyamide resins:	
*Nylon type	ALF, BCM, CEL, DUP, FG, GOC, MON, POL.
Non-nylon type	AMR, DUP, EMR, GNM, HN, UCC.
Polyolefin plastics materials:	
Ethylene polymers and copolymers:	
Production:	
*High-pressure polyethylene	ACP, CBN, CPX, DOW, DUP, EKX, ENJ, GOC, KPP, MON, RCC, UCC, USI.
*Low-pressure polyethylene	ACP, CEL, CPX, DOW, DUP, HPC, KPP, MON, PLC, UCC, USI.
*Ethylene copolymers	DUP, ENJ, UCC, USI.
*Polyethylene, density 0.940 and below:	
*Sales and use:	
*Injection molding	ACP, CBN, CEL, CPX, DOW, DUP, EKX, ENJ, GOC, KPP, MON, PLC, RCC, UCC, USI.
*Blow molding	CBN, DOW, DUP, EKX, KPP, MON, PLC, RCC, UCC, USI.
*Film and sheet	ACP, CBN, CEL, CPX, DOW, DUP, ENJ, EKX, GOC, KPP, MON, PLC, RCC, UCC, USI.
*Extrusion coating on paper and other substrates	CEL, CPX, DOW, DUP, EKX, GOC, MON, PLC, RCC, UCC, USI.
*Wire and cable	DOW, DUP, EKX, KPP, MON, PLC, UCC, USI.
*Pipe and conduit	EKX, GOC, KPP, PLC, UCC, USI.
*Other extruded products	CEL, CPX, DOW, DUP, EKX, ENJ, KPP, PLC, UCC, USI.
*All other uses (including export)	ACP, CEL, CPX, DOW, DUP, EKX, ENJ, GOC, KPP, MON, PLC, RCC, UCC, USI.
*Polyethylene, density over 0.940:	
*Sales and use:	
*Injection molding	ACP, CEL. CPX, DOW, DUP, EKX, HPC, KPP, PLC, SHC, UCC, USI.
*Blow molding	ACP, CEL, CPX, DOW, DUP, EKX, HPC, KPP, MON, PLC, SHC, UCC, USI.
*Film and sheet	ACP, CEL, CPX, DOW, DUP, EKX, HPC, KPP, PLC, SHC, UCC, USI.
*Extrusion coating on paper and other substrates	DUP, EKX, PLC, UCC, USI.
*Wire and cable	ACP, CEL, DUP, EKX, HPC, KPP, MON, PLC, SHC, UCC.
*Pipe and conduit	ACP, CEL, DUP, EKX, HPC, KPP, PLC, SHC, UCC, USI.
*Other extruded products	CEL, DOW, DUP, EKX, HPC, KPP, PLC, UCC, USI.
*All other uses (including export)	ACP, CEL, CPX, DOW, DSO, DUP, EKX, HPC, KPP, MON, PLC, UCC, USI.
Polypropylene:	
*Production	AVS, DA, EKX, ENJ, HPC, NVT, RCC, SHC.
*Sales and use:	
Injection and blow molding	ACP, EKX, ENJ, HPC, NVT, PLC, RCC, SHC, UCC.
Film and sheet	ACP, AVS, DA, EKX, ENJ, HPC, RCC, SHC, UCC.
Fibers and filaments	EKX, ENJ, HPC, PLC, SHC.
Other extruded products	EKX, ENJ, HPC, PLC, RCC, SHC.
All other uses (including export)	ACP, AVS, DA, EKX, ENJ, HPC, NVT, PLC, RCC, SHC, UCC.
*Styrene type plastics materials:	
ABS and SAN resins:	
*Production	BFG, DOW, FBF, FIR, GRD, KPP, MCB, MON, RCC, SW, UCC, USR.
*Sales and use:	
*Molding	BFG, DOW, FBF, KPP, MCB, MON, UCC, USR.
*Extrusion	BFG, DOW, MCB, MON, RCC, UCC, USR.
*All other uses (including export)	BFG, DOW, FIR, GRD, KPP, MCB, MON, RCC, SW, UCC, USR.

TABLE 2.--*Plastics and resin materials: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
THERMOPLASTIC RESINS--Continued	
*Styrene type plastics materials--Continued	
Styrene and styrene copolymer resins:	
*Production:	
Straight polystyrene	BPL, CBN, CSD, DOW, FBF, FG, JNS, JSC, KPP, MON, ONX, ORO, PLA, PRX, RCC, SOL, SPI, SW, TIC, UBS, UCC.
Rubber-modified polystyrene	BOR, BPL, CSD, DOW, FG, GOR, KPP, MON, PLA, RCC, SHC, UCC.
Styrene-butadiene copolymer	BFG, BOR, DOW, FIR, GAF, GLD, GNT, GRD, GYR, KPP, SBI, USR, WIC.
All other	ACC, BAS, BCN, BFG, DOW, DSO, DUP, GAF, GLD, GRD, IOC, JSC, MON, MRT, NLC, PAI, POL, PRX, PVI, RCC, RCD, RH, SM.
*Sales and use:	
*Molding	BFG, BPL, CBN, CSD, DOW, FBF, FG, FIR, GOR, GYR, KPP, MON, PLA, RCC, SHC, SOL, TIC, UCC, USR.
*Textile and paper treating and coating	BOR, DOW, FIR, GAF, GNT, GRD, GYR, JSC, KPP, MON, MRT, PRX, SBI, USR, WIC.
*Emulsion paint	BOR, DOW, DSO, FIR, GLD, GNT, GRD, GYR, KPP, MON, USR.
*Extrusion	BFG, CBN, CSD, DOW, KPP, MON, RCC, SHC, UCC.
*Foam and foamable materials	BAS, CBN, CSD, DOW, FG, GYR, KPP, MON, RCC, UCC.
*All other uses (including export)	ACC, BAS, BCN, BFG, BOR, DOW, DSO, DUP, FG, GAF, GNT, GRD, GYR, IOC, JSC, KPP, MON, MRT, GNX, ORO, PAI, POL, PRX, PVI, RCC, RH, SHC, SM, SPI, UBS, UCC, USR.
Vinyl resins:	
Polyvinylchloride and copolymers:	
*Production:	
Suspension homopolymers	ACP, AME, ATU, BFG, BOR, CPL, CRY, CUC, DA, DOW, ESC, FIR, GNT, GRA, GYR, MON, PNT, SFA, THC, TNA, UCC, USR.
Suspension copolymers	ACP, AME, BFG, BOR, CPL, CRY, CUC, DA, FIR, GNT, GYR, KYS, NSC, ONX, PNT, SFA, THC, TNA, UCC.
Dispersions (paste)	ACP, BFG, BOR, CRY, DA, FIR, GYR, MON, SFA, THC, UCC, USR.
*Sales and use:	
*Calendering, except flooring	AME, ATU, BFG, BOR, CPL, CRY, CUC, DA, DOW, ESC, FIR, GNT, GYR, MON, PNT, SFA, THC, UCC, USR.
Flooring:	
*Calendered	AME, ATU, BFG, BOR, CPL, CRY, CUC, DA, ESC, FIR, MON, PNT, SFA, THC, UCC.
*Coated	BFG, BOR, CRY, DA, FIR, GYR, MON, THC, UCC, USR.
Paper and textile uses:	
*Coating	ATU, BFG, BOR, CRY, DA, FIR, MON, ONX, SFA, THC, USR.
*Other	BFG, BOR, DA, FIR, THC, UCC.
*Protective coatings and adhesives	BFG, BOR, CRY, DA, ESC, FIR, MON, NSC, UCC.
*Wire and cable	ACP, AME, ATU, BFG, BOR, CPL, CRY, CUC, DA, DOW, FIR, MON, PNT, THC, UCC, USR.
*Extruded film and sheet	ACP, AME, BFG, BOR, CPL, CRY, CUC, DA, DOW, FIR, GYR, MON, PNT, SFA, THC, UCC, USR.
*Other extruded products	ACP, AME, ATU, BFG, BOR, CPL, CRY, CUC, DA, DOW, ESC, FIR, GNT, GYR, MON, PNT, SFA, THC, UCC, USR.
*Sound records	ACP, AME, BFG, BOR, CPL, CRY, CUC, DA, FIR, KYS, MON, PNT, SFA, UCC, USR.
*Injection and blow molding	ACP, ATU, BFG, BOR, CPL, CRY, DA, ESC, FIR, GYR, MON, PNT, SFA, THC, UCC, USR.

TABLE 2.--*Plastics and resin materials: Manufacturers' identification codes, by products, 1968--* Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
THERMOPLASTIC RESINS--Continued	
Vinyl resins--Continued	
Polyvinylchloride and copolymers--Continued	
*Sales and use--Continued	
*Plastisol formulating and molding	ACP, BFG, BOR, CRY, DA, FIR, MON, PNT, PYR, SFA, THC, UCC, USR.
*All other uses (including export)	AME, BFG, BOR, CPL, CRY, CUC, DA, DOW, ESC, FIR, GNT, GRA, GYR, MON, PNT, SFA, THC, TNA, UCC, USR.
Polyvinyl acetate:	
*Production:	
*Latexes	AML, BEN, BOR, BOY, CEL, CUC, DSO, DUP, FAR, FC, FLH, GLC, GLD, GRD, HAN, HNC, HRT, JOB, JSC, KMC, KMP, MCC, MMM, MON, NPV, NSC, NTC, OBC, PFP, PII, PRX, PTP, QCP, RPC, SED, SPC, UCC, WIC, x.
*Resins	ASH, BEN, BLS, BOR, CST, CUC, DSO, DUP, FAR, HNC, MON, MRN, NCI, NSC, ONX, PPG, PTP, RCI, RPC, SCO, SEY, SH, UCC, x.
*Sales and use:	
*Emulsion paints	AML, ASH, BEN, BOR, CEL, CUC, DSO, DUP, FAR, FLH, GLC, GLD, GRD, HAN, KMC, KMP, MCC, MON, NCI, NSC, OBC, PFP, PPG, PRX, PTP, RCI, RPC, SED, SPC, UCC, WIC.
*Adhesives	AML, ASH, BOR, CEL, CUC, DUP, FC, FLH, GRD, HNC, MMM, MON, MRN, NCI, NSC, NTC, PII, PPG, RCI, SH, UCC, WIC.
*Paper treating	AML, BOR, CEL, CUC, DSO, DUP, FLH, MMM, MON, NSC, PII, WIC.
*Textile treating	AML, BOR, CEL, CST, CUC, DUP, GRD, HRT, NSC, PII, SCO, UCC, WIC.
*All other uses (including export)	AML, BCN, BOR, CEL, CUC, DUP, GLC, GRD, JSC, MON, NSC, PII, QCP, RCI, SCO, SEY, UCC.
*Polyvinyl alcohol	BOR, CUC, DUP, FC, MON.
*Other vinyl resins	BAS, BOR, DOW, DUP, EW, GLD, GRD, MCC, MON, SH, UCC.
*All other thermoplastic resins	ACP, CBY, CEL, CIB, DEP, DUP, GE, GGY, JSC, MOB, MMM, PTP, RH, RPC, SBC, SCN, SNW, UNO, UOC, VAL, WIC.

Rubber-processing chemicals are organic compounds that are added to natural and synthetic rubbers to give them qualities necessary for their conversion into finished rubber goods. In this report, statistics are given for cyclic and acyclic compounds, by use--such as accelerators, antioxidants, blowing agents, and peptizers. Data on production and sales of rubber-processing chemicals in 1968 are given in table 1. Table 2 lists these products and identifies the manufacturers.

Production of rubber-processing chemicals as a group in 1968 amounted to 313 million pounds, or 18.4 percent more than the 264 million pounds reported for 1967. Sales of rubber-processing chemicals in 1968 amounted to 236 million pounds, valued at $151 million, compared with 201 million pounds, valued at $132 million, in 1967. The increased production and sales of rubber-processing chemicals in 1968 is attributable principally to the increased production and sales of cyclic compounds, particularly the thiazole accelerators and the amino antioxidants.

The output of cyclic rubber-processing chemicals in 1968 amounted to 264 million pounds, 19.7 percent more than the 220 million pounds reported for 1967. Sales in 1968 were 199 million pounds, valued at $133 million, compared with 170 million pounds, valued at $116 million, in 1967. Of the total output of cyclic rubber-processing chemicals in 1968, accelerators accounted for 31.5 percent and antioxidants for 62.9 percent. Production of antioxidants, which amounted to 165.7 million pounds in 1968, included 124.6 million pounds of amino compounds and 41.1 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants in 1968 were 91.2 million pounds, valued at $61.3 million; sales of phenolic and phosphite antioxidants were 30.3 million pounds, valued at $22.4 million.

Production of acyclic rubber-processing chemicals in 1968 amounted to 49.1 million pounds, an increase of 11.6 percent over

the 44.0 million pounds reported for 1967. Sales in 1968 totaled 36.6 million pounds, valued at $18.4 million, compared with 30.9 million pounds, valued at $15.5 million, in 1967. Accelerators, principally dithiocarbamic acid derivatives and tetramethylthiuram sulfides, accounted for 49.2 percent of the output of acyclic rubber-processing chemicals for 1968. Dodecyl mercaptans accounted for 29.5 percent. Blowing agents, modifiers, short-stops, and lubricating and conditioning agents accounted for the remainder of the output of acyclic compounds.

TABLE 1.--*Rubber-processing chemicals: U.S. production and sales, 1968*

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

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	312,647	235,940	151,268	$0.64
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total	263,554	199,357	132,880	.67
Accelerators, activators, and vulcanizing agents, total	82,972	64,702	38,206	.59
Aldehyde-amine reaction products	1,352	1,146	1,134	.99
Dithiocarbamic acid derivatives	237	163	348	2.13
Thiazole derivatives, total	70,078	52,755	27,801	.53
N-Cyclohexyl-2-benzothiazolesulfenamide	4,886	3,726	2,274	.61
2,2′-Dithiobis(benzothiazole)	22,780	11,571	6,332	.55
2-Mercaptobenzothiazole	6,072	...	...	...
2-Mercaptobenzothiazole, zinc salt	4,436	...	...	...
All other thiazole derivatives	31,904	37,458	19,195	.51
All other accelerators	11,305	10,638	8,923	.84
Antioxidants, antiozonants, and stabilizers, total	165,735	121,485	83,648	.69
Amino compounds, total	124,598	91,196	61,275	.67
Aldehyde- and acetone-amine reaction products	...	4,698	2,671	.57
Substituted p-phenylenediamines, total	56,915	38,420	34,096	.89
N,N′-Diphenyl-p-phenylenediamine	1,743	1,342	1,331	.99
All other substituted p-phenylenediamines	55,172	37,078	32,765	.88
Octyldiphenylamine	3,864	3,005	1,601	.53
N-Phenyl-2-naphthylamine	5,068	...	...	...
All other amino antioxidants, antiozonants, and stabilizers	58,751	45,073	22,907	.51
Phenolic and phosphite antioxidants and stabilizers, total	41,137	30,289	22,373	.74
Polyphenolics (including bisphenols)	11,438	9,882	11,949	1.21
Phenol, alkylated	13,306	7,463	3,937	.53
Phenol, styrenated	1,700	...	...	...
All other phenolic and phosphite antioxidants and stabilizers	14,693	12,944	6,487	.50
Blowing agents	...	3,823	5,870	1.54
Peptizers	6,840	6,659	3,868	.58
All other cyclic rubber-processing chemicals[2]	8,007	2,688	1,288	.48

See footnotes at end of table.

TABLE 1.--*Rubber-processing chemicals: U.S. production and sales, 1968*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
RUBBER-PROCESSING CHEMICALS, ACYCLIC	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	49,093	36,583	18,388	$0.50
Accelerators, activators, and vulcanizing agents, total	24,164	18,277	10,823	.59
Dithiocarbamic acid derivatives, total[3]	8,411	7,361	5,647	.77
Dibutyldithiocarbamic acid, sodium salt	1,326	...	...	...
Dibutyldithiocarbamic acid, zinc salt	2,061	1,996	1,894	.95
Diethyldithiocarbamic acid, zinc salt	1,897	1,583	977	.62
Dimethyldithiocarbamic acid, zinc salt	1,842	1,666	758	.45
All other dithiocarbamic acid derivatives	1,285	2,116	2,018	.95
Thiurams, total[4]	...	10,673	4,909	.46
Bis(diethylthiocarbamoyl) disulfide	...	787	461	.59
Bis(dimethylthiocarbamoyl) disulfide	8,497	8,128	3,131	.39
Bis(dimethylthiocarbamoyl) sulfide	1,881	1,590	1,230	.77
All other thiurams	...	168	87	.52
All other accelerators, activators, and vulcanizing agents[5]	5,375	243	267	1.10
Dodecyl mercaptans	14,497	12,687	4,711	.37
Dimethyldithiocarbamic acid, sodium salt	4,550	1,914	713	.37
All other acyclic rubber-processing chemicals[6]	5,882	3,705	2,141	.58

[1] Calculated from rounded figures.
[2] Includes retarders, tackifiers, physical-property improvers, and production data for blowing agents.
[3] 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 will be included in the report "Pesticides and Related Products".
[4] Includes data for small amounts of tetramethylthiuram sulfides for uses other than in the processing of natural and synthetic rubbers.
[5] Includes production data for thiurams.
[6] Includes blowing agents, polymerization regulators, shortstops, and conditioning and lubricating agents.

TABLE 2.--*Rubber-processing chemicals: Manufacturers' identification codes, by products, 1968*

[Rubber-processing chemicals for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
RUBBER-PROCESSING CHEMICALS, CYCLIC	
*Accelerators, activators, and vulcanizing agents:	
*Aldehyde-amine reaction products:	
Acetaldehyde-aniline condensate	USR.
n-Butyraldehyde-aniline condensate	DUP, MON, RCD, USR.
Butyraldehyde-butylideneaniline condensate	MON.
α-Ethyl-β-propylacrylanilide	CCO.
Heptaldehyde-aniline condensate	USR.
Triethyltrimethylenetriamine	USR.
*Dithiocarbamic acid derivatives:	
Dibenzyldithiocarbamic acid, sodium salt	USR.
Dibenzyldithiocarbamic acid, zinc salt	USR, WRC.
Dibutyldithiocarbamic acid, N,N-dimethylcyclohexylamine salt.	MON.
Dibutyldithiocarbamic acid, diphenylguanidine salt.	CCO.
2,4-Dinitrophenyl dimethyldithiocarbamate	USR.
Piperidinecarbodithioic acid, piperidinium-potassium salts, mixed.	DUP.
Guanidines:	
Dicatechol borate, di-o-tolylguanidine salt	DUP.
1,3-Diphenylguanidine	ACY.
Diphenylguanidine phthalate	MON.
1,3-Di-o-tolylguanidine	ACY.
1,2,3-Triphenylguanidine	ACS.
*Thiazole derivatives:	
2-Benzothiazyl N,N-diethylthiocarbamoyl sulfide	PAS.
1,3-Bis(2-benzothiazolylmercaptomethyl)urea	MON.
N-tert-Butyl-2-benzothiazolesulfenamide	ACY, 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, zinc chloride	DUP.
*2-Mercaptobenzothiazole, zinc salt	ACY, BFG, DUP, GYR, USR.
4-Morpholinyl-2-benzothiazyl disulfide	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide	ACY, BFG, MON.
Thiazoline-2-thiol	ACY.
All other cyclic accelerators, activators, and vulcanizing agents:	
p-Benzoquinonedioxime	CTN, DUP.
Bis(p-aminocyclohexyl)methane carbamate	DUP.
Bis(morpholinothiocarbonyl) disulfide	ACY.
Dibenzoyl-p-quinonedioxime	CTN, USR.
Dibenzylamine	MLS, USR.
N,N'-Dicinnamylidene-1,6-hexanediamine	DUP.
Di-N,N'-pentamethylenethiuram tetrasulfide	DUP, VNC.
4,4'-Dithiodimorpholine	MON.
2-Imidazoline-2-thiol	DUP, RBC.
m-Phenylenebismaleimide	DUP.
Poly-p-dinitrosobenzene	DUP.
Styrene polysulfide	TKL.
m-Tolylenebismaleimide	DUP.

TABLE 2.--*Rubber-processing chemicals: Manufacturers' identification codes by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stabilizers:	
*Amino antioxidants, antiozonants, and stabilizers:	
*Aldehyde- and acetone-amine reaction products:	
Acetaldehyde-aniline hydrochloride condensate-	USR.
Aldol-α-naphthylamine condensate----------	BFG.
Butyraldehyde-aniline condensate----------	DUP.
Diphenylamine-acetone condensate----------	ACY, BFG, USR.
Phenyl-2-naphthylamine-acetone condensate-----	USR.
*Substituted p-phenylenediamines:	
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenedi-amine.	EKT, USR, x.
N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylene-diamine.	MON, UPM.
N,N'-Bis(1-methylheptyl)-p-phenylenediamine---	BFG, MON, UPM.
N-sec-Butyl-N'-phenyl-p-phenylenediamine-----	USR.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine-----	USR.
Diarylarylenediamines, mixed----------	GYR.
N,N'-Di-sec-butyl-p-phenylenediamine----------	USR.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenedi-amine.	GYR.
N,N'-Di-2-naphthyl-p-phenylenediamine---------	BFG.
*N,N'-Diphenyl-p-phenylenediamine----------	BFG, DUP, SDC, USR.
N-Isopropyl-N'-phenyl-p-phenylenediamine------	MON, USR.
N-(1-Methylheptyl)-N'-phenyl-p-phenylene-diamine.	BFG.
Nitroso-N-phenyl-p-phenylenediamine----------	USR.
All other p-phenylenediamines----------	MON.
Other amino antioxidants, antiozonants, and stabilizers:	
p-Anilinophenol----------	BFG.
Dialkylthiourea----------	PAS.
1,2-Dihydro-6-dodecyl-2,2,4-trimethylquinoline	MON.
1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline-	MON.
1,2-Dihydro-2,2,4-trimethylquinoline----------	BFG, MON.
4,4'-Dimethoxydiphenylamine----------	DUP.
4,4'-Dioctyldiphenylamine----------	BFG.
N,N'-Diphenylethylenediamine----------	CCO, DA, x.
N,N'-Diphenyl-1,3-propanediamine----------	CCO.
N,N'-Di-o-tolylethylenediamine----------	CCO.
p-Isopropoxydiphenylamine----------	BFG.
4,4'-Methylenedianiline----------	USR.
*Octyldiphenylamine----------	ACY, NP1, PAS, USR.
Octyldiphenylamine mixture (mono-, nonyl-, and di-).	BFG.
N-Phenyl-1-naphthylamine----------	DUP, UCC.
*N-Phenyl-2-naphthylamine----------	BFG, DUP, USR.
p-(p-Toluenesulfonamido)diphenylamine---------	USR.
*Phenolic and phosphite antioxidants and stabilizers:	
Phosphites:	
Diphenyldecyl phosphite----------	HK.
Nonyl phenyl phosphites, mixed----------	USR.
Phenyldidecyl phosphite----------	HK.
Phosphite stabilizers----------	NPI.
Polyphenolic phosphite, polyalkylated---------	BFG.

TABLE 2.--*Rubber-processing chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants, antiozonants, and stablizers--Con.	
*Phenolic and phosphite antioxidants and stabilizers--Continued	
*Polyphenolics (including bisphenols):	
Bisphenol, hindered	GYR.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)	MON.
2,5-Di-(1,1-dimethylpropyl)hydroquinone	MON.
2,2'-Methylenebis(6-tert-butyl-p-cresol)	ACY, ASH.
2,2'-Methylenebis(6-tert-butyl-4-ethylphenol)	ACY.
2,2'-Methylenebis[6-(1-methylcyclohexyl)-p-cresol].	ICI.
2,2'-Methylenebis(6-tert-octyl-p-cresol)	ACY.
2,2'-Thiobis(4,6-di-sec-amylphenol)	MON.
4,4'-Thiobis(6-tert-butyl-m-cresol)	MON.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane.	ICI.
Other phenolic antioxidants and stabilizers:	
p-Benzyloxyphenol	BFG.
N-Butyroyl-p-aminophenol	MLS.
o-Cresol, alkylated	PIT.
N-Lauroyl-p-aminophenol	MLS.
*Phenol, alkylated	ACY, BFG, CCO, GYR, NEV, PIT, USR.
Phenol, hindered	DUP, GYR, PIT.
*Phenol, styrenated	BFG, GYR, NEV, USR.
N-Stearoyl-p-aminophenol	MLS.
Xylenol, alkylated	PIT.
*Blowing agents:	
N,N'-Dimethyl-N,N'-dinitrosoterephthalamide	DUP.
Dinitrosopentamethylenetetramine	DUP, NPI.
p,p'-Oxybis(benzenesulfonhydrazide)	USR.
*Peptizers:	
Alkylated o-thiocresol	PIT.
Alkylated thiophenol, zinc salt	PIT.
Aryl mercaptans	PIT.
2-Benzamidothiophene, zinc salt	ACY.
2',2'''-Dithiobis(benzanilide)	ACY.
Dixylyl disulfides, mixed	PIT.
2-Naphthalenethiol	DUP.
Pentachlorobenzenethiol	DUP.
Pentachlorobenzenethiol, zinc salt	DUP.
Thiocresol	PIT.
Thiophenol (Benzenethiol)	PIT.
Xylenethiol	DUP.
Other cyclic rubber-processing chemicals:	
p-tert-Amylphenol sulfide (tackifier)	PAS.
Dicresyl disulfide	USR.
N,4-Dinitroso-N-methylaniline (physical-property improver).	MON.
Hindered aromatic polyamine	USR.
N-Nitrosodiphenylamine (retarder)	ACY, BFG, CTN, GYR, NPI, SAL, USR.

TABLE 2.--*Rubber-processing chemicals: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
RUBBER-PROCESSING CHEMICALS, ACYCLIC	
*Accelerators, activators, and vulcanizing agents:	
*Dithiocarbamic acid derivatives:	
Dibutyldithiocarbamic acid, potassium salt	VNC.
*Dibutyldithiocarbamic acid, sodium salt	ALC, DUP, PAS, USR, VNC.
*Dibutyldithiocarbamic acid, zinc salt	ALC, DUP, USR, VNC.
Diethyldithiocarbamic acid, selenium salt	VNC.
Diethyldithiocarbamic acid, sodium salt	ALC, PAS.
Diethyldithiocarbamic acid, tellurium salt	VNC.
*Diethyldithiocarbamic acid, zinc salt	ALC, GYR, USR, VNC.
Dimethyldithiocarbamic acid, bismuth salt	VNC.
Dimethyldithiocarbamic acid, copper salt	VNC.
Dimethyldithiocarbamic acid, lead salt	VNC.
Dimethyldithiocarbamic acid, selenium salt	VNC.
Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide.	BFG, GNT.
*Dimethyldithiocarbamic acid, zinc salt	ALC, DUP, FMN, GYR, PAS, RBC, USR, WRC.
All other	PAS, VNC.
*Thiurams:	
Bis(dibutylthiocarbamoyl) sulfide	USR.
*Bis(diethylthiocarbamoyl) disulfide	DUP, GYR, PAS.
*Bis(dimethylthiocarbamoyl) disulfide	DUP, GYR, PAS, USR, VNC.
Bis(dimethylthiocarbamoyl) disulfide and 2-mercaptobenzothiazole, mixed.	VNC.
*Bis(dimethylthiocarbamoyl) sulfide	DUP, GYR, USR.
Bis(ethylmethylthiocarbamoyl) sulfide	PAS.
Thiuram blend	DUP.
Xanthates and sulfides:	
Di-n-butylxantho disulfide	USR.
Diisopropylxantho disulfide	BFG.
Zinc dibutyl xanthate	USR.
Zinc isopropyl xanthate	VNC.
All other acyclic accelerators, activators, and vulcanizing agents:	
n-Butyraldehyde-butylamine condensate	DUP.
Di-n-butylammonium oleate	DUP.
3-Ethyl-1,1-dimethyl-2-thiourea	VNC.
Ethylenediamine carbamate	DUP.
1,1,3-Trimethyl-2-thiourea	VNC.
Blowing agents:	
Modified urea	DUP.
Conditioning and lubricating agents:	
Methyl stearyl-10-sulfonic acid, sodium salt	DUP.
Mono- and dialkyl acid phosphates, mixed	DUP.
Mono- and dialkyl phosphate ammonium salts, mixed	DUP.
Polymerization regulators:	
Alkyl mercaptans, mixed	PLC.
*Dodecyl mercaptans	HK, PAS, PLC.
n-Octyl mercaptan	PAS.
Tetradecyl mercaptan	PLC.
Shortstops:	
Dimethyldithiocarbamic acid, potassium salt	GYR, USR.
*Dimethyldithiocarbamic acid, sodium salt	ALC, BFG, DUP, GYR, PAS, USR.
Other acyclic rubber-processing chemicals:	
Zinc laurate (activator, physical-property improver).	USR.
All other	ICI, USR.

Cyclic and acyclic elastomers (synthetic rubbers) are a group of high polymeric materials which have properties similar to those found in natural rubber. The term "elastomers", as used in this report, is specifically 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 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.

Data on U.S. production and sales of elastomers in 1968 are shown in table 1. Table 2 lists these products and identifies the manufacturers.

The total domestic output of all types of synthetic elastomers in 1968 was 4,268 million pounds, compared with 3,823 million pounds reported for 1967. Sales of these elastomers amounted to 3,563 million pounds, valued at $973 million, in 1968, compared with 3,262 million pounds, valued at $874 million, in 1967.

Production of cyclic elastomers in 1968 amounted to 2,563 million pounds, compared with 2,298 million pounds in 1967. Sales of cyclic elastomers in 1968 were 2,017 million pounds, valued at $479 million, compared with 1,940 million pounds, valued at $440 million, in the previous year. Of the total U.S. production of cyclic elastomers in 1968, the polybutadiene-styrene type (including vinylpyridine) accounted for 2,545 million pounds, and the polyurethane type for 18 million pounds.

The U.S. production of acyclic elastomers in 1968 was 1,705 million pounds, compared with 1,525 million pounds in 1967. Sales of these products in 1968 amounted to 1,546 million pounds, valued at $494 million. Of the 1968 production of acyclic elastomers, stereo elastomers were produced in the largest amount (809 million pounds), followed by the polyisobutylene-isoprene type (252 million pounds), and the polybutadiene-acrylonitrile type (N-type) (160 million pounds). The stereo elastomers are composed principally of polybutadiene, polyisoprene, and ethylene-propylene rubber. Production of silicone elastomers in 1968 was 9.2 million pounds and of other acyclic elastomers was 475 million pounds. The latter figure includes polyacrylate, polyalkalene sulfide, polychloroprene, polyisobutylene, and types of other elastomers of lesser importance.

TABLE 1.--*Elastomers (synthetic rubbers):*[1] *U.S. production and sales, 1968*

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

Product	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	4,268,086	3,562,704	973,157	$0.27
ELASTOMERS, CYCLIC				
Total	2,563,065	2,017,026	479,058	.24
Polybutadiene-styrene type (S-type)[3]	2,516,486	[4] 1,988,037	455,978	.23
Polybutadiene-styrene-vinylpyridine type	28,638	14,131	8,307	.59
Polyurethane type	17,941	14,858	14,773	.99
ELASTOMERS, ACYCLIC				
Total	1,705,021	1,545,678	494,099	.32
Polybutadiene-acrylonitrile type (N-type)	159,990	141,963	65,797	.46
Polyisobutylene-isoprene type (Butyl)	252,066	-	-	-
Silicone elastomers	9,227	9,131	28,358	3.11
Stereo elastomers, total	808,719	660,827	132,018	.20
Stereo polybutadiene	492,024	410,520	77,060	.19
All other stereo elastomers	316,695	250,307	54,958	.22
All other acyclic elastomers[5]	475,019	733,757	267,926	.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 polyacrylate, polyalkalene sulfide, polychloroprene, polyisobutylene, and other elastomers, and for sales of polyisobutylene-isoprene elastomers.

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

TABLE 2.--*Elastomers (synthetic rubbers): Manufacturers' identification codes, by products, 1968*

[Elastomers (synthetic rubbers) for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Product	Manufacturers' identification codes (see Appendix, tables 1 and 2)
ELASTOMERS, CYCLIC	
*Polybutadiene-styrene type (S-type)	ASH, ASY, BFG, CMC, CPY, FIR, FRS, GGC, GNT, GYR, MCB, PLC, RUB, SBI, SHC, TUS, USR, WIC.
*Polybutadiene-styrene-vinylpyridine type	BFG, FIR, FRS, GNT, GYR, USR.
*Polyurethane type	ACY, DUP, GNT, MOB, PRC, RUB, TKL, USR.
ELASTOMERS, ACYCLIC	
Polyacrylate ester type	ACY, BFG, TKL.
Polyalkalene sulfide type	PRC, TKL.
Polybutadiene type	BFG, FRS, GYR, TKL, TUS.
*Polybutadiene-acrylonitrile type (N-type)	BFG, FRS, GYR, SBI, USR.
Polychloroprene type (Neoprene)	DUP.
*Polyisobutylene-isoprene type (Butyl)	CBN, ENJ.
Reaction products of natural rubber	GYR, HPC, 1C1.
*Silicone elastomers	DCC, SFA, SPD, UCC.
*Stereo elastomers	ASY, BAR, DUP, ENJ, FRS, GGC, GNT, GYR, PLC, SHC, TUS, USR.
All other	DUP, ENJ, x.

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 1. Table 2 lists the individual products and identifies the manufacturers of each.

Total U.S. production of plasticizers in 1968 amounted to 1,331 million pounds--representing an increase of 5.4 percent over the output of 1,263 million pounds reported for 1967. Sales in 1968 of the plasticizers covered by this report amounted to 1,239 million pounds, valued at $280 million, compared with 1,162 million pounds, valued at $261 million in 1967--increases of 6.6 percent in quantity and 7.2 percent in value.

Production of cyclic plasticizers in 1968, which consisted chiefly of the esters of phthalic anhydride and phosphoric acid, amounted to 985 million pounds, compared with 930 million pounds in 1967--an increase of 5.9 percent. Sales of cyclic plasticizers in 1968 amounted to 918 million pounds, valued at $178 million, compared with 865 million pounds, valued at $168 million in the previous year. This represents an increase in sales quantity of 6.2 percent and in sales value of 5.9 percent. The production of dioctyl phthalates amounted to 440 million pounds or 33.0 percent of the total plasticizers output and 44.7 percent of the total cyclic plasticizer output.

Production of acyclic plasticizers in 1968 amounted to 346 million pounds, an increase of 4.0 percent, compared with 333 million pounds in 1967. Sales of acyclic plasticizers in 1968 amounted to 320 million pounds, valued at $102 million, compared with 297 million pounds, valued at $93 million, in 1967, a gain of 7.9 percent in sales quantity and 9.6 in value. Production of complex linear polyesters in 1968 amounted to 49 million pounds, and that of epoxidized esters, to 101 million pounds. Among the other products included in the acyclic class are the esters of adipic, azelaic, oleic, sebacic, and stearic acids.

TABLE 1.--*Plasticizers:* [1] *U.S. production and sales, 1968*

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

Chemical	Production	Sales		
		Quantity	Value	Unit value [2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	1,331,176	1,238,664	279,773	$0.23
PLASTICIZERS, CYCLIC				
Total	985,101	918,482	177,725	.19
Phosphoric acid esters:				
Cresyl diphenyl phosphate	19,793	19,111	5,277	.28
Tricresyl phosphate	44,322	40,538	13,715	.34
Triphenyl phosphate	7,876	...	...	...
Phthalic anhydride esters, total	840,628	785,252	132,550	.17
Butyl octyl phthalates (including butyl 2-ethylhexyl phthalate and butyl iso-octyl phthalate)	...	11,764	1,900	.16
Dibutyl phthalate	29,466	27,092	4,869	.18
Dicyclohexyl phthalate	5,189	...	...	...
Diethyl phthalate	22,722	18,627	3,617	.19
Diisodecyl phthalate	136,793	123,290	20,198	.16
Dimethyl phthalate	6,481	4,682	940	.20
Dioctyl phthalates, total	440,008	417,265	64,134	.15
Di(2-ethylhexyl) phthalate	330,484	321,357	48,580	.15
Diiso-octyl phthalate	94,186	84,337	13,199	.16
Mixed dioctyl phthalates (including dicapryl phthalate and dioctyl isophthalates)	15,338	11,571	2,355	.20
Di-tridecyl phthalate	17,735	19,805	4,607	.23
n-Hexyl n-decyl phthalate	12,428	...	...	...
n-Octyl n-decyl phthalate	43,906	38,866	7,149	.18
All other phthalic anhydride esters	125,900	123,861	25,136	.20
Trimellitic acid esters, total	4,731	4,363	2,540	.58
n-Octyl n-decyl trimellitate	1,492	1,329	537	.40
Trioctyl trimellitate	1,097	870	338	.39
All other trimellitic acid esters	2,142	2,164	1,665	.77
All other cyclic plasticizers [3]	67,751	69,218	23,643	.32
PLASTICIZERS, ACYCLIC				
Total	346,075	320,182	102,048	.34
Adipic acid esters, total	62,994	61,692	15,970	.26
Di(2-(2-butoxyethoxy)ethyl) adipate	1,749	1,734	773	.45
Di(2-ethylhexyl) adipate	31,818	34,476	8,445	.24
Diisodecyl adipate	8,401	11,805	3,353	.28
n-Hexyl n-decyl adipate	422	...	...	...
Iso-octyl isodecyl adipate	565	...	...	...
n-Octyl n-decyl adipate	11,304	10,050	2,387	.24
All other	8,735	3,627	1,012	.28
Complex linear polyesters and polymeric plasticizers [4]	49,088	46,550	18,249	.39
Di(2-ethylhexyl) azelate	6,514	6,470	2,206	.34

See footnotes at end of table.

TABLE 1.--*Plasticizers:*[1] *U.S. production and sales, 1968--Continued*

Product	Production	Sales		
		Quantity	Value	Unit value[2]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
PLASTICIZERS, ACYCLIC--Continued				
Epoxidized esters, total	101,480	94,474	26,682	$0.28
Epoxidized soya oils	71,120	64,099	18,453	.29
2-Ethylhexyl epoxytallates	...	9,265	2,469	.27
All other	30,360	21,110	5,760	.27
Glyceryl monoricinoleate	313	289	124	.43
Isopropyl myristate	3,172	3,632	1,469	.40
Isopropyl palmitate	814	841	310	.37
Oleic acid esters, total	13,222	11,287	2,875	.25
Butyl oleate	2,425	2,024	468	.23
Glyceryl trioleate (Triolein)	4,927	4,301	981	.23
Methyl oleate	2,460	...	...	...
All other	3,410	4,962	1,426	.29
Phosphoric acid esters	17,866	15,580	6,906	.44
Sebacic acid esters:				
Dibutyl sebacate	5,031	3,896	2,408	.62
Di(2-ethylhexyl) sebacate	5,163	5,111	2,829	.55
Stearic acid esters, total	8,831	7,951	2,033	.26
n-Butyl stearate	4,480	3,575	873	.24
All other	4,351	4,376	1,160	.27
Triethylene glycol di(caprylate-caprate)	2,467	2,091	746	.36
All other acyclic plasticizers[5]	69,120	60,318	19,241	.32

[1] Does not include data for clearly defined extenders or secondary plasticizers.

[2] Calculated from rounded figures.

[3] Includes data for alkylated naphthalene, glycol dibenzoates, hydrogenated terphenyls, phosphate esters (including sales of triphenyl phosphate), toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

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

[5] Includes data for azelaic, citric and acetylcitric, lauric, myristic, palmitic, pelargonic, ricinoleic, sebacic, and tartaric acid esters, glyceryl and glycol esters, and other acyclic plasticizers.

Note.--Production and sales statistics are included in this report for some items that are not used exclusively as plasticizers.

TABLE 2.--*Plasticizers: Manufacturers' identification codes, by products, 1968*--Continued

[Plasticizers for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PLASTICIZERS, CYCLIC	
Coumarone-indene plasticizer	NEV.
N-Cyclohexyl-p-toluenesulfonamide	MON.
Dibenzyl sebacate	WTH.
Diethylene glycol dibenzoate	VEL.
Di-tert-octyldiphenyl oxide	DOW.
Dipropanediol dibenzoate	VEL.
N-Ethyl-p-toluenesulfonamide	MON.
Isopropylidenediphenoxypropanol	DOW.
Naphthalene, alkylated	ACC.
Phosphoric acid esters:	
p-Chlorophenyldiphenyl phosphate	MON.
*Cresyl diphenyl phosphate	FMP, MON, MTR, SFA, SM.
Dibutyl phenyl phosphate	MON.
Diphenyl octyl phosphate	MON.
Methyl diphenyl phosphate	FMP, MON.
*Tricresyl phosphate	FMP, MON, MTR, SFA.
*Triphenyl phosphate	EK, MON, SFA.
All other phosphoric acid esters	SFA.
*Phthalic anhydride esters:	
Alkyl benzyl phthalates	x.
Bis(4-methyl-1,2-pentyl) phthalate	GRH.
Butyl benzyl phthalate	MON.
Butyl cyclohexyl phthalate	ACP.
n-Butyl n-decyl phthalate	PCC, TEK.
*Butyl octyl phthalates:	
Butyl 2-ethylhexyl phthalate	MON, UCC.
Butyl iso-octyl phthalate	GRH.
Butyl-n-octyl phthalate	GRH, PCC, RCI.
Di(2-butoxyethyl) phthalate	FMP, WTC.
*Dibutyl phthalate	ACP, CGL, COM, DA, DUP, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RUB, SW, UCC.
*Dicyclohexyl phthalate	ACP, DUP, FMP, MON, PFZ, WTC.
Diethyl isophthalate	PFZ.
*Diethyl phthalate	DUP, EKT, KF, MON, PFZ, TEK.
Dihexyl phthalate	ACP, CGL, CPL, ENJ.
Di(isodecyl)-4,5-epoxy phthalate	UCC.
Diisodecyl hydrophthalate	UCC.
*Diisodecyl phthalate	ACP, BFG, CGL, CPL, EKT, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
Diisononyl phthalate	ENJ.
Di(2-methoxyethyl) phthalate	EKT, FMP.
Dimethyl isophthalate	PFZ.
*Dimethyl phthalate	EKT, KF, MON, TCC, WTC.
Dinonyl phthalate	CPL, RCI, TEK.
*Dioctyl phthalates:	
Dicapryl phthalate	GRH, WTH.
Di(2-ethylhexyl) isophthalate	UCC.
*Di(2-ethylhexyl) phthalate	ACP, BFG, CGL, CPL, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RUB, TEK, UCC, WTC.
*Diiso-octyl phthalate	ACP, CGL, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
*Mixed dioctyl phthalates	BFG, TEK.
Diphenyl phthalate	MON.
*Ditridecyl phthalate	ACP, CGL, CPL, ENJ, GRH, MON, PCC, RCI, RUB, TEK, UCC.
2-(Ethylhexyl)isodecyl phthalate	UCC.

TABLE 2.-- *Plasticizers: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PLASTICIZERS, CYCLIC--Continued	
*Phthalic anhydride esters--Continued	
Glycol phthalate esters:	
Butyl phthalyl butyl glycolate	MON.
Ethyl (and methyl) phthalyl ethyl glycolate	MON.
All other glycol phthalate esters	HPC, WTC.
*n-Hexyl n-decyl phthalate	ACP, CPL, GRH, TEK, UCC.
Hydrogenated castor oil phthalate	DUP.
Isodecyl tridecyl phthalate	CPL, TEK.
Iso-octyl isodecyl phthalate	ACP, CGL, CPL, RUB.
*n-Octyl n-decyl phthalate	ACP, CPL, GRH, MON, PCC, RCI, RUB, TEK, UCC, WTC.
All other phthalic anhydride esters	UCC.
Polyethylene glycol dibenzoate	VEL.
Tetrahydrofurfuryl oleate	CCW, EMR.
Toluenesulfonamide, o-, p- mixtures	ACY, MON.
*Trimellitic acid esters:	
*n-Octyl n-decyl trimellitate	PCC, PFZ, RCI, TEK.
Tri(2-ethylhexyl)trimellitate	PFZ.
Triisodecyl trimellitate	PFZ.
Triiso-octyl trimellitate	GRH, RCI, RUB, WTC.
*Trioctyl trimellitate	GRH, PCC, RUB, TEK.
All other trimellitic acid esters	RCI, RUB, x.
Trimethylpentanediol dibenzoate	VEL.
Trimethylpentanediol monoisobutyrate monobenzoate	EKT.
All other cyclic plasticizers	BKL, CCW, FMP, MON, NEV.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters:	
*Di(2-(2-butoxyethoxy)ethyl) adipate	FMP, RCI, TKL, WTH.
*Di(2-ethylhexyl) adipate	CPL, DA, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RH, RUB, TEK, UCC.
Diisobutyl adipate	FMP, GRH, HAL.
*Diisodecyl adipate	ACP, CGL, EKT, ENJ, GRH, MON, PCC, PFZ, RCI, RH, RUB, TEK, UCC.
Diiso-octyl adipate	HAL, PCC, RCI, RH, RUB.
Diisopropyl adipate	SBC, VND.
Di-n-octyl adipate	ACP.
Di-n-propyl adipate	ARC.
2-Ethylbutyl-2-ethylhexyl adipate	RUB.
*n-Hexyl n-decyl adipate	CGL, GRH, PCC.
*Iso-octyl isodecyl adipate	BFG, GRH, PFZ.
*n-Octyl n-decyl adipate	ACP, CPL, GRH, MON, PCC, RH, RUB, TEK, TKL.
Polyethylene glycol adipate	PFZ.
Azelaic acid esters:	
Dicyclohexyl azelate	PFZ.
Di(2-ethylbutyl) azelate	EMR.
*Di(2-ethylhexyl) azelate	EKT, EMR, PCS, PFZ, RCI, RUB.
Diisobutyl azelate	HAL.
Diiso-octyl azelate	EMR.
All other azelaic acid esters	ACP, CGL, EMR.
Bis[2-(2-butoxyethoxy)ethoxy] methane	CTN.
1,4-Butanediol dicaprylate	RUB.
Butoxyethyl pelargonate	HAL.
Castor oil maleate	RH.
Citric and acetylcitric acid esters	ICI, PFZ.

TABLE 2.--*Plasticizers: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PLASTICIZERS, ACYCLIC--Continued	
*Complex linear polyesters and polymeric plasticizers.	ASH, EKT, EMR, HAL, MON, PFZ, RCI, RH, RUB, TEK, WTH.
Di(butoxyethoxy-ethoxy)methane	TKL.
Dibutyl tartrate	ARC.
Diethylene glycol dipelargonate (dinonanoate)	EMR.
Diiso-octyl diglycolate	CCA, UCC.
*Epoxidized esters:	
Butyl epoxydioleate	ASH.
Butyl epoxytallate	ASH.
Epoxidized linseed oils	ASH, SWT.
*Epoxidized soya oils	ASH, BAC, CPL, RH, SWT, TEK, UCC, WTC.
Epoxidized tall oils	RCI, RH.
*2-Ethylhexyl epoxytallates	ASH, BAC, UCC.
Octyl epoxystearates	WTC.
Octyl epoxytallates	RH, TEK, UCC, WTC.
All other epoxidized esters	EMR.
Glyceryl pelargonate	EMR.
Glyceryl tri-acetate (Triacetin)	PFZ.
Glyceryl tributyrate and tripropionate	EKT.
Glycol pelargonate	EMR.
Isodecyl nonanoate (Isodecyl pelargonate)	EMR.
Lauric acid esters	SBC.
Myristic acid esters:	
Ethoxyethyl myristate	SCP.
*Isopropyl myristate	ARC, DRW, ICI, PCS, SBC, WTC.
*Oleic acid esters:	
2-Butoxyethyl oleate	ARC, HAL.
*Butyl oleate	ARC, CHL, HAL, ICI, SWT, WM, WTH.
Decyl oleate	VND.
*Glyceryl trioleate (Triolein)	CHL, DRW, EMR, SWT, WM.
Isopropyl oleate	EMR, WM.
Methoxyethyl oleate	HAL.
*Methyl oleate	DA, EMR, ICI, SWT.
Propyleneglycol oleate	DRW.
n-Propyl oleate	CHL, EMR, WM.
All other oleic acid esters	DA, RH.
Palmitic acid esters:	
Isobutyl palmitate	ARC, DA, EKT.
Iso-octyl palmitate	DRW, RUB.
*Isopropyl palmitate	ARC, DRW, ICI, PCS, SBC.
2-Methoxyethyl palmitate	EKT.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate	FMP.
Tributyl phosphate	FMP.
Tri(2-chloroethyl) phosphate	SFA, UCC.
Triethyl phosphate	EKT.
Trioctyl phosphate	UCC.
All other phosphoric acid esters	SCP, SM.
Ricinoleic and acetylricinoleic acid esters:	
n-Butyl acetylricinoleate	BAC.
Butyl ricinoleate	BAC, RCI.
*Glyceryl monoricinoleate	BAC, DA, GLY, HAL.
Glyceryl tri(acetylricinoleate)	BAC.
Methoxyethyl ricinoleate	RCI.
Methyl ricinoleate	BAC, DA.

TABLE 2.--*Plasticizers: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PLASTICIZERS, ACYCLIC--Continued	
Ricinoleic and acetylricinoleic acid esters--Continued	
All other ricinoleic and acetylricinoleic acid esters.	BAC.
Sebacic acid esters:	
Dibutoxyethyl sebacate	HAL, RCI.
*Dibutyl sebacate	EKT, GRH, HAL, PFZ, RCI, RH, WTH.
*Di(2-ethylhexyl) sebacate	GRH, HAL, PFZ, RCI, RH, WTH.
Diiso-octyl sebacate	DA, RCI, RUB.
*Stearic acid esters:	
Butoxyethyl stearate	ARC.
*n-Butyl stearate	ARC, CHL, DA, DRW, EMR, HAL, ICI, PCS, RUB, SCP, SWT, WTH.
Dimethylammonium stearate	RH.
Dodecyl (lauryl) stearate	RCI.
2-Ethylhexyl stearate	FMP.
Glyceryl triacetyl stearate	BAC.
Isobutyl stearate	DA.
Isopropyl stearate	WM.
Methoxyethyl stearate	ARC.
Methyl dichlorostearate	HK.
Methyl pentachlorostearate	HK.
Methyl stearate	CHL.
All other stearic acid esters	DA, HPC, PCS, WM.
Sucrose acetate isobutyrate	ARC, EKT.
Tetraethylene glycol di(2-ethylhexanoate)	UCC.
Triethylene glycol dicaprylate	RUB.
*Triethylene glycol di(caprylate-caprate)	DRW, FOR, HAL, RUB, WM.
Triethylene glycol di-2-ethylbutyrate	UCC.
Triethylene glycol di(2-ethylhexanoate)	EKT, UCC.
Triethylene glycol dipelargonate	RUB.
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	EKX.
All other acyclic plasticizers	ARC, EMR, GLY, HPC, RH, RUB, TKL, WM.

The surface-active agents included in this report are organic chemicals that reduce the surface tension of water or other solvents and are used chiefly as detergents, dispersing agents, emulsifiers, foaming agents, or wetting agents in either aqueous or nonaqueous systems. Waxes and products used chiefly as plasticizers are excluded. Surface-active agents are produced from natural fats and oils; from silvichemicals such as lignin, rosin, and tall oil; and from chemical intermediates derived from coal-tar and petroleum. A major part of the output of the bulk chemicals shown in this report is consumed in the form of packaged soaps and detergents for household and industrial use. The remainder is used in the processing of textiles and leather, in ore flotation and oil-drilling operations, and in the manufacture of agricultural sprays, cosmetics, elastomers, foods, lubricants, paints, pharmaceuticals, and many other products.

Table 1 shows statistics for production and sales of surface-active agents grouped by ionic class and by chemical class and subclass; table 2 lists these products and identifies the manufacturers. All quantities are reported in terms of 100-percent organic surface-active ingredient and thus exclude all inorganic salts, water, and other diluents. Sales statistics reflect sales of bulk surface-active agents only; sales of formulated products are excluded.

Total U.S. production of surface-active agents in 1968 amounted to 3,739 million pounds, or 7.5 percent more than the 3,479 million pounds reported for 1967 and 12.6 percent more than the 3,321 million pounds reported for 1966. Sales of bulk surface-active agents in 1968 amounted to 1,998 million pounds, valued at $357 million, compared with sales in 1967 of 1,750 million pounds, valued at $317 million, and sales in 1966 of 1,766 million pounds, valued at $315 million. In terms of quantity, sales in 1968 were thus 14.2 percent larger than in 1967 and 13.1 percent larger than in 1966; in terms of value, sales in 1968 were 12.6 percent larger than in 1967 and 13.3 percent larger than in 1966.

Production of anionic surface-active agents in 1968 amounted to 2,710 million pounds, or 72.5 percent of the total output reported for 1968 and 3.7 percent more than the anionic output reported for 1967. Sales of anionics in 1968 amounted to 1,161 million pounds, valued at $166 million. Of the total anionic output, 1,015 million pounds consisted of potassium and sodium salts of fatty, rosin, and tall oil acids, of which 525 million pounds was the sodium salt of tallow acids and 122 million pounds was the sodium salt of coconut oil acids; 708 million pounds consisted of alkylbenzenesulfonates, of which 430 million pounds was sodium dodecylbenzenesulfonate, 113 million pounds was dodecylbenzenesulfonic acid, and 107 million pounds was sodium tridecylbenzenesulfonate; and 444 million pounds consisted of ligninsulfonates, of which 284 million pounds was the calcium salt and 47 million pounds was the sodium salt.

Production of nonionic surface-active agents in 1968 amounted to 854 million pounds, or 22.8 percent of the total output reported for 1968 and 21.2 percent more than the nonionic output reported for 1967. Sales of

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nonionics in 1968 amounted to 689 million pounds, valued at $130 million. Of the total nonionic output, 243 million pounds consisted of alkylphenol ethoxylates and other benzenoid ethers, of which 133 million pounds was nonylphenol ethoxylate; 358 million pounds consisted of alcohol ethoxylates and other nonbenzenoid ethers, of which 275 million pounds was mixed linear alcohol ethoxylate; 87 million pounds consisted of alkanolamides; and 82 million pounds consisted of glycerol esters.

Production of cationic surface-active agents in 1968 amounted to 167 million pounds, or 4.5 percent of the total output reported for 1968 and 8.4 percent more than the cationic output reported for 1967. Sales of cationics in 1968 amounted to 140 million pounds, valued at $57 million. Of the total cationic output, 46 million pounds consisted of quaternary ammonium salts not containing oxygen, and 25 million pounds consisted of primary monoamines not containing oxygen.

Production of amphoteric surface-active agents in 1968 amounted to 8.4 million pounds, or approximately 0.2 percent of the total output reported for 1968 and 25.8 percent more than the amphoteric output reported for 1967. Sales of amphoterics in 1968 amounted to 8.2 million pounds, valued at $4.8 million.

The difference between production and sales reflects inventory changes and captive consumption of soaps and surface-active agents by synthetic rubber producers, and by manufacturers of cosmetics, packaged detergents, bar soaps, and other formulated consumer products. In some instances the difference may also reflect quantities of surface-active agents used as chemical intermediates, e.g., nonionic alcohol and alkylphenol ethoxylates which may be converted to anionic surface-active agents by phosphation or sulfation.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968

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

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	3,739,382	1,998,217	356,732	$0.18
Benzenoid[4]	1,056,053	455,130	86,335	.19
Nonbenzenoid[5]	2,683,329	1,543,087	270,397	.18
Amphoteric Surface-Active Agents				
Total	8,355	8,235	4,838	.59
Anionic Surface-Active Agents				
Total	2,710,444	1,161,261	165,617	.15
Carboxylic acids (and salts thereof), total	1,044,447	...	...	...
Amine salts of fatty, rosin, and tall oil acids	1,052	349	161	.46
Carboxylic acids having amide, ester, or ether linkages, total	28,121	8,852	5,565	.63
N-Lauroylsarcosine, sodium salt	4,631	1,719	1,123	.65
All other	23,490	7,133	4,442	.62
Potassium and sodium salts of fatty, rosin, and tall oil acids, total	1,015,274	...	...	...
Castor oil acids, sodium salt	52	...	...	...
Coconut oil acids, potassium and sodium salts, total	135,116	3,768	1,169	.31
Potassium salt	13,021	...	...	...
Sodium salt	122,095	...	...	...
Corn oil acids, potassium and sodium salts	1,235	1,268	374	.29
Oleic acid, potassium salt	3,390	...	...	...
Oleic acid, sodium salt	1,607	1,465	306	.21
Stearic acid, sodium salt	6,011	795	263	.33
Tall oil acids, potassium salt	11,916	11,273	2,653	.24
Tall oil acids, sodium salt	7,978	...	...	...
Tallow acids, sodium salt	525,063	23,319	3,254	.14
All other	322,906	...	...	...
Phosphoric and polyphosphoric acid esters (and salts thereof), total	21,767	15,618	7,292	.47
Alcohols and phenols, ethoxylated and phosphated, total	15,135	10,556	4,266	.40
Mixed linear alcohols, ethoxylated and phosphated	864	750	181	.24
Nonylphenol, ethoxylated and phosphated	4,145	2,262	765	.34
All other	10,126	7,544	3,320	.44
Alcohols, phosphated or polyphosphated, total	6,632	5,062	3,026	.60
2-Ethylhexyl phosphate, sodium salt	193	136	39	.29
2-Ethylhexyl polyphosphate	355	347	160	.46
Mixed alkyl phosphate	864	...	...	...
Octyl phosphates	2,484	2,485	1,295	.52
All other	2,736	2,094	1,532	.73
Sulfonic acids (and salts thereof), total	1,270,928	661,216	65,567	.10
Alkylbenzenesulfonates, total	708,031	148,880	25,896	.17
Dodecylbenzenesulfonates, total	565,798	133,510	23,784	.18
Dodecylbenzenesulfonic acid	112,534	30,251	4,061	.13
Dodecylbenzenesulfonic acid, calcium salt	14,380	11,137	3,339	.30
Dodecylbenzenesulfonic acid, isopropanolamine salt	537	...	...	...
Dodecylbenzenesulfonic acid, isopropylamine salt	2,520	...	...	...
Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt	105	...	...	...
Dodecylbenzenesulfonic acid, sodium salt	429,871	82,803	13,777	.17
Dodecylbenzenesulfonic acid, triethanolamine salt	3,263	4,236	1,094	.26
All other	2,588	5,083	1 513	.30

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Anionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Sulfonic acids (and salts thereof)--Continued				
Alkylbenzenesulfonates--Continued				
Other alkylbenzenesulfonates, total	142,233	15,370	2,112	$0.14
Tridecylbenzenesulfonic acid	1,784	...	...	...
Tridecylbenzenesulfonic acid, sodium salt	107,486	...	...	...
All other	32,963	15,370	2,112	.14
Benzene-, cumene-, toluene-, and xylenesulfonates, total	55,769	42,343	3,942	.09
Xylenesulfonic acid, ammonium salt	10,783	8,720	820	.09
Xylenesulfonic acid, sodium salt	25,243	16,563	1,387	.08
All other	19,743	17,060	1,735	.10
Ligninsulfonates, total	444,257	432,209	16,323	.04
Ligninsulfonic acid, calcium salt	283,964	269,178	6,523	.02
Ligninsulfonic acid, sodium salt	47,099	48,682	4,049	.08
All other	113,194	114,349	5,751	.05
Naphthalenesulfonates, total	11,393	7,747	3,113	.40
Butylnaphthalenesulfonic acid, sodium salt	444	...	...	...
Diisopropylnaphthalenesulfonic acid and sodium salt	428	400	207	.52
All other	10,521	7,347	2,906	.40
Sulfonic acids having amide linkages, total	5,127	3,956	2,309	.58
N-Methyl-N-oleoyltaurine, sodium salt	2,510	2,397	1,205	.50
Sulfosuccinic acid derivatives	1,417	...	...	...
All other	1,200	1,559	1,104	.71
Sulfosuccinic acid esters, total	8,823	8,822	4,489	.51
Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt	6,128	6,204	3,199	.52
All other	2,695	2,618	1,290	.49
All other sulfonic acids	37,528	17,259	9,495	.55
Sulfuric acid esters (and salts thereof), total	...	157,650	37,195	.24
Acids, amides, and esters, sulfated, total	...	13,572	3,732	.27
Coconut oil acids - ethanolamine condensate, sulfated, potassium salt	...	39	35	.90
Esters of sulfated oleic acid, total	5,000	4,751	1,404	.30
Butyl oleate, sulfated, sodium salt	1,824	1,757	453	.26
Glycerol trioleate, sulfated, sodium salt	144	...	...	...
Isopropyl oleate, sulfated, sodium salt	363	324	107	.33
Propyl oleate, sulfated, sodium salt	412	397	130	.33
All other	2,257	2,273	714	.31
Oleic acid, sulfated, disodium salt	6,957	6,940	1,572	.23
Tall oil, sulfated, sodium salt	791	888	198	.22
All other	...	954	523	.55
Alcohols, sulfated, total	...	32,983	15,127	.46
Dodecyl sulfate salts, total	47,520	...	...	...
Dodecyl sulfate, ammonium salt	2,950	2,961	1,134	.38
Dodecyl sulfate, diethanolamine salt	...	2,523	1,453	.58
Dodecyl sulfate, magnesium salt	285	237	127	.54
Dodecyl sulfate, sodium salt	19,487	...	...	...
Dodecyl sulfate, triethanolamine salt	9,498	...	...	...
All other	15,300	...	...	...
Hexadecyl sulfate, sodium salt	151	130	68	.52
Mixed linear alcohol sulfate, sodium salt	2,309	...	...	...
Octadecyl sulfate, sodium salt	...	272	134	.49
All other	...	26,860	12,211	.45
Ethers, sulfated, total	150,787	79,966	12,387	.15
Alkylphenols, ethoxylated and sulfated	3,541	3,308	985	.30
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt	1,402	...	...	...
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	2,100	2,022	1,001	.50
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	2,495	...	...	...
All other	141,249	74,636	10,401	.14
Natural fats and oils, sulfated, total	35,562	31,129	5,949	.19
Castor oil, sulfated, sodium salt	7,212	6,465	1,916	.30
Coconut oil, sulfated, sodium salt	1,346	1,224	357	.29
Cod oil, sulfated, sodium salt	2,252	1,793	233	.13
Neat's-foot oil, sulfated, sodium salt	1,349	1,055	212	.20
Peanut oil, sulfated, sodium salt	130	128	90	.70
Ricebran oil, sulfated, sodium salt	71	46	11	.24

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Anionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Sulfuric acid esters (and salts thereof)--Continued				
Natural fats and oils, sulfated--Continued				
Soybean oil, sulfated, sodium salt	177	155	59	$0.38
Sperm oil, sulfated, sodium salt	8,685	7,741	1,299	.17
Tallow, sulfated, sodium salt	9,769	9,575	1,182	.12
All other	4,571	2,949	590	.20
Other anionic surface-active agents[6]	124,225	275,688	41,818	.15
Cationic Surface-Active Agents				
Total	167,032	140,177	56,519	.40
Amine oxides and oxygen-containing amines (except those having amide linkages), total	42,170	...	...	...
Acyclic, total	36,217	...	...	...
(Coconut oil alkyl)amine, ethoxylated	3,854	3,674	1,240	.34
(Mixed alkyl)amine, ethoxylated	3,583	3,335	1,537	.46
(Soybean oil alkyl)amine, ethoxylated	1,309	1,151	499	.43
(Tallow alkyl)amine, ethoxylated	1,654	1,505	810	.54
All other	25,817	...	...	...
Cyclic products (except imidazoline and oxazoline derivatives)	1,379	1,416	433	.31
Imidazoline and oxazoline derivatives, total	4,574	3,572	1,669	.47
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	1,936	1,023	446	.44
All other	2,638	2,549	1,223	.48
Amines and amine oxides having amide linkages, total	16,042	...	...	...
Carboxylic acid - diamine and polyamine condensates, total	8,554	8,401	1,981	.24
Stearic acid - diethylenetriamine condensate	136	78	47	.60
All other	8,418	8,323	1,934	.23
Oleic acid - ethylenediamine condensate, monoethoxylated	5,290	...	...	...
Stearic acid - ethylenediamine condensate, monoethoxylated	2,005	1,398	1,386	.99
Other amines and amine oxides having amide linkages	193	...	...	...
Amines, not containing oxygen (and salts thereof), total	53,973	...	...	...
Amine salts	3,220	3,642	1,255	.34
Diamines and polyamines, total	12,910	11,973	3,507	.29
N-(Coconut oil alkyl)trimethylenediamine	1,147	1,170	566	.48
Imidazoline derivatives	2,480	1,788	544	.30
N-(9-Octadecenyl)trimethylenediamine	1,518	1,725	597	.35
N-(Tallow alkyl)trimethylenediamine	4,080	4,249	1,183	.28
All other	3,685	3,041	617	.20
Primary monoamines, total	25,201	21,894	7,839	.36
(Coconut oil alkyl)amine	2,195	1,358	757	.56
Hexadecylamine	...	148	82	.55
(Hydrogenated tallow alkyl)amine	1,793	2,485	819	.33
9-Octadecenylamine	1,292	944	394	.42
Octadecylamine	1,087	859	361	.42
(Tall oil alkyl)amine	88	...	...	...
(Tallow alkyl)amine	6,314	5,666	1,460	.26
All other	12,432	10,434	3,966	.38
Secondary and tertiary monoamines, total	12,642	...	...	...
N,N-Dimethyl(coconut oil alkyl)amine	...	2,835	1,110	.39
N,N-Dimethyloctadecylamine	441	427	226	.53
All other	12,201	...	...	...
Oxygen-containing quaternary ammonium salts (except those having amide linkages), total	3,353	2,501	2,235	89
Acyclic	1,247	852	574	.67
Benzenoid	1,167	887	1,051	1.18
Cyclic nonbenzenoid	939	762	610	.80
Quaternary ammonium salts having amide linkages	5,337	...	...	...

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Cationic Surface-Active Agents--Continued				
Quaternary ammonium salts, not containing oxygen, total	46,157	45,068	20,015	$0.44
Acyclic, total	34,890	34,997	12,804	.37
Bis(coconut oil alkyl)dimethylammonium chloride	1,402	1,676	931	.56
Bis(hydrogenated tallow alkyl)dimethylammonium chloride	16,460	16,420	4,229	.26
(Coconut oil alkyl)trimethylammonium chloride	132	112	103	.92
Hexadecyltrimethylammonium salts	547	600	669	1.12
All other	16,349	16,189	6,872	.42
Benzenoid, total	11,267	10,071	7,211	.72
Benzyl(coconut oil alkyl)dimethylammonium chloride	246	239	220	.92
Benzyldimethyl(mixed alkyl)ammonium chloride	5,248	5,124	3,805	.71
Benzyldimethyloctadecylammonium chloride	501	440	353	.80
(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride	40	39	28	.72
(Dodecylbenzyl)trimethylammonium chloride	324	289	96	.33
All other	4,908	3,940	2,709	.73
Groups listed above for which separate sales data may not be shown	...	27,385	10,777	.39
Nonionic Surface-Active Agents				
Total	853,551	688,544	129,758	.19
Carboxylic acid amides, total	87,141	52,819	15,506	.29
Carboxylic acid - alkanolamine condensates, total	86,560	52,250	15,263	.29
Diethanolamine condensates (amine/acid ratio=2/1), total	23,724	17,754	5,028	.28
Capric acid	46	33	14	.42
Coconut oil acids	12,621	11,205	3,194	.29
Coconut oil and tallow acids	1,994	1,400	220	.16
Lauric acid	3,577	1,231	376	.31
Oleic acid	1,799	1,497	448	.30
Stearic acid	782	586	220	.38
Tall oil acids	431	136	40	.29
All other	2,474	1,666	516	.31
Diethanolamine condensates (other amine/acid ratios), total	40,305	...	...	...
Coconut oil acids (amine/acid ratio=1/1)	16,108	15,552	4,382	.28
Lauric acid (amine/acid ratio=1/1)	18,702	...	...	...
Oleic acid (amine/acid ratio=1/1)	532	448	170	.38
Stearic acid (amine/acid ratio=1/1)	892	846	358	.42
All other	4,071	...	...	...
Ethanolamine condensates, total	18,602	...	...	...
Lauric acid (amine/acid ratio=2/1)	32	32	13	.41
Stearic acid (amine/acid ratio=1/2)	108	...	...	...
All other	18,462	...	...	...
Isopropanolamine condensates, total	3,929	...	...	...
Lauric acid	134	69	29	.42
All other	3,795	...	...	...
Groups listed above for which separate sales data may not be shown	...	17,549	5,283	.30
Carboxylic acid - alkanolamine condensates, ethoxylated	581	569	243	.43
Oleic acid - ethanolamine condensate, ethoxylated	103	105	71	.68
All other	478	464	172	.37
Carboxylic acid esters, total	163,965	142,740	42,818	.30
Anhydrosorbitol esters, total	15,732	11,416	4,225	.37
Anhydrosorbitol monoester of tall oil acids	...	121	35	.29
Anhydrosorbitol monostearate	2,947	2,640	894	.34
Anhydrosorbitol sesquioleate	161	131	52	.40
Anhydrosorbitol trioleate	553	419	174	.42
Anhydrosorbitol tristearate	452	97	32	.33
All other	11,619	8,008	3,038	.38
Diethylene glycol esters, total	2,205	2,186	717	.33
Diethylene glycol monolaurate	342	318	104	.33
Diethylene glycol mono-oleate	94	97	28	.29
Diethylene glycol monostearate	550	567	170	.30
All other	1,219	1,204	415	.34

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]		Unit value[3]
Nonionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Carboxylic acid esters--Continued				
Ethoxylated anhydrosorbitol esters, total	12,784	14,844	6,120	$0.41
Ethoxylated anhydrosorbitol monolaurate	...	4,059	1,629	.40
Ethoxylated annydrosorbitol mono-oleate	4,484	4,977	2,138	.43
Ethoxylated anhydrosorbitol monopalmitate	276	403	180	.45
Ethoxylated anhydrosorbitol monostearate	2,314	2,668	1,123	.42
Ethoxylated anhydrosorbitol trioleate	448	...	...	...
Ethoxylated anhydrosorbitol tristearate	1,112	1,465	616	.42
All other	4,150	1,272	434	.34
Ethylene glycol esters, total	2,807	2,869	775	.27
Ethylene glycol monostearate	921	969	329	.34
All other	1,886	1,900	446	.23
Glycerol esters, total	81,690	70,161	18,228	.26
Complex glycerol esters	3,589	2,903	1,191	.41
Glycerol esters of chemically defined acids, total	15,080	13,230	4,342	.33
Glycerol mono-oleate	3,196	2,567	906	.35
Glycerol monoricinoleate	1,394	...	...	...
Glycerol monostearate	9,573	8,614	2,683	.31
All other	917	2,049	753	.37
Glycerol esters of mixed acids, total	63,021	54,028	12,695	.23
Glycerol monoester of hydrogenated soybean oil acids	12,000	11,762	2,783	.24
All other	51,021	42,266	9,912	.23
Natural fats and oils, ethoxylated, total	6,321	6,077	1,780	.29
Castor oil, ethoxylated	5,359	5,108	1,406	.28
Lanolin, ethoxylated	519	552	213	.39
All other	443	417	161	.39
Polyethylene glycol esters, total	27,818	23,071	7,047	.31
Polyethylene glycol esters of chemically defined acids, total	17,375	14,392	5,355	.37
Polyethylene glycol dilaurate	1,072	935	305	.33
Polyethylene glycol dioleate	2,957	1,412	491	.35
Polyethylene glycol distearate	434	379	141	.37
Polyethylene glycol monolaurate	3,307	3,073	1,192	.39
Polyethylene glycol mono-oleate	2,992	2,652	960	.36
Polyethylene glycol monoricinoleate	...	15	7	.47
Polyethylene glycol monostearate	5,547	5,848	2,227	.38
All other	1,066	78	32	.41
Polyethylene glycol esters of rosin and tall oil acids, total	9,195	7,899	1,415	.18
Polyethylene glycol monoester of tall oil acids	532	...	...	...
Polyethylene glycol sesquiester of tall oil acids	7,647	7,367	1,248	.17
All other	1,016	532	167	.31
Polyethylene glycol esters of other mixed acids, total	1,248	780	277	.36
Polyethylene glycol sesquiester of coconut oil acids	214	199	55	.28
All other	1,034	581	222	.38
Polyglycerol esters	494	461	201	.44
Propanediol esters, total	4,247	2,516	632	.25
1,2-Propanediol monostearate	1,429	1,000	343	.34
All other	2,818	1,516	289	.19
Other carboxylic acid esters	9,867	9,139	3,093	.34
Ethers, total	600,775	491,835	70,247	.14
Benzenoid ethers, total	242,508	223,103	35,306	.16
Dinonylphenol, ethoxylated	...	2,402	513	.21
Dodecylphenol, ethoxylated	16,319	16,845	2,294	.14
Nonylphenol, ethoxylated	132,587	126,149	17,230	.14
All other	93,602	77,707	15,269	.20
Nonbenzenoid ethers, total	358,267	268,732	34,941	.13
Linear alcohols, alkoxylated, total	310,825	230,807	25,802	.11
Dodecyl alcohol, ethoxylated	...	1,983	916	.46
Hexadecyl alcohol, ethoxylated	699	418	255	.61
Mixed linear alcohols, ethoxylated	275,796	219,644	21,294	.10
9-Octadecenyl alcohol, ethoxylated	2,012	2,312	1,198	.52
Octadecyl alcohol, ethoxylated	733	273	263	.96
All other	31,585	6,177	1,876	.30

See footnotes at end of table.

TABLE 1.--Surface-active agents: U.S. production and sales, 1968--Continued

Chemical	Production[1]	Sales[2]		
		Quantity[1]	Value	Unit value[3]
Nonionic Surface-Active Agents--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Ethers--Continued				
Other ethers and thioethers, total	47,442	37,925	9,139	$0.24
Tridecyl alcohol, ethoxylated	6,764	6,035	1,341	.22
All other	40,678	31,890	7,798	.24
Other nonionic surface-active agents	1,670	1,150	1,187	1.03

[1] All quantities are given in terms of 100 percent organic surface-active ingredient.
[2] Sales include products sold as bulk surface-active agents only.
[3] Calculated from rounded figures.
[4] The term "benzenoid," as used in this report, describes any surface-active agent, except lignin derivatives, whose molecular structure includes 1 or more 6-membered carbocylic or heterocyclic rings with conjugated double bonds (e.g., the benzene ring or the pyridine ring).
[5] Includes ligninsulfonates.
[6] Includes production of "all other" sulfated acids, amides, and esters and of "all other" sulfated alcohols; also includes sales of "all other" potassium and sodium salts of fatty, rosin, and tall oil acids.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968

[Surface-active agents for which separate statistics are given in table 1 are marked below with an asterisk (*); products not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Amphoteric Surface-Active Agents	
Acyclic:	
Alkylbetaine	DUP.
(1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt.	DUP.
(Carboxymethyl)(coconut oil alkyl)dimethylammonium hydroxide, inner salt.	CUL.
(Carboxymethyl)[3-(coconut oil amido)propyl]dimethylammonium chloride, sodium salt.	JRG.
(Carboxymethyl)[3-(coconut oil amido)propyl]dimethylammonium hydroxide, inner salt.	UVC.
(Carboxymethyl)dimethyl(9-octadecenyl)ammonium hydroxide, inner salt.	DUP.
(Carboxymethyl)dodecyldimethylammonium hydroxide, inner salt.	TCC.
(1-Carboxyundecyl)trimethylammonium hydroxide, inner salt.	DUP.
N-(Coconut oil alkyl)-β-alanine, sodium salt	GNM.
N-(Coconut oil alkyl)-β-alanine, partial sodium salt	GNM.
3-[(Coconut oil alkyl)amino]butyric acid, sodium salt	ARC.
N-(2-Coconut oil amidoethyl)-N-(2-hydroxyethyl)glycine, sodium salt.	TCC.
N-(Dodecyl and tetradecyl)-β-alanine	GNM.
N-(Dodecyl and tetradecyl)-β-alanine, triethanolamine salt.	GNM.
N-Dodecyl-3-iminodipropionic acid	GNM.
N-Dodecyl-3-iminodipropionic acid, sodium salt	GNM.
N-(2-Hydroxyethyl)-N-(2-stearamidoethyl)glycine, sodium salt.	GAF.
Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt.	RH.
(Mixed alkyl)sulfobetaine	DUP, TXT.
Mixed fatty betaines	TXT.
Oleic acid - ethylenediamine condensate, propoxylated and sulfated, sodium salt.	S.
Polypeptide, ammonium salt	MYW.
Polypeptide, sodium salt	MYW.
N-(Tallow alkyl)-3-iminodipropionic acid	GNM.
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	GNM.
All other acyclic	VAC.
Cyclic:	
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium hydroxide, disodium salt.	MIR, UVC.
1-[2-(2-Carboxyethoxy)ethyl]-1-(2-hydroxy-3-sulfopropyl)-2-(mixed alkyl)-2-imidazolinium hydroxide, disodium salt.	UVC.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, UVC.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium chloride, sodium salt.	PCS, UVC.
1-Carboxymethyl-1-(2-Hydroxyethyl)-2-nonyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt.	MIR, PCS, UVC.
Heptadecylmethylbenzimidazolinesulfonic acid, sodium salt.	CIB.
3-[2-(2-Mixed alkyl-2-imidazolin-1-yl)ethoxy]-propionic acid salt.	MOA.
3-[2-(2-Undecyl-2-imidazolin-1-yl)ethoxy]-propionic acid, sodium salt.	UVC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface Active Agents	
*Carboxylic acids (and salts thereof):	
*Amine salts of fatty, rosin, and tall oil acids:	
Coconut oil acids, diethanolamine salt	SEY.
Coconut oil acids, ethanolamine salt	SBP.
Oleic acid, n-butylamine salt	DYS.
Oleic acid, triethanolamine salt	DOM.
Stearic acid, morpholine salt	CSB.
Stearic acid, N,N,N',N'-tetrakis(2-hydroxyethyl)ethylenediamine salt.	ICI.
Stearic acid, triethanolamine salt	AML, GLY.
Tall oil acids, diethanolamine salt	SEY.
Tallow acids, ethanolamine salt	SBP.
Tallow acids, triethanolamine salt	SBP.
*Carboxylic acids having amide, ester, or ether linkages:	
Butoxyethoxypropionic acid	UVC.
N-(Coconut oil acyl)polypeptide, ammonium salt	MYW.
N-(Coconut oil acyl)polypeptide, potassium salt	MYW.
N-(Coconut oil acyl)polypeptide, sodium salt	MYW.
N-(Coconut oil acyl)polypeptide, triethanolamine salt	MYW.
N-(Coconut oil acyl)sarcosine, sodium salt	HMP.
Diisobutylene - maleic anhydride copolymer, ammonium and sodium salts.	RH.
*N-Lauroylsarcosine, sodium salt	CP, GGY, HMP, ONX.
N-(Mixed alkylsulfonyl)glycine, sodium salt	GAF.
Mixed linear alcohols, ethoxylated and carboxyalkylated, sodium salt.	SEY.
N-Oleoylpolypeptide, sodium salt	LMI, MYW.
N-Oleoylsarcosine, sodium salt	GAF, GGY, WTC.
Phthalic acid, octadecyl ester, potassium salt	CIB.
Stearolactolactic acid	GLY.
Stearolactolactic acid, calcium salt	GLY.
Stearolactolactic acid, sodium salt	GLY.
N-Stearoylsarcosine, sodium salt	GGY.
Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt	UVC.
N-(Undecenoylpolypeptide), potassium salt	MYW.
Unspecified sarcosine derivatives	HMP.
*Potassium and sodium salts of fatty, rosin, and tall oil acids:	
Castor oil acids, potassium salt	ARL, BAC, SEA.
*Castor oil acids, sodium salt	BAC, HEW, MRV, SNW.
*Coconut oil acids, potassium and sodium salts:	
*Potassium salt	ACE, AES, CP, CSB, DA, DSO, DYS, GAF, GRC, GRL, HEW HNT, JRG, LUR, MCP, NMC, PCH, PG, SWT.
*Sodium salt	AGP, CON, CP, GRC, HEW, JRG, LEV, NPR, PG, PRX, SWT.
*Corn oil acids, potassium and sodium salts:	
Potassium salt	GRC, HNT, HRT, NMC.
Sodium salt	GRC, LUR, NMC.
Lauric acid, potassium salt	DRW, VAL.
Lauric acid, sodium salt	SNW.
Mixed vegetable fatty acids, potassium salt	AES, DYS, GRC, GRL, MCP, PCH, SWT.
Mixed vegetable fatty acids, sodium salt	SWT.
Myristic acid, potassium salt	AES.
*Oleic acid, potassium salt	AES, ARL, BSW, CCL, CIB, DA, DAN, DYS, GAF, GYR, HNT, QCP, S, SHP, SWT, USR, WBG.
*Oleic acid, sodium salt	BSW, DA, GYR, LAK, LEV, LUR, MRV, NMC, SEA, SWT, WBG, WTC.
Olive oil acids, sodium salt	HEW, HNT, LUR.
Palm kernel oil acids, sodium salt	HEW, NMC.
Palm oil acids, sodium salt	HEW.
Peanut oil acids, potassium salt	KAL, SLC.
Rosin acids, potassium salt	USR, x.
Rosin acids, sodium salt	CRT, HRT, MRA, PLC, PRX, QCP, SLM, x.
Soybean oil acids, potassium salt	CON, HEW.
Soybean oil acids, sodium salt	HEW.
Stearic acid, potassium salt	GYR, HEW, WTC.
*Stearic acid, sodium salt	DA, GYR, HEW, LEV, MAL, WTC.
*Tall oil acids, potassium salt	ACE, AES, CON, CSB, DRW, DYS, GAF, GRC, HNT, NMC, PNX QCP, SOP, VAL, x.
*Tall oil acids, sodium salt	GRC, GYR, MRV, PRX, SOP, UNP, x.
Tallow acids, potassium salt	NMC, PG, SWT.
*Tallow acids, sodium salt	AGP, BSW, CON, CP, DA, DYS, GRC, HEW, JRG, LEV, LUR, NMC, NPR, PG, PLC, PRX, QCP, SWT.
All other	NMC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface-Active Agents--Continued	
*Phosphoric and polyphosphoric acid esters (and salts thereof):	
*Alcohols and phenols, ethoxylated and phosphated:	
Butyl alcohol ethoxylated and phosphated	GAF.
p-tert-Butylphenol, ethoxylated and phosphated	RTF.
Dinonylphenol, ethoxylated and phosphated	GAF.
Dodecyl alcohol, ethoxylated and phosphated	GAF, WIC.
Dodecylphenol, ethoxylated and phosphated	GAF.
2-Ethylhexanol, ethoxylated and phosphated	WAY.
Iso-octyl alcohol, ethoxylated and phosphated	GAF.
*Mixed linear alcohols, ethoxylated and phosphated	CHP, CRT, CST, GAF, SEY, TCH, TCI, WAY, WYN.
*Nonylphenol, ethoxylated and phosphated	GAF, HDG, NLC, RTF, SCP, TCC, TXT, VAC.
Nonylphenol, ethoxylated and phosphated, barium salt	WAY.
9-Octadecenyl alcohol, ethoxylated and phosphated	GAF.
9-Octadecenyl alcohol, ethoxylated and phosphated ethanolamine salt.	GAF.
Octadecyl alcohol, ethoxylated and phosphated	GAF.
Octylphenol, ethoxylated and phosphated	DYS, RH.
Octylphenol, ethoxylated and phosphated, magnesium salt.	x.
Phenol, ethoxylated and phosphated	GAF.
Polyhydric alcohol, ethoxylated and phosphated	NLC.
Tridecyl alcohol, ethoxylated and phosphated	GAF, LUR, NLC, TCC, WAY.
All other	SOP.
*Alcohols, phosphated or polyphosphated:	
Decyl, dodecyl, and octyl phosphate, morpholine salt	DUP.
Decyl polyphosphate, triethanolamine salt	RCD.
2-Ethylhexyl phosphate	WAY.
*2-Ethylhexyl phosphate, sodium salt	SEY, TCI, UCC.
*2-Ethylhexyl polyphosphate	SFA, TCC, TCI, UVC.
2-Ethylhexyl polyphosphate, sodium salt	SFA.
Hexyl polyphosphate, potassium salt	DEX.
*Mixed alkyl phosphate	CST, DUP, SFA, TCC.
Mixed alkyl phosphate, diethanolamine salt	DUP.
9-Octadecenyl phosphate	DUP.
Octadecyl phosphate, triethanolamine salt	RCD.
*Octyl phosphates:	
Octyl phosphate	TXT.
Octyl phosphate, alkylamine salt	DUP, TXT.
Octyl phosphate, potassium salt	DUP.
Octyl polyphosphate	DEX.
Octyl polyphosphate, potassium salt	DEX.
All other	NLC, SFA.
*Sulfonic acids (and salts thereof):	
*Alkylbenzenesulfonates:	
*Dodecylbenzenesulfonates:	
*Dodecylbenzenesulfonic acid	ACS, ARD, CO, CRT, CTL, EMK, HLI, LAK, LEV, PIL, PLX, RCD, RTF, STP, TCI, TDC, TEN, TXT, WTC.
Dodecylbenzenesulfonic acid, ammonium salt	AKS, ARL.
Dodecylbenzenesulfonic acid, butylamine salt	SOP, WTC.
*Dodecylbenzenesulfonic acid, calcium salt	APD, CO, NLC, RCD, RH, RTF, STP, WTC, x.
Dodecylbenzenesulfonic acid, diethanolamine salt	VAL.
Dodecylbenzenesulfonic acid, dimethylamine salt	PIL.
Dodecylbenzenesulfonic acid, ethylenediamine salt	APD.
*Dodecylbenzenesulfonic acid, isopropanolamine salt	CTL, PCS, RCD, x.
*Dodecylbenzenesulfonic acid, isopropylamine salt	APD, CTL, RCD, RTF, SNW, STP.
*Dodecylbenzenesulfonic acid, (mixed alkyl)amine salt.	PCS, VAL, WTC.
Dodecylbenzenesulfonic acid, potassium salt	RCD, SOP, VAL.
Dodecylbenzenesulfonic acid, propoxylated ethylenediamine salt.	PCS.
*Dodecylbenzenesulfonic acid, sodium salt	AAC, ACS, AKS, APX, ARD, ARL, ATR, BLA, CO, CP, CRT, CTL, DA, DEP, DSO, HLI, LEV, MON, PEK, PG, PIL, PLX, PRX, RCD, RTF, STP, TEN, TXT, UNP, VAC, WTC.
Dodecylbenzenesulfonic acid, strontium salt	RTF, VAC.
*Dodecylbenzenesulfonic acid, triethanolamine salt	AAC, ACS, AML, ARD, ARL, ATR, CTL, DSO, HLI, MCP, PIL, RCD, RTF, SOS, STP.
*Other alkylbenzenesulfonates:	
Decylbenzenesulfonic acid, sodium salt	MON.
Didodecylbenzenesulfonic acid	CO.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface-Active Agents--Continued	
*Sulfonic acids (and salts thereof)--Continued	
*Alkylbenzenesulfonates--Continued	
*Other alkylbenzenesulfonates--Continued	
(Mixed higher alkyl)benzenesulfonic acid	TXT.
(Mixed higher alkyl)benzenesulfonic acid, ammonium salt.	RTF.
Pentadecylbenzenesulfonic acid, potassium salt	STP.
Pentylbenzenesulfonic acid, sodium salt	MON.
*Tridecylbenzenesulfonic acid	PIL, RCD, TXT.
*Tridecylbenzenesulfonic acid, sodium salt	BLA, CP, NPR, PG, PIL, RCD, WTC.
Tridecylbenzenesulfonic acid, triethanolamine salt	PCS.
Undecylbenzenesulfonic acid	TXT.
Undecylbenzenesulfonic acid, ammonium salt	TXT.
Undecylbenzenesulfonic acid, sodium salt	TXT.
Undecylbenzenesulfonic acid, triethanolamine salt	TXT.
All other	USR.
*Benzene-, cumene-, toluene-, and xylenesulfonates:	
Benzenesulfonic acid, sodium salt	NES.
Cumenesulfonic acid, ammonium salt	NES, STP.
2,4-Dinitrobenezenesulfonic acid, sodium salt	NES.
Toluenesulfonic acid	NES, RCD.
Toluenesulfonic acid, potassium salt	NES, RCD, STP, TXN.
Toluenesulfonic acid, sodium salt	CO, NES, STP, WTC.
*Xylenesulfonic acid, ammonium salt	ATR, CO, HLI, NES, RCD, STP, WTC.
Xylenesulfonic acid, potassium salt	NES, STP.
*Xylenesulfonic acid, sodium salt	ATR, CO, HLI, JRG, NES, PIL, RCD, STP, TXN.
*Ligninsulfonates:	
Ligninsulfonic acid, aluminum salt	MAR.
Ligninsulfonic acid, ammonium salt	CPP, CRZ, WVA.
*Ligninsulfonic acid, calcium salt	CRZ, CWP, GLY, LKY, LPC, MAR, PSP.
Ligninsulfonic acid, chromium salt	DCP, MAR, RAY.
Ligninsulfonic acid, iron salt	CRZ, WVA.
Ligninsulfonic acid, magnesium salt	LPC.
Ligninsulfonic acid, mixed salts	PSP.
*Ligninsulfonic acid, sodium salt	CRZ, CWP, MAR, RAY, WVA.
*Naphthalenesulfonates:	
*Butylnaphthalenesulfonic acid, sodium salt	CLD, CMG, DA, PFZ.
Dibutylnaphthalenesulfonic acid	GAF, S.
Didodecylnaphthlenesulfonic acid, sodium salt	PFZ.
*Diisopropylnaphthalenesulfonic acid and sodium salt:	
Diisopropylnaphthalenesulfonic acid	DUP, GAF.
Diisopropylnaphthalenesulfonic acid, sodium salt	ACS, GAF, PFZ.
Dipentylnaphthalenesulfonic acid, (mixed alkyl)amine salt.	NLC.
Dipentylnaphthalenesulfonic acid, sodium salt	GGY.
Isopropylnaphthalenesulfonic acid	DA, DUP, GRD, ONX.
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	DUP.
All other	TRC.
*Sulfonic acids having amide linkages:	
N-(Coconut oil acyl)-N-methyltaurine, sodium salt	GAF, TNI.
N-Cyclohexyl-N-palmitoyltaurine, sodium salt	GAF.
Lauric acid, 2-sulfoacetamidoethyl ester, potassium salt.	WTC.
*N-Methyl-N-oleoyltaurine, sodium salt	CRT, DA, DEP, DRW, GAF, HRT, MCP, MRA, PCI, SNW.
N-Methyl-N-palmitoyltaurine, sodium salt	GAF.
N-Methyl-N-(tall oil acyl)taurine, sodium salt	GAF, WTC.
N-Methyl-N-(tallow acyl)taurine, sodium salt	GAF.
*Sulfosuccinic acid derivatives:	
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt.	ACY, MOA.
N-(2-Hydroxyethyl)-N-(tallow alkyl)sulfosuccinamic acid, disodium salt.	SCP.
N-Octadecylsulfosuccinamic acid, disodium salt	ACY, CTN.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface-Active Agents--Continued	
*Sulfonic acids (and salts thereof)--Continued	
*Sulfonic acids having amide linkages--Continued	
*Sulfosuccinic acid derivatives--Continued	
Sulfosuccinic acid, alkanolamide ester sodium salt---	HDG.
Sulfosuccinic acid, 2-(coconut oil amido)ethyl ester, disodium salt.	LAK.
Sulfosuccinic acid, 2-undecylenamidoethyl ester, disodium salt.	LAK.
*Sulfosuccinic acid esters:	
Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl) ester, sodium salt.	GAF.
*Sulfosuccinic acid, bis(2-ethylhexyl) ester, sodium salt.	ACY, AKS, CRT, CST, DA, DAN, EMK, GGY, HDG, HRT, ICI, MCP, MOA, PC, SBC, TCI, UVC.
Sulfosuccinic acid, bis(tallow monoglyceride) ester, sodium salt.	ACY.
Sulfosuccinic acid, dihexyl ester, sodium salt---------	ACY, MOA.
Sulfosuccinic acid dioctyl ester, sodium salt----------	MCP, RH.
Sulfosuccinic acid, dipentyl ester, sodium salt--------	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt------	ACY, MOA.
Sulfosuccinic acid, dodecyloxypoly(ethyleneoxy)ethyl ester, disodium salt.	LAK.
Sulfosuccinic acid monoester, ammonium salt----------	SCP.
Sulfosuccinic acid monoester, sodium salt------------	SCP.
*All other sulfonic acids:	
Butylhydroxybiphenylsulfonic acid----------	RBC.
Coconut oil acids, 2-sulfoethyl ester, sodium salt-----	GAF, LEV.
Dodecyldiphenyloxidedisulfonic acid, disodium salt-----	DOW.
Dodecyl sulfoacetate----------	ACS, LEV.
2-Lauroyloxy-1-propanesulfonic acid----------	SDH.
Mixed alkanesulfonic acid, sodium salt----------	DUP, VPC, WTC.
Mixed fish oils, sulfonated----------	SLM.
n-Octylphenol, ethoxylated and sulfonated, sodium salt.	CRT, RH, SNW.
Petroleumsulfonic acid, water soluble (acid layer), sodium salt.	SIN, WTC.
Sperm oil, sulfonated----------	SLM.
All other----------	STC.
*Sulfuric acid esters (and salts thereof):	
*Acids, amides, and esters, sulfated:	
*Coconut oil acids - ethanolamine condensate, sulfated, potassium salt.	DEX, EMK, ONX.
*Esters of sulfated oleic acid:	
2-Butoxyethyl oleate, sulfated, sodium salt----------	S.
*Butyl oleate, sulfated, sodium salt----------	AKS, CHP, EFH, ICI, MCP, ONX, PC.
Ethyl oleate, sulfated, sodium salt----------	GAF.
*Glycerol trioleate, sulfated, sodium salt----------	LEA, MRV, SCP.
Isobutyl oleate, sulfated, sodium salt----------	DA.
*Isopropyl oleate, sulfated, sodium salt----------	CRT, DEX, HRT, ICI, LEA, LUR, SCP.
Methyl oleate, sulfated, sodium salt----------	DA, ICI.
*Propyl oleate, sulfated, sodium salt----------	ACY, CHP, GAF, MCP, MRV.
All other----------	EFH.
*Oleic acid, sulfated, disodium salt----------	ACT, ACY, CHP, CRT, DA, EFH, GAF, ICI, LEA, MRV, PCI, SCO, TEN, WHW.
*Tall oil, sulfated, sodium salt----------	ACY, APX, BAO, DA, HRT, ICI, KAL, MRV, RTF, SEA, WHI.
*Other acids, amides, and esters, sulfated:	
Coconut oil acids - isopropanolamine condensate, sulfated, sodium salt.	APX.
Glycerol monoester of coconut oil acids, sulfated, sodium salt.	AAC, CP.
9-Octadecenyl acetate, sulfated, sodium salt---------	DUP.
Oleic acid - ethanolamine condensate, sulfated, sodium salt.	SCP.
Oleostearin, sulfated, sodium salt----------	SEA.
Propyl ricinoleate, sulfated, disodium salt----------	AKS.
Ricinoleic acid, sulfated, disodium salt----------	DA.
All other----------	EMR.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface-Active Agents--Continued	
*Sulfuric acid esters (and salts thereof)--Continued	
*Alcohols, sulfated:	
*Dodecyl sulfate salts:	
2-Amino-2-methylpropanol salt	DUP.
*Ammonium salt	AAC, CTL, CUL, DUP, ONX, PCS, RCD, SCP, STP.
*Diethanolamine salt	CUL, DUP, HLI, JRG, ONX, SCP, STP, WTC.
N,N-Diethylcyclohexylamine salt	DUP.
Isopropanolamine salt	JRG, PCS.
*Magnesium salt	AAC, CUL, HLI, ONX, STP.
Potassium salt	HLI, PG, RCD.
*Sodium salt	AAC, CTL, CUL, DUP, HLI, JRG, ONX, PCS, PG, RCD, SCP, STP.
*Triethanolamine salt	AAC, CTL, CUL, DUP, HLI, ONX, PG, RCD, SCP, STP, TXT.
*Hexadecyl sulfate, sodium salt	AAC, DUP, SCP.
*Mixed linear alcohol sulfate, sodium salt	CP, LAK, RTF, SCP, TXT.
*Octadecyl sulfate, sodium salt	DUP, EMK, ONX, PG.
*Other alcohols, sulfated:	
Linear alcohols, sulfated:	
Coconut and sperm oil alkyl sulfate, sodium salt	DEP, DUP.
Decyl and octyl sulfate, sodium salt	PCS.
Decyl sulfate, sodium salt	CTL, DUP.
Decyl sulfate, triethanolamine salt	DUP, PCS.
Hexadecyl and 9-octadecenyl sulfate, sodium salt	RCD.
Hexyl sulfate, potassium salt	DEX.
Hexyl sulfate, sodium salt	GAF.
Mixed linear alcohol sulfate, ammonium salt	CP, LAK, S, SCP, TXT.
Mixed linear alcohol sulfate, triethanolamine salt	LAK.
Nonyl sulfate, sodium salt	TEN.
Octadecyl sulfate, triethanolamine salt	DUP.
Octyl sulfate, sodium salt	AAC, DUP.
Tetradecyl sulfate, sodium salt	ONX.
Nonlinear alcohols, sulfated:	
Branched hexadecyl sulfate, sodium salt	APX.
3,9-Diethyl-6-tridecyl sulfate, sodium salt	UCC.
2-Ethylhexyl sulfate, sodium salt	AAC, PCS, SCP, UCC.
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	UCC.
Tridecyl sulfate, sodium salt	AAC, DUP.
*Ethers, sulfated:	
*Alkylphenols, ethoxylated and sulfated:	
Dodecylphenol, ethoxylated and sulfated, ammonium salt.	GAF.
(Mixed alkyl)phenol, ethoxylated and sulfated, ammonium salt.	GAF.
Nonylphenol, ethoxylated and sulfated, ammonium salt	CIB, GAF, PIL, STP, TXT.
Nonylphenol, ethoxylated and sulfated, sodium salt	CRT, GAF.
Nonylphenol, ethoxylated and sulfated, triethanolamine salt.	ARL.
Octylphenol, ethoxylated and sulfated, sodium salt	RH.
*Dodecyl alcohol, ethoxylated and sulfated, ammonium salt.	AAC, CTL, HLI, ONX, PG.
*Dodecyl alcohol, ethoxylated and sulfated, sodium salt	AAC, CTL, CUL, DUP, ONX, PCS, RCD, SCP, STP.
*Mixed linear alcohols, ethoxylated and sulfated, sodium salt.	CO, CRT, GAF, LAK, PIL, RCD, RTF, SCP, SHC, STP, TXT, UCC.
*Other sulfated ethers:	
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt.	LEV.
Hexyloxypropyl sulfate, sodium salt	S.
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt.	CO, DA, GAF, LAK, NLC, PIL, RCD, SCP, SHC, STP, TXT, UCC.
Mixed linear alcohols, ethoxylated and sulfated, potassium salt.	DA, SHC, STP.
Sperm oil alcohol, ethoxylated and sulfated, sodium salt.	DUP.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Anionic Surface-Active Agents--Continued	
*Sulfuric acid esters (and salts thereof)--Continued	
*Ethers, sulfated--Continued	
*Other sulfated ethers--Continued	
Tridecyl alcohol, ethoxylated and sulfated, sodium salt.	AAC, ARL, ONX, RCD.
All other	APX, PG.
*Natural fats and oils, sulfated:	
*Castor oil, sulfated, sodium salt	AAE, ACT, ACY, AKS, AML, APX, BAO, BSW, CRT, DA, DEX, DRW, EFH, GAF, HRT, IC1, KAL, KNG, LEA, LUR, MCP, MRA, MRD, MRV, ONX, PC, S, SCO, SEA, SLC, SLM, SNW, WHI, WHW.
*Coconut oil, sulfated, sodium salt	ACY, BAO, DA, KNG, LUR, MRD, RTC, SEA, WHW.
*Cod oil, sulfated, sodium salt	ACT, BAO, CRT, DRW, EFH, HRT, MRD, S, SEA, WAW, WHI, WHW.
Cottonseed oil, sulfated, sodium salt	DA.
Grease, other than wool, sulfated, sodium salt	SEA, WHI, WHW.
Herring oil, sulfated, sodium salt	DA.
Lard, sulfated, sodium salt	SLM, WAW.
Mixed animal and vegetable oils, sulfated, sodium salt	SLM.
Mixed fish oils, sulfated, sodium salt	AML, BAO, SCO, SLM, WHI.
Mustard seed oil, sulfated, sodium salt	DA, LUR.
*Neat's-foot oil, sulfated, sodium salt	ACT, BAO, CRT, DA, KAL, LEA, LUR, MRD, PC, SEA, SLM, WHI, WHW.
*Peanut oil, sulfated, sodium salt	ACY, DA, ICI, LEA, LUR, SLC.
*Ricebran oil, sulfated, sodium salt	EFH, KNG, LUR.
*Soybean oil, sulfated, sodium salt	CRT, DRW, HRT, KAL, LEA, MRD, ONX.
*Sperm oil, sulfated, sodium salt	ACT, AKS, BAO, CLD, CRT, DA, DRW, HRT, KAL, KNG, MRD, ONX, RTC, S, SEA, SLM, WHI, WHW.
*Tallow, sulfated, sodium salt	ACT, ACY, BAO, BSW, DA, EFH, HEW, ICI, KAL, LUR, MCP, MRA, MRD, ONX, PC, PCI, SCP, SEY, SID, SOS, WHI.
Whale oil, sulfated, sodium salt	KNG.
All other	WHI.
Other anionic surface-active agents:	
Lignin (non-sulfonated) and salts thereof	WVA.
Mixed linear alcohols, ethoxylated and carbonated, sodium salt.	S.
Tridecyl alcohol, ethoxylated and carbonated, sodium salt.	S.
Cationic-Surface-Active Agents	
*Amine oxides and oxygen-containing amines (except those having amide linkages):	
*Acyclic:	
N,N-bis(2-hydroxyethyl)(coconut oil alkyl)amine oxide	ARC.
N,N-Bis(2-hydroxyethyl)dodecylamine	CTL, FIN.
N,N-Bis(2-hydroxyethyl)octadecylamine	ARC, FIN, TCH.
N,N-Bis(2-hydroxyethyl)octadecylamine oxide	ARC.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine	ARC.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine acetate	ONX, PG.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine oxide	ARC.
*(Coconut oil alkyl)amine, ethoxylated	AAC, APD, ARC, NLC, SDH, TCH, VAC.
(Coconut oil alkyl)amine, ethoxylated, acetate	RPC.
(Coconut oil alkyl)amine, ethoxylated, maleate	SDH.
5,8-Diethyl-7-hydroxydodecane-6-one oxime	GNM.
N,N-Dimethyl(coconut oil alkyl)amine oxide	ARC.
N,N-Dimethylhexadecylamine oxide	ONX.
N,N-Dimethyl(hydrogenated tallow alkyl)amine oxide	ARC.
(Hydrogenated tallow alkyl)amine, ethoxylated	CIB.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)ethylenediamine.	NLC.
1,1',1'',1'''-[2-hydroxypropyliminobis)ethylenenitrilo]tetra-2-propanol, tristearate ester.	DUP.
*(Mixed alkyl)amine, ethoxylated	APD, CIB, DA, GAF, RH.
(Mixed alkyl)poly(oxyethylene)amine	GAF.
Mixed substituted oximes	GNM.
(9-Octadecenyl)amine, ethoxylated	ARC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Cationic Surface-Active Agents--Continued	
*Amine oxides and oxygen-containing amines (except those having amide linkages)--Continued	
*Acyclic--Continued	
Octadecylamine, ethoxylated	ARC, ICI.
Polyethylenepolyamine, alkoxylated	NLC.
*(Soybean oil alkyl)amine, ethoxylated	AAC, ARC, RTF, VAC.
*(Tallow alkyl)amine, ethoxylated	ARC, ASH, CIB, DUP, TCH, VAC.
N-(Tallow alkyl)trimethylenediamine, ethoxylated	ARC, RTF.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	NLC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated.	WYN.
All other	x.
*Cyclic products (except imidazoline and oxazoline derivatives):	
N-(Coconut oil alkyl)morpholine oxide	ARC.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	APX.
Lignin amine	WVA.
Rosin amine, ethoxylated	HPC, NLC, PCS, RTF.
*Imidazoline and oxazoline derivatives:	
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline	COM, SWT, UVC.
2-(8-Heptadecenyl)-1-(2-hydroxyethyl)-2-imidazoline	ONX, UVC.
2-(8-Heptadecenyl)-4-hydroxymethyl-4-methyl-2-oxazoline.	COM, UVC.
2-(Heptadecyl-1-(2-hydroxyethyl)-2-imadazoline	GGY, MOA, UVC.
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	PCS, UVC.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline.	GGY, UVC.
*1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	CUL, HDG, NLC, UVC, x.
1-(2-Hydroxyethyl)-2-tridecyl-2-imidazoline hydrochloride.	UVC, WTC.
1-(2-Hydroxyethyl)-2-undecyl-2-imidazoline	UVC.
2-(11-Hydroxy-8-heptadecenyl)-2-imidazoline	UVC.
*Amines and amine oxides having amide linkages:	
*Carboxylic acid - diamine and polyamine condensates:	
Caprylic acid - tetraethylenepentamine condensate	ICI.
Coconut oil acids - N,N-dimethyltrimethylenediamine condensate.	JRG, PCS, TXT.
Mixed dicarboxylic acids - polyalkylenepolyamine condensate.	TXT.
Mixed fatty acids - polyalkylenepolyamine condensate	GRD, ICI, NLC.
Oleic acid - 1-(2-aminoethyl)piperazine condensate	TXT.
Oleic acid - diethylenetriamine condensate	APD, TXT.
Oleic acid - N,N-dimethyltrimethylenediamine condensate.	CCW, CIB, SNW.
*Stearic acid - diethylenetriamine condensate	APX, CST, HRT, ONX, S.
Stearic acid - N,N-diethylethylenediamine condensate	CBP.
Stearic acid - dipropylenetriamine condensate	JOR.
Stearic acid - tetraethylenepentamine condensate	ICI, ONX.
Tall oil acids - diethylenetriamine condensate	NCW, NLC, PCS.
Tall oil acids - polyalkylenepolyamine condensate	PCS, UVC.
All other	EFH, VND.
*Oleic acid - ethylenediamine condensate, monoethoxylated.	CLD, DEX, SOC, TNA.
*Stearic acid - ethylenediamine condensate, monoethoxylated.	AML, CLD, CMG, CST, DA, DEP, DEX, ICI, MRA, S, SNW.
*Other amines and amine oxides having amide linkages:	
Coconut oil acids - diethylenetriamine condensate, polyethoxylated.	TCC.
Coconut oil acids - ethylenediamine condensate, monoethoxylated.	ARL.
3-Lauramido-N,N-dimethylpropylamine oxide	SNW.
Palm oil acids - ethylenediamine condensate, monoethoxylated.	APX.
Polypeptide, ethyl ester	MYW.
Stearic acid - diethylenetriamine condensate, polyethoxylated.	TCC.
Stearic acid - ethylenediamine condensate, polyethoxylated.	APD.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Cationic Surface-Active Agents--Continued	
*Amines, not containing oxygen (and salts thereof):	
*Amine salts:	
(Coconut oil alkyl)amine acetate	ARC, ASH.
Hexamethylenediamine-p-toluenesulfonate	x.
(Hydrogenated tallow alkyl)amine acetate	ARC, ASH.
(9-Octadecenyl)amine acetate	ARC, GNM.
(9-Octadecenyl)amine oleate	ARC.
N-(9-Octadecenyl)trimethylenediamine tallate	ARC.
Octadecylamine acetate	ACY, ARC.
Octylamine acetate	ARC.
(Soybean oil alkyl)amine acetate	ARC, ENO.
(Tallow alkyl)amine acetate	ARC, ASH, FOR.
N-(Tallow alkyl)trimethylenediamine acetate	ARC, FOR.
N-(Tallow alkyl)trimethylenediamine naphthenate	APD, FOR.
N-(Tallow alkyl)trimethylenediamine oleate	ARC, FOR.
N-(Tallow-alkyl)trimethylenediamine tallate	ARC.
All other	ASH.
*Diamines and polyamines:	
*N-(Coconut oil alkyl)trimethylenediamine	ARC, ENO, FOR, GNM.
*Imidazoline derivatives:	
1-(2-Aminoethyl)-2-heptadecyl-2-imidazoline	HDG, UVC.
1-(2-Aminoethyl)-2-(mixed alkyl)-2-imidazoline	RTF, UVC.
1-[3-(2-Aminoethyl)naphth-1-yl]-2-(8-heptadecenyl)-2-imidazoline.	NLC.
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline	NLC, RTF, UVC.
2-(8-Heptadecenyl)-2-imidazoline	PCS.
2-Heptadecyl-2-imidazoline	SCO.
*N-(9-Octadecenyl)trimethylenediamine	ARC, FOR, GNM.
*N-(Tallow alkyl)trimethylenediamine	ARC, ENO, FOR, GNM.
*Other diamines and polyamines:	
N-(Docosyl- and eicosyl)trimethylenediamine	ENO.
N-(Mixed alkyl)polyethylenepolyamine	CCW.
N-(Soybean oil alkyl)trimethylenediamine	ARC, ENO.
N-(Tall oil alkyl)trimethylenediamine	ARC.
N-(Tallow alkyl)dipropylenetriamine	GNM.
*Primary monoamines:	
*(Coconut oil alkyl)amine	ARC, ASH, ENO, FOR, GNM.
(Cottonseed oil alkyl)amine	FOR.
Docosyl- and eicosylamine	ENO.
Dodecylamine	ARC, ASH, ENO, FOR, GNM.
*Hexadecylamine	ARC, ASH, ENO, FOR.
*(Hydrogenated tallow alkyl)amine	ARC, ASH, ENO, FOR, GNM.
(Mixed alkyl)amine	ARC.
(Mixed tert-alkyl)amine	RH.
*9-Octadecenylamine	ARC, ENO, FOR, GNM.
*Octadecylamine	ARC, ASH, ENO, FOR, GNM.
Octylamine	ARC.
tert-Octylamine	RH.
(Soybean oil alkyl)amine	ARC, ENO.
*(Tall oil alkyl)amine	ARC, FOR, GNM.
*(Tallow alkyl)amine	ARC, ASH, ENO, FOR, GNM.
*Secondary and tertiary monoamines:	
Bis(coconut oil alkyl)amine	ARC.
Bis(hydrogenated tallow alkyl)amine	FOR.
Bis(soybean oil alkyl)amine	ARC.
*N,N-Dimethyl(coconut oil alkyl)amine	ARC, BRD, PG.
N,N-Dimethyldodecylamine	BRD.
N,N-Dimethylhexadecylamine	BRD.
N,N-Dimethyl(hydrogenated tallow alkyl)amine	ARC, ENO.
N,N-Dimethyl(mixed alkyl)amine	BRD.
*N,N-Dimethyloctadecylamine	ARC, BRD, ENO, PG.
N,N-Dimethyl(soybean oil alkyl)amine	ARC, ENO.
N,N-Dimethyltetradecylamine	BRD, ENO.
N-Methylbis(coconut oil alkyl)amine	ENO, FOR, GNM.
N-Methylbis(hydrogenated tallow alkyl)amine	ARC, ENO, FOR, GNM.
N-Methylbis(mixed alkyl)amine	PG.
N-Methyldioctadecylamine	FOR.
Tridodecylamine	GNM.
Trioctylamine	GNM.

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TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Cationic Surface-Active Agents--Continued	
*Oxygen-containing quaternary ammonium salts (except those having amide linkages):	
*Acyclic:	
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate.	LUR, VAC.
Bis(2-hydroxyethyl, ethoxylated)ethylammonium ethyl sulfate.	APD.
Bis(2-hydroxyethyl, ethoxylated)methyl(9-octadecenyl)-ammonium chloride.	ARC.
Bis(2-hydroxyethyl, ethoxylated)methyloctadecylammonium chloride.	ARC.
(Coconut oil alkyl)amine, ethoxylated and quaternarized.	ARC.
(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)-methylammonium chloride.	ARC, VAC.
(Coconut oil alkyl)(2-hydroxyethyl, ethoxylated)methyl-(mixed alkyl)ammonium methyl sulfate.	ARC.
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)ethylenediamine, distearate methyl sulfate.	DUP.
2-Hydroxytrimethylenebis[(coconut oil alkyl)dimethylammonium chloride].	CIB.
(9-Octadecenyl)amine, ethoxylated and quaternarized----	ARC.
Octadecylamine, propoxylated and quaternarized--------	TCC.
(Tallow alkyl)amine, propoxylated and quaternarized----	ARC.
(Tallow alkyl)diamine, ethoxylated and quaternarized---	ARC.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine dioleate methyl sulfate.	DUP.
*Benzenoid:	
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)ammonium chloride.	CIB, NLC.
Benzyl(coconut oil alkyl, ethoxylated)dimethylammonium chloride.	GAF.
1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium chloride.	UVC.
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazolinium chloride.	MOA, NLC, UVC.
(Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride--	RH.
(Ethoxybenzyl)dimethyl(octyltolyloxy)ammonium chloride-	RH.
*Cyclic nonbenzenoid:	
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium ethyl sulfate.	APD, MOA, UVC.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate---------	APD, BRD.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate.	APD.
2(8-Heptadecenyl)-1,1-bis(2-hydroxyethyl)-2-imidazolinium chloride.	GGY.
*Quaternary ammonium salts having amide linkages:	
2-Heptadecyl-1-methyl-1-(2-stearamidoethyl)-2-imidazolinium methyl sulfate.	CUL.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)ammonium dihydrogen phosphate.	ACY.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)ammonium nitrate.	ACY.
(2-Hydroxyethyl)dimethyl(3-tallow acyl amidopropyl)ammonium chloride.	CUL.
(3-Lauramidopropyl)trimethylammonium methyl sulfate------	ACY.
Trimethyl(3-oleamidopropyl)ammonium methyl sulfate-------	CIB.
All other----------	DUP, NLC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Cationic Surface-Active Agents--Continued	
*Quaternary ammonium salts, not containing oxygen:	
*Acyclic:	
*Bis(coconut oil alkyl)dimethylammonium chloride	ARC, ENO, FOR, GNM, VAC.
Bis(coconut oil alkyl)dimethylammonium nitrate	ARC.
*Bis(hydrogenated tallow alkyl)dimethylammonium chloride.	ARC, ASH, ENO, FOR, GNM, VAC.
*(Coconut oil alkyl)trimethylammonium chloride	ARC, FOR, GNM.
(Cottonseed oil alkyl)trimethylammonium chloride	FOR.
Didodecyldimethylammonium bromide	ONX.
Dimethylbis(mixed alkyl)- and Trimethyl(mixed alkyl)-ammonium chloride.	GNM.
Dimethylbis(9-octadecenyl)ammonium chloride	GNM.
Dimethylbis(soybean oil alkyl)ammonium chloride	ARC.
Dimethyldioctadecylammonium chloride	FOR, ONX, PG.
Dimethyldioctadecylammonium methyl sulfate	ONX.
Dodecyltrimethylammonium bromide	DUP.
Dodecyltrimethylammonium chloride	ARC, FOR, GNM.
Ethyldimethyl(mixed alkyl)ammonium ethyl sulfate	JOR, TCC.
Ethyldimethyl(9-octadecenyl)ammonium bromide	ONX.
Ethylhexadecyldimethylammonium bromide	FIN.
*Hexadecyltrimethylammonium salts:	
Hexadecyltrimethylammonium bromide	DUP, FIN, ICI.
Hexadecyltrimethylammonium chloride	ARC, BRD.
Hexadecyltrimethylammonium p-toluenesulfonate	FIN.
(Hydrogenated tallow alkyl)trimethylammonium chloride	ARC, FOR.
Methyltrioctylammonium chloride	GNM.
Methyltris(mixed alkyl)ammonium chloride	ASH.
N,N,N',N',N'-Pentamethyl-N-(tallow alkyl)trimethylene-bis[ammonium chloride].	ARC, GNM, ORO.
Triethyloctadecylammonium ethyl sulfate	AKS.
Trimethyloctadecylammonium chloride	ARC.
Trimethyl(soybean oil alkyl)ammonium chloride	ARC, VAC.
Trimethyl(tallow alkyl)ammonium chloride	ARC, FOR, GNM.
Trimethyltetradecylammonium bromide	FIN.
All other	STC, VAC.
*Benzenoid:	
*Benzyl(coconut oil alkyl)dimethylammonium chloride	CRT, DEP, LUR, RTF, TXT.
*Benzyldimethyl(mixed alkyl)ammonium chloride	AAC, BRD, CUL, FIN, ONX, PG, RH, TXT, VAC.
*Benzyldimethyloctadecylammonium chloride	CUL, FIN, ONX, TNI, WSN.
Benzyldimethyltetradecylammonium chloride	SNW.
Benzyldodecyldimethylammonium chloride	FIN, ONX, SDH.
Benzylhexadecyldimethylammonium chloride	ONX, RH.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride.	ENO.
Benzyl(mixed alkyl)pyridinium chloride	RFT.
1-Benzylpyridinium chloride	DEP.
Benzyltrimethylammonium chloride	BRD, CUL, TCC, VAC.
*(3,4-Dichlorobenzyl)dodecyldimethylammonium chloride	CUL, ONX, VAC.
(Dodecylbenzyl)dimethyloctadecylammonium chloride	ARC.
(Dodecylbenzyl)triethylammonium chloride	PC.
*(Dodecylbenzyl)trimethylammonium chloride	CUL, NLC, VAC, WTC.
2-Dodecylisoquinolinium bromide	CUL, ONX.
(Dodecylmethylbenzyl)trimethylammonium chloride	RH.
1-Dodecylpyridinium chloride	BRD, HK.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride	ONX.
Nonionic Surface-Active Agents	
*Carboxylic acid amides:	
*Carboxylic acid - alkanolamine condensates:	
*Diethanolamine condensates (amine/acid ratio = 2/1):	
*Capric acid	GGY, PCS, SCP, UVC.
Castor oil acids	BAC, PCS, VAL.
*Coconut oil acids	AKS, AML, ARD, BSW, CLI, CTL, DA, DEP, DSO, EFH, GAF, HLI, HRT, JOR, KNP, LUR, MCP, MOA, ONX, PC, PCS, PNX, PUR, RCD, RTF, SBC, SCP, SEY, SOP, SOS, STP, SWT, TXC, UNN, UVC, VAC, VND, WTC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid amides--Continued	
*Carboxylic acid - alkanolamine condensates--Continued	
*Diethanolamine condensates (amine/acid ratio = 2/1)--Continued	
Coconut oil and tall oil acids	CSB.
*Coconut oil and tallow acids	CIB, CLI, CRT, DA, GAF, PG.
*Lauric acid	CLI, DA, DRW, HLI, MOA, ONX, PCS, PG, RCD, WON, WTC.
Lauric and myristic acids	HLI.
Linoleic acid	VND.
Mixed vegetable oil acids	HLI.
*Oleic acid	CCW, CLI, EMR, STP, UVC, VAC, WTC.
Palmitic acid	CMG.
Palmitic and stearic acids	MCP.
Pelargonic acid	EMR.
*Stearic acid	AML, CLI, DA, EMR, JOR, ONX, SCO, SOS, TXC, VAL.
Tallow acids	MOA, WTC.
*Tall oil acids	EFH, MCP, MOA, MRA, SOS.
Unspecified mixed fatty acids	ROB.
*Diethanolamine condensates (other amine/acid ratios):	
*Coconut oil acids (amine/acid ratio=1/1)	APX, ARD, CCL, CLI, CTL, CUL, DA, EMK, GGY, HLI, MOA, MRV, ONX, PCS, PEK, PIL, QCP, RTF, SBC, SCO, SEY, STP, TCC, TXT, VAC.
Coconut oil acids (other ratios)	EMR, JRG.
Hydrogenated tallow acids (amine/acid ratio=1/1)	DA.
*Lauric acid (amine/acid ratio=1/1)	CTL, CUL, DRW, HLI, LEV, MOA, ONX, PCS, PG, SBC, STP, TXN, VAC.
Lauric and myristic acids (amine/acid ratio=1/1)	CLI, RTF, TXT.
Myristic acid (amine/acid ratio=1/1)	HDG.
*Oleic acid (amine/acid ratio=1/1)	DA, GGY, PCS, SBC, SWT, TCC, TXT.
Palmitic and stearic acids (amine/acid ratio=1/1)	GAF, MRA.
Pelargonic acid (amine/acid ratio=1/1)	PCS.
Safflower oil acids (amine/acid ratio=1/1)	MOA.
*Stearic acid (amine/acid ratio=1/1)	EMR, GAF, GGY, GLY, MOA, RPC, SEY, UVC.
Stearic acid (amine/acid ratio=2.7/1)	EFH.
Tall oil acids (amine/acid ratio=1/1)	MRV.
Tall oil acids (amine/acid ratio=2.7/1)	EFH.
Tallow acids (amine/acid ratio=1/1)	RPC.
Unspecified mixed fatty acids (amine/acid ratio=1/1).	STP.
*Ethanolamine condensates:	
Coconut oil acids (amine/acid ratio=2/1)	AES, CTL, STP, VND, WTC.
Coconut oil acids (amine/acid ratio=1/1)	APX, MOA, PCS, PG, STP, UVC, VAC.
Hydrogenated castor oil acids (amine/acid ratio=2/1).	BAC, GLY.
Hydrogenated tallow acids (amine/acid ratio=2/1)	GLY.
*Lauric acid (amine/acid ratio=2/1)	AES, ARC, CTL, WTC.
Lauric and myristic acids (amine/acid ratio=2/1)	TXN.
Lauric and myristic acids (amine/acid ratio=1/1)	TXT.
Oleic acid (amine/acid ratio=2/1)	HAL.
Oleic acid (amine/acid ratio=1/1)	VPC.
Stearic acid (amine/acid ratio=2/1)	ARC, CLI.
Stearic acid (amine/acid ratio=1/1)	MOA, VND.
*Stearic acid (amine/acid ratio=1/2)	GLY, PCS, WTC.
Other	HAL, MOA, VAC.
*Isopropanolamine condensates:	
Coconut oil acids	STP.
*Lauric acid	CLI, MOA, PCS, WTC.
Lauric and myristic acids	LEV, MOA, TXT.
Oleic acid	WTC.
*Carboxylic acid - alkanolamine condensates, ethoxylated:	
Coconut oil acids - ethanolamine condensate, ethoxylated.	DA, STP.
Hydrogenated tallow acids - ethanolamine condensate, ethoxylated.	ARC.
*Oleic acid - ethanolamine condensate, ethoxylated	ARC, ARD, DA, GAF.
Tallow acids - propanolamine condensate, ethoxylated	NLC.
*Carboxylic acid esters:	
*Anhydrosorbitol esters:	
Anhydrosorbitol dioleate	APD.
*Anhydrosorbitol monoester of tall oil acids	APD, GLY, HDG, RTF, TCH.
Anhydrosorbitol monolaurate	APD, ARC, GLY, HDG, TCH.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
*Anhydrosorbitol esters--Continued	
Anhydrosorbitol mono-oleate	AAC, APD, ARC, DRW, EMR, GLY, HAL, HDG, PCS, TCH.
Anhydrosorbitol monopalmitate	APD, GLY, HDG, PCS, TCH.
*Anhydrosorbitol monostearate	AAC, APD, ARC, DRW, GLY, HDG, PCS.
*Anhydrosorbitol sesquioleate	AAC, GLY, HDG.
Anhydrosorbitol tetrastearate	APD.
Anhydrosorbitol triester of tall oil acids	TCH.
*Anhydrosorbitol trioleate	AAC, APD, GLY, PCS, TCH.
*Anhydrosorbitol tristearate	APD, DRW, GLY, HDG, PCS.
All other	GLY.
*Diethylene glycol esters:	
Diethylene glycol dioleate	GLY.
Diethylene glycol distearate	ARC, GLY.
*Diethylene glycol monolaurate	ARC, CCW, EMR, GLY, HAL, HDG, WTC.
*Diethylene glycol mono-oleate	ARC, HAL, WTC.
Diethylene glycol monoricinoleate	GLY.
*Diethylene glycol monostearate	AML, ARC, CCW, CLI, DA, HAL, HDG, MCP, PCS, QCP, UVC, VAL, VND, WTC.
Diethylene glycol sesquiester of tall oil acids	QCP, WTC.
Diethylene glycol sesqui-isostearate	SEY.
Diethylene glycol sesquilaurate	ARC, GLY.
Diethylene glycol sesquistearate	WM.
*Ethoxylated anhydrosorbitol esters:	
Ethoxylated anhydrosorbitol monoester of tall oil acids.	RTF, TCH.
*Ethoxylated anhydrosorbitol monolaurate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH.
*Ethoxylated anhydrosorbitol mono-oleate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH, VAC.
*Ethoxylated anhydrosorbitol monopalmitate	AAC, APD, GLY, HDG, PCS, TCH.
*Ethoxylated anhydrosorbitol monostearate	AAC, APD, ARC, DRW, GLY, HDG, PCS, TCH.
Ethoxylated anhydrosorbitol triester of castor oil acids.	APD.
Ethoxylated anhydrosorbitol triester of tall oil acids.	APD.
*Ethoxylated anhydrosorbitol trioleate	AAC, APD, GLY, TCH.
*Ethoxylated anhydrosorbitol tristearate	AAC, APD, DRW, GLY, HDG, PCS, TCH.
*Ethylene glycol esters:	
Ethylene glycol distearate	ARC, CCA, EMR, HAL, HDG, HUM.
Ethylene glycol ester of dimer acid	EMR.
Ethylene glycol mono-oleate	EFH, HAL.
*Ethylene glycol monostearate	ARC, CCW, GLY, HAL, HDG, KNP, PCS, VND, WM.
Ethylene glycol sesquistearate	CLI, WM.
*Glycerol esters:	
*Complex glycerol esters:	
Glycerol diacetyltartrate monostearate	DRW, PCS.
Glycerol lactate ester of hydrogenated cottonseed and palm oil acids.	GLD.
Glycerol lactate ester of hydrogenated tallow acids	GLD.
Glycerol lactate palmitate	ARC, DRW.
Glycerol lactate stearate	PCS.
Glycerol maleate mono-oleate	DA.
Glycerol monoester of mixed fatty acids, acetylated	EKT.
Glycerol mono-oleate, acetylated	x.
Glycerol monostearate, succinylated	EKT.
Glyceryl mannitan laurate	GLY.
*Glycerol esters of chemically defined acids:	
Glycerol dioleate	ARC, HAL.
Glycerol distearate	APD, APX, ARC.
Glycerol monocaprate	ARC.
Glycerol monocaprylate	DRW.
Glycerol monolaurate	ARC, GLY, HAL.
*Glycerol mono-oleate	APD, ARC, CCW, DA, DRW, EFH, EKT, EMR, GLY, HAL, HDG, PCS, SWT, WM.
*Glycerol monoricinoleate	CCW, DA, EFH, GLY, HAL, HDG.
*Glycerol monostearate	ARC, BLS, CCW, CHL, CRT, DRW, EKT, EMR, GLY, GRO, HAL, HRT, LUR, MRA, NW, PCS, PG, SOS, SWT, TCC, VND, WM, WTC.
*Glycerol esters of mixed acids:	
Glycerol monoester of coconut oil acids	DRW, GLY, SWT, WM.
Glycerol monoester of corn oil acids	GLD.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
*Glycerol esters--Continued	
*Glycerol esters of mixed acids--Continued	
Glycerol monoester of cottonseed oil acids----------	EKT.
Glycerol monoester of hydrogenated cottonseed oil acids.	GLD, LEV.
*Glycerol monoester of hydrogenated soybean oil acids.	DRW, EKT, GLD, PCS.
Glycerol monoester of hydrogenated tallow acids------	GLD.
Glycerol monoester of lard acids----------	ARC, EKT, GLD, GLY.
Glycerol monoester of peanut oil acids----------	DRW.
Glycerol monoester of tall oil acids----------	EFH.
Glycerol monoester of unspecified mixed fatty acids--	EKT, LEV.
Glycerol sesquiester of tall oil acids----------	ARC, SLM.
Glycerol sesquiester of unspecified mixed fatty acids.	APD.
*Natural fats and oils, ethoxylated:	
*Castor oil, ethoxylated----------	AAC, APD, BAC, DA, DRW, EMR, GAF, GLY, ICI, NLC, PCS, RTF, TCH, TMH, WYN.
Hydrogenated castor oil ethoxylated----------	APD, DA, GAF, TCH.
*Lanolin, ethoxylated----------	AAC, APD, CRD, PCS.
Tallow, ethoxylated----------	DRW.
*Polyethylene glycol esters:	
*Polyethylene glycol esters of chemically defined acids:	
Polyethylene glycol dibenzoate----------	TCC.
*Polyethylene glycol dilaurate----------	ARC, DA, DEX, DRW, EFH, GLY, HAL, HDG, JOR, PCS, WM.
*Polyethylene glycol dioleate----------	ARC, CLD, DA, EFH, GGY, GLY, HAL, HDG, NLC, PCS, SM, UVC, VND.
*Polyethylene glycol distearate----------	ARC, EFH, GLY, HAL, HDG, PCS, QCP.
Polyethylene glycol methylcarbitol maleate---------	CCA.
*Polyethylene glycol monolaurate----------	AAC, ARC, CCA, DA, DEX, GAF, GGY, GLY, HAL, HDG, JOR, KNP, MCP, PCS, SYC, TCH, UVC.
*Polyethylene glycol mono-oleate----------	APD, ARC, CCA, CRT, DA, DEX, DRW, EFH, GAF, GGY, GLY, HAL, HDG, HRT, ICI, ONX, PCS, SM, SWT, SYC, TCH, UVC, VAC, WM, WTC.
Polyethylene glycol monopalmitate----------	APD, CLD.
Polyethylene glycol monopelargonate----------	PCS.
*Polyethylene glycol monoricinoleate----------	ARC, DA, HAL, UVC.
*Polyethylene glycol monostearate----------	AAC, AKS, AML, APD, ARC, CHP, CRT, DA, DEP, DEX, DRW, EFH, EMR, GAF, GGY, GLY, HAL, HDG, ICI, KNP, ONX, PC, PCS, RH, SEY, TCC, TCH, UVC, VAC, VND, WTC.
Polyethylene glycol sesquioleate----------	EMR, PCS.
*Polyethylene glycol esters of rosin and tall oil acids:	
Polyethylene glycol diester of tall oil acids--------	EFH, GLY.
Polyethylene glycol monoester of rosin acids--------	NLC.
*Polyethylene glycol monoester of tall oil acids------	EFH, GLY, NLC, SOS.
Polyethylene glycol sesquiester of rosin acids-------	APD, HPC, QCP.
*Polyethylene glycol sesquiester of tall oil acids----	AML, APD, APX, ARC, DA, DRW, MON, OMC, SLM, TCH, UVC, WTC.
*Polyethylene glycol esters of other mixed acids:	
Polyethylene glycol esters of mixed unspecified fatty acids.	EMR, MCP, VAC.
Polyethylene glycol diester of trimerized castor oil acids.	GLY.
Polyethylene glycol monoester of coconut oil acids---	EMR, GLY.
Polyethylene glycol monoester of soybean oil acids---	SYC.
Polyethylene glycol monopelargonate----------	EMR.
Polyethylene glycol sesquiester of castor oil acids--	ARC, GGY.
*Polyethylene glycol sesquiester of coconut oil acids.	ARL, DA, DRW, ONX, PG, SCP, UVC, VND.
Polyethylene glycol sesquiester of tallow acids------	ONX, SOS.
*Polyglycerol esters:	
Polyglycerol lactate oleate----------	DRW.
Polyglycerol monolaurate----------	VND.
Polyglycerol mono-oleate----------	HDG, PCS, VND.
Polyglycerol monostearate----------	PCS.
*Propanediol esters:	
1,2-Propanediol distearate----------	ARC, HAL, PCS.
1,3-Propanediol monoester of coconut oil acids---------	DRW.
1,2-Propanediol monoester of tallow acids----------	GLD.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Nonionic Surface-Active Agents--Continued	
*Carboxylic acid esters--Continued	
*Propanediol esters--Continued	
1,2-Propanediol monolaurate	ARC, HAL, SBC, WM.
1,2-Propanediol mono-oleate	EFH, HAL.
1,2-Propanediol monopalmitate	ARC.
*1,2-Propanediol monostearate	APD, ARC, CCW, EKT, GLY, HAL, PCS, PG.
*Other carboxylic acid esters:	
Anhydrosorbitol glycerol monolaurate	APD.
Ethoxylated glycerol sesquiester of mixed fatty acids	APD.
Ethoxylated methanol ester of coconut oil acids	JOR.
Ethoxylated 1,2-propanediol mono-oleate	APD.
Ethoxylated 1,2-propanediol monostearate	APD.
Ethoxylated sorbitol beeswax ester	APD.
Ethoxylated sorbitol hexaester of tall oil acids	APD, TCH.
Ethoxylated sorbitol hexaoleate	APD.
Ethoxylated sorbitol lanolin ester	APD.
Ethoxylated sorbitol mono-oleate	APD.
Ethoxylated sorbitol monostearate	MCP, SNW.
Ethoxylated sorbitol oleate, acetylated	APD.
Ethoxylated sorbitol pentaester of tall oil acids	APD, RTF.
Ethoxylated sorbitol pentalaurate	APD.
Ethoxylated sorbitol tetraester of lauric and oleic acids.	APD.
Ethoxylated sorbitol tetraester of tall oil acids	APD.
Methoxy polyethylene glycol mono-oleate	NLC.
Methylglucoside laurate	HDG.
Methylglucoside oleate	HDG.
Pentaerythritol distearate	GLY, PCS, VAL.
Polyalkylene glycol diglycolate	NLC, RTF.
Sucrose esters of fatty acids	SUG.
All other	CCW, GLY, STC, TCC, WM.
*Ethers:	
*Benzenoid ethers:	
Alkylphenol - formaldehyde condensates, alkoxylated:	
p-tert-Butylphenol - formaldehyde, alkoxylated	RTF.
(Mixed alkyl)phenol - formaldehyde, alkoxylated	NLC, RTF.
Nonylphenol - formaldehyde, alkoxylated	NLC, RTF.
tert-Octylphenol - formaldehyde, ethoxylated	SDW.
p-tert-Butylphenol, ethoxylated	RTF.
Diisobutylphenol, ethoxylated	GAF, RH.
Dinonyl-and nonylphenol, ethoxylated	GAF.
*Dinonylphenol, ethoxylated	GAF, HDG, PCS, STP, TMH.
*Dodecylphenol, ethoxylated	APX, GAF, MON, PCS, TMH, UCC.
Iso-octylphenol, ethoxylated	DA, OMS.
(Mixed alkyl)phenol, ethoxylated	GAF, PCS.
(Mixed alkyl)phenoxypoly(ethyleneoxy)ethyl chloride	GAF.
*Nonylphenol, ethoxylated	APD, CIB, CLY, DA, DOW, GAF, HDG, JCC, MON, NLC, OMC, PCS, RH, RTF, STP, TCH, TMH, UCC.
Nonylphenol, ethoxylated and propoxylated	RTF.
Nonylphenoxypoly(ethyleneoxy)ethyl iodide	GAF.
Phenol, ethoxylated	APD, DA, GAF, JCC, TCH, UCC.
Tetradecylphenol, ethoxylated	ORO.
Tridecylphenol, ethoxylated	PCS.
Xylenol, ethoxylated	NLC.
All other	GAF, RH, VPC.
*Nonbenzenoid ethers:	
*Linear alcohols, alkoxylated:	
Coconut oil alcohol, ethoxylated	PCS.
Decyl alcohol, ethoxylated	GAF, ICI.
Decyl and octyl alcohols, ethoxylated	GAF.
Decyl and octyl alcohols, ethoxylated and propoxylated.	GAF.
Decyloxypoly(ethyleneoxy)ethyl chloride	GAF.
*Dodecyl alcohol, ethoxylated	AAC, APD, DRW, GAF, HDG, OMC, UCC.
*Hexadecyl alcohol, ethoxylated	ACS, APD, ASH, CIB, GLY, ICI.
*Mixed linear alcohols, ethoxylated	AAC, CO, GAF, HDG, JCC, MON, NLC, RH, RTF, SHC, STP, TCH, UCC.
Mixed linear alcohols, ethoxylated and propoxylated	GAF, JCC, STP, WYN.
*9-Octadecenyl alcohol, ethoxylated	AAC, APD, ASH, CIB, DA, DUP, GAF, GLY, ICI, TCH, VAC, VPC.

TABLE 2.--Surface-active agents: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
Nonionic Surface-Active Agents--Continued	
*Ethers--Continued	
*Nonbenzenoid ethers--Continued	
*Linear alcohols, alkoxylated--Continued	
*Octadecyl alcohol, ethoxylated	APD, C1B, DUP, HDG, VAC.
Sperm oil alcohol, ethoxylated	CRD, DUP.
Tallow alcohol, ethoxylated	AAC, ASH.
Tridecyl alcohol, ethoxylated	DUP.
All other	RH.
*Other ethers and thioethers:	
tert-Dodecyl mercaptan, ethoxylated	AAC, UCC.
Glucose, ethoxylated	RH.
Glycerol, alkoxylated	NLC.
Mixed alcohols, ethoxylated	DRW, TCH.
Poly(mixed ethylene, propylene)glycol	NLC, UCC.
Polypropylene glycol, ethoxylated	NLC, RTF, WYN.
Propoxylated thiourea	VAC.
Rosin alcohol, ethoxylated	C1B.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated	CUC.
*Tridecyl alcohol, ethoxylated	AAC, APD, DRW, GAF, GLY, ICI, JCC, MON, NLC, OMC, PCS, RTF, TCH, UCC.
Tridecyl alcohol, propoxylated and ethoxylated	JCC.
Trimethylheptanol, ethoxylated	PCS.
Trimethylnonyl alcohol, ethoxylated	UCC.
Trimethylolpropane, alkoxylated	JCC, RTF, WYN.
All other	SNW.
*Other nonionic surface-active agents:	
3,5-Dimethyl-1-hexyn-3-ol	CUC.
3,6-Dimethyl-4-octyne-3,6-diol	CUC.
Dodecylbenzenesulfonic acid - diethanolamine condensate, fatty acid monoester.	ACT.
Glycerol sesquiester of hydrogenated castor oil acids, borated and ethoxylated.	GLY.
Octyl phosphate, ethoxylated	DUP.
Polyethylene - vinyl alcohol condensate, potassium salt	NLC.
2,4,7,9-Tetramethyl-5-decyne-4,7-diol	CUC.
Tri(castor oil alkyl) phosphate	GLY.
Tris(nonylphenyl)phosphite	GAF.
All other	CMG.

Pesticides and related products include fungicides, herbicides, insecticides, rodenticides, plant hormones, seed disinfectants, soil conditioners, soil fumigants and synergists. The data are given in terms of 100-percent active material; they thus exclude such materials as diluents, emulsifiers, and wetting agents. Statistics on production and sales of pesticides and related products in 1968 are given in table 1; table 2 lists these products and identifies the manufacturers.

Production of pesticides and related products in 1968 amounted to 1,192 million pounds--about 13.6 percent more than the 1,050 million pounds reported for 1967. Sales in 1968 were 960 million pounds, valued at $849 million, compared with 897 million pounds, valued at $787 million, in 1967.

The output of pesticides and related products included in the cyclic group amounted to 930 million pounds in 1968--about 13 percent more than the 823 million pounds produced in 1967. Sales in 1968 were 723 million pounds, valued at $697 million, compared with 682 million pounds, valued at $628 million, in 1967. The output of DDT amounted to 139 million pounds in 1968--about 35 percent more than in 1967.

Production of acyclic pesticides and related products increased in 1968, amounting to 263 million pounds, compared with the 227 million pounds reported for 1967. Sales in 1968 were 237 million pounds, an increase of about 10 percent as compared with 216 million pounds, in 1967; however, the value of sales decreased to $152 million in 1968, compared with $159 million in 1967--a decline of more than 4 percent.

TABLE 1.--*Pesticides and related products: U.S. production and sales, 1968*

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

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	1,192,360	959,631	849,240	$0.88
Benzenoid	792,916	601,612	516,977	.86
Nonbenzenoid	399,444	358,019	332,263	.93
PESTICIDES AND RELATED PRODUCTS, CYCLIC				
Total	929,548	722,661	697,295	.96
Fungicides, total	113,178	89,209	32,870	.37
3,5-Dimethyl-1,3,5-2H-tetrahydrothiadiazine-2-thione (DMTT)	993	993	474	.48
Mercury fungicides, total	2,030	1,333	7,471	5.60
Phenylmercuric acetate (PMA)	582	374	2,883	7.71
Phenylmercuric oleate	373	354	1,095	3.09
Other mercury fungicides	1,075	605	3,493	5.77
Naphthenic acid, copper salt	1,718	1,782	464	.26
Pentachlorophenol (PCP)	48,575	46,460	7,243	.16
8-Quinolinol (8-Hydroxyquinoline), copper salt	135	279	374	1.34
2,4,5-Trichlorophenol and salts	28,066	...	...	...
All other cyclic fungicides[2]	31,661	38,362	16,844	.44
Herbicides and plant hormones, total	408,959	271,889	443,274	1.63
Phenoxyacetic acid derivatives:				
2,4-Dichlorophenoxyacetic acid (2,4-D)	79,263	22,822	7,373	.32
2,4-Dichlorophenoxyacetic acid esters and salts, total	94,116	66,501	31,875	.48
2,4-Dichlorophenoxyacetic acid, n-butyl ester	30,204	26,398	16,418	.62
2,4-Dichlorophenoxyacetic acid, dimethylamine,salt	14,445	14,087	5,919	.42
2,4-Dichlorophenoxyacetic acid, iso-octyl ester	11,164	8,751	3,277	.37
All other (2,4-D) esters and salts	38,303	17,265	6,261	.36
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	17,530	2,930	3,242	1.11
2,4,5-Trichlorophenoxyacetic acid esters and salts, total	42,542	33,115	26,226	.79
2,4,5-Trichlorophenoxyacetic acid, n-butyl ester	29,941	25,528	17,763	.70
2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester	6,182	5,610	6,319	1.13
All other (2,4,5-T) esters and salts	6,419	1,977	2,144	1.08
All other cyclic herbicides and plant hormones[3]	175,508	146,521	374,558	2.56
Insecticides and rodenticides, total	407,411	361,563	221,151	.61
3-(α-Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	11	...	...	...
Aldrin-toxaphene group[4]	115,974	122,015	63,109	.52
α-Bis(p-chlorophenyl)-β,β,β-trichloroethane (DDT)	139,401	85,377	12,521	.15
Organophosphorus insecticides, total	75,868	83,026	83,164	1.00
0,0-Diethyl O-p-nitrophenyl phosphorothioate (Parathion)	...	19,510	9,875	.51
0,0-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion)	38,163	45,178	25,129	.56
All other organophosphorus insecticides[5]	37,705	18,338	48,160	2.63
All other insecticides and rodenticides[6]	76,157	71,145	62,357	.88

See footnotes at end of table

TABLE 1.--*Pesticides and related products: U.S. production and sales, 1968*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
PESTICIDES AND RELATED PRODUCTS, ACYCLIC				
Total	262,812	236,970	151,945	$0.64
Fungicides, total	40,985	40,752	29,191	.72
Dimethyldithiocarbamic acid, ferric salt (Ferbam)	1,900	1,906	695	.36
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	...	1,996	899	.45
Ethylene bis(dithiocarbamic acid), zinc salt (Zineb)	3,081	3,442	1,419	.41
All other acyclic fungicides[7]	36,004	33,408	26,178	.78
Herbicides and plant hormones[8], total	60,033	46,665	40,056	.86
Methanearsonic acid, monosodium salt	15,805	14,520	4,347	.30
All other acyclic herbicides	44,228	32,145	35,709	1.11
Insecticides, rodenticides, and soil conditioners and fumigants, total	161,794	149,553	82,698	.55
1,2-Dibromo-3-chloropropane (DBCP)	7,887	...	...	...
Methyl bromide (Bromomethane)	20,454	19,967	7,832	.39
All other acyclic insecticides (including acyclic organophosphorus insecticides), rodenticides, and soil conditioners and fumigants[9] [10]	133,453	129,586	74,866	.58

[1] Calculated from rounded figures.

[2] Includes captan, dinocap, folpet, glyodin, pentachloronitrobenzene, sodium pentachlorophenate, tri- and tetrachlorophenols, and others.

[3] Includes barban, 2-chloro-N-isopropyl acetanilide, dicamba, dimethylurea compounds, dinitrophenol compounds, endothal, isopropyl phenylcarbamates (IPC and CIPC), maleic hydrazide, picloram, propanil, triazines, trifluralin, uracils, and others.

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

[5] Includes carbophenothion, coumaphos, diazinon, dioxathion, parathion (production only), ronnel, and other phosphorothioates and phosphorodithioates, and others.

[6] Includes chlorobenzilate, DDD, dicofol, endosulfan, hexachlorocyclohexane, lindane, methoxychlor, and other chlorinated insecticides, carbaryl, insect attractants, DEET and other insect repellents, small amounts of nematocides, rodenticides, including Warfarin (sales only), synergists, and others.

[7] Includes dithiocarbamates, including dodine, maneb, mercury compounds, Nabam (production only), PETD, and others.

[8] Includes CDAA, dalapon, methanearsonic acid's disodium salt and dodecyl- and octyl-ammonium salts, thiocarbamate, thiolcarbamate, and organophosphorus herbicides, sodium TCA, and others.

[9] Includes DBCP (sales only), DDVP, disulfoton, ethion, malathion, naled, phorate, TEPP, and other organophosphorus insecticides, soil conditioners and fumigants, metaldehyde (which is a mollusicide), small quantities of rodenticides, and others.

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

TABLE 2.--*Pesticides and related products : Manufacturers' identification codes, by products, 1968*

[Pesticides and related products for which separate statistics are given in table 1 are marked below with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC	
*Fungicides:	
2,6-Bis(dimethylaminomethyl)cyclohexanone	MRK.
5-Chloro-2-Benzothiazolethiol, laurylpyridinium salt.	VNC.
2,4-Dichloro-6-(o-chloroanilino)-s-triazine	CHG.
1,4-Dichloro-2,5-dimethoxybenzene	DUP.
2,6-Dichloro-4-nitroaniline (DCNA)	UPJ.
*3,5-Dimethyl-1,3,5,2H-tetrahydrothiadiazine-2-thione (DMTT).	MRK, OTC, SF, WRC.
Diphenylammonium propionate	MRK.
3,3'-Ethylenebis(tetrahydro-4,6-dimethyl-2H-1,3,5-thiadiazine-2-thione).	DUP.
2-Heptadecyl-2-imidazoline (Glyodin)	UCC.
2-Mercaptobenzothiazole, monoethanolamine salt	VNC.
*Mercury fungicides:	
N-(Ethylmercuri)-p-toluene sulfonanilide	DUP.
Hydroxymercurichlorophenol	DUP.
Mercurial turf fungicides	MAL.
Methylmercury quinolinolate	MRK.
2-(Phenylmercuriamino)ethyl acetate	CLY.
*Phenylmercuric acetate (PMA)	BKM, CLY, MRK, TRO, WRC.
Phenylmercuric ammonium acetate	MAL, TRO.
Phenylmercuric borate	WRC.
Phenylmercuric dimethyldithiocarbamate	WRC.
Phenylmercuric hydroxide	MON, MRK.
Phenylmercuric lactate	WRC.
Phenylmercuric naphthonate	MRK.
*Phenylmercuric oleate	CLY, HNX, MRK, TRO, WRC.
Phenylmercuric propionate	MRK.
N-Phenylmercuriformamide	VIN.
Tris(2-hydroxyethyl)(phenylmercuri)ammonium lactate.	CLY.
2-(1-Methyl-n-heptyl)-4,6-dinitrophenyl crotonate (Dinocap).	RH.
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Piperalin).	LIL.
*Naphthenic acid, copper salt	CCA, FER, HNX, MCI, SHP, TRO, WTC.
Pentachloronitrobenzene (PCNB)	OMC, OTC.
*Pentachlorophenol (PCP)	BXT, DOW, FRO, MON, RCI, SFD.
Pentachlorophenol, sodium salt	DOW, MON, RCI.
*8-Quinolinol (8-Hydroxyquinoline), copper salt	FIS, HNX, MON, MRK.
Tetrachloro-p-benzoquinone (Chloranil)	USR.
2,3,4,6-Tetrachlorophenol	DOW.
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan).	CHO.
N-Trichloromethylthiophthalimide (Folpet)	CHO.
*2,4,5-Trichlorophenol acid and salts:	
2,4,5-Trichlorophenol	DA, DOW, HK, HPC.
2,4,5-Trichlorophenol, ethanolamine salt	GAF.
2,4,5-Trichlorophenol, sodium salt	DOW.
2,4,6-Trichlorophenol	DOW, RBC.
Other cyclic fungicides	BKM, ORO, VNC.
*Herbicides and plant hormones:	
3-Amino-2,5-dichlorobenzoic acid, methyl ester	GAF.
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	DOW.
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)	DUP.
3-tert-Butyl-5-chloro-6-methyluracil	DUP.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
N-Butyl-N-ethyl-α,α,α-trifluoro-2,6-dinitro-p-toluidine (Benefin).	LIL.
2-Butynyl-4-chloro-m-chlorocarbanilate (Barban)----	GOC.
2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)-	GGY.
2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine).	GGY.
2-Chloro-4-ethylamino-6-isopropylamino-s-triazine (Atrazine).	GGY.
2-Chloro-N-isopropyl acetanilide----------	MON.
N'-(4-Chlorophenoxy)phenyl N,N-dimethylurea (Chloroxuron).	CBA.
3-(p-Chlorophenyl)-1,1-dimethylurea (Monuron)------	DUP.
3-(p-Chlorophenyl)-1,1-dimethylurea trichloro-acetate.	ACN.
3-Cyclohexyl-5,6-trimethyleneuracil----------	DUP.
2,6-Di-tert-butyl-p-tolylmethylcarbamate----------	HPC.
2,5-Dichloro-3-aminobenzoic acid, ammonium salt----	AMC, GAF.
3,6-Dichloro-o-anisic acid (Dicamba)----------	VEL.
2,4-Dichlorobenzyltributylphosphonium chloride-----	SM.
2,5-Dichloro-3-nitrobenzoic acid----------	GAF.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)---	DUP.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron).	DUP.
2,4-Dichlorophenyl-4-nitrophenyl ether----------	RH.
3',4'-Dichloropropionanilide (Propanil)----------	CIS, MON, RH.
1,2-Dihydropyridazine-3,6-dione (Maleic hydrazide) (MH).	ACY, ASL, USR.
N-(beta-0,0-Diisopropyl-dithiophosphorylethyl)-benzene sulfonamide (Bensulide).	SF.
N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid)----	ARA, CWN, LIL, UPJ.
1,1-Dimethyl-3-phenylurea (Fenuron)----------	DUP.
1,1-Dimethyl-3-phenylurea trichloroacetate---------	ACN.
Dimethyl-tetrachloroterephthalate----------	DA.
Dinitrobutylphenol (DNBP)----------	CIS, DOW.
Dinitrobutylphenol, ammonium salt----------	CIS, DOW.
Dinitrobutyl phenol, triethanolamine salt----------	CIS, DOW.
Dinitrocresol (DNOC)----------	CIS.
Dinitrocresol, sodium salt----------	CIS.
Diphenylacetonitrile (Diphenatrile)----------	LIL.
2-Ethylamino-4-isopropylamino-6-methylmercapto-s-triazine (Ametryne).	GGY.
S-Ethyl cyclohexylethylthiocarbamate----------	SF.
S-Ethyl hexahydro-1H-azepine-1-carbothioate (Molinate).	SF.
Gibberellic acid----------	ABB, MRK.
3-(Hexahydro-4,7-methanoindan-5-yl)-1,1-dimethyl-urea (Norea).	HPC.
3-Indolebutyric acid----------	ARA.
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)-------	PPG.
Isopropyl N-phenylcarbamate (IPC)----------	PPG.
Methyl 2-chloro-9-hydroxyfluorene-9-carboxylate----	USB.
1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)------	DUP.
2-Methylmercapto-4,6-bis(isopropylamino)-s-triazine (Prometryne).	GGY.
4-(Methylsulfonyl)-2,6-dinitro-N,N-dipropylaniline-	SHC.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
1-Naphthaleneacetic acid and derivatives:	
1-Naphthaleneacetamide	AMC.
1-Naphthaleneacetic acid (NAA)	AMC, THM.
1-Naphthaleneacetic acid, methyl ester	AMC.
1-Naphthaleneacetic acid, sodium salt	AMC, BKL.
N-1-Naphthylphthalamic acid (NPA)	USR.
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, disodium salt (Endothall).	PAS.
Phenoxyacetic acid derivatives:	
4-Chloro-2-methylphenoxyacetic acid (MCPA)	CLY, RDA, RIV.
4-Chloro-2-methylphenoxyacetic acid, potassium salt.	GTH.
*2,4-Dichlorophenoxyacetic acid (2,4-D)	DA, DOW, HPC, MON, RDA.
*2,4-Dichlorophenoxyacetic acid esters and salts:	
2,4-Dichlorophenoxyacetic acid, 2-butoxyethyl ester.	AMC.
2,4-Dichlorophenoxyacetic acid, butoxypolypropyleneglycol ester.	DOW.
*2,4-Dichlorophenoxyacetic acid, n-butyl ester.	AMC, DA, DOW, HPC, MON, PBI, RDA, RIV.
2,4-Dichlorophenoxyacetic acid, sec-butyl ester.	DOW, MON, RDA.
*2,4-Dichlorophenoxyacetic acid, dimethylamine salt.	ALC, AMC, DA, DOW, HPC, PBI, RDA, RIV, TMH.
2,4-Dichlorophenoxyacetic acid, ethanolamine and isopropanolamine salt.	DOW.
2,4-Dichlorophenoxyacetic acid, ethyl ester	AMC, DOW.
2,4-Dichlorophenoxyacetic acid, 2-ethylhexyl ester.	DA, HPC.
*2,4-Dichlorophenoxyacetic acid, iso-octyl ester.	DOW, MON, PBI, RDA, RIV.
2,4-Dichlorophenoxyacetic acid, isopropyl ester.	AMC, DOW, HPC, MON.
2,4-Dichlorophenoxyacetic acid, lithium salt	GTH, RIV.
*2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	DA, DOW, HFT, HPC, MON, THM.
*2,4,5-Trichlorophenoxyacetic acid esters and salts:	
2,4,5-Trichlorophenoxyacetic acid, amyl esters	HPC.
2,4,5-Trichlorophenoxyacetic acid, 2-butoxyethyl ester.	AMC.
2,4,5-Trichlorophenoxyyacetic acid, butoxypolypropyleneglycol ester.	DOW.
*2,4,5-Trichlorophenoxyacetic acid, n-butyl ester.	DA, DOW, HPC, MON, PBI, RIV.
2,4,5-Trichlorophenoxyacetic acid, 2-ethylhexyl ester.	DA, HPC.
*2,4,5-Trichlorophenoxyacetic acid, iso-octyl ester.	DA, DOW, MON, PBI, RIV, TMH.
2,4,5-Trichlorophenoxyacetic acid, triethylamine salt.	DOW, HPC, RIV.
Polychloro-tetrahydro-methanoindene (Polychlorodicyclopentadiene) isomers.	VEL.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Herbicides and plant hormones--Continued	
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	DOW, HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid esters and salts:	
2-(2,4,5-Trichlorophenoxy)propionic acid, 2-ethyl-hexyl ester.	HPC.
2-(2,4,5-Trichlorophenoxy)propionic acid, iso-octyl ester.	RIV.
2-(2,4,5-Trichlorophenoxy)propionic acid, sodium salt.	RIV.
α,α,α-Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin).	LIL.
3-(m-Trifluoromethylphenyl)-1,1-dimethylurea (Flumeturon).	CBA.
Tris-(2,4-dichlorophenoxyethyl)phosphite (2,4-DEP).	USR.
Insect attractants and repellants:	
tert-Butyl 4(or 5)-chloro-2-methylcyclohexane-carboxylate (Trimedlure).	UOP.
N,N-Diethyltoluamide (DEET)----------	CHF, HPC, PFZ.
Di-n-propyl isocinchomeronate----------	MGK.
*Insecticides:	
3-sec-Amylphenyl-N-methylcarbamate----------	x.
Benzyl thiocyanate----------	HK.
2-sec-Butyl-4,6-dinitrophenyl-3,3-dimethylacrylate (Binapacryl).	FMN.
2-(p-tert-Butylphenoxy)-cyclohexyl-2-propynyl sulfite.	USR.
o-sec-Butylphenyl N-methylcarbamate----------	OTC.
Chlorinated insecticides:	
*Aldrin-toxaphene group:	
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor).	VEL.
Hexachloro-epoxy-octahydro-endo-endo-di-methanonaphthalene (Endrin).	SHC, VEL.
Hexachloro-epoxy-octahydro-endo-exo-di-methanonaphthalene (Dieldrin).	SHC.
Hexachloro-hexahydro-endo-exo-dimethano-naphthalene (Aldrin).	SHC.
Octachloro-hexahydro-methanoindene (Chlordan)-	VEL.
Terpene polychlorinates----------	HN.
Toxaphene (Chlorinated camphene)----------	HPC.
2,2-Bis(p-chlorophenyl)-1,1-dichloroethane (DDD) (TDE).	ACN, RH.
1,1-Bis(p-chlorophenyl)-2-nitrobutane----------	COM.
1,1-Bis(p-chlorophenyl)-2-nitropropane----------	COM.
*α-Bis(p-chlorophenyl)β,β,β-trichloroethane (DDT)	ACN, DA, LEB, MTO, OMC.
2-(p-tert-Butylphenoxy)isopropyl-2'-chloroethyl sulfite.	USR.
Chlorobenzilate----------	GGY.
p-Chlorophenyl p-chlorobenzenesulfonate (Ovex)-	DOW.
o-Chlorophenyl-N-methylcarbamate----------	OTC.
p-Chlorophenyl 2,4,5-trichlorophenyl sulfone (Tetradifon).	FMN, FMP.
6-Chloro-3,4-xylylmethylcarbamate----------	UPJ.
Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta [cd] pentalen-2-one.	ACN.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Insecticides--Continued	
Chlorinated insecticides--Continued	
1,1-Dichloro-2,2-bis(p-ethylphenyl)ethane-------	RH.
4,4'-Dichloro-α-trichloromethylbenzhydrol (Dicofol).	RH.
2,6-Dimethyl-3,5-dichloro-4-pyridinol----------	DOW.
Dodecachlorooctahydro-1,3,4-metheno-2H-cyclobuta-[cd]pentalene (Mirex).	ACN.
Hexachlorocyclohexane (Benzene hexachloride) (BHC).	DA, HK.
Hexachlorocyclohexane, 100% γ-isomer (Lindane)--	HK.
Hexachloro-hexahydro-methano-benzodioxathiepin-3-oxide (Endosulfan).	HK.
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor).	CHF, DUP, HFT.
Isobornyl thiocyanoacetate----------	CIS, HPC.
O-Isopropylphenyl N-methylcarbamate----------	OTC.
1-Naphthyl N-methylcarbamate (Carbaryl)----------	UCC.
*Organophosphorus insecticides:	
4-tert-Butyl-2-chlorophenylmethyl methylphosphoramidite.	DOW.
S-[[(p-Chlorophenyl)thio]methyl] O,O-diethyl phosphorodithioate (Carbophenothion).	SF.
2-Chloro-1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate.	SHC.
O,O-Diethyl O-3-chloro-4-methyl-1-oxo-2H-1-benzopyran-7-yl-phosphorothioate (Coumaphos).	CHG.
Diethyl-1-(2,4-dichlorophenyl)-2-chlorovinyl phosphate.	SHC.
O,O-Diethyl-1-(2,5-dichlorophenyl)-O-2-chlorovinyl phosphate.	SHC.
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate (Diazinon).	GGY.
O,O-Diethyl O-p-(methylsulfinyl)phenyl phosphorothioate.	CHG.
*O,O-Diethyl O-p-nitrophenyl phosphorothioate (Parathion).	AMP, MON, SF, SHC.
O,O-Diethyl O-3,5,6-trichloro-2 pyridyl phosphorothiate.	DOW.
O,O-Dimethyl O-[4-(methylthio)-m-tolyl] phosphorothioate (Fenthion).	CHG.
*O,O-Dimethyl O-p-nitrophenyl phosphorothioate (Methyl parathion).	AMP, MON, SF, SHC, VEL.
O,O-Dimethyl S-[4-oxo-1,2,3-benzotriazin-3(4H)-ylmethyl] phosphorodithioate.	CHG.
O,O-Dimethyl S-phthalimidomethyl phosphorodithioate.	SF.
Dimethyl 2,4,5-trichlorophenyl phosphorothionate (Ronnel).	DOW.
2,3-p-Dioxane S,S-bis(O,O-diethylphosphorodithioate) (Dioxathion).	HPC.
α-Methylbenzyl 3-(dimethoxyphosphinyloxy)-cis-crotonate.	SHC.
O,O,O',O'-Tetramethyl O,O'-thiodi-p-phenylene phosphorodithioate.	ACY.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, CYCLIC--Continued	
*Insecticides--Continued	
N-(Phenyl-2-nitropropyl)piperidine	MRK.
M-Tolyl methylcarbamate	OTC.
Other cyclic insecticides	ORO.
Lampricide: 3-Trifluoromethyl-4-nitrophenol	MEE.
Nematocides:	
0,0-Diethyl 0-(2,4-dichlorophenyl)phosphorothioate.	SM.
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin).	ACY.
*Rodenticides:	
*3-(α-Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	ABB, CIS, MOT, PEN.
2-Diphenylacetyl-1,3-indandione (Diphacinone)	NES.
2-Diphenylacetyl-1,3-indandione, sodium salt	NES.
3-(1-Furyl-3-acetylethyl)-4-hydroxycoumarin (Coumafuryl).	AMC.
2-Pivaloyl-1,3-indandione (Pindone)	MOT, PIC.
Synergists and adjuvants:	
α-[2-(2-n-Butoxyethoxy)-ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide).	FMN, FMP.
N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3-dicarboximide.	MGK.
Piperonal bis[2-(2-butoxyethoxy)ethyl]acetal	MGK.
PESTICIDES AND RELATED PRODUCTS, ACYCLIC	
*Fungicides:	
Bis-1,4-bromoacetoxy-2-butene	VIN.
Cadmium succinate	MAL.
1-Chloro-2-nitropropane (Korax)	FMN.
Dimethyl thiocarbonyl disulfide	CLY.
Disodium cyanodithioimidocarbonate	BKM.
Dithiocarbamic acid fungicides:	
*Dimethyldithiocarbamic acid, ferric salt (Ferbam).	DUP, FMN, VNC, WRC.
Dimethyldithiocarbamic acid, manganese salt	FMN.
Ethylene bis(dithiocarbamic acid), diammonium salt.	CIS, RBC.
*Ethylene bis(dithiocarbamic acid), disodium salt (Nabam).	CHF, CIS, DUP, FMN, RH.
Ethylene bis(dithiocarbamic acid), manganese salt (Maneb).	DUP, RH.
*Ethylene bis(dithiocarbamic acid), zinc salt (Zineb).	DUP, FMN, RH, WOD.
Polyethylenethiuram disulfide (PETD)	FMN.
n-Dodecylguanidine acetate (Dodine)	ACY.
Mercury fungicides:	
Chloromethoxypropylmercuric acetate	TRO.
Ethylmercury phosphate	CHF.
3-Methyl(mercurithio)-1,2-propanediol	DUP.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Fungicides--Continued	
Mercury fungicides--Continued	
Methylmercuric hydroxide	MRT.
Methylmercury nitrile	WRC.
2-Propene-1,1-diol diacetate	SHC.
All other acyclic fungicides	BKM.
*Herbicides and plant hormones:	
Cacodylic acid	ASL, VIN.
2-Chloroallyl diethyldithiocarbamate (CDEC)	MON.
2-Chloro-N,N-diallylacetamide (CDAA)	MON.
2,3-Dichloroallyl diisopropylthiolcarbamate (Di-allate).	MON.
2,2-Dichloropropionic acid, sodium salt (Dalapon)	DOW.
N-Dimethylaminosuccinamic acid	USR.
S-Ethyl-N,N-diisobutylthiocarbamate	SF.
S-Ethyl di-N,N-propylthiocarbamate (EPTC)	SF.
Ethyl xanthogen disulfide	RBC.
Methanearsonic acid, disodium salt (DSMA)	ASL, CLY, DA.
Methanearsonic acid, dodecyl- and octylammonium salts.	CLY, VIN.
*Methanearsonic acid, monosodium salt (MSMA)	ASL, DA, VIN.
S-Propyl butylethylthiocarbamate (Pebulate)	SF.
S-Propyl dipropylthiocarbamate (Vernolate)	SF.
S,S,S-Tributyl phosphorotrithioate	CHG.
Tributyl phosphorotrithioate	SM.
Trichloroacetic acid, sodium salt (TCA)	DOW.
S-2,3,3-Trichloroallyl N,N-diisopropylthiol-carbamate (Tri-allate).	MON.
*Insecticides:	
Butoxy polypropylene glycol (fly repellent)	UCC.
Metaldehyde	COM.
Organophosphorus insecticides:	
S-[1,2-Bis(ethoxycarbonyl)ethyl] 0,0-dimethyl phosphorodithioate (Malathion).	ACY, CIS.
2-Carbomethoxy-1-propen-2yl dimethyl phosphate	SHC.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled).	SHC.
0,0-Diethyl S-2-(ethylthio)ethyl phosphorodi-thioate (Disulfoton).	CHG.
0,0-Diethyl 0-2-(ethylthio)ethyl phosphorothio-ate (Demeton 0).	CHG.
0,0-Diethyl S-2-(ethylthio)ethyl phosphorothio-ate (Demeton S).	CHG.
0,0-Diethyl S-(ethylthio)methyl phosphorodithio-ate (Phorate).	ACY, MON.
3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-crotonamide.	SHC.
0,0-Dimethyl-0-2,2-dichlorovinyl phosphate (DDVP).	SHC.
0,0-Dimethyl S-(N-methylcarbamoylmethyl) phos-phorodithioate (Dimethoate).	ACY.

TABLE 2.--*Pesticides and related products: Manufacturers' identification codes, by products, 1968*--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
PESTICIDES AND RELATED PRODUCTS, ACYCLIC--Continued	
*Insecticides--Continued	
*Organophosphorus insecticides--Continued	
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide.	SHC.
S-[2-(Ethylsulfinyl)ethyl] 0,0-dimethyl phosphorodithioate (Oxydemetonmethyl).	CHG.
0,0,0',0'-Tetraethyl S,S'-methylene bisphosphorodithioate (Ethion).	FMN, FMP.
Tetraethyl pyrophosphate (TEPP)----------	ALC.
Tetra-n-propyl dithiopyrophosphate----------	SF.
Polyethylene polysulfide----------	BFG.
2-Thiocyanoethyl dodecanoate----------	RH.
Nematocides:	
O-Ethyl S, S-dipropyl phosphorodithioate----------	SM.
2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime.	UCC.
*Rodenticides: Sodium fluoracetate----------	RBC.
*Soil conditioners: Polyacrylonitrile, hydrolyzed, sodium salt.	ACY.
*Soil fumigants:	
2-Aminobutane carbonate----------	LIL.
*1,2-Dibromo-3-chloropropane (DBCP)----------	AMP, BST, DOW, SHC.
1,3-Dichloropropene----------	DOW.
1,3-Dichloropropene, 1,2-dichloropropane----------	DOW, SHC.
*Methyl bromide (Bromomethane)----------	AMP, DOW, GTL, MCH.
N-Methyldithiocarbamic acid, sodium salt (Metham)-	SF.
Trichloronitromethane (Chloropicrin)----------	DOW, IMC.

The term miscellaneous chemicals comprises those synthetic organic products that are not included in the use groups covered by the other preliminary reports in the 1968 series. They include products that are employed in a great variety of uses. The number of chemicals used exclusively for only one purpose is not large. Among the products covered are those used for gasoline and lubricating oil additives, paint driers, photographic chemicals, tanning materials, flotation reagents, refrigerants, textile polymers, sequestering agents, organic fertilizers, antifreeze chemicals, solvents, and acyclic intermediates. Statistics on production and sales of miscellaneous chemicals in 1968 are given in table 1; table 2 lists these products and identifies the manufacturers.

Production of miscellaneous cyclic and acyclic chemicals in 1968 totaled 67.5 billion pounds, or 13 percent more than the output of 59.7 billion pounds reported for 1967. Sales of miscellaneous chemicals in 1968 amounted to 30.4 billion pounds, valued at $3.9 billion, compared with 26.0 billion pounds, valued at $3.5 billion, in 1967.

The total output of miscellaneous cyclic chemicals in 1968 was 1.8 billion pounds, or 17 percent more than the output of 1.5 billion pounds reported for 1967. Sales in 1968 totaled 903 million pounds, valued at $320 million, compared with 776 million pounds, valued at $284 million, in 1967. In 1968 the most important groups of cyclic compounds were the lubricating oil additives, the output of which was 508 million pounds, and synthetic tanning materials, the output of which was 42 million pounds.

Total production of miscellaneous acyclic chemicals in 1968 was 65.7 billion pounds, or 13 percent more than the output of 58.2 billion pounds reported for 1967. Sales in 1968 totaled 29.5 billion pounds, valued at 3.6 billion, compared with 25.2 billion pounds, valued at $3.2 billion, in 1967. The statistics for acyclic chemicals were regrouped in 1966 primarily by chemical function. The order of precedence of these functional groups is generally that used in naming and indexing chemical compounds by *Chemical Abstracts*, but other important considerations are comparability with statistics for earlier years and the need for groupings that will not reveal the operations of individual producers.

In 1968, the most important groups of acyclic chemicals were the halogenated hydrocarbons, the nitrogenous compounds, monohydric alcohols, and aldehydes and ketones. Production of halogenated hydrocarbons, which are used as solvents, intermediates, refrigerants, and aerosol propellants, totaled 13.8 billion pounds. The most important chemicals in this group were dichloroethane (production of 4.8 billion pounds in 1968 compared with 4.0 billion pounds in 1967) and vinyl chloride (3.0 billion pounds compared with 2.4 billion pounds). Output of nitrogenous compounds totaled 11.5 billion pounds. The most important chemical in this group was urea (used principally in fertilizers and as a feed

additive), production of which was 4.9 billion pounds in 1968 compared with 4.2 billion pounds in 1967.

Monohydric alcohols, which are used largely as solvents and intermediates, were the third largest group in 1968, with production of 10.3 billion pounds. The most important items in the group in terms of production were synthetic methanol (3.8 billion pounds in 1968 compared with 3.4 billion pounds in 1967), isopropyl alcohol (2.1 billion pounds in 1968, the same as in 1967), and synthetic ethyl alcohol (2.1 billion pounds in 1968, compared with 1.9 billion pounds in 1967). Aldehydes and ketones, which are also used largely as solvents and intermediates, were the next largest group with production of 9.3 billion pounds. The most important items in this group in 1968 were formaldehyde (4.3 billion pounds), acetaldehyde (1.6 billion pounds), and acetone (1.4 billion pounds).

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968

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

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	67,525,338	30,365,810	3,874,730	$0.13
MISCELLANEOUS CHEMICALS, CYCLIC				
Total	1,797,648	902,506	320,303	.35
Benzoic acid, sodium salt[2]	10,080	9,567	3,080	.32
Benzoyl peroxide	6,322	6,084	5,701	.94
4-tert-Butylpyrocatechol	730	676	1,231	1.82
2,6-Di-tert-butyl-p-cresol:				
Food grade	6,171	6,662	4,007	.60
Tech	17,161	16,875	8,985	.53
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	630	...	...	...
Flotation reagents	5,992	...	...	...
Gasoline additives[3]	16,651	13,261	11,826	.89
Hexamethylenetetramine, tech	96,803	71,212	10,705	.15
p-Hydroxybenzoic acid esters:				
Methyl p-hydroxybenzoate	636	592	906	1.53
Propyl p-hydroxybenzoate	208	212	368	1.74
Lubricating oil and grease additives, total	507,769	304,453	66,856	.22
Oil-soluble petroleum sulfonate, barium salt	26,203	...	...	...
Oil-soluble petroleum sulfonate, calcium salt	185,255	68,589	18,976	.28
Oil-soluble petroleum sulfonate, sodium salt	94,928	77,483	12,740	.16
All other	201,383	158,381	35,140	.22
4-Methylmorpholine	342	240	336	1.40
Morpholine	21,386	20,646	7,561	.37
Naphthenic acid salts, total[4 5]	27,111	24,028	6,982	.29
Calcium naphthenate	1,707	1,630	532	.33
Cobalt naphthenate	3,992	3,625	1,899	.52
Lead naphthenate	17,037	14,672	2,999	.20
Manganese naphthenate	1,757	1,594	467	.29
Zinc naphthenate	1,591	1,452	386	.27
All other	1,027	1,055	699	.66
Photographic chemicals:				
Benzotriazole	45	...	...	...
2,5-Diethoxy-4-morpholinobenzenediazonium salts	18	18	167	9.28
p-Diethylaminobenzenediazonium (p-Diazo-N,N-diethylaniline) salts	113	97	194	2.00
N,N-Diethyltoluene-2,5-diamine, monohydrochloride	363	328	1,010	3.08
p-(N-Ethylbenzimido)benzenediazonium chloride - zinc chloride	6	...	...	...
Pinene, total	120,694	64,020	6,957	.11
α-Pinene	77,712	...	...	...
β-Pinene	42,982	...	...	...
Rosin acid salts	351	...	...	...

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Tall oil salts, total[4]	8,000	8,119	2,253	$0.28
Calcium tallate	705	773	216	.28
Cobalt tallate	2,120	2,112	941	.45
Iron tallate	...	51	11	.22
Lead tallate	3,920	4,007	769	.19
Manganese tallate	967	921	234	.25
All other	288	255	82	.32
Tanning materials, synthetic, total	41,927	41,307	9,898	.23
2-Naphthalenesulfonic acid, formaldehyde condensate and salts	39,022	38,455	8,207	.21
All other	2,905	2,852	1,691	.59
Textile chemicals, other than surface-active agents	1,786	783	812	1.04
All other miscellaneous cyclic chemicals	906,353	313,326	170,468	.54
MISCELLANEOUS CHEMICALS, ACYCLIC				
Total	65,727,690	29,463,304	3,554,427	.12
Cellulose Esters and Ethers				
Total	1,125,701	340,047	135,167	.40
Cellulose esters, total	1,008,473	234,022	77,120	.33
Cellulose acetate	817,442	...	...	...
All other	191,031	234,022	77,120	.33
Cellulose ethers, total	117,228	106,025	58,047	.55
Sodium carboxymethylcellulose, 100%	59,951	58,605	24,750	.42
All other	57,277	47,420	33,297	.70
Lubricating Oil Additives				
Total	479,621	169,297	35,368	.21
Phosphorodithioates (Dithiophosphates)	102,103	32,065	10,268	.32
Sulfurized lard oil	3,400	2,874	434	.15
All other	374,118	134,358	24,666	.18
Nitrogenous Compounds				
Total[6]	11,475,227	6,275,869	753,653	.12
Acrylonitrile	1,020,957	...	...	...
Amines, total	945,431	236,026	61,583	.26
Butylamines:				
n-Butylamine, mono	1,477	1,062	457	.43
Di-n-butylamine	3,493	2,005	687	.34
Diisobutylamine	3,674	...	...	...
Diethylamine	7,045	...	...	...
1,6-Hexanediamine (Hexamethylenediamine)	649,786	...	...	...
Methylamines:				
Monomethylamine	21,682	17,844	1,799	.10
Dimethylamine	72,749	35,571	4,216	.12
Trimethylamine	19,745	14,327	1,521	.11
Propylamines:				
Mono-n-propylamine	441	122	78	.64
Diisopropylamine	3,390	2,323	557	.24
Di-n-propylamine	9,417	9,100	2,865	.31
All other	152,532	153,672	49,403	.32

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Nitrogenous Compounds--Continued				
1,1'-Azobisformamide	4,219	3,360	3,572	$1.06
2-Dimethylaminoethanol	2,830	2,016	1,007	.50
Erucamide	1,352	1,268	1,559	1.23
Ethanolamines, total	223,866	185,673	25,233	.14
2-Aminoethanol (Monoethanolamine)	73,017	61,985	8,922	.14
2,2'-Iminodiethanol (Diethanolamine)	85,140	58,305	6,716	.12
2,2',2''-Nitrilotriethanol (Triethanolamine)	65,709	65,383	9,595	.15
2-Methyllactonitrile (Acetone cyanohydrin)	484,928	...	...	...
Nitriloacids and salts, total	64,899	52,040	14,720	.28
(Ethylenedinitrilo)tetraacetic acid	3,111	993	536	.54
(Ethylenedinitrilo)tetraacetic acid, disodium salt	784	812	497	.61
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	27,972	20,686	6,551	.32
(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt	5,022	3,827	1,502	.39
All other	28,010	25,722	5,634	.22
Pentaerythritol tetranitrate	5,503	3,438	2,763	.80
Sarcosine and salt	2,546	2,013	843	.42
Stearamide	...	668	285	.43
Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2)	12,913	13,200	4,031	.31
Urea in compounds or mixtures (100% basis), total	[7] 4,871,159	4,468,125	[8] 138,153	.03
In feed compounds	565,254	554,883	16,108	.03
In liquid fertilizer	1,991,185	1,755,018	54,574	.03
In solid fertilizer	1,970,225	1,911,934	59,894	.03
All other	344,495	246,290	7,577	.03
All other nitrogenous compounds	3,834,624	1,308,042	499,904	.38
Acids, Acyl Halides and Anhydrides				
Total	5,577,038	1,114,976	167,939	.15
Acetic acid, synthetic, 100%	1,738,236	378,019	24,265	.06
Acetic anhydride, 100%	1,663,776	130,061	13,001	.10
Acrylic acid	82,453	16,459	4,467	.27
Adipic acid	1,163,399	108,578	17,981	.17
Chloroacetic acid, mono-	79,113	...	...	...
Dodecenylsuccinic anhydride	1,276	984	400	.41
Fumaric acid	43,335	40,360	6,378	.16
Gluconic acid, tech	3,950	3,884	1,188	.31
Lauroyl chloride	3,432	...	...	...
Maleic anhydride	181,748	131,335	16,202	.12
Propionic acid	38,104	20,442	1,948	.10
All other acids, acyl halides and anhydrides	578,216	284,854	82,109	.29
Salts of Organic Acids				
Total	242,707	201,694	71,621	.36
Acetic acid salts, total	29,274	28,090	6,920	.25
Ammonium acetate	1,028	845	296	.35
Copper acetate	217	192	162	.84
Potassium acetate	3,686	3,579	1,059	.30
Sodium acetate	16,510	15,734	2,573	.16

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued				
Salts of Organic Acids--Continued				
Acetic acid salts--Continued				
Zinc acetate	669	588	218	$0.37
Zirconium acetate	334	276	112	.41
All other	6,830	6,876	2,500	.36
2-Ethylhexanoic acid (α-Ethylcaproic acid) salts, total	5,772	4,956	3,184	.64
Calcium 2-ethylhexanoate	1,213	458	168	.37
Cobalt 2-ethylhexanoate	1,155	1,040	935	.90
Lead 2-ethylhexanoate	824	960	407	.42
Manganese 2-ethylhexanoate	111	121	41	.34
Zinc 2-ethylhexanoate	472	466	222	.48
All other	1,997	1,911	1,411	.74
Gluconic acid, sodium salt, tech	14,660	13,687	3,444	.25
Linoleic acid salts	237	...	...	...
Mercaptoacetic (Thioglycolic) acid, salts	2,832	2,585	3,736	1.45
Octanoic acid (Caprylic acid) salts	...	876	1,181	1.35
Oleic acid salts[9]	1,201	1,109	638	.58
Palmitic acid, aluminum salt	84	...	...	...
Polyacrylic acid salts	5,206	4,875	5,452	1.12
Propionic acid salts:				
Calcium propionate	13,693	10,227	2,235	.22
Sodium propionate	6,854	5,243	1,124	.21
Stearic acid salts, total [10]	44,716	36,941	12,628	.34
Aluminum stearates, total	5,559	3,968	1,490	.38
Aluminum distearate	4,473	3,053	1,126	.37
Aluminum monostearate	642	566	241	.43
Aluminum tristearate	444	349	123	.35
Calcium stearate	16,416	15,107	4,690	.31
Lithium stearate	503	514	244	.47
Magnesium stearate	4,279	4,384	1,629	.37
Zinc stearate	12,038	10,930	3,780	.35
All other	5,921	2,038	795	.39
All other salts of organic acids	118,178	93,105	31,079	.33
Aldehydes and Ketones				
Total	9,335,751	3,780,608	209,835	.06
Acetaldehyde	1,585,066	...	...	...
Acetone, total	1,360,603	1,014,637	49,817	.05
From isopropyl alcohol	798,902	523,702	27,459	.05
All other	561,701	490,935	22,358	.05
2-Butanone (Methyl ethyl ketone)	451,224	437,842	42,256	.10
Chloral (Trichloroacetaldehyde)	70,517	...	...	...
Formaldehyde (37% by weight)	4,304,608	1,514,004	37,273	.02
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	87,166	31,767	4,039	.13
4-Methyl-2-pentanone (Methyl isobutyl ketone)	182,090	166,852	20,565	.12
All other aldehydes and ketones	1,294,477	615,506	55,885	.09
Alcohols, Monohydric, Unsubstituted				
Total	10,296,488	4,766,950	306,147	.06
Alcohols, C_9 or lower, unmixed, total	9,661,996	4,316,039	241,957	.06
Butyl alcohols:				
n-Butyl alcohol (n-Propylcarbinol)	432,597	251,500	23,816	.09

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value [1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Alcohols, Monohydric, Unsubstituted--Continued				
Alcohols, C_9 or lower, unmixed--Continued				
Butyl alcohols--Continued				
Isobutyl alcohol (Isopropylcarbinol)	108,609	79,748	5,300	$0.07
Ethyl alcohol, synthetic [11]	2,126,762	1,246,515	73,540	.06
2-Ethyl-1-hexanol	386,951	176,135	21,776	.12
Hexyl alcohol	13,956	5,280	648	.12
Iso-octyl alcohols	132,397	80,381	9,740	.12
Isopropyl alcohol	2,074,205	794,783	47,159	.06
Methanol, synthetic	3,817,382	1,490,403	39,438	.03
1-(and 2-)Octanol	21,480	8,896	1,762	.20
All other	547,657	182,398	18,778	.10
Alcohols, C_{10} and higher, unmixed, total	223,600	106,211	18,860	.18
Decyl alcohols	152,523	51,153	6,309	.12
1-Hexadecanol and other hexadecyl alcohols	6,888	5,545	1,450	.26
All other	64,189	49,513	11,101	.22
Mixtures of alcohols, total	410,892	344,700	45,330	.13
C_9 and lower, only	47,537	34,599	4,342	.13
C_{10} and higher, only	286,603	230,982	30,268	.13
C_6 to C_{12} and others	[12] 76,752	79,119	10,720	.14
Polyhydric Alcohols and Their Esters and Ethers				
Total	4,729,787	3,743,491	451,464	.12
Polyhydric alcohols, total	3,030,543	2,436,896	246,489	.10
Ethylene glycol	2,042,846	1,627,336	109,041	.07
Pentaerythritol	92,431	80,561	17,810	.22
Propylene glycol (1,2-Propanediol)	352,876	333,055	31,076	.09
Sorbitol	84,089	71,300	13,872	.19
All other	458,301	324,644	74,690	.23
Polyhydric alcohol esters	171,226	181,028	37,262	.21
Polyhydric alcohol ethers, total	1,528,018	1,125,567	167,713	.15
2-Butoxyethanol (Ethylene glycol monobutyl ether)	88,017	81,934	13,764	.17
Diethylene glycol	225,801	143,309	11,752	.08
Dipropylene glycol	38,818	33,249	3,608	.11
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	...	58,363	8,933	.15
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	37,395	27,906	4,494	.16
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	...	5,598	760	.14
2-Methoxyethanol (Ethylene glycol monomethyl ether)	137,358	85,342	12,579	.15
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	14,258	6,929	1,124	.16
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	16,298	...	...	...
Polyethylene glycol	45,181	41,698	9,529	.23
Polypropoxy ethers, total	367,145	317,498	48,117	.15
Glycerol tri(polyoxypropylene) ether	220,460	208,348	30,963	.15
All other	146,685	109,150	17,154	.16
Polypropylene glycol	195,858	169,189	25,892	.15
Triethylene glycol	73,076	57,698	9,016	.16
All other ethers of polyhydric alcohols	288,813	96,854	18,145	.19

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Esters of Monohydric Alcohols				
Total	2,167,142	988,363	177,084	$0.18
n-Butyl acetate, unmixed	63,174	63,296	7,463	.12
Butyl acrylate	44,224	38,158	7,678	.20
Dibutyl fumarate	6,282	5,154	950	.18
Dibutyl maleate	10,719	...	...	...
Dilauryl 3,3'-thiodipropionate	1,348	1,473	1,345	.91
Dioctyl maleate	2,690	2,429	489	.20
Distearyl 3,3'-thiodipropionate	702	708	715	1.01
Ethyl acetate, 85%	179,389	146,936	13,211	.09
Ethyl acrylate	165,155	58,304	11,217	.19
2-Ethyl-1-hexyl acrylate	32,712	25,778	6,504	.25
Isobutyl acrylate	3,361	2,159	454	.21
Iso-octyl mercaptoacetate	3,241	2,936	1,752	.60
Isopropyl acetate	...	42,038	4,533	.11
Methyl methacrylate	404,586	...	...	...
Phosphorus acid esters, not elsewhere specified	36,674	25,063	13,048	.52
Vinyl acetate	718,149	248,275	26,391	.11
All other	494,736	325,656	81,334	.25
Halogenated Hydrocarbons				
Total	13,796,111	5,794,615	584,748	.10
Carbon tetrachloride	763,425	647,754	36,981	.06
Chlorinated paraffins	57,607	58,780	7,379	.13
Chlorodifluoromethane	...	55,010	32,752	.60
Chloroethane (Ethyl chloride)	573,140	258,189	17,035	.07
Chloroform	180,795	139,882	9,818	.07
Chloromethane (Methyl chloride)	305,253	139,253	8,223	.06
Chlorotrifluoromethane	...	144	624	4.33
Dichlorodifluoromethane	325,625	302,159	79,597	.26
1,2-Dichloroethane (Ethylene dichloride)	4,798,735	491,564	17,038	.03
Dichloromethane (Methylene chloride)	302,631	288,115	22,453	.08
1,2-Dichloropropane (Propylene dichloride)	...	30,400	845	.03
Dichlorotetrafluoroethane	...	17,333	8,809	.51
Iodomethane (Methyl iodide)	19	18	52	2.89
Tetrachloroethylene (Perchloroethylene)	636,484	502,685	34,328	.07
1,1,1-Trichloroethane (Methylchloroform)	299,406	288,122	31,766	.11
Trichloroethylene	519,145	527,571	38,146	.07
Trichlorofluoromethane	204,418	175,656	33,165	.19
Vinyl chloride, monomer (Chloroethylene)	2,968,897	1,463,069	66,930	.05
All other halogenated hydrocarbons	1,860,531	408,911	138,807	.34
All Other Miscellaneous Acyclic Chemicals				
Total	6,502,117	2,287,394	661,401	.29
2-Butanone peroxide	2,405	2,241	2,761	1.23
tert-Butyl peroxide (Di-tert-butyl peroxide)	1,098	1,305	1,344	1.03
Carbon disulfide	792,597	568,744	25,094	.04
Epoxides, ethers, and acetals:				
Epichlorohydrin	...	75,024	14,063	.19
Ethylene oxide	2,625,231	393,522	30,481	.08
Ethyl ether, all grades	100,137	83,287	6,516	.08
Isopropyl ether	...	6,108	594	.10
Methyl ether (Dimethyl ether)	12,645	...	...	...
Propylene oxide	957,853	89,959	8,244	.09
Lauroyl peroxide	2,065	2,050	1,816	.89
Organo-silicon polymers	48,277	44,729	70,659	1.58
Phosgene (Carbonyl chloride)	446,586	...	...	...

See footnotes at end of table.

TABLE 1.--Miscellaneous chemicals: U.S. production and sales, 1968--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
All Other Miscellaneous Acyclic Chemicals--Continued				
Sodium formaldehyde sulfoxylate	S,542	4,87S	1,160	$0.24
Sodium methoxide (Sodium methylate)	6,037	5,253	1,338	.2S
Tetraethyllead	48S,208	482,134	249,142	.S2
Tetramethyllead[13]	115,537	116,181	49,17S	.42
Tetra(methyl-ethyl)leads	304,295	294,801	1S6,713	.S3
Zinc formaldehyde sulfoxylate	89S	761	312	.41
All other	59S,709	116,420	41,989	.36

[1] Calculated from rounded figures.
[2] Compared with revised 1967 statistics for production of 12,600,000 pounds and sales of 10,200,000 pounds, valued at $3,100,000.
[3] Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given in the "Plasticizers" report.
[4] Quantities are given on the basis of solid naphthenate, tallate, or linoleate content.
[5] Statistics exclude production and sales of copper naphthenate. Statistics on copper naphthenate are given in the "Pesticide and Related Products" report.
[6] Statistics exclude production and sales of fatty amines. Statistics on fatty amines are given in the "Surface-Active Agents" report.
[7] Production of urea in primary solution totaled 4,872,81S thousand pounds.
[8] Includes estimated values for sales of urea in nitrogen compounds.
[9] Statistics exclude production and sales of potassium and sodium oleate. Statistics on these oleates are included in the "Surface-Active Agents" report.
[10] Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included in the "Surface-Active Agents" report.
[11] Statistics on production of ethyl alcohol from natural sources by fermentation are issued by the Alcohol Tax Unit, U.S. Internal Revenue Service.
[12] Of the total production, over 55% consisted of alcohols lower than C_{10} and less than 45% consisted of alcohols higher than C_{10}.
[13] Includes production and sales for use in synthesis of tetra(methyl-ethyl)leads.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968

[Miscellaneous chemicals for which separate statistics are given in table 1 are marked with an asterisk (*); chemicals not so marked do not appear in table 1 because the reported data are accepted in confidence and may not be published. Manufacturers' identification codes shown below are taken from the Appendix, tables 1 and 2. An x signifies that the manufacturer did not consent to his identification with the designated product.]

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC	
Acetylcyclohexanesulfonyl peroxide	WTL.
Adenosine phosphates	PLB.
2-Aminobenzothiazole	FMT.
1-(2-Aminoethyl)piperazine	JCC, UCC.
1-(3-Aminopropyl)morpholine	JCC.
Amyl p-dimethylaminobenzoate	VND.
o-Anisaldehyde	ASL.
Anisaldehyde bisulfite	GIV, SHL.
Arylalkyl phosphites	WES.
*Benzoic acid, sodium salt	HN, MON, PFZ, VEL.
p-Benzoquinone (p-Quinone)	EKT.
Benzothiazole	ACY.
*Benzoyl peroxide	AZT, CAD, NOC, RCI, UPR, WTL.
Benzyltrimethylammonium chloride	COM.
Biological stains	ACS, EK.
Bis-aminopropylpiperazine	JCC.
Bis(2,4-dichlorobenzoyl) peroxide	CAD, WTL.
2,4-Bis(4-hydroxy-3,5-di-tert-butyl-phenoxy)-6-(n-octylthio)-1,3,5-triazine.	GGY.
Bis(2-hydroxypropoxyphenyl)methane	JCC.
2,4-Bis(n-octylthio)-6-(4'-hydroxy-3',5'-di-tert-butylanilino)-1,3,5-triazine.	GGY.
Boron fluoride-phenol complex	ACS.
4-Bromoacetoxymethyl-m-dioxolane	EFH.
Butyl benzoate	FRO, TCC, VEL.
p-tert-Butylbenzoic acid, barium bis-salt	CCA.
2(and 3)-tert-Butyl-4-methoxyphenol	EKT.
tert-Butyl peroxybenzoate	AZT, WTL.
4-tert-Butylphenyl salicylate	DOW.
*4-tert-Butylpyrocatechol	BKL, CTN, DOW.
Camphene	GLC, HPC.
Catecholsulfonic acid, sodium salt	ICO.
Cellulose acetate phthalate	x.
Centralite-1 (N,N'-Diethyl-N,N'-diphenylurea)	OTC, PAS.
Chemical indicators	ACS, EK, FIN, LAM.
Chemical reagents	ACS, ARA, CLB, EK, GFS, LAM, PIC.
Chloramine B (Sodium derivative of N-chlorobenzenesulfonamide).	NES.
1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride.	DOW.
o-Chlorobenzamalononitrile	NCA.
5-Chloro-2-hydroxybenzophenone	DOW.
Chlorophyllin, sodium-potassium-copper	KCH.
Cobalt phthalocyaninedisulfonate	ACS.
Cumene hydroperoxide	HPC, RCI.
Cyanuric acid	FMB.
1,3-(and 1,4-)Cyclohexadiene	ALD.
Cyclohexanone peroxide	AZT, CAD, NOC, WTL.
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid) disubstituted, polyester salts: Barium and cadmium salts.	RCI.
Cyclohexene	EK.
Cyclohexenone and cyclopentenone	ALD.
1,4-Cyclohexylenedimethanol	EKT.
Cyclopropane	OH, OMS, TAE.
Cytidine and derivatives	PLB.
Decahydronaphthalene (Decalin)	DUP.
Decyl diphenyl phosphite	x.
Dehydroacetic acid, sodium salt	GAN.
Diaminohexanitrobiphenyl	NCA.
Diaminotrinitrobenzene	NCA.
2,5-Di-tert-amylhydroquinone	CTN, EKT.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Di-tert-amylphenyl hydrogen phosphate	SM.
1,4-Diazabicyclo(2.2.2)octane	HOU.
Diazodinitrophenol	HPC.
Dibromodimethylhydantoin	ARA.
2,6-Di-tert-butyl-p-cresol:	
*Food grade	ASH, EKT, HPC, KPT, PRD, SHC.
*Tech	ASH, EKT, HPC, KPT, MON, PRD, SHC.
2,5-Di-tert-butylhydroquinone	EKT.
Di-tert-butyl diperoxyphthalate	WTL.
1,3-Dichloro-5,5-dimethylhydantoin	GLY.
Dichloro-s-triazine-2,4,6(1H,3H,5H)trione (Dichloroisocyanuric acid), and salts.	FMB, MON.
4,4'-Dichloro-3-trifluoromethylcarbonalide	GGY.
Dicyclohexylammonium nitrite	OMC.
Diethylamine salt of octylphenyl (and butoxyethyl) acid phosphate.	SM.
Diethylcarbamyl chloride	ICO.
Digitonin	PEN.
2,4-Dihydroxybenzophenone	DUP.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone	GAF.
3,5-Dihydroxy-3,5-dimethyl-1,2-peroxycyclopentane	WTL.
2,6-Dihydroxyisonicotinic acid (2,6-Dihydroxy-4-carboxypyridine).	EK.
2,2'-Dihydroxy-4-methoxybenzophenone	ACY.
2,2'-Dihydroxy-4-(octadecyloxy)benzophenone	ACY.
3,5-Diiodosalicylic acid	NRT.
Diisopropylbenzene hydroperoxide	HPC.
Diisopropyl-m,p-cresols	GIV.
* p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	ASL, EKT, GAF, UOP.
2,5-Dimethyl-2,5-di(benzoylperoxy)hexane	WTL.
2,6-Dimethylmorpholine	DOW.
4,4-Dinitrocarbanilide-4,6-dimethyl-2-pyrimidinol	MRK.
Di-n-octadecyl-3,5-di-tert-butyl-4-hydroxyphenyl phosphonate.	GGY.
Dioxane (1,4-Diethylene oxide)	DOW, UCC.
Dioxin	GIV.
2,5-Diphenyl-p-benzoquinone	EKT.
Dipropylene glycol salicylate	SBC.
Dithioammilide, monoethanolamine salt	ACY.
4-(Dodecyloxy)-2-hydroxybenzophenone	DUP, EKT.
Enzymes:	
Hydrolytic:	
Amylases	BAX, CRN, NLS, OMS, PMP, RH, SBO, WBC.
Proteases	BAX, NLS, PFZ, PMP, WBC.
Other	BAX, NLS, RH, WBC.
Nonhydrolytic	NLS, PLB, WBC.
2-Ethoxyethyl p-methoxycinnamate	GIV.
Ethyl cellulose phthalate	EK.
Ethylenediaminedi(o-hydroxyphenylacetic acid), ferric sodium salt.	GGY.
4-Ethylmorpholine	BRD, JCC.
*Flotation reagents:	
Dicresylphosphorodithioic acid (Dicresylthiophosphoric acid).	ACY.
Dicresylphosphorodithioic acid, ammonium salt	ACY.
Dicresylphosphorodithioic acid, sodium salt	KCU.
2,2'-Dimethylthiocarbanilide (Di-o-tolylthiourea)	DUP, RBC.
Rosin amines	HPC.
Thiocarbanilide (Diphenylthiourea)	ACS, ACY.
Other	UCC.
Fluorinated benzenoid chemicals	PIC.
Furan derivatives:	
2-Furaldehyde (Furfural)	QKO.
Tetrahydrofurfuryl alcohol	QKC.
Gallic acid	MAL.
*Gasoline additives:	
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	EKT.
6-tert-Butyl-o-cresol	TNA.
tert-Butylphenols, mixed	TNA.
2,6-Di-tert-butylphenol	SHC,TNA.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Gasoline additives--Continued	
N,N'-Di-sec-butyl-o-phenylenediamine	x.
N,N'-Di-sec-butyl-p-phenylenediamine	DUP, EKT.
2,6-Di-tert-butyl-p-benzoquinone	TNA.
2,6-Di-tert-butyl-α-dimethylamino-p-cresol	TNA.
2,6-Diethylaniline	TNA.
N,N'-Diisopropyl-p-phenylenediamine	DUP, x.
N,N'-Disalicylidene-1,2-propanediamine	DUP, EKT, TX.
Methylcyclopentadienylmanganese tricarbonyl	TNA.
4,4'-Methylenebis(2,6-di-tert-butylphenol)	SCH, TNA.
4,4'-Thiobis(6-tert-butyl-o-cresol)	TNA.
2,2'-Thiobis(6-tert-butyl-p-cresol)	ASH.
1,3,5-Tris(3,5-di-tert-butyl-4-hydroxybenzyl)mesitylene	TNA.
Other	DUP, EKT, TNA, UPM.
Glyceryl p-aminobenzoate	VND.
Glyceryl tribenzoate	VEL.
Guanosine phosphates	PLB.
*Hexamethylenetetramine, tech	BOR, DUP, HKD, HMP, HN, PLS.
Hexanitrostilbene	NCA.
Hydrindantin	HEX.
o-(2-Hydroxy-p-anisoyl)benzoic acid	ACY.
p-Hydroxybenzoic acid esters:	
Benzyl p-hydroxybenzoate	LEM.
Butyl p-hydroxybenzoate (Butylparaben)	HN, ICO, LEM.
Ethyl p-hydroxybenzoate (Ethylparaben)	HN, LEM.
n-Heptyl p-hydroxybenzoate (Heptylparaben)	WSN.
*Methyl p-hydroxybenzoate (Methylparaben)	HN, ICO, LEM, PYL, WSN.
*Propyl p-hydroxybenzoate (Propylparaben)	HN, ICO, LEM, WSN.
Other	HN.
Hydroxyethylpiperazine	UCC.
2-Hydroxy-4-methoxybenzophenone	ACY, GAF.
2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate	ACY.
Hydroxymethyl-5,5-dimethylhydantoin	GLY.
2-Hydroxy-4-n-octoxybenzophenone	ACY.
Hydroxyphenylbenzotriazole derivatives	EK, GGY.
2-Hydroxypropyl p-(N,N-bis-2-hydroxypropylamino)benzoate	SHL.
1-Hydroxy-2-pyridine (Omadine)	OMC.
2-Imidazolidinethione (1,3-Ethylene-2-thiourea)	PAS.
1,2,3-Indantrione monohydrate (Ninhydrin)	HEX.
Inosine phosphates	PLB.
Isobutyl vinyl ether - toluene, xylene polymers	GAF.
Isocyanuric acid	MON.
p-Isopropyl-α-methylcinnamaldehyde	GIV.
Ketene dimer	EKT.
*Lubricating oil and grease additives:	
Chlorosulfurized and sulfurized compounds:	
Heterocyclic compounds, sulfurized	ORO.
Tall oil ester, sulfurized	LUB.
Terpenes, sulfurized	LUB.
Other	HK, LUB.
Oil-soluble petroleum sulfonates:	
Oil-soluble petroleum sulfonate, ammonium salt	SIN.
*Oil-soluble petroleum sulfonate, barium salt	CO, LUB, TX, x.
*Oil-soluble petroleum sulfonate, calcium salt	CO, ENJ, LUB, ORO, SHO, TX, WTC, x.
Oil-soluble petroleum sulfonate, magnesium salt	CO.
*Oil-soluble petroleum sulfonate, sodium salt	CO, ENJ, MOR, PAR, SHO, SOC, SOI, TX, WTC.
Phenol salts:	
Barium salt of nonylphenol	ENJ, CCA.
Calcium salt of octylphenol-formaldehyde	SHC.
Other	ENJ, GOC, LUB, MON, ORO, SIN, TX, x.
All other	ENJ, LUB, MON, ORO, SIN, x.
Maleic anhydride half esters, vinyl ether copolymers	GAF.
p-Menthane	HPC.
8-p-Menthyl hydroperoxide	HN, HPC.
p-Methoxybenzylidenemalonic acid, dimethyl ester	ACY.
4-Methoxyphenol	ASL, CTN, EKT.
2-Methylcyclohexanol	EKT.
Methyl cyclopropanecarboxylate	NEP.
2,2'-Methylenebis(4-chlorophenol) (Dichlorophene)	GIV.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968-- Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Methylenebis(5,5-dimethylhydantoin)	GLY.
2,2'-Methylenebis(3,4,6-trichlorophenol) (Hexachlorophene)	GIV.
Methyl gallate	HSH.
Methylglucoside	CRN, PFN.
* 4-Methylmorpholine	BRD, JCC, UCC.
Methyl phenyl phosphates	TNA.
1-Methyl-2-pyrrolidone, monomer	GAF.
* Morpholine	DOW, JCC, UCC.
Morpholine salt of p-toluenesulfonic acid	AMB.
* Naphthenic acid salts:	
Aluminum naphthenate	HSH, WTC.
Barium naphthenate	CCA.
Cadmium naphthenate	CCA.
* Calcium naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SW, TRO, WTC.
Cerium naphthenate	SHP.
Cobalt lead manganese naphthenate	HNX, HSH.
* Cobalt naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SW, TRO, WTC.
Iron naphthenate	CCA, CCC, HNX, HSH, MCI, WTC.
Lead manganese naphthenate	CCA.
* Lead naphthenate	CCA, CCC, CCW, FER, HNX, HSH, MCI, SHP, SW, TRO, TX, WTC.
Lithium naphthenate	CCA, MCI.
* Manganese naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SW, TRO, WTC.
Nickel naphthenate	CCA.
Rare earths naphthenate	CCA.
Sodium naphthenate	CCA.
Strontium naphthenate	CCA.
* Zinc naphthenate	CCA, CCC, FER, HNX, HSH, MCI, SHP, SW, TRO, WTC.
o-Nitrobenzoic acid and sodium salt	WAY.
5-Norbornen-2-ylmethyl acrylate (Bicyclo(2.2.1)hept-5-ene-2-methylol acrylate).	ICO.
Octadecyl 3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate	GGY.
Organic mercury compounds: Phenylmercuric borate	TRO.
Pentaerythritol tetrabenzoate	VEL.
Phenolthiosulfonic acid	GAF.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	DOW, JCC.
2-(2-Phenoxyethoxy)ethanol (Diethylene glycol phenyl ether)	DOW.
2,2'-(p-Phenylene)diethanol	EKT.
m-Phenylene isonaphthalamide	DUP.
Phenyl hydrogen phosphate	HDG, SM.
5-Phosphonylribose-1-pyrophosphate, magnesium salt	PLB.
Photographic chemicals:	
N-(o-Acetamidophenethyl)-1-hydroxy-2-naphthamide	EKT.
2-(4-Amino-N-ethyl-m-toluidino)ethyl sulfate	EKT.
3-Amino-1,2,4-triazole	FMT.
* Benzotriazole	EK, FMT, MEE, MRT.
p-Benzylaminophenol hydrochloride	EK.
3-Chloro-4-diethylaminobenzenediazonium salts (p-Diazo-2-chloro-N,N-diethylaniline salts).	ESA, FMT.
Chlorohydroquinone	EK.
2,4-Diaminophenol dihydrochloride (Amidol)	VPC.
2,5-Dibutoxy-4-morpholinobenzenediazonium salts	ESA, FMT.
* 2,5-Diethoxy-4-morpholinobenzenediazonium salts	ESA, FMT, GAF, IDC.
2,5-Diethoxy-4-thiocresoldiazonium salts	FMT.
* p-Diethylaminobenzenediazonium (p-Diazo-N,N-diethylaniline) salts.	ESA, FMT, GAF, IDC, MRT.
N,N-Diethyl-p-phenylenediamine hydrochloride	EKT, FMT.
* N,N-Diethyltoluene-2,5-diamine, monohydrochloride	EKT, FMT, IDC.
2,5-Dihydroxy-p-benzenedisulfonic acid salts	x.
2,5-Dihydroxybenzenesulfonic acid	EK.
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline) - zinc chloride.	ESA, FMT, IDC.
4-(2',6'-Dimethylmorpholinyl)benzenediazonium chloride - zinc chloride.	IDC.
p-Diphenylaminediazonium sulfate	FMT.
* p-(N-Ethylbenzimido)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylaniline) - zinc chloride.	ESA, FMT, MRT.
p-(Ethyl(2-hydroxyethyl)amino)benzenediazonium chloride (p-Diazo-N-ethyl-N-hydroxyethylaniline) - zinc chloride.	ESA, FMT, IDC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Photographic chemicals--Continued	
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	IDC.
N-Ethyl-N-(α- methanesulfonamidoethyl)toluene-2,5-diamine sulfate.	EKT.
Hydroquinone (Hydroquinol)	EKT.
p-((2-Hydroxyethyl)methylamino)benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline) - zinc chloride.	ESA, FMT.
1-(3-Hydroxyphenyl)urea	FMT.
4-Methoxy-1-naphthol	x.
p-Methylaminophenol sulfate	EK.
5-Methylbenzotriazole	EK, FMT.
4-Methyl-1-phenyl-3-pyrazolidinone	WAY.
4-Morpholinylbenzenediazonium salts	FMT.
6-Nitrobenzimidazole	EK, FMT.
Octylphenyl salicylate	EKT.
Phenyl-5-mercaptotetrazole	CFC, FMT.
1-Phenyl-3-pyrazolidinone	GGY, WAY.
4-Phenylpyrocatechol	x.
Polyvinyl cinnamate	WAY.
2-Resorcylic monoethanolamide	FMT.
4,4'-Thiodiresorcinol (Diresorcyl sulfide)	BKC.
1-(2,4,6-Trichlorophenyl)-3-(4-nitroanilino)-2-pyrazolin-5-one.	FKT.
All other	EKT, FMT, IDC, x.
Phthalic acid, lead salt, dibasic	NTL.
Picramic acid, sodium salt	SDC.
Picric acid, sodium salt	NCA.
*Pinene (α- and β-)	ARZ, CBY, GLD, HN, HPC, NCI.
Piperazine, ethoxylated	GAF.
Piperonal, sodium bisulfite complex	SHL.
Polyethylene terephthalate	DUP, EK.
Polyvinyl phthalate	EK.
Propyl gallate	EKT, HN, HSH.
Pyrogallol (Pyrogallic acid)	HSH, MAL.
Resorcinol monobenzoate	EKT.
*Rosin acid salts:	
Aluminum resinate	JMS.
Calcium resinate	JMS, SW.
Cobalt manganese resinate	JMS.
Copper resinate	JMS.
Iron resinate	HSH, JMS.
Lead resinate	JMS.
Manganese resinate	JMS, WVA.
Zinc resinate	JMS, SW.
Salicylanilide	DUP, FIN, LEM, PCW.
Salicylic acid, lead salt	MRK, NTL.
Sodium cresoxide (Cresylic acid, sodium salt)	DEX, GOC.
Sucrose benzoate	VEL.
Sulfosalicylic acid	LEM, MON, MRK.
*Tall oil salts (Linoleic-rosin acid salts):	
Calcium manganese tallate	MCI.
*Calcium tallate	CCA, CCC, HNX, HSH, MCI, TRO, WTC.
*Cobalt tallate	CCA, CCC, FER, HNX, MCI, SHP, TRO, WTC.
Copper tallate	CCA, MCI, SHP.
*Iron tallate	CCA, MCI, MLD, SHP, WTC.
Lead manganese tallate	HSH, MCI.
*Lead tallate	CCA, CCC, FER, HNX, HSH, MCI, SHP, TRO, WTC.
*Manganese tallate	CCA, CCC, FER, HNX, HSH, MCI, TRO, WTC.
Zinc tallate	HSH, MCI.
Tannic acid	HSH, MAL.
*Tanning materials, synthetic:	
Hydroxytoluenesulfonic acid, formaldehyde condensate (Cresol-formaldehyde sulfonate), sodium salt.	GGY.
*2-Naphthalenesulfonic acid, formaldehyde condensate and salts.	AKS, DA, GRD, RH, TCD.
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated).	RH.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Tanning materials, synthetic--Continued	
Styrene maleic anhydride interpolymer, partial sodium salt.	DUP.
Sulfonyldiphenolsulfonic acid, formaldehyde condensate	GAF.
All other	AKS, GGY.
2,3,5,6-Tetrachloro-4-(methylsulfonyl)pyridine	DOW.
1,2,3,4-Tetrahydronaphthalene (Tetralin)	DUP, UCC.
Tetrahydrothiophene	ORO, PAS.
Tetrahydrothiophene-1,1-dioxide (Sulfolane)	PLC.
Tetrakis(methylene-3-(3',5'-di-tert-butyl-4'-hydroxyphenol)propionate)methane.	GGY.
Tetranitrocarbazole	SDC.
Tetraphenyltin	x.
*Textile chemicals, other than surface-active agents:	
1,3-Bis(hydroxymethyl)-2-imidazolidone (Dimethylolethylene urea).	ACY, AKS.
4-Decyloxy-2-hydroxybenzophenone	GAF.
N^1,N^4-Diphenyl-1,2-propanediamine	SNW.
1-((Octadecyloxy)methyl)pyridinium chloride	DUP.
Phenol, sulfurated	GAF.
Tetrahydro-3,5-bis(methoxymethyl)-4H-1,3,5-oxadiazin-4-one (1,3-Bis(methoxymethyl)uron).	x.
2,2',4,4'-Tetrahydroxybenzophenone	GAF.
All other	CIB. x.
2,2'-Thiobis(4-chlorophenol)	CIV.
2,2'-Thiobis(4,6-dichlorophenol)	SLH.
(2,2'-Thiobis(4-octylphenolate))-n-butylamine nickel	ACY.
Thiophene	PAS.
o-Toluidine formaldehyde hydrochloride	RHC.
o-Tolylbiguanide	MON.
Triallyl cyanurate	ACY.
Triaryl phosphites	WES.
Tribenzylamine	RPC.
3,4',5-Tribromosalicylanilide	DOW, FIN, MEE.
3,4',5-Tribromosalicylanilide and dibromosalicylanilide mixtures.	FIN.
3,4,4'-Trichlorocarbanilide	MON.
Trichloromelamine	WTH.
1,3,5-Trichloro-s-triazine-2,4,6(1H,3H,5H)trione (Trichloroisocyanuric acid).	MON.
Tri-(m,p)-cresyl borate	USB.
Tricyclohexyltin hydroxide	x.
Trimethylaminoethylpiperazine	JCC.
3,5,5-Trimethyl-2-cyclohexen-1-one (Isophorone)	ENJ, UCC.
2,4,6-Trinitroresorcinol, lead derivative	RFM.
s-Trioxane	CEL.
Triphenylphosphine	CCW, x.
Triphenyl phosphite	HK, MON.
Triphenyl sulfonium chloride mixtures	FIS.
Triphenyltin	x.
Tris(1-aziridinyl)phosphine oxide	DOW.
Uridine derivatives	PLB.
1-Vinyl-2-pyrrolidinone, monomer and polymer	GAF.
1-Vinyl-2-pyrrolidinone - acrylamide copolymer	GAF.
1-Vinyl-2-pyrrolidinone - vinyl acetate copolymer	GAF.
1-Vinyl-2-pyrrolidinone - other copolymers	GAF.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC	
Cellulose Esters and Ethers	
*Cellulose esters:	
*Cellulose acetate	AV, CEL, DUP, EKT.
Cellulose acetate butyrate	EKT.
Cellulose acetate propionate	EKT.
Cellulose propionate	CEL.
Nitrocellulose (Cellulose nitrate)	DUP, HPC.
All other	UCC.
*Cellulose ethers:	
Ethylcellulose	DOW, x.
Ethylhydroxyethylcellulose	HPC.
Hydroxyethylcellulose	HPC, UCC.
Hydroxypropylcellulose	x.
Methylcellulose	DOW.
*Sodium carboxymethylcellulose, 100%	BUK, DUP, HPC, KON, UCC, WMP, WYN.
Sodium carboxymethylhydroxyethylcellulose	HPC.
All other	KCH, UCC.
Lubricating Oil Additives	
Chlorosulfurized lard oil	CCW.
Chlorosulfurized sperm oil	CCW.
*Phosphorodithioates (Dithiophosphates):	
Zinc di(butylhexyl) phosphorodithioate	ORO.
Zinc dihexyl phosphorodithioate	MON, SIN.
All other	ENJ, LUB, MON, SIN, x.
Sulfurized butenes	LUB.
*Sulfurized lard oil	CCW, GOC, NLC, WBG.
Sulfurized sperm oil	CCW, LUB, QCP, SIN.
All other	ALX, CCW, ENJ, GOC, HK, LUB, MON, ORO, SIN, SOI, TX.
Nitrogenous Compounds	
Acetamidine hydrochloride	MRK.
Acetamidoethanol (N-Acetyl-ethanolamine)	ALB, RBC.
Acetonitrile	EKX, SOH, UCC.
*Acrylonitrile	ACY, BFG, DUP, MON, SOH, UCC.
Adiponitrile	DUP, MON.
Allyl-sec-butylcyanoacetic acid, ethyl ester	SDW.
1-Allyl-3-(2-hydroxyethyl)-2-thiourea	FMT, IDC.
Allyl isocyanate	CWN.
Allyl isothiocyanate, non-flavor grade	ICO.
*Amines:	
Allylamines	SHC.
n-Butylamines:	
*n-Butylamine, mono-	EKT, PAS, UCC, VGC.
*Di-n-butylamine	PAS, UCC, VGC.
Tri-n-butylamine	PAS, VGC.
tert-Butylamine, mono-	MON, RH.
n-Butylethylamine	PAS.
n-Butylmethylamine	UCC.
Diethylenetriamine	DOW, JCC, UCC.
N,N-Diethylethylenediamine	CBP, PD.
N^1,N^1-Diethyl-1,4-pentanediamine (Novoldiamine)	SDH.
Diethylaminopropylamine	UCC.
N,N-Dimethyl-1,3-propanediamine	ARC, JCC.
Dimethylaminopropylamine	UCC.
Dipropylenetriamine	UCC.
Ethylamines:	
*Diethylamine	DUP, ESC, PAS. UCC.
Diethylamine hydrochloride	BKL, EK.
Ethylamine, mono-	ESC, PAS, UCC.
Triethylamine	ESC, PAS, UCC.
Ethylenediamine	DOW, JCC, UCC.
Ethylenediamine sulfate	EK.
(2-Ethylhexyl)amine, mono-	VGC.
*1,6-Hexanediamine (Hexamethylenediamine)	CEL, DUP, ELP, MON.
n-Hexylamine	VGC.
3,3'-Iminobispropylamine	JCC, UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
*Amines--Continued	
Isobutylamines:	
*Diisobutylamine	PAS, UCC, VGC.
Isobutylamine, mono-	PAS.
Isopropylamines:	
*Diisopropylamine	ESC, PAS, UCC, VGC.
Isopropylamines, mono-	ESC, PAS, UCC, VGC.
Methylamines:	
*Dimethylamine	COM, DUP, ESC, GAF, PAS, RH.
Dimethylamine hydrochloride	CFC, EK.
Dimethylamine sulfate	RH.
*Methylamine, mono-	COM, DUP, ESC, GAF, PAS, RH.
Methylamine hydrochloride	RBC.
*Trimethylamine	COM, DUP, ESC, GAF, PAS, RH.
n-Octylamine, mono-	VGC.
Pentaethylenehexamine	DOW.
Pentylamines (Amylamines):	
Dipentylamine	PAS, VGC.
Pentylamine, mono-	ALB, PAS.
Tripentylamine	PAS.
1,2-Propanediamine (Propylenediamine)	UCC.
1,3-Propanediamine (1,3-Diaminopropane)	JCC.
*Propylamines:	
*Dipropylamine	ESC, PAS, UCC, VGC.
*Propylamine, mono-	ESC, PAS, UCC, VGC.
Tripropylamine	UCC.
Tetraethylenepentamine	DOW, JCC, UCC.
N,N,N',N'-Tetramethyl-1,3-butanediamine	UCC.
Tetramethylethylenediamine	RH.
Triethylenetetramine	DOW, UCC.
Other amines	ALB, ALD, DUP, EK, GNM, JCC, NES, NLC, UCC.
2-Amino-1-butanol	ACY, COM.
2-Aminoethanethiol (2-Mercaptoethylamine) hydrochloride	EVN.
1-Aminoethanol (Acetaldehyde ammonia)	PAS.
2-Aminoethanol (Monoethanolamine) hydrochloride	WSN.
2-Aminoethanol (Monoethanolamine) sulfite	EVN, SUM.
Aminoethoxyethanol	JCC.
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	DOW, HDG, JCC, UCC.
2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate.	EVN, HAB.
2-Amino-2-ethyl-1,3-propanediol	COM.
Aminoguanidine bicarbonate	COM.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris-(hydroxymethyl)aminomethane).	COM.
2-Amino-2-methyl-1,3-propanediol	COM.
2-Amino-2-methyl-1-propanol	COM.
2-Amino-1-propanol	LIL.
3-Amino-1-propanol	UCC.
*1,1'-Azobisformamide	FMT, NPI, USR.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyronitrile).	DUP.
N,N-Bis(2-hydroxyethyl)-2-stearamidomethoxy)ethylamine	CIB.
1,3-Bis(hydroxymethyl)urea (Dimethylolurea)	GLY, x.
Bis(trimethylsilyl)acetamide	ALD, PIC.
N-Bromoacetamide	ARA.
N-Bromosuccinimide (Succinibromimide)	ARA, SDW.
2,3-Butanedione monoxime	EK.
2-Butanone oxime	ACP, CCA.
Butyl isocyanate	CWN, UPJ.
tert-Butylurea	BKL.
Butyraldehyde oxime	ACP.
n-Butyronitrile	EKX.
Caprolactam (2-Oxohexamethylenimine)	ACP, CNP, DBC, UCC.
Chloroacetamide	BPC.
Chloroacetonitrile	BPC.
Chlorocholine chloride	ACY.
2-Chloro-N,N-dimethylethylamine (Dimethylaminoethyl chloride) hydrochloride.	CTN, HEX, MCH, MRK, x.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
3-Chloro-N,N-dimethylpropylamine	SK.
2-Chloro-N,N-dimethylpropylamine hydrochloride	MCH.
3-Chloro-N,N-dimethylpropylamine hydrochloride	MCH.
2-Chloroethylamine hydrochloride	NES.
β-Chloroallyl-N-methylamine	LIL.
Chloro-N-(2-hydroxyethyl)acetamide	KF.
N-Chlorosuccinimide (Succinichlorimide)	ACS, ARA.
2-Chlorotriethylamine hydrochloride	MCH.
2-Chloro-N,N-diethylethylamine hydrochloride	HEX.
Choline base	RH.
Coco nitrile	FOR.
Coconut oil amide	ARC, HUM, PG.
Cottonseed oil nitrile	FOR.
Creatine and creatinine	PFN.
2-Cyanoacetamide	KF.
2-Cyanoacethydrazide	KF.
Cyanoacetic acid	KF.
Cyanogen bromide	EK.
2-Dibutylaminoethanol	AAC, PAS.
1,3-Dibutyl-2-thiourea	OMC, PAS, RBC.
1,4-Dicyanobutene	x.
Diethanolamine polyoxypropylene ether	JCC.
Diethyl acetamidomalonate	SDW.
Diethylaminoethanethiol hydrochloride	EVN.
2-Diethylaminoethanol	AAC, PAS, UCC.
2-Diethylaminoethyl methacrylate	DUP.
Diethylcarbamoyl chloride	CTN.
Diethyldithiocarbamic acid, sodium salt	EK.
N,N-Diethyldodecanamide	EK.
Diethylhydroxylamine	PAS.
1,3-Diethyl-2-thiourea	PAS, RBC.
Diisopropylaminoethanol	PAS, UCC.
2-Diisopropylaminoethyl methacrylate	DUP.
Diisopropylammonium nitrite	OMC.
N,N-Dimethylacetamide	DUP.
*2-Dimethylaminoethanol	AAC, DUP, JCC, PAS, RH, UCC.
3-Dimethylaminopropionitrile	ACY.
Dimethylaminoethyl methacrylate	x.
Dimethylamino-2-propanol	COM, PAS.
N-(3-Dimethylaminopropyl)oleamide	DUP.
Dimethylcarbamyl chloride	CTN, OTC.
N,N-Dimethylformamide	DUP, ESC.
1,1-Dimethylhydrazine	FMP.
Dithiooxamide	MAL.
2,5-Dithiobiurea	ACY.
*Erucamide	ASH, FIN, HUM.
*Ethanolamines:	
*2-Aminoethanol (Monoethanolamine)	ACP, DOW, JCC, MAT, SHC, UCC.
*2,2'-Iminodiethanol (Diethanolamine)	ACP, DOW, JCC, MAT, SHC, UCC.
*2,2',2''-Nitrilotriethanol (Triethanolamine)	ACP, DOW, JCC, MAT, SHC, UCC.
Ethoxymethylenemalononitrile	KF.
3-Ethoxypropionitrile	ACY.
Ethyl acetamidocyanoacetate	SDW.
2-Ethylaminoethanol (Ethylmonoethanolamine)	PAS.
Ethyl carbamate	FMP.
Ethyl carbodiimide hydrochloride	OTC.
Ethyl cyanoacetate	KF.
N,N'-Ethylenebis-stearamide	CTN.
2-Ethylhexyl cyanoacetate	KF.
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	SDW.
5-(N-Ethyl-N-hydroxyethylamino)-2-pentanone	SDW.
Fish oil fatty acid amide	ASH, HUM.
Formamide	DUP.
Formamidine disulfide dihydrochloride	WAY.
Formamidine hydrochloride	EK, KF.
Glycine (Aminoacetic acid), non-medicinal	CHT.
Glycine ethyl ester hydrochloride	BPC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
Glycine salts: Cupric glycinate	BPC.
Glycolonitrile	ACY.
Guanidine hydrochloride	ACY.
Hexadecyl nitrile	FOR.
Hexamethylenediamine carbamate	BKL.
Hexamethylenediammonium adipate (Nylon salt)	CEL, DUP, MON.
Hydracrylonitrile (Ethylene cyanohydrin)	UCC.
2-Hydrazinoethanol (2-Hydroxyethylhydrazine)	NOR.
Hydroxyethyl carbamate	JCC.
N-Hydroxymethylacrylamide terpolymer	GAF.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris(hydroxymethyl)nitromethane).	COM.
N-Hydroxymethylstearamide	ICI.
Hydroxypropyl carbamate	JCC.
Isobutyl cyanoacetate	KF.
Isobutyronitrile	EKX, ESC.
Isopropanolamines:	
1-Amino-2-propanol (Monoisopropanolamine)	DOW, UCC.
1,1'-Iminodi-2-propanol (Diisopropanolamine)	DOW, UCC.
1,1',1''-Nitrilotri-2-propanol (Triisopropanolamine)	DOW, UCC.
3-Isopropoxypropionitrile	DUP.
3-Isopropoxypropylamine	DUP.
2-Isopropylaminoethanol	PAS
Isopropyl ethylthionocarbamate	DOW.
Isopropyl isocyanate	OTC.
Lactonitrile	MON.
Lauronitrile (Dodecyl nitrile)	FOR.
Lysine diisocyanate methyl ester	MRK.
Malononitrile	KF, MTR.
Methacrylamide	RH, x.
Methacrylonitrile	SOH.
Methoxyamine hydrochloride	EK.
3-Methoxypropylamine	EKT, JCC.
N-Methylacetamide	ACI, EK.
2-Methylaminoethanol (N-Methylethanolamine)	UCC.
Methyl carbamate	BKL, FMP.
Methyl cyanoacetate	KF.
Methyl α-cyanoacrylate	EKT.
N,N'-Methylenebis(acrylamide)	ACY.
N,N'-Methylenebis(octadecanamide)	ARC.
Methylenebis(thiocyanate)	NLC.
N-Methylglucamine	DUP.
Methyl isocyanate	OTC, UCC.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)	UCC.
*2-Methyllactonitrile (Acetone cyanohydrin)	ACY, RH, x.
2-Methyl-2-nitro-1,3-propanediol	COM.
2-Methyl-2-nitro-1-propanol	COM.
Methylpolyethanolamine	GAF.
N-Methyltaurine	GAF.
*Nitriloacids and salts:	
(Diethylenetrinitrilo)pentaacetic acid	HMP.
(Diethylenetrinitrilo)pentaacetic acid, monosodium hydrogen ferric salt.	GGY.
(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt.	GGY, HMP.
(Diethylenetrinitrilo)pentaacetic acid, sodium salt	CWL, DOW, GGY, RPC.
N,N-Dihydroxyethylglycine, sodium salt	CWL, DOW, HMP.
Ethanoldiglycine, disodium salt	HMP.
*(Ethylenedinitrilo)tetraacetic acid (Ethylenediaminetetraacetic acid).	DOW, GGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt.	DOW, GGY.
*(Ethylenedinitrilo)tetraacetic acid, disodium salt	DOW, EK, GGY, HMP, RPC.
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt.	GGY.
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate.	GGY, HMP.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
*Nitriloacids and salts--Continued	
(Ethylenedinitrilo)tetraacetic acid, manganese salt	GGY.
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt.	GGY, HMP, RPC.
(Ethylenedinitrilo)tetraacetic acid, tetraammonium salt.	DOW.
(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt.	GGY, HMP.
*(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	CRT, CWL, DOW, GGY, HMP, HRT, IBI, RPC.
(Ethylenedinitrilo)tetraacetic acid, triammonium salt	DOW.
(Ethylenedinitrilo)tetraacetic acid, trisodium salt	GGY, HMP.
(N-Hydroxyethylethylenedinitrilo)triacetic acid	GGY.
*(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt.	CRT, CWL, DOW, GGY, HMP, IBI, RPC.
Nitrilotriacetic acid, trisodium salt	DOW, GGY, HMP.
Other	EK, HMP.
2-Nitro-1-butanol	COM.
Nitroethane	COM.
Nitromethane	COM.
1-Nitropropane	COM.
2-Nitropropane	COM.
Nylon, 6 and 6/6 polymer for fiber	DBC, DUP, MON.
Octadecyl isocyanate	CWN, MOB, UPJ.
Octadecyloxymethyltriethylammonium chloride	DAN.
Oleamide (Octadecene amide)	ARC, ASH, FIN, HUM.
Oleic acid, amine condensates	CCW, GAF, GLY.
Oleonitrile (Octadecene nitrile)	ARC, FOR.
Oleoylhydroxamic acid	WOB.
Oleoylpalmitamide	FIN.
*Pentaerythritol tetranitrate	COM, DUP, HPC.
Pentyl nitrate (Amyl nitrate)	TNA.
Polyacrylamide	ACY, HPC, NLC.
Polyacrylonitrile	DUP.
Polyesteramide	ICI.
Polyoxyalkylene amines	JCC, UCC.
n-Propyl carbamate	BKL.
Propyl isocyanate	OTC.
Propyl nitrate	TNA.
Quaternary ammonium compounds	EK, RSA, WAY.
Ricinolamide	TKL.
*Sarcosine (N-Methylaminoacetic acid)	GAF, GGY, HMP.
Semicarbazide base	FMT.
Semicarbazide hydrochloride	FMT.
Semioxamazide	NOR.
*Stearamide (Octadecane amide)	ARC, ASH, FIN, HUM.
*Stearic acid - ethylenediamine condensate (amine/acid ratio=1/2)	CCW, GLY, ICI, x.
Stearic acid, other amine condensates	CIB, SNW.
Stearonitrile (Octadecanenitrile)	FOR.
Stearylerucamide	FIN.
Succinimide	ACS.
Tallow amide, hydrogenated	ARC, ASH.
Tall oil nitrile	FOR.
Tallow nitrile	ARC, FOR.
Tallow nitrile, hydrogenated	FOR.
N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine	WYN.
Tetramethylguanidine	ACY.
3,3'-Thiodipropionitrile	ACY.
Thiosemicarbazide	ACY, FMT.
*Urea in compounds or mixtures, 100% basis:	
*In feed compounds	ACN, ACY, AGY, DUP, FTX, GCC, JDC, KET, MON, MSC, SHC, SOH, TER, VLN, WYC.
*In liquid fertilizer	ACN, AGY, BOR, CFA, CNC, COL, DUP, ESC, FCA, FTX, GCC, GOC, HKY, HPC, JDC, KET, MON, MSC, NIT, OMC, PLC, PPC, SHC, SNI, SOH, TER, VLN, WYC, x.
*In solid fertilizer	ACN, ACY, AGY, DUP, GCC, GOC, HPC, JDC, MON, MSC, OMC, PPC, SHC, SNO, SOH, TER, VLN, WYC, x, x.
In plastics	DUP, MON, OTC.
All other	ACN, BOR, CNC, DUP, HKY, HPC, MSC, SHC, SNO, TER, WYC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Nitrogenous Compounds--Continued	
Urea paroxide	FMB.
Urea - Urethane compounds	DUP.
All other nitrogenous compounds	ACY, ALB, ALD, BJL, DUP, EK, EVN, JCC, GAF, GLY, KF, LIL, MOB, MRK, NCA, OMC, OTC, PFN, PIC, SDH, SEL, UCC, USB, x,x,x,x,x.
Acids, Acid Anhydrides, and Acyl Halides	
*Acetic acid, synthetic, 100%	BOR, CEL, EKT, HPC, PUB, UCC.
*Acetic anhydride, 100%:	
From acetaldehyde	HPC.
From acetic acid	CEL, EKT, FMP.
From ethylene	UCC.
Aconitic acid	PCW. PD.
*Acrylic acid	BFG, CEL, DBC, MMM, UCC.
*Adipic acid	ACP, CEL, DUP, ELP, MON, RH.
Azelaic acid	EMR.
Behenic acid	ASH.
2-Bromohexanoic acid	EK.
tert-Butylperoxymaleic acid	WTL.
Butylstannoic acid	CCW.
Butyric acid	CEL, EKT, UCC.
Butyric anhydride	EKT, UCC.
Butyryl chloride	HK, OTC.
Castor oil fatty acids, dehydrated	BAC, DA.
*Chloroacetic acid, mono-	BUK, DA, DOW, HPC, MON.
Chloroacetyl chloride	DOW.
Chlorolevulinic acid	CRZ.
Citric acid	MLS, PFZ.
Crotonic acid (2-Butenoic acid)	EKT.
Decanoyl chloride	CAD, UPR, WTL.
Diglycolic acid	DUP.
Dithiodipropionic acid	EVN.
* Dodecenylsuccinic anhydride	ACS, HMY, MON.
Dodecylsuccinic anhydride	HN.
2-Ethylbutyric acid (Diethylacetic acid)	UCC.
2-Ethylhexanoic acid (α-Ethylcaproic acid)	EKT, UCC.
2-Ethylhecanoyl chloride	UPR, WTL.
Formic acid, 90%	DUP, SFI, UCC.
*Fumaric acid	ACS, HN, MON, PCC, PFZ, PTT.
*Gluconic acid, tech	CWL, DLI, IBI, PFZ.
Glutaric anhydride	UCC.
Glycolic acid (Hydroxyacetic acid)	DUP.
n-Hexadecenylsuccinic anhydride	HMY.
Isethionic acid (2-Hydroxyethanesulfonic acid)	GAF.
Isoascorbic acid	MRK, PFZ.
Isobutyric acid	EKT.
Isobutyric anhydride	EKT.
Isobutyryl chloride	WTL.
Iso-octadecenylsuccinic anhydride	HMY.
Iso-octanoic acid	UCC.
Itaconic acid (Methylenesuccinic acid)	PFZ.
2-Keto-D-gluconic acid	MRK.
Lactic acid:	
Edible, 100%	CLN, MON.
Technical, 100%	CLN, MON.
*Lauroyl chloride	CAD, GAF, HK, ONX, UPR, WTL.
Levulinic acid	QKO.
Maleic acid	ACS, PFZ.
*Maleic anhydride	ACS, HN, KPS, MON, PCC, PTT, RCI.
Malic acid	ACS, EK, PFN.
Malonic acid	KF.
Mercaptoacetic acid (Thioglycolic acid)	EVN, HAB.
3-Mercaptopropionic acid	EVN.
Mercaptosuccinic acid (Thiomalic acid)	EVN.
Methacrylic acid	DUP, RH.
Methanesulfonic acid	EK, PAS.
2-Methylvaleric acid (2-Methylpentanoic acid)	UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Acids, Acid Anhydrides, and Acyl Halides--Continued	
Neodecanoic acid	ENJ.
Neoheptanoic acid	ENJ.
Neopentanoic acid	ENJ.
Nonanoic acid (Pelargonic acid)	EMR, GIV.
Nonenylsuccinic anhydride	HMY.
Octadecylphosphonic acid	SM.
Octanoyl chloride	HK.
Octenylsuccinic anhydride	HMY.
Oleoyl chloride	GAF.
Oxalic acid	ACS, MAL, PFZ, SF1.
Palmitoyl chloride	GAF, OPC.
Pelargonyl chloride	WTL.
Peroxyacetic acid	FMB, UCC.
Pivaloyl chloride	WTL.
Polyacrylic acid	DA, RH.
Polygalacturonic acid	SKG.
*Propionic acid	CEL, COM, EKT, UCC.
Propionic anhydride	EKT, UCC.
Propionyl chloride	ABB, EK, OPC.
Sebacic acid	RH, WTH.
Sorbic acid (2,4-Hexadienoic acid)	UCC.
Succinic acid	ACS, BKC.
Succinic anhydride	ACS.
d-Tartaric acid	BKC.
Tetrahydroxysuccinic acid (Dioxytartaric acid)	ACY.
Thioacetic acid	EK, EVN.
Thiolactic acid	EVN.
3,3'-Thiodipropionic acid	CCW, EVN.
Trichloroacetic acid	DOW.
Trichloroacetyl chloride	EK.
Valeric acid	UCC.
All other	ABB, ALD, CLB, EK, GAF, HMY, PD, PIC, RH, UCC, x.
Salts of Organic Acids	
*Acetic acid salts:	
Aluminum acetate	ACY, UCC.
Aluminum subacetate	MAL.
*Ammonium acetate	ACS, BKC, MAL.
Barium acetate	ACS, BKC, MAL.
Cadmium acetate	BKC, MAL, SHP.
Calcium acetate	ACS, BKC, ENJ, MAL.
Chromium acetate	ACY.
Cobalt acetate	BKC, HSH, SHP.
*Copper acetate	ACS, BKC, SHP, UCC.
Dibutyltin diacetate	CCW.
Lead acetate	ACS, BKC, MAL.
Lead subacetate	ACS, BKC, MAL.
Lead tetraacetate	ARA, UCC.
Magnesium acetate	ACS, BKC.
Manganese acetate	HSH, SHP.
Mercuric acetate	MAL.
Nickel acetate	BKC, HSH, SHP.
*Potassium acetate	ACS, BKC, CWL, MAL, UCC.
Silver acetate	MAL.
*Sodium acetate	ACS, BKC, CEL, DAN, EKT, MAL, UCC, WSN.
Sodium diacetate	UCC.
Strontium acetate	BKC.
*Zinc acetate	ACS, BKC, HSH, MAL, SHP, SNW, UCC.
*Zirconium acetate	HSH, NTL, SNW, TZC.
Adipic acid, ammonium salt	FIS.
Chloroacetic acid, sodium salt	DOW.
Citric acid salts:	
Ammonium citrate	MAL, PFZ.
Calcium citrate	PFZ.
Ferric ammonium citrate	PFZ.
Ferric citrate	MAL.
Ferrous calcium citrate	BKL, MAL.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
Citric acid salts--Continued	
Potassium citrate	MLS, PFZ.
Sodium citrate	MLS, PFZ.
Cottonseed oil acids, calcium salt	PD.
*2-Ethylhexanoic acid (α-Ethylcaproic acid) salts:	
Aluminum 2-ethylhexanoate	WTC.
Barium 2-ethylhexanoate	CCA.
Cadium 2-ethylhexanoate	CCA.
*Calcium 2-ethylhexanoate	CCA, CCC, FER, HNX, HSH, MCI, SW.
*Cobalt 2-ethylhexanoate	CCA, CCC, FER, HNX, HSH, MCI, SW, TRO, WTC.
Cobalt lead manganese 2-ethylhexanoate	MCI.
Copper 2-ethylhexanoate	CCA.
Iron 2-ethylhexanoate	CCA.
*Lead 2-ethylhexanoate	CCA, CCC, HNX, HSH, MCl, NTL, TRO, WTC.
*Manganese 2-ethylhexanoate	CCA, HNX, MCI, WTC.
Nickel 2-ethylhexanoate	MCI.
Potassium 2-ethylhexanoate	CCA.
Rare earths 2-ethylhexanoate	CCA.
Stannous 2-ethylhexanoate	WTC.
Strontium 2-ethylhexanoate	CCA.
*Zinc 2-ethylhexanoate	CCA, HNX, HSH, MCI.
Zirconium 2-ethylhexanoate	CCA, CCC, HNX, WTC.
Formic acid salts:	
Aluminum formate	UCC, WSN.
Ammonium formate	ACS, WSN.
Calcium formate	COM.
Chromic formate	GAF.
Copper formate	CTN.
Lead formate	NTL.
Potassium formate	CFC.
Sodium formate, refined	ACS, BKC.
Sodium formate, tech	COM, HPC, UCC.
Glucoheptonic acid salts:	
Sodium glucoheptonate	IBI.
Zinc glucoheptonate	PFN.
Gluconic acid salts:	
Ammonium gluconate	PFZ.
*Sodium gluconate	CWL, DLI, IBI, PFZ, PMP.
Glycolic acid salts:	
Aluminum glycolate	CIB.
Sodium glycolate	CFC.
9H-Hexadecafluorononanoic acid, ammonium salt	DUP.
Humic acids, sodium salts	NLC.
Isoascorbic acid, sodium salt	BAX, MRK.
Lactic acid salts:	
Ammonium lactate	TCC.
Calcium lactate	SHF.
Other	REH.
Lauric acid salts:	
Barium cadmium laurate	CCA.
Dibutyltin dilaurate	CCA.
Zinc laurate	SNW.
*Linoleic acid salts:	
Calcium linoleate	CCA, MCI, SHP.
Cobalt linoleate	SHP.
Copper linoleate	HSH, SHP.
Lead linoleate	SHP.
Lead manganese linoleate	SDH.
Manganese linoleate	SHP.
Maleic acid salts:	
Dibutyltin maleate	CCA.
Lead (tribasic) maleate	NTL.
Malonic acid, calcium salt	GIV, KF.
*Mercaptoacetic acid (Thioglycolic acid) salts:	
Ammonium mercaptoacetate	EVN, HAB, TNI.
Antimony mercaptoacetate	CCA.
Calcium mercaptoacetate	EVN.
Dibutyltin mercaptoacetate	CCA.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
*Mercaptoacetic acid (Thioglycolic acid) salts--Continued	
Potassium mercaptoacetate	EVN.
Sodium mercaptoacetate	EVN.
Mercaptopropionic acid, dibutyltin salt	CCA.
Methylsuccinic acid, disodium salt	SDW.
Myristic acid, lithium salt	CCW.
Neodecanoic acid salts:	
Cadmium neodecanoate	CCA.
Calcium neodecanoate	CCA.
Lead neodecanoate	CCA.
Tributyltin neodecanoate	CCW.
Zinc neodecanoate	CCA.
*Octanoic acid (Caprylic acid) salts:	
Aluminum octanoate	DA.
Barium cadmium octanoate	CCA.
Stannous octanoate	CCA, x
Zinc octanoate	BKC.
*Oleic acid salts:	
Aluminum oleate	WTC.
Ammonium oleate	MCI.
Barium zinc oleate	WTC.
Calcium oleate	MCI.
Chromium oleate	SHP.
Cobalt oleate	MCI.
Copper oleate	MCI, SHP.
Lead oleate	MCI.
Lithium oleate	MCI.
Manganese oleate	MCI.
Stannous oleate	CCW, x.
Zinc oleate	EFH, MCI.
Zirconium oleate	MCI.
Oxalic acid salts:	
Ammonium oxalate	ACS, BKC, PFZ.
Copper oxalate	CFC.
Ferric ammonium oxalate	PFZ.
Ferric oxalate	PFZ.
Ferric sodium oxalate	PFZ.
Ferrous oxalate	BKL.
Potassium binoxalate	BKC.
Potassium oxalate	BKC, PFZ.
Sodium oxalate	BKC, MAL, SFI.
Palmitic acid salts:	
*Aluminum palmitate	ACY, DA, WTC.
Zinc palmitate	ACY, DA, WTC.
Phosphorodithioic acid salts (Dithiophosphates):	
Potassium dihexyl phosphorodithioate	ACY.
Sodium di-sec-butyl diethyl phosphorodithioate	ACY.
Sodium di-sec-butyl phosphorodithioate	ACY.
Sodium diethyl phosphorodithioate	ACY.
Sodium dihexyl phosphorodithioate	ACY.
Sodium diisopropyl phosphorodithioate	ACY.
Other	ACY.
*Polyacrylic acid salts:	
Ammonium polyacrylate	BFG.
Sodium polyacrylate	ALC, BFG, DA, GRB, JOR, RH.
Polymethacrylic acid, sodium salt	GRD.
Propionic acid salts:	
*Calcium propionate	HFT, PFZ, UCC, WSN.
*Sodium propionate	HFT, PFZ, UCC, WSN.
Zinc propionate	BKC.
Ricinoleic acid salts:	
Calcium ricinoleate	BAC.
Lithium ricinoleate	BAC.
Sodium ethyl oxalacetate	FMP.
Sodium polypectate	SKG.
Sodium sorbitol borate	APD.
Sorbic acid salts:	
Potassium sorbate	UCC.
Sodium sorbate	UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Salts of Organic Acids--Continued	
*Stearic acid salts:	
*Aluminum stearates:	
*Aluminum distearate	ACY, DA, JTC, MAL, NOC, PEN, SYP, WTC.
*Aluminum monostearate	DA, JTC, MAL, SYP, WTC.
*Aluminum tristearate	DA, MAL, NOC, PEN, SYP.
Ammonium stearate	DA, NOC, WTC.
Barium stearate	DA, NOC, PEN, SYP.
Cadmium stearate	DA, PEN, SYP, WTC.
*Calcium stearate	ACY, DA, HNX, JTC, MAL, NOC, PEN, SYP, WTC.
Cobalt stearate	WTC.
Copper stearate	NOC, WTC.
Ferric stearate	MCI, NOC.
Ferrous stearate	NOC, WTC.
Lead stearate	MCI, NTL, WTC.
Lead stearate, dibasic	NTL.
*Lithium stearate	DA, PEN, SYP, WTC.
*Magnesium stearate	ACY, DA, JTC, MAL, NOC, PEN, SYP, WTC.
Nickel stearate	WTC.
*Zinc stearate	ACY, CCA, DA, HNX, JTC, MAL, NOC, PEN, SYP, WTC.
All other	APD, NOC.
Succinic acid, sodium salt	MAL.
Sugar acids, sodium salt	HMP, PFN.
Tartaric acid salts:	
Antimony potassium tartrate	PFZ.
Potassium sodium tartrate	PFZ.
Sodium bitartrate	PFZ.
Vinylsulfonic acid, sodium salt	x.
Xanthic acid salts:	
Potassium n-butylxanthate	USR.
Potassium ethylxanthate	ACY, DOW.
Potassium hexylxanthate	DOW.
Potassium isopropylxanthate	DOW.
Potassium pentylxanthate	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 salts of organic acids	CCW, EK, EVN, FIN, KCH, SYP, UCC, x.
Aldehydes and Ketones	
*Acetaldehyde	CEL, COM, DUP, EKT, EKX, HPC, MON, PUB, SHC, UCC.
*Acetone:	
From cumene	ACP, CLK, HPC, MON, SHC, SKO, SOC, UCC.
*From isopropyl alcohol	EKT, ENJ, SHC, UCC.
Other	CEL, DIX, HPC.
Acrolein (Acrylaldehyde)	SHC, UCC.
Aldol (Acetaldol)	UCC.
*2-Butanone (Methyl ethyl ketone)	CEL, DIX, ENJ, SHC, SPI, UCC.
Butyraldehyde	CEL, EKX, UCC.
Caprolactone	UCC.
*Chloral (Trichloroacetaldehyde)	DA, FMB, GGY, MTO.
5-Chloro-2-pentanone	SDW.
1-Chloro-1-penten-3-one (Chlorovinyl ethyl ketone)	x.
Chloro-2-propanone (Chloroacetone)	EL, MRK.
Crononaldehyde	CEL, EKT, UCC.
Dichloroacetaldehyde	FMB.
Dihydropseudoionone	GIV.
1,4-Dihydroxy-2-butanone	GAF.
1,3-Dihydroxy-2-propanone (Dihydroxyacetone)	BAX.
2-Ethylbutyraldehyde	UCC.
2-Ethylhexanal (α-Ethylcaproaldehyde)	EKX, UCC.
Ethylpropylacrolein	UCC.
*Formaldehyde (37% by weight)	ACN, ACP, BOR, CBC, CEL, COM, DUP, GAF, GOC, HKD, HN, HPC, MON, RCI, RH, UCC.
Glutaraldehyde	UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (See Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Aldehydes and Ketones--Continued	
Glyoxal	UCC.
2-Heptanone (Methyl amyl ketone)	UCC.
Heptyl methyl ketone	ARC.
Hexaldehyde	EKX, GIV.
2,5-Hexanedione (Acetonylacetone)	AC1, RBC, UCC.
2-Hydroxy-2-methyl-3-butanone	LIL.
*4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	CEL, SHC, UCC.
Isobutyraldehyde	EKX, UCC.
Isodecaldehyde, mixed isomers	UCC.
Isovalerone (Diisobutyl ketone)	EKT, UCC.
Lactide (3,6-Dimethyl-2,5-p-dioxanedione)	CLN.
Methoxyacetaldehyde	JCC.
4-Methoxy-4-methyl-2-pentanone	SHC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)	EKT, UCC.
Methyl nonyl ketone	ARC.
*4-Methyl-2-pentanone (Methyl isobutyl ketone)	EKT, ENJ, SHC, UCC.
4-Methyl-3-penten-2-one (Mesityl oxide)	SHC, UCC.
Methylpseudoionone	GIV.
2-Methylvaleraldehyde (2-Methylpentaldehyde)	UCC.
Paraformaldehyde	CEL, HN.
Paraldehyde (Paracetaldehyde)	UCC.
2,4-Pentanedione (Acetylacetone)	UCC.
3-Pentanone (Diethyl ketone)	HEX.
Propionaldehyde	EKX, UCC.
Pseudoionone	GIV, UCC.
Tetrahydropseudoionone	GIV.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	UCC.
Valeraldehyde	UCC.
All other	ALD, CEL, CLB, EK, GIV, PIC.
Alcohols, Monohydric, Unsubstituted	
*Alcohols C_9 or lower, unmixed:	
Allyl alcohol	DOW, SHC.
Amyl alcohols:	
2-Methyl-1-butanol	UCC.
2-Methyl-2-butanol (tert-Amyl alcohol)	ENJ, SHC.
1-Pentanol	UCC.
2-Pentanol	UCC.
Butyl alcohols:	
Primary:	
*Iso (Isopropylcarbinol)	DBC, EKX, SHC, UCC.
*Normal (n-Propylcarbinol)	CEL, CO, DBC, EKX, ENJ, SHC, TNA, UCC.
Secondary (Methylethylcarbinol)	ENJ, SHC.
Tertiary (Trimethylcarbinol)	SHC.
2,6-Dimethyl-4-heptanol (Diisobutylcarbinol)	UCC.
*Ethyl alcohol, synthetic	CEL, DUP, EKX, ENJ, HPC, PUB, SHC, UCC, USI.
*2-Ethyl-1-hexanol	CEL, EKX, ENJ, SHC, UCC.
2-Ethyl-4-methyl-1-pentanol	EKX.
Heptyl alcohol	EKX, GOC.
*Hexyl alcohol	CO, EKX, ENJ, PG, TNA, UCC.
Hexynol	CUC, LIL, x.
*Iso-octyl alcohols	ENJ, GOC, HOU, PCC, TID, UCC.
*Isopropyl alcohol	ENJ, SHC, UCC.
Methallyl alcohol	BPC.
*Methanol, synthetic	ACN, BOR, CEL, COM, DUP, ESC, GOC, HN, HPC, MON, RH, UCC.
2-Methyl-3-butyn-2-ol	CUC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	SHC, UCC.
3-Methyl-1-pentyn-3-ol (Methylparafynol)	CUC.
Nonyl alcohols	ENJ, GOC.
*1-Octanol	CO, DUP.
*2-Octanol (sec-Capryl alcohol)	RH, WTH.
Octanols, other	IFF, PG.
Propyl alcohol (Propanol)	CEL, EKX, UCC.
2-Propyn-1-ol	GAF.
All other	CUC, EK, GYR, UCC, x.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Alcohols, Monohydric, Unsubstituted--Continued	
*Alcohols C_{10} or higher, unmixed:	
*Decyl alcohols	CO, DUP, ENJ, GOC, HOU, PCC, PG, TID, UCC.
3,9-Diethyl-6-tridecanol	UCC.
3,6-Dimethyl-3-octanol	CUC.
Dodecyl alcohol (Lauryl alcohol) (95%)	CO, DUP.
7-Ethyl-2-methyl-4-hendecanol	UCC.
4-Ethyl-1-octyn-3-ol	CUC.
*1-Hexadecanol (Cetyl alcohol) (95%)	ASH, DUP, GIV.
*Hexadecyl alcohols, other	CO, ENJ, PG.
1-Octadecanol (Stearyl alcohol) (95%)	ASH, CO, DUP, PG.
cis-9-Octadecen-1-ol (Oleyl alcohol)	ASH, DUP.
Tetradecyl alcohols	CO, DUP, PG, UCC.
1-Tridecanol	ENJ, GOC, HOU, TID, UCC.
2,6,8-Trimethyl-4-nonanol	UCC.
All other	CO.
*Mixtures of alcohols:	
*C_9 and lower only:	
Amyl alcohols	ENJ, PUB, UCC.
Other	CEL, EKX, GOC.
C_{10} and higher only	ASH, CO, ENJ, GOC, ICI, PG, SHC, TNA.
C_6 to C_{12} and others	CO, EKX, PG, TNA.
Polyhydric Alcohols and their Esters and Ethers	
*Polyhydric alcohols:	
1,4-Butanediol	GAF.
1,2(and 1,3)-Butanediol (Butylene glycol)	CEL.
1,2,4-Butanetriol	GAF,.
2-Butene-1,4-diol	GAF.
2-Butyne-1,4-diol	GAF.
3-Chloro-1,2-propanediol (Glycerol α-chlorohydrin)	EVN.
1,10-Decanediol	NEP.
2,5-Dimethyl-2,5-hexanediol	CUC.
2,5-Dimethyl-3-hexyne-2,5-diol	CUC.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	EKX.
*Ethylene glycol	ACP, APD, CAU, CEL, DOW, DUP, EKX, GAF, HCH, JCC, MAT, OMC, SHC, UCC, WYN.
2-Ethyl-1,3-hexanediol	UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylol propane).	CEL.
Glycerol, synthetic	APD, DOW, SHC.
1,6-Hexanediol	CEL.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolethane).	COM.
Mannitol	APD.
3-Mercapto-1,2-propanediol (Thioglycerol)	EVN.
Methylglycerol	APD.
2-Methyl-2,4-pentanediol (Hexylene glycol)	CEL, SHC, UCC.
2-Methyl-2-propyl-1,3-propanediol	ABB, BKL, COM, ICO.
1,9-Nonanediol	ASH.
*Pentaerythritol	CEL, COM, HN, HPC, RCI.
*Propylene glycol (1,2-Propanediol)	APD, CEL, DOW, DUP, JCC, OMC, UCC, WYN.
*Sorbitol	APD, BRD, MRK, PFZ.
2,2,4-Trimethyl-1,3-pentanediol	EKX.
All other	APD, CUC, PHR, UCC.
*Polyhydric alcohol esters:	
1,3-Butanediol dimethacrylate	SAR.
2-(2-Butoxyethoxy)ethyl acetate	EKT, UCC.
2-Butoxyethyl acetate	UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Polyhydric Alcohols and their Esters and Ethers--Continued	
*Polyhydric alcohol esters--Continued	
Diethylene glycol chloroformate	PPG.
2-(2-Ethoxyethoxy)ethyl acetate	EKT.
2-Ethoxyethyl acetate	CEL, DOW, EKT, ENJ, UCC.
Ethylene glycol diacetate	EKT, UCC.
Ethylene glycol dimercaptoacetate	EVN.
Ethylene glycol dimethacrylate	CTN, SAR.
Ethylene glycol hydroxyacetate	CCA.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol trimethacrylate.	SAR.
Glyceryl monoacetate (Monoacetin)	HAL.
Glyceryl triacetate (Triacetin)	EKT, UCC.
Glyceryl trioleate	GRC, HAL.
Glycol adipate	x.
Hydroxyethyl methacrylate	AAC, JCC.
Hydroxypropyl methacrylate	JCC.
2-Methoxyethyl acetate	EKT, UCC.
Methoxytriethyleneglycol acetate	RBC.
Pentaerythritol caprylate	DRW.
Pentaerythritol distearate	EMR.
Pentaerythritol pelargonate	DRW.
Polyethylene glycol dimethacrylate	SAR.
Sucrose octa-acetate	PD.
Tetraethylene glycol dimethacrylate	SAR.
Triethylene glycol dimethacrylate	SAR.
2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate	EKX.
All other	EK, GLY, SAR, UCC, x.
*Polyhydric alcohol ethers:	
3-(Allyloxy)-1,2-propanediol (Allyl glyceryl ether)	SHC.
Bis(2-butoxyethyl) ether (Diethylene glycol di-n-butyl ether).	UCC.
Bis(2-ethoxyethyl) ether (Diethylene glycol diethyl ether).	UCC.
Bis(hydroxyethyl) ether butynediol	GAF.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether.	ASL.
Bis(2-methoxyethyl) ether (Diethylene glycol dimethyl ether).	ASL, OMC.
*2-Butoxyethanol (Ethylene glycol monobutyl ether)	DOW, JCC, OMC, SHC, UCC.
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether).	DOW, SHC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether).	DOW, OMC, UCC.
1-Butoxyethoxy-2-propanol	UCC.
*Diethylene glycol	ACP, CAU, DOW, EKX, GAF, HCH, JCC, NAT, OMC, SHC, UCC, WYN.
Dimethoxyethane (Ethylene glycol dimethyl ether)	ASL.
*Dipropylene glycol	CEL, DOW, JCC, OMC, UCC.
*2-Ethoxyethanol (Ethylene glycol monoethyl ether)	DOW, JCC, OMC, UCC.
*2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether).	DOW, JCC, OMC, UCC.
*2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether).	DOW, OMC, UCC.
2-[2-(Hexyloxy)ethoxy]ethanol	UCC.
Isobutoxyethanol	UCC.
1-Isobutoxy-2-propanol (Propylene glycol isobutyl ether)	DOW.
*2-Methoxyethanol (Ethylene glycol monomethyl ether)	DOW, JCC, HCH, OMC, UCC.
*2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether).	DOW, JCC, HCH, OMC, UCC.
*2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether).	DOW, OMC, UCC.
2-(2-Methoxyethoxy)ethyl 2-methoxyethyl ether (Triethylene glycol dimethyl ether).	ASL.
Methoxypolyethylene glycol	JCC, UCC.
1-Methoxy-2-propanol	DOW, JCC, UCC.
3-(3-Methoxypropoxy)propanol	DOW, JCC, UCC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Polyhydric Alcohols and their Esters and Ethers--Continued	
Polyhydric alcohol ethers--Continued	
3[3-(3-Methoxypropoxy)propoxy1]propanol	DOW.
Methyl butynoxyethanol	CUC.
Polybutylene glycol	NLC.
Polyethoxyethylglycerol	GLY.
Polyethoxyethylsorbitol	APD, GLY, TCH.
*Polyethylene glycol	ACP, DA, DOW, DUP, GAF, HDG, JCC, MAT, NLC, OMC, UCC, WYN.
*Polypropoxy ethers:	
*Glycerol tri (polyoxypropylene) ether	JCC, OMC, UCC, WYN.
*Other	ACS, APD, DA, JCC, UCC, WYN.
*Propypropylene glycol	DOW, JCC, HDG, NLC, OMC, UCC, WYN.
Polytetramethylene ether glycol	QKO, x.
Tetraethylene glycol	DOW, UCC.
1,1,3,3-Tetramethoxypropane	KF, UCC.
2,2'-Thiodiethanol (Thiodiglycol)	PIC, UCC.
*Triethylene glycol	ACP, CAU, DOW, GAF, HCH, JCC, MAT, OMC, UCC.
Tripropylene glycol	DOW, HDG, UCC.
All other	DOW, EK, EKX, GAF, PIC, UCC, WYN.
Esters of Monohydric Alcohols	
Allyl methacrylate	SAR, x.
Amyl acetates, 90%:	
Isopentyl acetate (Isoamyl acetate)	NW.
Mixed	PFW, PUB, UCC.
Butyl acetates:	
Iso	EKT, ENJ, PUB, UCC.
*Normal	CEL, EKT, ENJ, PUB, SHC, UCC.
Secondary	ENJ, HPC, PUB, SHC.
Tertiary	EK.
*Butyl acrylate	CEL, DBC, RH, UCC.
n-Butyl 4,4-bis(tert-butylperoxy)valerate	WTL.
Butyl chloroacetate	MON.
Butyl lactate	COM.
Butyl maleate, mono	PCC.
tert-Butyl peroxyacetate	AZT, WTL.
tert-Butyl peroxy-2-ethylhexanoate	AZT, WTL.
tert-Butyl peroxyisobutyrate	AZT, WTL.
tert-Butyl peroxyisopropylcarbonate	PPG, WTL.
tert-Butyl peroxypivalate	AZT, WTL.
Cetyl lactate	VND.
Diallyl maleate	FMP.
*Dibutyl fumarate	MON, PFZ, RCI, RUB.
*Dibutyl maleate	CUC, DUP, MON, RCI, RUB.
Di(sec-butyl) peroxydicarbonate	WTL.
Diethyl sec-butylethylmalonate	ABB.
Diethyl butylmalonate	BPC.
Diethyl sec-butylmalonate	ABB.
Diethyl carbonate (Ethyl carbonate)	CTN, FMP, OTC.
Diethyl diethylmalonate (Diethyl malonic ester)	BPC, LIL.
Diethyl (ethoxymethylene)malonate	KF.
Diethyl ethylmalonate (Ethyl malonic ester)	LIL.
Diethyl ethyl(1-methylbutyl)malonate (Ethyl-1-methyl butyl malonic ester).	ABB.
Di(2-ethyl-1-hexyl) fumarate	RUB.
Di(2-ethyl-1-hexyl) maleate	HRT, RUB.
Di(2-ethyl-1-hexyl) peroxydicarbonate	WTL.
Diethyl maleate	ACY, UCC.
Diethyl malonate (Malonic ester)	ABB, KF, LIL.
Diethyl (1-methylbutyl)malonate	ABB, LIL.
Diethyl methylmalonate	BPC.
Diethyl oxalate (Ethyl oxalate)	BKL, FMP.
Diisobutyl maleate	RUB.
Di-iso-nonyl maleate	RUB.
Diisopropyl peroxydicarbonate (Isopropyl percarbonate)	PPG, WTL.
Dilauryl maleate	EFH.
*Dilauryl 3,3'-thiodipropionate	ACY, CCW, EVN, HAB.
Dimethyl acetylenedicarboxylate	EK.

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TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Esters of Monohydric Alcohols--Continued	
Dimethyl carbonate	CTN, OTC.
2,5-Dimethylhexane 2,5-diperoctoate	UPR.
Dimethyl maleate	AAC.
Dimethyl malonate	KF.
Dimethyl methoxymethylene malonate	KF.
Di(4-methyl-2-pentyl) maleate	RUB.
Dimyristyl 3,3'-thiodipropionate	CCW.
Dioctyl fumarate	RCI.
*Dioctyl maleate	MON, PCC, RCI.
*Distearyl 3,3'-thiodipropionate	ACY, CCW, EVN, HAB.
Dithiobis(stearyl propionate)	EVN.
Ditridecyl maleate	RUB.
Di(tridecyl) 3,3'-thiodipropionate	ACY, EVN.
*Ethyl acetate (85%)	CEL, EKT, EKX, ENJ, HPC, MON, PUB, UCC.
Ethyl acetoacetate	EKT, UCC.
*Ethyl acrylate	CEL, DBC, RH, UCC.
Ethyl chloroacetate	DOW, KF, MON.
Ethyl chloroformate	CTN, FMP, OTC.
Ethylene carbonate	JCC.
Ethyl formate	COM.
2-Ethyl-1-hexyl acetate	EKT, UCC.
*2-Ethyl-1-hexyl acrylate	CEL, DBC, UCC.
2-Ethyl-1-hexyl methacrylate	x.
Ethylidene diacetate	CEL.
Ethyl propionate	NW.
Ethyl silicate (Tetraethoxysilane)	SFA, UCC.
Ethyl sulfate (Diethyl sulfate)	UCC.
Ethyl thioglycolate	EVN.
Fatty acid esters, not included with plasticizers or surface-active agents:	
Dimethyl brassylate	EMR.
Ethyl stearate	ICO.
Hexadecyl stearate	ICI.
Isopropyl linoleate	VND.
Methyl esters of coconut oil	PG.
Methyl esters of tallow	BFR, CHL, DA, HUM.
Methyl 12-hydroxystearate	BAC, HUM.
Methyl stearate	DA.
Myristyl myristate	VND.
All other	CCA, DA, EMR, ICI.
Hexyl acetate	ENJ.
n-Hexyl acrylate	UCC.
*Isobutyl acrylate	DBC, RH, UCC.
Isobutyl isobutyrate	EKX.
Isodecyl acrylate	UCC.
*Iso-octyl mercaptoacetate	CCW, EVN, HAB.
Iso-octyl 3-mercaptopropionate	EVN.
*Isopropyl acetate	EKT, ENJ, HPC, UCC.
Isopropyl chloroformate	CTN, PPG.
Lauryl lactate	VND.
Methallylidene diacetate	UCC.
Methyl acetate	EK, UCC.
Methyl acetoacetate	EKT, UCC.
Methyl acrylate, monomer	CEL, DBC, RH.
Methyl borate	MHI, SFA.
Methyl chloroacetate	DOW, KF.
Methyl chloroformate	CTN, FMP.
Methyl dichloroacetate	KF, PD.
Methyl formate	DUP.
*Methyl methacrylate, monomer	ACY, DUP, RH.
4-Methyl-2-pentyl acetate	PUB, SHC, UCC.
Methyl sulfate (Dimethyl sulfate)	DUP.
Methyl vinyl acetate	UCC.
Myristyl lactate	VND.
Octadecyl 3-mercaptopropionate	EVN.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Esters of Monohydric Alcohols--Continued	
*Phosphorus acid esters:	
Bis(2-ethylhexyl) hydrogen phosphate	SM, UCC.
Bis(2-ethylhexyl) hydrogen phosphite	SM.
Butyl phosphates	SM.
Dibutyl butylphosphonate	SM.
Dibutyl hydrogen phosphite	SM.
Didodecyl hydrogen phosphate	DUP.
Diethyl phosphorochloridothionate	SF.
Diisopropyl hydrogen phosphite	SM.
Dimethyl methylphosphonate	SM.
Dimethyl phosphorochloridothionate	SF.
Dioleyl hydrogen phosphite	SM.
Iso-octyl phosphate	SM.
Methyl phosphates	HK.
Oleyl hydrogen phosphate	SM.
Triamyl phosphite	SM.
Tributyl phosphate	COM.
Tributyl phosphite	SFI, SM.
Tridecyl phosphite	HK.
Triethyl phosphite	SM.
Triiso-octyl phosphite	SM.
Triisopropyl phosphite	SM.
Trimethyl phosphate	TNA.
Trimethyl phosphite	SM.
Trioctyl phosphite	HK.
Tris(2-chloroethyl) phosphite	SM.
Tris(chloroisopropyl) thionophosphate	TNA.
Tris(2,3-dibromopropyl) phosphate	MCH.
Tris(1,3-dichloroisopropyl phosphate	MCH.
Tris(2-ethylhexyl) phosphite	SM.
Tris(octadecyl) phosphite	SM.
All other	ALD, DUP, EK, MON, SM, TNA.
Propyl acetate	CEL, EKT, PUB, UCC.
Propylene carbonate	DOW, JCC.
Tetraoctyl orthosilicate	MON.
Titanic acid esters:	
Tetrabutyl titanate	DUP.
Tetraisopropyl titanate	DUP.
Tetrakis(2-ethylhexyl) titanate	DUP.
Other	DUP.
Triethyl orthoacetate	EK, KF.
Triethyl orthoformate	KF.
Triethyl orthopropionate	KF.
Triisodecyl orthoformate	KF.
Trimethyl orthoformate	KF.
*Vinyl acetate, monomer	BOR, CEL, CUC, DUP, MON, NSC, UCC.
All other	ALD, CCA, CEL, DUP, EFH, EK, EMR, FMP, GAF, OTC, PIC, PCC, RH, TNI, UCC.
Halogenated Hydrocarbons	
1-Bromobutane (n-Butyl bromide)	ABB, BPC, MCH.
2-Bromobutane (sec-Butyl bromide)	ABB, BPC, EK.
Bromochloromethane	DOW.
1-Bromo-3-chloropropane (Trimethylenechlorobromide)	DOW, MCH.
2-Bromo-2-chloro-1,1,1-trifluoroethane	ICI.
1-Bromododecane	EK, GAF.
Bromoethane (Ethyl bromide)	DOW, MCH.
1-Bromo-3-methylbutane (Isoamyl bromide)	LIL.
1-Bromo-3-methyl-2-butene	SDW.
1-Bromo-octadecane	GAF.
1-Bromopentane (n-Amyl bromide)	BPC, CLB.
2-Bromopentane (1-Methylbutyl bromide)	ABB, LIL.
1-Bromopropane (n-Propyl bromide)	BPC, EK.
2-Bromopropane (Isopropyl bromide)	BPC.
3-Bromopropene (Allyl bromide)	DOW.
Bromotrichloromethane	MCH.
Bromotrifluoromethane	DUP.
*Carbon tetrachloride	ACS, DA, DOW, FMB, FRO, PPG, SFI.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Halogenated Hydrocarbons--Continued	
*Chlorinated paraffins:	
Less than 35% chloride	DA.
35%-64% chlorine	CCH, DA, DV, HK, HPC, ICI, KPS, NEV.
65% or more chlorine	DVC, NEV.
2-Chloro-1,3-butadiene	DUP.
1-Chlorobutane (n-Butyl chloride)	PUB, UCC.
2-Chlorobutane (sec-Butyl chloride)	PLC.
1-Chloro-1,1-difluoroethane	ACS, DUP.
*Chlorodifluoromethane	ACS, DUP, KAI, PAS, UCC.
*Chloroethane (Ethyl chloride)	AME, DOW, HPC, PPG, SHC, TNA.
*Chloroform	ACS, DA, DOW, DUP, FRO, SFI.
*Chloromethane (Methyl chloride)	ACS, ANM, DCC, DOW, DUP, FRO, TNA, UCC.
2-Chloro-2-methylpropane (tert-Butyl chloride)	EK.
3-Chloro-2-methylpropene (Methallyl chloride)	FMP.
Chloropentafluoroethane	DUP.
3-Chloropropene (Allyl chloride)	DOW, SHC.
Chlorotrifluoroethylene (Trifluorovinyl chloride)	ACS, MMM.
Chlorotrifluoroethylene, polymerized	HK, MMM.
*Chlorotrifluoromethane	DUP, PAS, UCC.
1,2-Dibromo-1,1-dichloroethane	DOW.
Dibromodifluoromethane	DOW.
1,2-Dibromoethane (Ethylene dibromide)	DOW, ETD, HCH, MCH.
Dibromomethane (Methylene bromide)	DOW, UCC.
1,2-Dibromo-1,1,2,2-tetrafluoroethane	DUP.
Dichlorobutadiene	DUP.
1,3-Dichloro-2-butene	DUP.
1,4-Dichlorobutene	DUP.
*Dichlorodifluoromethane	ACS, DUP, KAI, PAS, UCC.
*1,2-Dichloroethane (Ethylene dichloride)	AME, BFG, CO, DA, DOW, JCC, MON, PPG, TNA, UCC, WYN.
*Dichloromethane (Methylene chloride)	ACS, DA, DOW, DUP, FRO, SFI.
*1,2-Dichloropropane (Propylene dichloride)	DOW, JCC, UCC.
2,3-Dichloropropene	DOW, UCC.
*Dichlorotetrafluoroethane	ACS, DUP, UCC.
1,1-Difluoroethane	ACS, DUP.
Difluorotetrachloroethane	DUP, UCC.
Diiodomethane (Methylene iodide)	NTB.
Hexafluoropropylene, monomer	DUP.
Iodobutane (Butyl iodide)	RSA.
Iodoethane (Ethyl iodide), tech	CLB, EK, FMT, RSA.
Iodoform (Triiodomethane)	NTB.
*Iodomethane (Methyl iodide)	CLB, EK, FMT, RSA.
1-Iodoperfluorohexane	x.
Lauryl chlorides	TEK.
Octafluorocyclobutane	DUP.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	DOW.
Tetrabromoethane	DOW.
1,1,2,2-Tetrachloroethane (Acetylene tetrachloride)	DUP.
*Tetrachloroethylene (Perchloroethylene)	DA, DOW, DUP, FRO, HK, PPG, SFI, TNA, TTX.
Tetrafluoroethylene, monomer	DUP.
Tetrafluoroethylene, polymer	DUP, PAS.
Tetrafluoromethane	DUP.
*1,1,1-Trichloroethane (Methyl chloroform)	DOW, PPG, TNA.
1,1,2-Trichloroethane (Vinyl trichloride)	DOW.
*Trichloroethylene	DOW, DUP, HK, PPG, TNA, TTX.
*Trichlorofluoromethane	ACS, DUP, KAI, PAS, UCC.
1,2,3-Trichloropropane	DOW, SHC.
1,2,3-Trichloropropene	DOW, UCC.
Trichlorotrifluoroethane	ACS, DUP, PAS, UCC.
Vinyl bromide (Bromoethylene)	DOW.
*Vinyl chloride, monomer (Chloroethylene)	AME, BFG, CO, DA, DOW, GNT, HN, MON, MND, PPG, TNA, UCC.
Vinyl fluoride	x.
Vinylidene chloride, monomer (1,1-Dichloroethylene)	DOW.
Vinylidene fluoride	x.
All other	DUP, EK, GAF, PAS, PIC.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
All Other Miscellaneous Acyclic Chemicals	
Acetyl peroxide	AZT, WTL.
Alkyl sulfides, mixed	ORO.
Aluminum isopropoxide (Aluminum isopropylate)	CHT, KCH.
*2-Butanone peroxide	AZT, CAD, NOC, RCI, WTL.
tert-Butyl hydroperoxide	AZT, CAD, WTL.
*tert-Butyl peroxide (Di-tert-butyl peroxide)	AZT, CAD, NOC, SHC, WTL.
Butyrolactone	GAF.
Caprolactone	UCC.
*Carbon disulfide	ACS, FMB, PAS, PPG, SFI.
2-Chloroethanol (Ethylene chlorohydrin)	UCC.
Decanoyl peroxide	CAD, UPR, WTL.
Dialdehyde starch	MLS.
2,4-Dihydroxy-3,3-dimethylbutyric acid, gammalactone (Pentolactone).	CKL,PD.
2,5-Dimethyl-2,5-bis(2-ethyl-1-hexanoylperoxy)hexane	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	WTL.
2,5-Dimethyl-2,5-dihydroperoxyhexane	UPR.
Epoxides, ethers, and acetals:	
Acetone dimethylacetal (2,2-Dimethoxypropane)	DOW.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)	SHC.
Bis(2-chloroethoxy)methane (Dichloroethylformal)	TKL.
Bis(2-chloroethyl) ether (Dichlorodiethyl ether)	DOW, UCC.
Bis(2-chloro-1-methylethyl) ether (Dichloroisopropyl ether).	DOW.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	DOW.
Butylene oxide	DOW.
Butyl ether (Di-n-butyl ether)	UCC.
Butyl vinyl ether	UCC.
2-Chloro-1,1-dimethoxyethane (Dimethyl chloracetal)	LIL.
2-Chloroethyl vinyl ether	UCC.
Chloromethyl methyl ether	HK, RH.
2,2-Dichloro-1,1-difluoroethyl methyl ether	DOW.
*Epichlorohydrin	DOW, RBC, SHC, UCC.
*Ethylene oxide	ACP, CAU, DOW, EKX, GAF, HCH, JCC, MAT, OMC, SHC, SNO, UCC, WYN.
*Ethyl ether:	
Absolute	MAL.
Tech.	ENJ, HPC, UCC, USI.
U.S.P.	MAL, OMS.
Ethyl vinyl ether	GAF, UCC.
Glycidol (2,3-Epoxy-1-propanol)	OTC.
Isobutyl vinyl ether	GAF.
*Isopropyl ether	ENJ, SHC, UCC.
Methylal (Dimethoxymethane)	CEL.
*Methyl ether (Dimethyl ether)	COM, DUP, UCC.
Methyl vinyl ether	GAF, UCC.
*Propylene oxide	CEL, DOW, JCC, OMC, UCC, WYN.
Other	ALD, EK, GAF, HDG, ICI, UCC.
Ethanedithiol	RBC.
Ethanethiol	EK.
2-(Ethylmercapto)ethanol	PLC.
Fats and oils, chemically modified	ABB, CHL, DOM, RT, SDW.
Glucono-delta-lactone	DLI, PFZ.
Glutaraldehyde bis(sodium bisulfite)	IDC.
Hydrocarbons:	
1-Butyne (Ethylacetylene)	CUC.
n-Dodecane	HMY.
Ethylene, from ethyl alcohol, medicinal grade	OH.
Hexadecane	HMY.
Myrcene	IFF, NCI.
n-Octane	HMY.
1-Octadecene	HMY.
Propyne (Methylacetylene)	CUC.
Other	EK, HMY.
*Lauroyl peroxide	AZT, CAD, TEK, WTL.
Magnesium methylate	MRT, SFA.

TABLE 2.--Miscellaneous chemicals: Manufacturers' identification codes, by products, 1968--Continued

Chemical	Manufacturers' identification codes (see Appendix, tables 1 and 2)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
All Other Miscellaneous Acyclic Chemicals--Continued	
Methanesulfanol	PAS.
Methyldisulfide	CRZ.
Methyl sulfide (Dimethyl sulfide)	CRZ.
Methyl sulfoxide	CRZ.
Organo-aluminum compounds:	
Ethylaluminum chlorides	TNA, TSA.
Isobutylaluminum chlorides	TNA, TSA.
Methylaluminum chlorides	TNA.
Other	TNA, TSA.
Organo-boron compounds	ACS, SFA.
Organo-lead compounds:	
*Tetraethyllead	DUP, HCH, NLC, TNA.
*Tetramethyllead	DUP, NLC, TNA.
*Tetra(methyl-ethyl)lead	DUP, HCH, TNA.
Organo-lithium compounds	FTE.
Organo-magnesium halides	ARA, CLB, x.
Organo-mercury compounds	NTB.
Organo-silicon compounds:	
Monomers	DCC, PIC, TRC, UCC, x.
*Polymers	DCC, ORO, SFA, SPD, UCC.
Organo-tin compounds:	
Bis(tributyltin) oxide	CCW.
Dibutyltin dichloride	CCW.
Dibutylmethoxytin (Dibutyl tin methoxide)	CCA.
Other	CCA, CCW, x.
Perchloromethanethiol (Perchloromethyl mercaptan)	CHO.
Perlargonyl peroxide	WTL.
*Phosgene (Carbonyl chloride)	ACS, CTH, DUP, MOB, OMC, OTC, PPG, RUC, UCC, UPJ, VDM.
Pine oil, synthetic	CBY, HCI.
β-Propiolactone	CEL.
Propionyl peroxide	WTL.
Rare sugars	PFN, PIC, RSA.
Sodium ethoxide	FMP.
Sodium formaldehyde bisulfite	EK, IDC.
*Sodium formaldehyde sulfoxylate	DA, RH, ROY.
*Sodium methoxide (Sodium methylate)	BFR, DA, DUP, OMC, RBC, SFA.
Succinyl peroxide	WTL.
Tetrakis(hydroxymethyl)phosphonium chloride	HK.
Tributylphosphine	CCW.
Trioctylphosphine oxide	EK.
*Zinc formaldehyde sulfoxylate	DA, RH, ROY.
Other	ALD, ALX, CUC, DA, DUP, EK, GAF, KF, LCI, MES, NTL, PIC, PLC, SDW, SFA, UCC, WTL, x, x, x.

APPENDIX

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 1968, the Directory of Manufacturers lists approximately 800 primary manufacturers. 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: table 1 lists them in alphabetical order by identification symbols; table 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 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1968 are listed below in the order of their identification codes as used in the final tables of the 14 individual sections of this report. Table 2 of the Appendix lists these manufacturers alphabetically and gives their office addresses.]

Code identification	Name of company
AAC	Alcolac Chemical Corp.
AAE	American Aniline & Extract Co., Inc.
AAP	American Aniline Products, Inc.
ABB	Abbott Laboratories
ABS	Abex Corp., American Brakeblok Div.
ACC	Amoco Chemicals Corp.
ACE	Acme Chemical Co.
ACI	Aceto Industrial Chemical Co., Inc.
ACN	Allied Chemical Corp., Agricultural Div.
ACP	Allied Chemical Corp., Plastics Div.
ACR	Corn Products Co., Acme Resin Co. Div.
ACS	Allied Chemical Corp., Specialty Chemicals Div.
ACT	Arthur C. Trask Co.
ACU	Allied Chemical Corp., Union Texas Petroleum Div.
ACY	American Cyanamid Co.
AES	Amerace-Esna Corp., Chemical Specialties Div.
AGP	Armour-Dial, Inc.
AGY	Agway, Inc., Nitrogen Div.
AKS	Arkansas Co., Inc.
ALB	Ames Laboratories, Inc.
ALC	Alco Chemical Corp.
ALD	Aldrich Chemical Co., Inc.
ALF	Allied Chemical Corp., Fibers Div.
ALL	Alliance Chemical Co., Inc.
ALT	Crompton & Knowles Corp., Chemicals Group, Althouse Div.
ALX	Alox Corp.
AMB	American Bio-Synthetics Corp.
AMC	Amchem Products, Inc.
AME	American Chemical Corp.
AML	Amalgamated Chemical Corp.
AMO	American Oil Co. (Texas)
AMP	American Potash & Chemical Corp.
AMR	Pacific Resins & Chemical Co.
AMS	Martin-Marietta Corp., Ridgway Color & Chemical Div.
ANM	Ancon Chemical Corp.
APD	Atlas Chemical Industries, Inc.
APR	Atlas Processing Co.
APT	American Petrochemical Corp., Mol Rez Div.
APV	Armstrong Paint & Varnish Works, Inc.
APX	Apex Chemical Co., Inc.
ARA	Arapahoe Chemicals Div. of Syntex Corp.
ARC	Armour & Co., Armour Industrial Chemical Co. Div.
ARD	Ardmore Chemical Co., Inc.
ARK	Armstrong Cork Co.
ARL	Arol Chemical Products Co.
ARM	USS Agri-Chemicals, Inc.
ARN	Arenol Chemical Corp.
ARP	Armour Pharmaceutical Co.
ARZ	Arizona Chemical Co.
ASH	Ashland Oil & Refining Co., Ashland Chemical Co. Div.
ASL	Ansul Chemical Co.
AST	Astra Pharmaceutical Products, Inc.
ASY	American Synthetic Rubber Corp.
ATL	Atlantic Chemical Corp.
ATP	Atco Chemical-Industrial Products, Inc., Fine Chemicals Div.
ATR	Atlantic Richfield Co., ARCO Chemical Co. Div.
ATU	Atlantic Tubing & Rubber Co.
AV	FMC Corp., American Viscose Div.
AVS	Avisun Corp.
AZT	Dart Industries, Inc., Aztec Chemicals Div.
BAC	Baker Castor Oil Co.
BAL	Baltimore Paint & Chemical Corp.
BAO	Bayoil Co., Inc.
BAR	American Rubber & Chemical Co.
BAS	BASF Corp.
BAX	Baxter Laboratories, Inc.
BCM	Belding Chemical Industries
BCN	Lehn & Fink Products Corp., Beacon Div.
BDO	Benzenoid Organics, Inc.
BEE	Beecham, Inc.
BEN	Bennett's
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.
BFR	Branchflower Co.
BJL	Burdick & Jackson Laboratories, Inc.
BKC	J. T. Baker Chemical Co.
BKL	Millmaster Onyx Corp., Millmaster Chemical Div., Berkely Chemical Dept.
BKM	Buckman Laboratories, Inc.
BL	Belle Chemical Co., Inc.
BLA	Astor Products, Blue Arrow Div.
BLS	Beech-Nut, Inc.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
BME	Bendix Corp., Friction Materials Div.
BOR	Borden, Inc., Borden Chemical Div.
BOY	Walter N. Boysen Co.
BPC	Stauffer Chemical Co., Cowles Chemical Div., Benzol Products
BPL	Brand Plastics Co.
BRD	Baird Chemical Industries, Inc.
BRS	Bristol-Meyers Co., Bristol Laboratories Div.
BRU	M. A. Bruder & Sons, Inc.
BST	Occidental Petroleum Corp., Occidental Chemical Co. Div.
BSW	Original Bradford Soap Works, Inc.
BUC	Blackman-Uhler Chemical Co.
BUK	Buckeye Cellulose Corp.
BUR	Burroughs-Wellcome & Co. (U.S.A.), Inc.
BXT	J. H. Baxter & Co.
CAD	Chemetron-Noury Corp.
CAP	Cap-Roc, Inc.
CAU	Calcasieu Chemical Corp.
CBA	Ciba Corp.: Ciba Agrochemical Co. Ciba Products Co.
CBC	Georgia-Pacific Corp., Coos Bay Div.
CBD	Chembond Corp.
CBM	Carborundum Co., Coated Abrasives Div.
CBN	Columbian Carbon Co., Inc. and Chemicals Div.
CBP	Ciba Corp., Ciba Pharmaceutical Co. Div.
CBR	Colab Resin Corp.
CBT	Samuel Cabot, Inc.
CBY	Crosby Chemicals, Inc.
CCA	Carlisle Chemical Works, Inc., Advance Div.
CCC	Chase Chemical Corp.
CCH	Pearsall Co.
CCL	Charlotte Chemical Laboratories, Inc.
CCO	Reichhold Chemicals, Inc., Rubber Chemicals Group
CCP	Crown Central Petroleum Corp.
CCW	Carlisle Chemical Works, Inc.
CD	Budd Co., Polychem Div.
CEL	Celanese Corp., Celanese Coatings Co.
CFA	Cooperative Farm Chemicals Association
CFC	Sun Chemical Corp.
CGL	Cargill, Inc.
CHF	Chemical Formulators, Inc.
CHG	Chemagro Corp.
CHL	Chemol, Inc.
CHO	Stauffer Chemical Co., Calhio Chemicals, Inc. Div.
CHP	C. H. Patrick & Co., Inc.
CHT	Chattem Drug & Chemical Co., Chatten Chemicals Div.
CIB	Ciba Chemical & Dye Co.
CIK	Tenneco Chemicals, Inc., Cal/Ink Div.
CIS	Chemical Insecticide Corp.
CKL	Chemlek Laboratories, Inc.
CLB	Columbia Organic Chemicals Co., Inc.
CLD	Colloids, Inc.
CLI	Clintwood Chemical Co.
CLK	Clark Oil & Refining Corp.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.
CLV	Clover Chemical Co.
CLY	W. A. Cleary Corp.
CM	Carpenter-Morton Co.
CMC	Cos-Mar Co.
CMG	Nyanza, Inc.
CMP	Commercial Products Co., Inc.
CNC	Columbia Nitrogen Corp.
CNP	Columbia Nipro Corp.
CO	Continental Oil Co.
COL	Collier Carbon & Chemical Corp.
COM	Commercial Solvents Corp.
CON	Concord Chemical Co., Inc.
COP	Coopers Creek Chemical Corp.
COR	Commonwealth Oil Refining Co., Inc.
CP	Colgate-Palmolive Co.
CPC	Childs Pulp Colors, Inc.
CPD	Chemical Products Corp.
CPL	Conoco Plastics
CPP	Charmin Paper Products Co.
CPV	Cook Paint & Varnish Co.
CPX	Chemplex Co.
CPY	Copolymer Rubber & Chemical Corp.
CRD	Croda, Inc.
CRN	Corn Products Co.
CRS	Carus Chemical Co., Inc.
CRT	Crest Chemical Corp.
CRY	Tenneco Chemicals, Inc., Tenneco Plastics Div.
CRZ	Crown Zellerbach Corp., Chemical Products Div.
CSB	Imoco-Gateway Corp. Chemical Services
CSD	Cosden Oil & Chemical Co.
CSO	Cities Service Oil Co.
CSP	Coastal States Petrochemical Co.
CST	Charles S. Tanner Co.
CTL	Continental Chemical Co.
CTN	Chemetron Corp., Organic Chemical Div.
CUC	Air Reduction Co., Inc., Airco Chemicals & Plastics
CUL	Culver Chemical Co.
CUT	Cutter Laboratories, Inc.
CW	General Mills, Inc.
CWL	Stauffer Chemical Co., Cowles Chemical Div.
CWN	Upjohn Co., Carwin Organic Chemicals
CWP	Consolidated Papers, Inc.
DA	Diamond Shamrock Corp.
DAN	Dan River Mills, Inc.
DAV	Conchemco, Inc., H. B. Davis Co. Div.
DBC	Dow Badische Co.
DCC	Dow Corning Corp.
DCP	Dixie Chemical Products, Inc.
DEG	Degen Oil & Chemical Co.
DEP	DePaul Chemical Co., Inc.
DEX	Dexter Chemical Corp.
DIX	Dixie Chemical Co.
DLH	Hess Oil & Chemical Corp.
DLI	Dawe's Laboratories, Inc.
DOM	Dominion Products, Inc.
DOW	Dow Chemical Co.
DPP	Dixie Pine Products Co., Inc.
DRW	Drew Chemical Corp.
DSC	Dye Specialties, Inc.
DSO	DeSoto, Inc.
DUN	Frank W. Dunne Co.
DUP	E. I. duPont de Nemours & Co., Inc.
DVC	Dover Chemical Corp.
DXS	Sun Oil Co., DX Div.
DYS	Davies-Young Co.
ECC	Eastern Color & Chemical Co.
ECL	Eastside Chemical Laboratory
EFH	E. F. Houghton & Co.
EK	Eastman Kodak Co.:
EKT	Tennessee Eastman Co. Div.
EKX	Texas Eastman Co. Div.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
ELP	El Paso Products Co.
EMK	Emkay Chemical Co.
EMR	Emery Industries, Inc.
EN	Endo Laboratories, Inc.
ENJ	Enjay Chemical Co.
ENO	Enenco, Inc.
EPC	Epoxylite Corp.
ESA	East Shore Chemical Co., Inc.
ESC	Escambia Chemical Corp.
ETD	Ethyl-Dow Chemical Co.
EVN	Evans Chemetics, Inc.
EW	Westinghouse Electric Corp., Industrial Plastics Div., Chemical Products Plant
FAB	Fabricolor Manufacturing Corp.
FAR	Farnow, Inc.
FB	Fritzsche Bros., Inc.
FBF	Rexall Chemical Co., Fiberfil Div.
FBR	Pabco Paint Corp.
FC	Franklin Chemical Co.
FCA	Farmers Chemical Association, Inc.
FCD	France, Campbell & Darling, Inc.
FCL	Federal Color Laboratories, Inc.
FEL	Felton International, Inc.
FER	Ferro Corp., Ferro Chemical Div.
FG	Foster Grant Co., Inc.
FH	Foster-Heaton Co.
FIN	Fine Organics, Inc.
FIR	Firestone Tire & Rubber Co., Firestone Plastics Co. Div.
FIS	Fisher Chemical Co., Inc. & Fisher Melamine Corp.
FLH	H. B. Fuller Co.
FLM	Fleming Laboratories, Inc.
FLO	Florasynth, Inc.
FLW	Fuller-O'Brien Corp.
FMB	FMC Corp., Inorganic Chemicals Div. & Organic Chemicals Div.
FMN	FMC Corp., Niagara Chemical Div.
FMP	FMC Corp., Organic Chemicals Div. & Nitro Plant
FMT	Fairmount Chemical Co., Inc.
FOC	Farac Oil & Chemical Co., Div of Handschy Chemical Co.
FOM	Formica Corp.
FOR	El Dorado Chemical Co.
FRL	Firestone Tire & Rubber Co., Firestone Industrial Rubber Products Co. Div.
FRM	Farmer's Chemical Co.
FRO	Vulcan Materials Co., Chemicals Div.
FRP	Filtered Rosin Products Co.
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.
FSH	Frisch & Co., Inc.
FST	First Chemical Corp.
FTE	Foote Mineral Co.
FTX	Central Farmers Fertilizer Co., Fel-Tex Plant
GAF	GAF Corp.: Dyestuff & Chemical Div. Polymers Chemical Dept., Textile Chemical Div.
GAN	Gane's Chemical Works, Inc.
GCC	W. R. Grace & Co., Ag Chem. Group
GE	General Electric Co.,
GEI	Insulating Materials Dept.
GFS	G. Frederick Smith Chemical Co.
GGC	Goodrich-Gulf Chemicals, Inc.
GGY	Geigy Chemical Corp.
GIL	Gilman Paint & Varnish Co.
GIV	Givaudan Corp.
GLC	General Latex & Chemical Corp.
GLD	SCM Corp.: Famous Foods Div. Glidden-Durkee Div.
GLX	Electro-Seal Glasflex Corp.
GLY	Glyco Chemicals, Inc.
GNF	General Foods Corp., Maxwell House Div.
GNM	General Mills, Inc., Chemical Div.
GNT	General Tire & Rubber Co., Chemical Div.
GOC	Gulf Oil Corp.
GOR	Gordon Chemical Co., Inc.
GPM	General Plastics Manufacturing Co.
GPR	Grain Processing Corp.
GRA	Great American Plastics Co.
GRC	W. R. Grace & Co.: Dubois Chemicals Div.
GRD	Dewey & Almy Chemical Div.
GRG	P. D. George Co.
GRH	W. R. Grace & Co.: Hatco Chemical Div.
GRL	Vestal Laboratories Div.
GRO	Millmaster Onyx Corp., A. Gross & Co. Div.
GRS	Pontiac Refining Corp.
GRV	Guardsman Chemical Coatings, Inc.
GRW	Great Western Sugar Co.
GTH	Guth Chemical Co.
GTL	Great Lakes Chemical Corp.
GYR	Goodyear Tire & Rubber Co.
HAB	Halby Products Co., Inc.
HAL	C. P. Hall Co. of Illinois
HAM	Hampden Color & Chemical Co.
HAN	Hanna Paint Manufacturing Co., Inc.
HAP	Applied Plastics Co., Inc.
HCH	Houston Chemical Corp.
HCR	Hercor Chemical Corp.
HDG	Hodag Chemical Corp.
HER	Heresite & Chemical Co.
HET	Heterochemical Corp.
HEW	Hewitt Soap Co.
HEX	Hexagon Laboratories, Inc.
HFT	Hoffman-Taff, Inc.
HK	Hooker Chemical Corp.,
HKD	Durez Div.
HKY	Hawkeye Chemical Co.
HL1	Haag Laboratories, Inc.
HMP	W. R. Grace & Co., Hampshire Chemical Div.
HMY	Humphrey Chemical Co.
HN	Tenneco Chemicals, Inc.
HNC	H & N Chemical Co.
HNT	Huntington Laboratories, Inc.
HNX	Tenneco Chemicals, Inc., Nuodex Div.
HOF	Hoffmann-LaRoche, Inc.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Div.
HPC	Hercules, Inc.
HRS	Harris Paint Co.
HRT	Hart Products Corp.
HSC	Holland Suco Color Co.
HSH	Harshaw Chemical Co. Div. of Kewanee Oil Co.
HST	American Hoechst Corp.
HUM	Kraftco Corp., Humko Products Div.
HUS	Husky Briquetting, Inc.
HVG	Haveg Industries, Inc.
HYC	Dextro Corp., Hysol Div.
HYN	Hynson, Westcott & Dunning, Inc.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
IBI	Industrial Biochemicals, Inc.
ICC	Inmont Corp.
ICF	Interchemical Corp., Finishes Div.
ICI	ICI America, Inc.
ICO	Inmont Corp.
IDC	Industrial Dyestuff Co.
IFF	International Flavors & Fragrances, Inc.
IMC	International Minerals & Chemical Corp.
IMP	Hercules, Inc., Imperial Color & Chemical Dept.
INL	Inland Steel Co., Inland Steel Container Co. Div.
IOC	Ionac Chemical Co. Div. of Sybron Corp.
IPC	Interplastic Corp., Commercial Resins Div.
IPI	Isocyanate Products, Inc.
IPR	Inter-Pacific Resins, Inc.
IRC	TRC, Inc., IRC Div.
IRI	Ironsides Resins, Inc.
ISC	Interstate Chemical Co.
JCC	Jefferson Chemical Co., Inc.
JDC	Nipak, Inc.
JEN	Jennison-Wright Corp.
JMS	J. Meyer & Sons, Inc.
JNS	S. C. Johnson & Son, Inc.
JOB	Jones-Blair Paint Co.
JOR	Jordan Chemical Co.
JRG	Andrew Jergens Co.
JSC	Jersey State Chemical Co.
JTC	Joseph Turner & Co.
JWL	Jewel Paint & Varnish Co.
KAI	Kaiser Aluminum & Chemical Corp., Kaiser Chemicals Div.
KAL	Kali Manufacturing Co.
KCC	Kennecott Copper Corp., Chino Mines Div.
KCH	Keystone Chemurgic Corp.
KCU	Kennecott Copper Corp., Utah Copper Div.
KCW	Keystone Color Works, Inc.
KEL	Kelly-Pickering Chemical Corp.
KEN	Witco Chemical Corp., Kendall Refining Co. Div.
KET	Ketona Chemical Corp.
KF	Kay-Fries Chemicals, Inc.
KMC	Kohler-McLister Paint Co.
KMP	Kelly-Moore Paint Co.
KND	Knoedler Chemical Co.
KNG	Far-Best Corp., O. L. King Div.
KNP	Knapp Products, Inc.
KON	H. Kohnstamm & Co., Inc.
KPI	Kenrich Petrochemicals, Inc.
KPP	Sinclair-Koppers Co.
KPS	Koppers Pittsburgh Co.
KPT	Koppers Co., Inc., Organic Materials Div.
KYN	Kyanize Paints, Inc.
KYS	Keysor Chemical Co.
LAK	Lakeway Chemical Co.
LAM	LaMotte Chemical Products Co.
LAS	Lasco Industries, Inc.
LCI	Lachat Chemicals, Inc.
LEA	Leatex Chemical Co.
LEB	Lebanon Chemical Corp.
LEM	B. L. Lemke & Co., Inc.
LEN	Leonard Refineries, Inc.
LEV	Lever Brothers Co.
LIL	Eli Lilly & Co.
LKL	Lakeside Laboratories Div. of Colgate-Palmolive Co.
LKY	Lake States Div. of St. Regis Paper Co.
LMI	North American Chemical Co.
LPC	Lignin Products Co.
LUB	Lubrizol Corp
LUE	George Lueders & Co., Inc.
LUR	Laurel Products Corp.
LVR	C. Lever Co., Inc.
LVY	Fred'k H. Levey Co. Div. of Columbian Carbon Co., Inc.
MAL	Mallinckrodt Chemical Works
MAR	American Can Co.
MAT	Matador Chemical Co., Inc.
MAY	Otto B. May, Inc.
MCA	Masonite Corp., Alpine Div.
MCB	Borg-Warner Corp., Marbon Chemical Div.
MCC	McCloskey Varnish Co.
MCH	Michigan Chemical Corp.
MCI	Mooney Chemicals, Inc.
MCP	Moretex Chemical Products, Inc.
MED	Medical Chemicals Corp.
MEE	Maumee Chemical Co.
MER	Merichem Co.
MET	M & T Chemicals, Inc.
MFG	Molded Fiber Glass Cos., Inc.
MGK	McLaughlin Gormley King Co.
MGR	Magruder Color Co., Inc.
MHI	Ventron Corp., Metals Chemicals Div.
MID	Dexter Corp., Midland Div.
MIR	Miranol Chemical Co., Inc.
MLS	Miles Laboratories, Inc., Marschall Div.
MMM	Minnesota Mining & Manufacturing Co.
MNO	Monochem, Inc.
MNP	Minnesota Paints, Inc.
MOA	Mona Industries, Inc.
MOB	Mobay Chemical Co.
MOC	Marathon Oil Co., Texas Refining Div.
MON	Monsanto Co.
MOR	Mineral Oil Refining Co.
MOT	Motomco, Inc.
MR	Benjamin Moore & Co.
MRA	Crown-Metro
MRB	Marblette Co. Div. of Allied Products Corp.
MRD	Marden-Wild Corp.
MRK	Merck & Co., Inc.
MRN	Standard Brands Chemicals, Inc., Paisley Div.
MRO	W. R. Grace & Co., Marco Chemical Div.
MRT	Morton Chemical Co.
MRV	Marlowe-Van Loan Corp.
MRX	Max Marx Color & Chemical Co., Inc.
MSC	Mississippi Chemical Corp.
MTO	Montrose Chemical Corp. of California
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.
MYW	Stepan Chemical Co., Maywood Div.
NCA	Northrop Carolina, Inc.
NCI	Union Camp Corp., Chemicals Div.
NCW	Nostrip Chemical Works, Inc.
NEO	Norda Essential Oil & Chemical Co., Inc.
NEP	Nepera Chemical Co., Inc.
NES	Nease Chemical Co., Inc.
NEV	Neville Chemical Co.
NIL	Nilok Chemicals, Inc.
NIT	Nitrin, Inc.
NLC	Nalco Chemical Co.
NMC	National Milling & Chemical Co.
NOC	Norac Co., Inc. & Mathe Chemical Co. Div.
NON	A. P. Nonweiler Co.
NOR	Norwich Pharmacal Co.
NPC	Northwest Petrochemical Corp.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
NPI	National Polychemicals, Inc.
NPP	Enjay Chemical Co., Enjay Fibers & Laminates Co. Div.
NPR	Safeway Stores, Inc., Newport Products Co. Div.
NPV	Norris Paint & Varnish Co.
NSC	National Starch & Chemical Corp.
NTB	National Biochemical Co.
NTC	National Casein Co.
NTL	National Lead Co.
NVF	NVF Co.
NVT	Novamont Corp., Neal Works
NW	Northwestern Chemical Co.
OBC	O'Brien Corp.
OCF	Owens-Corning Fiberglas Corp.
OH	Air Reduction Co., Inc., Ohio Medical Products Div.
OMC	Olin Corp., & Agricultural Chemicals Div.
OMS	E. R. Squibb & Sons, Inc.
ONX	Millmaster Onyx Corp., Onyx Chemical Co. Div.
OPC	Orbis Products Corp.
ORG	Organics, Inc.
ORO	Chevron Chemical Co.
ORT	Roehr Chemicals, Inc.
OSB	C. J. Osborn Co.
OTA	Ottawa Chemical Co.
OTC	Ott Chemical Co.
OTH	Chevron Chemical Co.
PAI	Pennsylvania Industrial Chemical Corp.
PAN	Pan American Petroleum Corp.
PAR	Pennsylvania Refining Co.
PAS	Pennwalt Corp.
PAT	Patent Chemicals, Inc.
PBI	Private Brands, Inc.
PBY	Pillsbury Co.
PC	Proctor Chemical Co., Inc.
PCC	USS Chemicals Div. of U.S. Steel Corp.
PCH	Peerless Chemical Co.
PCI	Pioneer Chemical Works, Inc.
PCR	Princeton Chemical Research, Inc.
PCS	Emery Industries, Inc., Western Div.
PCW	Pfister Chemical, Inc.
PD	Parke, Davis & Co.
PDC	Berncolors-Poughkeepsie, Inc
PEK	Peck's Products Co.
PEL	Pelron Corp.
PEN	CPC International, Inc., Penick Div.
PER	Perry & Derrick Co., Inc.
PFN	Pfanstiehl Laboratories, Inc.
PFP	Midwest Manufacturing Corp.
PFW	Polak's Frutal Works
PFZ	Chas. Pfizer & Co., Inc.
PG	Proctor & Gamble Co., Proctor & Gamble Manufacturing Co.
PGU	Gulf Oil Corp., Perkins Glue, Chemicals Dept.
PHF	Peter Hand Foundation, Inc.
PHR	Pharmachem Corp.
PIC	Pierce Organics, Inc.
PII	Polymer Industries, Inc.
PIL	Pilot Chemical Co.
PIT	Pitt-Consol Chemical Co.
PLA	Richardson Co., Richardson Polymers Div.
PLB	P-L Biochemicals, Inc.
PLC	Phillips Petroleum Co.
PLS	Plastics Engineering Co.
PLU	Plumb Chemical Corp.
PLX	Plex Chemical Corp.
PMC	Plastics Manufacturing Co.
PMP	Premier Malt Products, Inc.
PNT	Pantasote Co.
PNX	Murphy-Phoenix Co.
POL	Polymer Corp.
PPC	Premier Petrochemical Co.
PPG	PPG Industries, Inc.
PPL	Pioneer Plastics Core
PPR	Phillips Puerto Rico Corp., Inc.
PRC	Products Research & Chemical Corp.
PRD	Producto! Chemical Co., Inc.
PRT	Pratt & Lambert, Inc.
PRX	Purex Corp., Ltd.
PSC	Passaic Color & Chemical Co.
PSP	Georgia-Pacific Corp., Bellingham Div.
PTO	Puerto Rico Chemical Co., Inc.
PTP	Preservative Paint Co.
PTT	Petro-Tex Chemical Corp.
PUB	Publicker Industries, Inc.
PUR	Puritan Chemical Co.
PVI	Polyvinyl Chemicals, Inc.
PYL	Polychemical Laboratories, Inc.
PYR	Poly Resins
PYZ	Polyrez Co., Inc.
QCP	Quaker Chemical Corp.
QKO	Quaker Oats Co.
QUN	K. J. Quinn & Co., Inc.
RAB	Raybestos-Manhattan, Inc., Raybestos Div.
RAY	ITT Rayonier, Inc.
RBC	Roberts Chemicals, Inc.
RCC	Rexall Drug & Chemical Co., Rexall Chemical Co. Div.
RCD	Richardson Co.
RCI	Reichhold Chemicals, Inc.
RDA	Rhodia, Inc.
RED	Red Spot Paint & Varnish Co., Inc.
REH	Reheis Chemical Co. Div. of Armour Pharmaceutical Co.
REL	Reliance Universal, Inc. & Rel-Rez Div.
REM	Remington Arms Co., Inc.
REN	Renroh Resins
REZ	Rezolin, Inc.
RGC	Rogers Corp.
RH	Rohm & Haas Co.
RIK	Riker Laboratories, Div. of Rexall Drug & Chemical Co.
RIL	Reilly Tar & Chemical Corp.
RIV	Riverdale Chemical Co.
RLS	Rachelle Laboratories, Inc.
ROB	Robeco Chemicals, Inc.
ROM	United Merchants & Manufacturers, Inc., Roma Chemical Div.
ROY	Royce Chemical Co.
RPC	Millmaster Onyx Corp., Refined-Onyx Div.
RSA	R.S.A. Corp.
RSB	Rosenberg Bros. & Co.
RT	F. Ritter & Co.
RTC	Ritter Chemical Co., Inc.
RTF	Retzloff Chemical Co.
RUB	Hooker Chemical Corp., Ruco Div.
RUC	Rubicon Chemicals, Inc.
S	Sandoz, Inc. & Dyestuff & Chemical Div.
SAC	Southeastern Adhesives Co.
SAL	Salsbury Laboratories
SAR	Sartomer Resins, Inc.
SBC	Scher Bros., Inc.
SBI	Standard Brands Chemical Industries, Inc.
SBO	Southern Biochemical Corp.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
SBP	Sugar Beet Products Co.
SCC	Standard Chlorine of Delaware, Inc.
SCF	Schaefer Varnish Co.
SCH	Schering Corp.
SCN	Schenectady Chemicals, Inc.
SCO	Scholler Bros., Inc.
SCP	Standard Chemical Products, Inc.
SCR	R. P. Scherer Corp.
SDC	Martin-Marietta Corp., Southern Dyestuff Co. Div.
	Sterling Drug, Inc.:
SDG	Glenbrook Laboratories Div.
SDH	Hilton-Davis Chemical Co. Div.
SDW	Winthrop Laboratories Div.
SEA	Seaboard Chemicals, Inc.
SED	Conchemco, Inc., Kansas City Div.
SEL	Selney Co., Inc.
SEY	Seydel-Woolley & Co.
	Stauffer Chemical Co.:
SF	Agricultural Div.
SFA	Specialty Chemical Div.
SFD	Sonford Chemical Co.
SFI	Stauffer Chemical Co., Industrial Div.
SH	Stein, Hall & Co., Inc.
SHA	Shanco Plastics & Chemicals, Inc.
SHC	Shell Oil Co., Shell Chemical Co. Div.
SHF	National Dairy Products Corp., Sheffield Chemical Div.
SHL	Nitini, Inc. Sub. of Shulton, Inc.
SHO	Shell Oil Co.
SHP	Shepherd Chemical Co.
SIC	Vistron Corp., Silmar Div.
SID	George F. Siddall Co., Inc.
SIM	Simpson Timber Co.
SIN	Sinclair Oil Corp.
SIO	Standard Oil Co. of Ohio
SIP	James P. Sipe & Co.
SK	Smith, Kline & French Laboratories
SKC	Sinclair-Koppers Chemical Co.
SKG	Sunkist Growers, Inc.
SKO	Skelly Oil Co.
SKT	Textron, Inc., Spencer Kellogg Div.
SLC	Soluol Chemical Co., Inc.
SLM	Salem Oil & Grease Co.
SLV	Sterling Drug, Inc., Salvo Chemical Div.
SM	Mobil Chemical Co.
SM	Mobil Oil Corp. & Mobil Chemical Co. Div., Industrial Chemical Div.
SMC	Stamford Chemical Industries, Inc.
SNA	Sun Chemical Corp., Pigments Div.
SNC	Sonoco Products Co.
SNI	Kaiser Aluminum & Chemicals Corp., Kaiser Agricultural Chemicals Div.
SNO	SunOlin Chemical Co.
SNT	Suntide Refining Co.
SNW	Sun Chemical Corp., Chemical Div.
SOC	Standard Oil Co. of California, Chevron Chemical Co.
SOG	Signal Oil & Gas Co.
SOH	Vistron Corp.
SOI	American Oil Co. (Maryland)
SOL	Solar Chemical Corp.
SOP	Southern Chemical Products Co.
SOR	Thomason Industries, Inc., Southern Resin Div.
SOS	Southern Sizing Co.
SPC	Sinclair Paint Co.
SPD	General Electric Co., Silicone Products Dept.
SPI	Sinclair Oil Corp., Chemical Div.
SPL	Spaulding Fibre Co., Inc.
SPY	Standard Pyroxoloid Corp.
SRL	G. D. Searle & Co.
STA	A. E. Staley Manufacturing Co.
STC	Sou-Tex Chemical Co., Inc.
STG	Stange Co.
STP	Stepan Chemical Co.
SUG	Colonial Sugars Co., Sucro Chemical Div.
SUM	Summit Chemical Products Corp.
SUN	Sun Oil Co., Sunoco Div.
SVC	Sullivan Varnish Co.
SVT	Solvent Chemical Co., Inc.
SW	Sherwin-Williams Co.
SWT	Swift & Co., Swift Chemical Co. Div.
SYC	Synthetic Chemicals, Inc.
SYP	Synthetic Products Co.
SYV	Synvar Corp.
TAE	Chemetron Corp., National Cylinder Gas Div.
TCC	Tanatex Chemical Corp.
TCD	Tenneco Chemicals, Inc., Tenneco Colors Div.
TCH	Trylon Chemicals, Inc.
TCI	Norwich Pharmacal Co., Texize Chemicals, Inc. Div.
TDC	Diversey Corp., Diversey Chemical Co. Div.
TEK	Teknor Apex Co.
TEN	Tennessee Copper Co. Div. of Tennessee Corp.
TER	Terra Chemicals International, Inc.
THC	Olin Corp., Thompson Plastics
THM	Wm. T. Thompson Co., Thompson Chemicals Div.
TIC	Ticonderoga Chemical Corp.
TID	Getty Oil Co.
TKL	Thiokol Chemical Corp.
TMH	Thompson-Hayward Chemical Co.
TMS	Sterling Drug, Inc., Thomasset Colors Div.
TNA	Ethyl Corp.
TNI	Gillette Chemical Co. Div. of Gillette Co.
TOC	Tenneco Oil Co.
TRC	Toms River Chemical Corp.
TRO	Troy Chemical Co.
TSA	Texas Alkyls, Inc.
TTX	Detrex Chemical Industries, Inc.
TUS	Texas-U.S. Chemical Co.
TV	Sun Chemical Corp.
TX	Texaco, Inc.
TXC	Tex Chem Co.
TXN	Textilana-Nease, Inc.
TXT	Textilana Corp.
TZC	Tizon Chemical Corp.
UBS	Staley Chemicals
UCC	Union Carbide Corp.
UDI	Petrochemicals Co., Inc.
UHL	Paul Uhlich & Co., Inc.
UNG	Ungerer & Co.
UNN	United Chemical Corp. of Norwood
UNO	United Oil Manufacturing Co.
UNP	United Chemical Products Corp.
UNS	Union Starch & Refining Co., Inc.
UOC	Union Oil Co. of California
UOP	Universal Oil Products Co., UOP Chemical Div.
UPF	U.S. Pipe & Foundry Co.
UPJ	Upjohn Co.
UPL	U.S. Plywood-Champion Papers, Inc., California Div., Shasta Operations
UPM	Universal Oil Products Co.
UPR	Argus Chemical Corp., U.S. Peroxygen Div.
USB	U.S. Borax Research Corp.

TABLE 1.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by code, 1968--Continued

Code identification	Name of company
USI	National Distillers & Chemical Corp.: National Petro Chemical Corp. Div. U.S. Industrial Chemicals Co. Div.
USO	U.S. Oil Co., Inc.
USR	Uniroyal, Inc., Chemical Div.
UVC	Universal Chemicals Corp.
VAC	Northern Petrochemical Co., Varney Div.
VAL	Valchem
VB	Vermilye-Bell
VDM	Van De Mark Chemical Co., Inc.
VEL	Velsicol Chemical Corp.
VGC	Virginia Chemicals, Inc.
VIN	Vineland Chemical Co.
VLN	Valley Nitrogen Producers, Inc.
VLY	Chem-Fleur, Inc.
VNC	Vanderbilt Chemical Corp.
VND	Van Dyk & Co., Inc.
VPC	Verona-Pharma Chemical Corp.
VPT	Vickers Refining Co., Inc.
VSV	Valentine Sugars, Inc., Valite Div.
VTM	Vitamins, Inc.
WAW	W. A. Wood Co.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.
WBC	Worthington Biochemical Corp.
WBG	White & Bagley Co.
WCA	West Coast Adhesives Co.
WCC	Witco Chemical Corp., Witfield Chemical Div.
WES	Weston Chemical Co., Inc.
WHC	Whittaker Corp., Research & Development/San Diego
WHI	White & Hodges, Inc.
WHL	Whitmoyer Laboratories, Inc.
WHW	Whittemore-Wright Co., Inc.
WIC	Wica Chemicals, Inc.
WIL	Wilson Pharmaceutical & Chemical Corp., Wilson Laboratories Div.
WJ	Warner-Jenkinson Manufacturing Co.
WM	Wilson Pharmaceutical & Chemical Corp. Wilson-Martin Div.
WMP	Warner Machine Products, Inc., Warner Chemical Div.
WOB	Woburn Chemical Corp.
WOD	Woodbury Chemical Co.
WON	Woonsocket Color & Chemical Co.
WRC	Wood Ridge Chemical Corp.
WRD	Weyerhaeuser Co.
WSN	Washine Chemical Corp.
WTC	Witco Chemical Co., Inc.
WTH	Wallace & Tiernan, Inc.: Harchem Div.
WTL	Lucidol Div.
WVA	Westvaco Corp.: Chemical Div., Tall Oil Dept. Polychemicals Div.
WYC	Wycon Chemical Co.
WYN	Wyandotte Chemicals Corp.
WYT	Wyeth Laboratories, Inc. Div. of American Home Products Corp.
YAW	Young Aniline Works, Inc.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968

[Names of synthetic organic chemical manufacturers that reported production or sales to the U.S. Tariff Commission for 1968 are listed below alphabetically, together with their identification codes as used in the final tables of the 14 individual sections of this report. Table 1 of the Appendix lists these manufacturers in the order of their identification codes.]

Identification code	Name of company	Office address
A8B	Abbott Laboratories	14th St. and Sheridan Rd., N. Chicago, IL 60664.
ABS	Abex Corp., American Brakelok Div	900 W. Maple Rd., Troy, MI 48084.
ACI	Aceto Industrial Chemical Co., Inc	126-02 Northern Blvd., Flushing, New York, NY 11368.
ACE	Acme Chemical Co	2506 N. 32d St., Milwaukee, WI 53245.
AGY	Agway, Inc., Nitrogen Div	1446 Buffalo St., Olean, NY 10760.
HOU	Air Products & Chemicals, Inc., Houdry Process & Chemical Div.	1339 Chestnut St., Philadelphia, PA 19107.
	Air Reduction Co., Inc.:	
CUC	Airco Chemicals & Plastics	150 E. 42d St., New York, NY 10017.
OH	Ohio Medical Products Div	1400 E. Washington Ave., Madison, WI 53701.
ALC	Alco Chemical Corp	Trenton Ave. and William St., Philadelphia, PA 19134.
AAC	Alcolac Chemical Corp	3440 Fairfield Rd., Baltimore, MD 21226.
ALD	Aldrich Chemical Co., Inc	2371 N. 30th St., Milwaukee, WI 53210.
ALL	Alliance Chemical Co., Inc	P. O. Box 326, Ridgefield, NJ 07657.
	Allied Chemical Corp.:	
ACN	Agricultural Div	40 Rector St., New York, NY 10006.
ALF	Fibers Div	1450 Broadway, New York, NY 10018.
ACP	Plastics Div	P. O. Box 365, Morristown, NJ 07960.
ACS	Specialty Chemicals Div	Columbia Rd. & Park Ave., Morristown, NJ 07960.
ACU	Union Texas Petroleum Div	P. O. Box 2120, Houston, TX 77001.
ALX	Alox Corp	3943 Buffalo Ave., Niagara Falls, NY 14302.
AML	Amalgamated Chemical Corp	Ontario and Rorer Sts., Philadelphia, PA 19134.
AMC	Amchem Products, Inc	Brookside Ave., Ambler, PA 19002.
AES	Amerace-Esna Corp., Chemical Specialties Div.	74 Hudson Ave., Tanafly, NJ 07670.
AAE	American Aniline & Extract Co., Inc	Venango and F Sts., Philadelphia, PA 19134.
AAP	American Aniline Products, Inc	P. O. Box 3063, Paterson, NJ 07509.
AMB	American Bio-Synthetics Corp	710 W. National Ave., Milwaukee, WI 53204.
MAR	American Can Co	100 Park Ave., New York, NY 10017.
AME	American Chemical Corp	P. O. Box 9247, Long Beach, CA 90810.
ACY	American Cyanamid Co	Wayne, NJ 07470.
HST	American Hoechst Corp	129 Quidnick St., Coventry, RI 02816.
S01	American Oil Co. (Maryland)	910 S. Michigan Ave., Chicago, IL 60680.
AMO	American Oil Co. (Texas)	910 S. Michigan Ave., Chicago, IL 60680.
APT	American Petrochemical Corp., Mol Rez Div	3134 California St., N.E. Minneapolis, MN 55418.
AMP	American Potash & Chemical Corp	3000 W. 6th St., Los Angeles, CA 90005.
BAR	American Rubber & Chemical Co	P. O. Box 1034, Louisville, KY 40201.
ASY	American Synthetic Rubber Corp	P. O. Box 360, Louisville, KY 40201.
ALB	Ames Laboratories, Inc	200 Rock Lane, Milford, CT 06460.
ACC	Amoco Chemical Corp	130 E. Randolph Dr., Chicago, IL 60601.
ANM	Ancon Chemical Corp	1 Stanton St., Marinette, WI 54143.
ASL	Ansul Chemical Co	1 Stanton St., Marinette, WI 54143.
APX	Apex Chemical Co., Inc	200 S. 1st St., Elizabethport, NJ 07206.
HAP	Applied Plastics Co., Inc	130 Penn St., El Segundo, CA 90246.
ARA	Arapahoe Chemicals, Div. of Syntex Corp	2855 Walnut St., Boulder, CO 80302.
ARD	Ardmore Chemical Co., Inc	840 Valley Brook Ave., Lyndhurst, NJ 07071.
ARN	Arenol Chemical Corp	40-33 23d St., Long Island City, NJ 11101
UPR	Argus Chemical Corp., U.S. Peroxygen Div	840 Morton Ave., Richmond, CA 94804.
ARZ	Arizona Chemical Co	Wayne, NJ 07470.
AKS	Arkansas Co., Inc	185 Foundry St., Newark, NJ 07105.
ARC	Armour & Co., Armour Industrial Chemical Co. Div.	401 N. Wabash Ave., Chicago, IL 60690.
AGP	Armour-Dial, Inc	100 S. Wacker Dr., Chicago, IL 60606.
ARP	Armour Pharmaceutical Co	P. O. Box 511, Kankakee, IL 60901.
ARK	Armstrong Cork Co	Liberty and Charlotte Sts., Lancaster, PA 17604.
APV	Armstrong Paint & Varnish Works, Inc	1330 S. Kilbourn Ave., Chicago, IL 60623.
ARL	Arol Chemical Products Co	371 Wayne St., Jersey City, NJ 07302.
ASH	Ashland Oil & Refining Co	1401 Winchester Ave., Ashland, KY 41101.
	Ashland Chemical Co. Div	P. O. Box 149, Baytown, TX 77520 and 170 N. High St., Columbus, OH 43215.
BLA	Astor Products, Blue Arrow Div	5244 Edgewood Ct., Jacksonville, FL 32203.
AST	Astra Pharmaceutical Products, Inc	7-1/2 Neponset St., Worcester, MA 01606.
ATP	Atco Chemical-Industrial Products, Inc., Fine Chemicals Div.	93 Main St., Franklin, NJ 07416.
ATL	Atlantic Chemical Corp	10 Kingsland Rd., Nutley, NJ 07110.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
	Atlantic Richfield Co.:	
ATR	ARCO Chemical Co. Div----------	260 S. Broad St., Philadelphia, PA 19101.
ATU	Atlantic Tubing & Rubber Co----------	Mill St., Cranston, RI 02905.
APD	Atlas Chemical Industries, Inc----------	Wilmington, DE 19899.
APR	Atlas Processing Co----------	P. O. Box 9188, 3546 Midway St., Shreveport, LA.71109.
AVS	Avisun Corp----------	River Rd. & Grantham Lane, New Castle, DE 19720
BAS	BASF Corp----------	Ft. of Central Ave., S. Kearny, NJ 07032.
BRD	Baird Chemical Industries, Inc----------	185 Madison Ave., New York, NY 10016.
BAC	Baker Castor Oil Co----------	40 Avenue A, Bayonne, NJ 07002.
BKC	J. T. Baker Chemical Co----------	222 Red School Lane, Phillipsburg, NJ 08865.
BAL	Baltimore Paint & Chemical Corp----------	2325 Hollins Ferry Rd., Baltimore, MD 21230.
BXT	J. H. Baxter & Co----------	1700 S. El Camino Real, San Mateo, CA 94402.
BAX	Baxter Laboratories, Inc----------	6301 N. Lincoln Ave., Morton Grove, IL 60053.
BAO	Bayoil Co., Inc----------	2 Union St., Peabody, MA 01960.
BEE	Beecham, Inc----------	65 Industrial S., Clifton, NJ 07012.
BLS	Beech-Nut, Inc----------	Church St., Canajoharie, NY 13317.
BCM	Belding Chemical Industries----------	1407 Broadway, New York, NY 10018.
BL	Belle Chemical Co., Inc----------	P.O. Box 848, Lowell, NC 28098.
BME	Bendix Corp., Friction Materials Div----------	P.O. Box 238, Troy, NY 12180.
BEN	Bennett's----------	65 W. 1st S. St., Salt Lake City, UT 84110.
BDO	Benzenoid Organics, Inc----------	P.O. Box 157, Bellingham, MA 02019.
PDC	Berncolors-Poughkeepsie, Inc----------	75 N. Water St., Poughkeepsie, NY 12602.
BUC	Blackman-Uhler Chemical Co----------	P.O. Box 5627, Spartanburg, SC 29301.
BOR	Borden, Inc., Borden Chemical Div----------	350 Madison Ave., New York, NY 10017.
MCB	Borg-Warner Corp., Marbon Chemical Div--------	P.O. Box 68, Washington, WV 26181.
BOY	Walter N. Boysen Co----------	1001 42d St., Oakland, CA 94608.
BFR	Branchflower Co----------	4501 Shilshole Ave., NW., Seattle, WA 98101.
BPL	Brand Plastics Co----------	130 E. Randolph Dr., Chicago, IL 60601.
BRS	Bristol-Meyers Co., Bristol Laboratories Div.-	P.O. Box 657, Syracuse, NY 13201.
BRU	M. A. Bruder & Sons, Inc----------	52d St. and Grays Ave., Philadelphia, PA 19143.
BUK	Buckeye Cellulose Corp----------	2899 Jackson Ave., Memphis, TN 38108.
BKM	Buckman Laboratories, Inc----------	1256 N. McLean Blvd., Memphis, TN 38108.
CD	Budd Co., Polychem Div----------	70 S. Chapel St., Newark, DE 19711.
BJL	Burdick & Jackson Laboratories, Inc----------	1953 S. Harvey St., Muskegon, MI 49442.
BUR	Burroughs-Wellcome & Co. (U.S.A.), Inc--------	1 Scarsdale Rd., Tuckahoe, NY 10707.
PEN	CPC International, Inc., Penick Div.----------	100 Church St., New York, NY 10008.
CBT	Samuel Cabot, Inc----------	246 Summer St., Boston, MA 02210.
CAU	Calcasieu Chemical Corp----------	P.O. Box 1522, Lake Charles, LA 70601.
CAP	Cap-Roc, Inc----------	300 State St., Rochester, NY 14614.
CBM	Carborundum Co., Coated Abrasives----------	Walmore Rd., Niagara Falls, NY 14302.
CGL	Cargill, Inc----------	Cargill Bldg., Minneapolis, MN 55402.
CCW	Carlisle Chemical Works, Inc----------	West St., Reading, OH 45215.
CCA	Advance Div----------	500 Jersey Ave., New Brunswick, NJ 08903.
CM	Carpenter-Morton Co----------	376 3d St., Everett, MA 02149.
CRS	Carus Chemical Co., Inc----------	1375 8th St., LaSalle, IL 61301.
CEL	Celanese Corp. of America----------	522 5th Ave., New York, NY 10036.
	Celanese Coatings Co----------	1495 S. 11th St., Louisville, KY 40208.
FTX	Central Farmers Fertilizer Co., Fel-Tex Div---	P.O. Box 68, Fremont, NB 68025.
CCL	Charlotte Chemical Laboratories, Inc----------	P.O. Box 948, Charlotte, NC 28201.
CPP	Charmin Paper Products Co----------	800 Hoberg St., Green Bay, WI 54305.
CCC	Chase Chemical Corp----------	3527 Smallman St., Pittsburgh, PA 15201.
CHT	Chattem Drug & Chemical Co., Chattem Chemicals Div.	1715 W. 38th St., Chattanooga, TN 37409.
CHG	Chemagro Corp----------	P.O. Box 4913, Station "F", Kansas City, MO 64120.
CBD	Chembond Corp----------	P.O. Box 270, Springfield, OR 97477.
	Chemetron Corp.:	
TAE	National Cylinder Gas Div----------	840 N. Michigan Ave., Chicago, IL 60611.
CTN	Organic Chemical Div----------	373 7th Ave., New York, NY 10001.
CAD	Chemetron-Noury Corp----------	2153 Lockport-Olcott Rd., Burt, NY 14028.
VLY	Chem-Fleur, Inc----------	200 Pulaski St., Newark, NJ 07105.
CHF	Chemical Formulators, Inc----------	P.O. Box 26, Nitro, WV 25143.
CIS	Chemical Insecticide Corp----------	30 Whitman Ave., Metuchen, NJ 08840.
CPD	Chemical Products Corp----------	P.O. Box 449, Cartersville, GA 30120.
CKL	Chemlek Laboratories, Inc----------	4040 W. 123d St., Alsip, IL 60658.
CHL	Chemol, Inc----------	P.O. Box 20687, Greensboro, NC 27420.
CPX	Chemplex Co----------	3100 Golf Rd., Rolling Meadows, IL 60008.
OTH & ORO	Chevron Chemical Co----------	940 Hensley St., Richmond, CA 94801 amd 200 Bush St., San Francisco, CA 94120.
CPC	Childs Pulp Colors, Inc----------	43 Summit St., Brooklyn, NY 11231.
MTR	Chris-Craft Industries, Inc., Montrose Chemical Div.	100 Lister Ave., Newark, NJ 07105.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
CIB	Ciba Chemical & Dye Co	Route 208, Fair Lawn, NJ 07410.
	Ciba Corp.:	
CRA	Ciba Argochemical Co	556 Morris Ave., Summit, NJ 07901.
CBP	Ciba Pharmaceutical Co. Div	556 Morris Ave., Summit, NJ 07901.
CBA	Ciba Products Co	556 Morris Ave., Summit, NJ 07901.
CSO	Cities Service Oil Co	P.O. Box 300, Tulsa, OK 74101.
CLK	Clark Oil & Refining Corp	P.O. Box 297, Blue Island, IL 60406.
CLY	W. A. Cleary Corp	P.O. Box 749, New Brunswick, NJ 08903.
CLI	Clintwood Chemical Co	4342 S. Wolcoth Ave., Chicago, IL 60609.
CLV	Clover Chemical Co	P.O. Box 146, Eighty Four, PA 15330.
CSP	Coastal States Petrochemical Co	6th Fl., Lincoln Liberty Life Bldg., Houston, TX 77002.
CBR	Colab Resin Corp	Main St., Tewksbury, MA 01876.
CP	Colgate-Palmolive Co	300 Park Ave., New York, NY 10022.
COL	Collier Carbon & Chemical Corp	461 S. Boylston, Los Angeles, CA 90017.
CLD	Colloids, Inc	394 Frelinghuysen Ave., Newark, NJ 07114.
SUG	Colonial Sugars Co., Sucro Chemical Div	Drawer G, Gramercy, LA 70052.
CNP	Columbia Nipro Corp	P.O. Box 1483, Augusta, GA 30903.
CNC	Columbia Nitrogen Corp	P.O. Box 1483, Augusta, GA 30903.
CLB	Columbia Organic Chemicals Co., Inc	912 Drake St., Columbia, SC 29205.
CBN	Columbian Carbon Co	380 Madison Ave., New York, NY 10017.
	Chemicals Div	P.O. Box 1522, Lake Charles, LA 70601.
CMP	Commercial Products Co., Inc	117 Ethel Ave., Hawthorne, NJ 07641.
COM	Commercial Solvents Corp	245 Park Ave., New York, NY 10017.
COR	Commonwealth Oil Refining Co., Inc	P.O. Box 3623, Ponce, PR 00731.
	Conchemco, Inc.:	
DAV	H. B. Davis Co. Div	Bayard & Severn Sts., Baltimore, MD 21230.
SED	Kansas City Div	18th & Garfield Sts., Kansas City, MO 64127.
CPL	Conoco Plastics	P.O. Box 236, Wilton, CT 06897.
CON	Concord Chemical Co., Inc	P. O. Box 1100, Camden, NJ 08103.
CWP	Consolidated Papers, Inc	Wisconsin Rapids, WI 54494.
CTL	Continental Chemical Co	270 Clifton Blvd., Clifton, NJ 07015.
CO	Continental Oil Co	Park-Eighty Plaza East, Saddle Brook, NJ 07662.
CPV	Cook Paint & Varnish Co	P.O. Box 389, Kansas City, MO 64141.
CFA	Cooperative Farm Chemicals Association	P.O. Box 308, Lawrence, KS 66044.
COP	Coopers Creek Chemical Corp	River Rd., W. Conshohocken, PA 19428.
CPY	Copolymer Rubber & Chemical Corp	P.O. Box 2591, Baton Rouge, LA 70821.
CRN	Corn Products Co	International Plaza, Englewood, NJ 07632.
ACR	Acme Resin Co. Div	1401 Circle Ave., Forest Park, IL 60130.
CSD	Cosden Oil & Chemical Co	P.O. Box 1311, Big Spring, TX 79720.
CMC	Cos-Mar Co	P.O. Box 68, Washington, WV 26181.
CRT	Crest Chemical Corp	225 Emmet St., Newark, NJ 07114.
CRD	Croda, Inc	51 Madison Ave., New York, NY 10010.
ALT	Crompton & Knowles Corp., Chemicals Group, Althouse Div.	500 Pear St., Reading, PA 19603.
CBY	Crosby Chemicals, Inc	P.O. Drawer 32, DeRidder, LA 70634.
CCP	Crown Central Petroleum Corp	P.O. Box 1168, Baltimore, MD 21203.
MRA	Crown Metro, Inc	12 Dudley St., Providence, RI 02905.
CRZ	Crown Zellerbach Corp., Chemical Products Div.	Camas, WA 98607.
CUL	Culver Chemical Co	1502 N. 25th St., Melrose Park, IL 60160.
CUT	Cutter Laboratories, Inc	4th and Parker Sts., Berkeley, CA 94710.
DAN	Dan River Mills, Inc	Danville, VA 24541.
AZT	Dart Industries, Inc., Azetec Chemicals Div	P.O. Box 756, Elyria, OH 44035.
DYS	Davies-Young Co	705 Albany St., Dayton, OH 45401.
DLI	Dawe's Laboratories, Inc	4800 S. Richmond St., Chicago, IL 60632.
DEG	Degen Oil & Chemical Co	200 Kellogg St., Jersey City, NJ 07305.
DEP	DePaul Chemical Co., Inc	44-27 Purvis St., Long Island City, NY 11101.
DSO	DeSoto, Inc	1700 S. Mt. Prospect Ave., Des Plaines, IL 60018.
TTX	Detrex Chemical Industries, Inc	14331 Woodrow Wilson, Detroit, MI 48232.
DEX	Dexter Chemical Corp	845 Edgewater Rd., Bronx, NY 10474.
HYC	Hysol Div	211 Franklin St., Olean, NY 14760.
MID	Midland Div	E. Water St., Waukegan, IL 60085.
DA	Diamond Shamrock Corp	300 Union Commerce Bldg., Cleveland, OH 44114.
TDC	Diversey Corp., Diversey Chemical Co. Div	212 W. Monroe St., Chicago, IL 60606.
DIX	Dixie Chemical Co	3635 W. Dallas Ave., Houston, TX 77019.
DCP	Dixie Chemical Products, Inc	3635 W. Dallas Ave., Houston, TX 77019.
DPP	Dixie Pine Products Co., Inc	P.O. Box 470, Hattiesburg, MS 39401.
DOM	Dominion Products, Inc	882 3d Ave., Brooklyn, NY 11232.
DVC	Dover Chemical Co	15th and Davis Sts., Dover, OH 44622.
DBC	Dow Badische Chemical Co	Drawer D, Williamsburg, VA 23185.
DOW	Dow Chemical Co	Hopkins Bldg., Midland, MI 48640.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
DCC	Dow Corning Corp	P.O. Box 5R2, Midland, MI 48640.
DRW	Drew Chemical Corp	416 Division St., Boonton, NJ 07005.
DUN	Frank W. Dunne Co	1007 41st St., Oakland, CA 94608.
DUP	E. I. duPont de Nemours & Co., Inc	DuPont Bldg., Wilmington, DE 19898.
DSC	Dye Specialties, Inc	26 Journal Sq., Jersey City, NJ 07306.
ECC	Eastern Color & Chemical Co	35 Livingston St., Providence, RI 02904.
EK	Eastman Kodak Co	343 State St., Rochester, NY 14650.
EKT	Tennessee Eastman Co. Div	P.O. Box 511, Kingsport, TN 37662.
EKX	Texas Eastman Co. Div	P.O. Box 2068, Longview, TX 75601.
ESA	East Shore Chemical Co., Inc	1180 Michigan Ave., Muskegon, MI 49440.
ECL	Eastside Chemical Laboratory	12880 Bellevue-Richmond Rd., Bellevue, WA 98004.
FOR	El Dorado Chemical Co	P.O. Box 599, Oakland, CA 94604.
GLX	Electro-Seal Glasflex Corp	Stirling, NJ 07980
ELP	El Paso Products Co	P.O. Box 3986, Odessa, TX 79760.
EMR	Emery Industries, Inc	4300 Carew Tower, Cincinnati, OH 45202.
PCS	Western Div	8733 S. Dice Rd., Santa Fe Springs, CA 90670.
EMK	Emkay Chemical Co	319 2d St., Elizabeth, NJ 07206.
EN	Endo Laboratories, Inc	1000 Stewart Ave., Garden City, NY 11530.
ENO	Eneco, Inc	P.O. Box 398, Memphis, TN 38101.
ENJ	Enjay Chemical Co	60 W. 49th St., New York, NY 10020.
NPP	Enjay Fibers & Laminates Co. Div	Odenton, MD 21113.
EPC	Epoxylite Corp	P.O. Box 3397, 1428 N. Tyler Ave., S. El Monte, CA 91733.
ESC	Escambia Chemical Corp	P.O. Box 467, Pensacola, FL 32570.
TNA	Ethyl Corp	330 S. 4th St., Richmond, VA 23217.
ETD	Ethyl-Dow Chemical Co	Midland, MI 48640.
EVN	Evans Chemetics, Inc	250 E. 43d St., New York, NY 10017.
	FMC Corp.:	
AV	American Viscose Div	1617 John F. Kennedy Blvd., Philadelphia, PA 19103.
FMB	Inorganic Chemicals Div	633 3d Ave., New York, NY 10017 and Sawyer Ave. & River Rd., Town of Tonawanda, NY 14150.
FMN	Niagara Chemical Div	100 Niagara St., Middleport, NY 14105.
FMP	Organic Chemicals Div	633 3d Ave., New York, NY 10017.
	Nitro Plant	633 3d Ave., New York, NY 10017.
FAB	Fabricolor Manufacturing Corp	24-1/2 Van Houten St., Paterson, NJ 07505.
FMT	Fairmount Chemical Co., Inc	117 Blanchard St., Newark, NJ 07105.
FOC	Farac Oil & Chemical Co., Div. of Handschy Chemical Co.	13601 S. Ashland Ave., Riverdale, IL 60627.
KNG	Far-Best Corp., O. L. King Div	640 Gilman St., Berkeley, CA 94710.
FCA	Farmers Chemical Association, Inc	P.O. Box B7, Harrison, TN 37341.
FRM	Farmer's Chemical Co	P.O. Box 591, 3713 W. Main St., Kalamazoo, MI 49005.
FAR	Farnow, Inc	77 Jacobus Ave., S. Kearny, NJ 07032.
FCL	Federal Color Laboratories, Inc	4526 Chickering Ave., Cincinnati, OH 45232.
FEL	Felton International, Inc	599 Johnson Ave., Brooklyn, NY 11237.
FER	Ferro Corp., Ferro Chemical Div	P. O. Box 349, 7050 Knick Rd., Bedford, OH 44014.
FRP	Filtered Rosin Products Co	P. O. Box 349, Baxley, GA 31513.
FIN	Fine Organics, Inc	205 Main St., Lodi, NJ 07644.
	Firestone Tire & Rubber Co.:	
FRL	Firestone Industrial Rubber Products Div	P.O. Box 2290, Fall River, MA 02777.
FIR	Firestone Plastics Co. Div	P.O. Box 699, Pottstown, PA 19464.
FRS	Firestone Synthetic Rubber & Latex Co. Div	381 W. Wilbeth Rd., Akron, OH 44301.
FST	First Chemical Corp	P.O. Box 1427, Pascagoula, MS 39567.
FIS	Fisher Chemical Co., Inc	580 Sylvan Ave., Englewood, NJ 07632.
FIS	Fisher Melamine Corp	580 Sylvan Ave., Englewood, NJ 07632.
FLM	Fleming Laboratories, Inc	P.O. Box 10372, Charlotte, NC 28201.
FLO	Florasynth Laboratories, Inc	900 Van Nest Ave., Bronx, NY 10462.
FTE	Foote Mineral Co	Route 100, Exton, PA 19341.
FOM	Formica Corp	4614 Spring Grove Ave., Cincinnati, OH 45232.
FG	Foster Grant Co., Inc	289 N. Main St., Leominster, MA 01453.
FH	Foster-Heaton Co	16 E. 5th St., Paterson, NJ 07524.
FCD	France, Campbell & Darling, Inc	N. Michigan Ave., Kenilworth, NJ 07033.
FC	Franklin Chemical Co	2020 Bruck St., Columbus, OH 43207.
FRE	Freeman Chemical Corp	222 E. Main St., Port Washington, WI 53074.
FSH	Frisch & Co., Inc	88 E. 11th St., Paterson, NJ 07524.
FB	Fritzsche Bros., Inc	76 9th Ave., New York, NY 10011.
FLH	H. B. Fuller Co	2400 Kasota Ave., St. Paul, MN 55108.
FLW	Fuller-O'Brien Corp	450 E. Grand Ave., S. San Francisco, CA 94080.
	GAF Corp.:	
	Dyestuff & Chemical Div	P.O. Box 12, Linden, NJ 07036.
	Polymer Chemical Dept., Textile Chemical Div	1228 Chestnut St., Chattanooga, TN 37402.
GAN	Gane's Chemical Works, Inc	535 5th Ave., New York, NY 10017.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
GGY	Geigy Chemical Corp	444 Saw Mill River Rd., Ardsley, NY 10502.
GE	General Electric Co	1 Plastics Ave., Coshocton, OH 43812, and 1 Plastics Ave., Pittsfield, MA 01203.
GEI	Insulating Materials Dept	I River Rd., Schenectady, NY 12305.
SPD	Silicone Products Dept	Waterford, NY 12188.
GNF	General Foods Corp., Maxwell House Div	112S Hudson St., Hoboken, NJ 07030.
GLC	General Latex & Chemical Corp	666 Main St., Cambridge, MA 02139.
CW	General Mills, Inc	Quimby St., Ossining, NY 10562.
GNM	Chemical Div	S. Kensington Rd., Kankakee, IL 60901.
GPM	General Plastics Manufacturing Co	3481 S. 35th St., Tacoma, WA 98409.
GNT	General Tire & Rubber Co., Chemical Div	1708 Englewood Ave., Akron, OH 44309.
GRG	P. D. George Co	5200 N. 2d St., St. Louis, MO 63147.
	Georgia-Pacific Corp.:	
PSP	Bellingham Div	P.O. Box 1236, Bellingham, WA 98225.
C8C	Coos Bay Div	P.O. Box 869, Coos Bay, OR 97420
TID	Getty Oil Co	Delaware City, DE 19706.
TNI	Gillette Chemical Co., Div. of Gillette Co	P.O. Box 362, N. Chicago, IL 60064.
GIL	Gilman Paint & Varnish Co	W. 8th and Pine Sts., Chattanooga, TN 37401.
GIV	Givaudan Corp	125 Delawanna Ave., Clifton, NJ 07014.
GLY	Glyco Chemicals, Inc	417 5th Ave., New York, NY 10016.
8FG	B. F. Goodrich Co., B. F. Goodrich Chemical Co. Div.	3135 Euclid Ave., Cleveland, OH 44137.
GGC	Goodrich-Gulf Chemicals, Inc	1717 E. 9th St., Cleveland, OH 44114.
GYR	Goodyear Tire & Rubber Co	1144 E. Market St., Akron, OH 44313.
GOR	Gordon Chemical Co., Inc	88 Webster St., Worcester, MA 01603.
	W. R. Grace & Co.:	
GCC	Agricultural Chemical Group	P.O. Box 277, Memphis, TN 38101.
GRD	Dewey & Almy Chemical Div	62 Whittemore Ave., Cambridge, MA 02140.
GRC	Dubois Chemicals Div	634 Broadway, Cincinnati, OH 45202.
HMP	Hampshire Chemical Div	Poisson Ave., Nashua, NH 03060.
GRH	Hatco Chemical Div	629 Amboy St., Edison, NJ 08817.
MRO	Marco Chemical Div	1711 W. Elizabeth Ave., Linden, NJ 07036.
GRL	Vestal Laboratories Div	4963 Manchester Ave., St. Louis, MO 63110.
GPR	Grain Processing Corp	1600 Oregon St., Muscatine, LA 52761.
GRA	Great American Plastics Co	85 Water St., Fitchburg, MA 01420.
GTL	Great Lakes Chemical Corp	P.O. Box 2200, West Lafayette, IN 47906.
GRW	Great Western Sugar Co	P.O. Box 5308, Terminal Annex, Denver, CO 80217.
GRV	Guardsman Chemical Coatings, Inc	1350 Steele Ave., SW., Grand Rapids, MI 49502.
GOC	Gulf Oil Corp	P.O. Box 2100, Houston, TX 77001.
PGU	Perkins Glue, Chemicals Dept	632 N. Cannon Ave., Lansdale, PA 19446.
GTH	Guth Chemical Co	332 S. Center St., Hillside, IL 60162.
HNC	H & N Chemical Co	90 Maltese Dr., Totowa, NJ 07512.
HLI	Haag Laboratories, Inc	14010 S. Seeley Ave., Blue Island, IL 60406.
HA8	Halby Products Co., Inc	600 Terminal Ave., New Castle, DE 19720.
HAL	C. P. Hall Co. of Illinois	7300 S. Central Ave., Chicago, IL 60638.
HAM	Hampden Color & Chemical Co	126 Memorial Dr., Springfield, MA 01101.
HAN	Hanna Paint Manufacturing Co., Inc	P.O. Box 147, Columbus, OH 43216.
HRS	Harris Paint Co	1010-26 N. 19th St., Tampa, FL 33601.
HSH	Harshaw Chemical Co., Div. of Kewanee Oil Co	1945 E. 97th St., Cleveland, OH 44106.
HRT	Hart Products Corp	1440 Broadway, New York, NY 10018.
HVG	Haveg Industries, Inc	900 Greenbank Rd., Wilmington, DE 19808.
HKY	Hawkeye Chemical Co	P.O. Box 899, Clinton, LA 52733.
HCR	Hercor Chemical Corp	P.O. Box 4198, Ponce, PR 00731.
HPC	Hercules, Inc	910 Market St., Wilmington, DE 19899.
IMP	Imperial Color & Chemical Dept	P.O. Box 231, Glens Falls, NY 12803.
HER	Heresite & Chemical Co	822 S. 14th St., Manitowoc, WI 54220.
DLH	Hess Oil & Chemical Corp	1 Hess St., Woodbridge, NJ 07095.
HET	Heterochemical Corp	111 E. Hawthorne Ave., Valley Stream, NY 11582.
HEW	Hewitt Soap Co	333 Linden Ave., Dayton, OH 45403.
HEX	Hexagon Laboratories, Inc	3536 Peartree Ave., Bronx, NY 10469.
HDG	Hodag Chemical Corp	7247 N. Central Park Ave., Skokie, IL 60076.
HOF	Hoffmann-LaRoche, Inc	324 Kingsland St., Nutley, NJ 07110.
HFT	Hoffman-Taff, Inc	P.O. Box 1246 S.S.S., Springfield, MO 65805.
HSC	Holland Suco Color Co	P.O. Box 2166, Huntington, WV 25722.
HK	Hooker Chemical Corp	Buffalo Ave. & 47th St., Niagara Falls, NY 14302.
HKD	Durez Div	Walck Rd., N. Tonawanda, NY 14121.
RUB	Ruco Div	New South Rd., Hicksville, NY 11802.
EFH	E. F. Houghton & Co	303 W. Lehigh Ave., Philadelphia, PA 19133.
HCH	Houston Chemical Corp	1 Gateway Center, Pittsburgh, PA 15222

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
HMY	Humphrey Chemical Co	Devine St., North Haven, CT 06473.
WAY	Philip A. Hunt Chemical Corp., Wayland Chemical Div.	P.O. Box 0, Lincon, RI 02865.
HNT	Huntington Laboratories, Inc	P.O. Box 710, Huntington, IN 46750.
HUS	Husky Briquetting, Inc	P.O. Box 380, Cody, WY 82414.
HYN	Hynson, Westcott & Dunning, Inc	Charles and Chase Sts., Baltimore, MD 21201
ICI	ICI America, Inc	151 South St., Stamford, CT 06904.
RAY	ITT Rayonier, Inc	161 E. 42d St., New York, NY 10017.
CS8	Imoco-Gateway Corp., Chemical Services Div	Howard & West Sts., Baltimore, MD 21230.
IBI	Industrial Biochemicals, Inc	U.S. Highway #1, Edison, NJ 08817.
IDC	Industrial Dyestuff Co	P.O. Box 4249, E. Providence, RI 02914.
INL	Inland Steel Co., Inland Steel Container Co	4300 W. 130th St., Chicago, IL 60658.
ICC & ICO	Inmont Corp	150 Wagaraw Rd., Hawthorne, NJ 07506 and Berry Ave. and Route 17, Carlstadt, NJ 07072.
ICF	Interchemical Corp., Finishes Div	5935 Milford Ave., Detroit, MI 48210.
IFF	International Flavors & Fragrances, Inc	521 W. 57th St. New York, NY 10019
IMC	International Minerals & Chemical Corp	5401 Old Orchard Rd., Skokie, IL 60078
ISC	Interstate Chemical Co	501 Santa Fe, Kansas City, Mo 64105.
IPR	Inter-Pacific Resins, Inc	P.O. Box 445, 1602 N. 18th Ave., Sweet Home, OR 97386.
IPC	Interplastic Corp., Commercial Resins Div.	2015 N.E. Broadway St., Minneapolis, MN 55413
IOC	Ionac Chemical Co., Div. of Sybron Corp	Birmingham, NJ 08011.
IRI	Ironsides Resins, Inc	270 W. Mound St., Columbus, OH 43216.
IPI	Isocyanate Products, Inc	900 Wilmington Rd., New Castle, DE 19720.
JCC	Jefferson Chemical Co., Inc.	P.O. Box 53300, Houston, TX 77052.
JEN	Jennison-Wright Corp	P.O. Box 691, Toledo, OH 43601
JRG	Andrew Jergens Co	2535 Spring Grove Ave., Cincinnati, OH 45214.
JSC	Jersey State Chemical Co	59 Lee Ave., Haledon, NJ 07508.
JWL	Jewel Paint & Varnish Co	345 N. Western Ave., Chicago, IL 60612.
JNS	S. C. Johnson & Son, Inc	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Paint Co	6969 Denton Dr., Dallas, TX 75235.
JOR	Jordan Chemical Co	1830 Columbia Ave., Folcraft, PA 19032.
	Kaiser Aluminum & Chemical Corp.:	
SNI	Kaiser Agricultural Chemicals Div	P.O. Box 246, Savannah, GA 31402.
KAI	Kaiser Chemical Div	P.O. Box 337, Gramercy, LA 70052.
KAL	Kali Manufacturing Co	427 Moyer St., Philadelphia, PA 19125.
KF	Kay-Fries Chemicals, Inc	360 Lexington Ave., New York, NY 10017.
KMP	Kelly-Moore Paint Co	1015 Commercial St., San Carlos, CA 94070.
KEL	Kelly-Pickering Chemical Corp	956 Bransten Rd., San Carlos, CA 94070.
	Kennecott Copper Corp.:	
KCC	Chino Mines Div	Hurley, NM 88043.
KCU	Utah Copper Div	P.O. Box 11299, Salt Lake City, UT 84111.
KPI	Kenrich Petrochemicals, Inc	Foot of E. 22d St., Bayonne, NJ 07002.
KET	Ketona Chemical Corp	P.O. Box 6565, Tarrant Branch, Birmingham, AL 35217.
KYS	Keysor Chemical Co	26000 Springfield Rd., Saugus, CA 91350.
KCH	Keystone Chemurgic Corp	R.D. 2, Bethlehem, PA 18017.
KCW	Keystone Color Works, Inc	151 W. Gay Ave., York, PA 17403.
KNP	Knapp Products, Inc	180 Hamilton Ave., Lodi, NJ 07644.
KND	Knoedler Chemical Co	651 High St., Lancaster, PA 17604.
KMC	Kohler-McLister Paint Co	1201 Osage St., Denver, CO 80201.
KON	H. Kohnstamm & Co., Inc	161 Avenue of the Americas, New York, NY 10013.
KPT	Koppers Co., Inc., Organic Materials Div	Koppers Bldg., Pittsburgh, PA 15219.
KPS	Koppers Pittsburgh Co	Koppers Bldg., Pittsburgh, PA 15219.
HUM	Kraftco Corp., Humko Products Div	5050 Poplar Ave., Memphis, TN 38117.
KYN	Kyanize Paints, Inc	2d and Boston Sts., Everett, MA 02149.
LCI	Lachat Chemicals, Inc	20200 Ashland Ave., Chicago Heights, IL 60411
LKL	Lakeside Laboratories, Div. of Colgate-Palmolive Co.	1707 E. North Ave., Milwaukee, WI 53201.
LKY	Lake States, Div. of St. Regis Paper Co	603 W. Davenport St., Rhinelander, WI 54501.
LAK	Lakeway Chemical Co	5025 Evanston Ave., Muskegon, MI 49443.
LAM	LaMotte Chemical Products Co	Chestertown, MD 21620.
LAS	Lasco Industries, Inc	1561 Chapin Rd., Montebello, CA 90640.
LUR	Laurel Products Corp	2600 E. Tioga St., Philadelphia, PA 19134.
LEA	Leatex Chemical Co	2722 N. Hancock St., Philadelphia, PA 19133.
LEB	Lebanon Chemical Corp	P.O. Box 180, Lebanon, PA 17042.
BCN	Lehn & Fink Products, Inc., Beacon Div	33 Richdale Ave., Cambridge, MA 02140.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
LEM	B. L. Lemke & Co., Inc----------	199 Main St., Lodi, NJ 07644.
LEN	Leonard Refineries, Inc----------	E. Superior St., Alma, MI 48801
LEV	Lever Brothers Co----------	390 Park Ave., New York, NY 10022.
LVR	C. Lever Co----------	Howard and Huntington Sts., Philadelphia, PA 19133.
LVY	Fred'k H. Levy Co., Div. of Columbian Carbon Co., Inc.	380 Madison Ave., New York, NY 10017.
LPC	Lignin Products Co----------	P.O. Box 960, Erie, PA 16512.
LIL	Eli Lilly & Co----------	307 E. McCarty St., Indianapolis, IN 46206 and G.P.O. Box 4388, San Juan, PR 00936.
LUB	Lubrizol Corp----------	29400 Lakeland Blvd., Wickliffe, OH 44092.
LUE	George Lueders & Co., Inc----------	427 Washington St., New York, NY 10013.
MET	M & T Chemicals, Inc----------	Woodbridge Rd. and Randolph Ave., Rahway, NJ 07065.
MGR	Magruder Color Co., Inc----------	1 Virginia St., Newark, NJ 07114.
MAL	Mallinckrodt Chemical Works----------	3600 N. 2d St., St. Louis, MO 63147.
MOC	Marathon Oil Co., Texas Refining Div----------	P.O. Box 1191, Texas City, TX 77590.
MRB	Marblette Co., Div. of Allied Products Corp----	37-31 30th St., Long Island City, NY 11101.
MRD	Marden-Wild Corp----------	500 Columbia St., Somerville, MA 02143.
MRV	Marlowe-Van Loan Corp----------	1511 Joshua Circle, High Point, NC 27260.
	Martin-Marietta Corp.:	
AMS	Ridgway Color & Chemical Div----------	75 Front St., Ridgway, PA 15853.
SDC	Southern Dyestuff Co. Div----------	P.O. Box 10098, Charlotte, NC 28201.
MRX	Max Marx Color & Chemical Co., Inc----------	192 Coit St., Irvington, NJ 07111.
MCA	Masonite Corp., Alpine Chemical Div----------	P.O. Box 2392, Gulfport, MS 39503.
MAT	Matador Chemical Co., Inc.	P.O. Box 2256, Wichita, KS 67201
NOC	Mathe Chemical Co., Div. of Norac Co., Inc-----	169 Kennedy Dr., Lodi, NJ 07644.
MEE	Maumee Chemical Co----------	1310 Expressway Dr., Toledo, OH 43608.
MAY	Otto B. May, Inc----------	52 Amsterdam St., Newark, NJ 07105.
MCC	McCloskey Varnish Co----------	7600 State Rd., Philadelphia, PA 19136.
MGK	McLaughlin Gormley King Co----------	1715 S.E. 5th St., Minneapolis, MN 55414.
MED	Medical Chemicals Corp----------	4122 W. Grand Ave., Chicago, IL 60651.
MRK	Merck & Co., Inc----------	Lincoln Ave., Rahway, NJ 07065.
MER	Merichem Co----------	1914 Haden Rd., Houston, TX 77015.
JMS	J. Meyer & Sons, Inc----------	4321 N. 4th St., Philadelphia, PA 19140.
MCH	Michigan Chemical Corp----------	351 E. Ohio St., Chicago, IL 60611.
PFP	Midwest Manufacturing Corp----------	Oak St. and Bluff Rd., Burlington, IA 52601.
MLS	Miles Laboratories, Inc., Marschall Div-------	Myrtle and McNaughton Sts., Elkhart, IN 46514.
	Millmaster Onyx Corp.:	
GRO	A. Gross & Co. Div----------	295 Madison Ave., New York, NY 10017.
BKL	Millmaster Chemical Div., Berkeley Chemical Dept.	99 Park Ave., New York, NY 10016.
ONX	Onyx Chemical Co. Div----------	Warren and Morris Sts., Jersey City, NJ 07302.
RPC	Refined-Onyx Div----------	624 Schuyler Ave., Lyndhurst, NJ 07071.
MOR	Mineral Oil Refining Co----------	4401 Park Ave., Dickinson, TX 77539.
MMM	Minnesota Mining & Manufacturing Co----------	3M Center, St. Paul, MN 55101.
MNP	Minnesota Paints, Inc----------	1101 S. 3d St., Minneapolis, MN 55415.
MIR	Miranol Chemical Co., Inc----------	277 Coit St., Irvington, NJ 07111.
MSC	Mississippi Chemical Corp----------	P.O. Box 388, Yazoo City, MS 39194.
MOB	Mobay Chemical Co----------	Penn Lincoln Parkway, W. Pittsburgh, PA 15205.
SM	Mobil Chemical Co----------	P.O. Box 3868, Beaumont, TX 77704; 7301 Bessemer Ave., Cleveland, OH 44127; 1281S Elmwood St., Cleveland, OH 44111; and P.O. Box 250, Edison, NJ 08817.
SM	Mobil Oil Corp----------	P.O. Box 900, Dallas, TX 75221.
	Mobil Chemical Co. Div., Industrial Chemical Div.	401 E. Main St., Richmond, VA 23208.
MFG	Molded Fiber Glass Companies, Inc----------	4601 Benefit Ave., Ashtabula, OH 44004.
MOA	Mona Industries, Inc----------	65 E. 23d St., Paterson, NJ 07524.
MNO	Monochem, Inc----------	P.O. Box 488, Geismar, LA 70734.
MON	Monsanto Co----------	800 N. Lindbergh Blvd., St. Louis, MO 63166 and 200 N. 7th St., Kenilworth, NJ 07033.
	Bircham Bend Plant----------	190 Grochmal Ave., Indian Orchard, MA 01051.
	Chocolate Bayou Plant----------	P.O. Box 711, Alvin, TX 77511
	Plastics Div----------	730 Worcester St., Indian Orchard, MA 01101; 5100 W. Jefferson Ave., Trenton, MI 48183; River Rd., Addyston, OH 45001; and P.O. Box 1311, Texas City, TX 77591.
	Textiles Div----------	800 N. Lindbergh Blvd., St. Louis, MO 63166 and P.O. Box 1507, Pensacola, FL 32502.
	Western Div----------	9229 E. Marginal Way S., Seattle, WA 98108.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
MTO	Montrose Chemical Corp. of California----------	500 S. Virgil Ave., Los Angeles, CA 90005.
MCI	Mooney Chemicals Inc----------	2301 Scranton Rd., Cleveland, OH 44113.
MR	Benjamin Moore & Co----------	548 5th Ave., New York, NY 10036.
MCP	Moretex Chemical Products, Inc----------	314 W. Henry St., P.O. Box 1799, Spartanburg, SC 29301.
MRT	Morton Chemical Co----------	110 N. Wacker Dr., Chicago, IL 60606.
MOT	Motomco, Inc----------	89 Terminal Ave., Clark, NJ 07066
PNX	Murphy-Phoenix Co----------	9505 Cassius Ave., Cleveland, OH 44105.
NVF	NVF Co----------	700 Maryland Ave., Wilmington, DE 19899.
NLC	Nalco Chemical Co----------	180 N. Michigan Ave., Chicago, IL 60601.
NTB	National Biochemical Co----------	3127 W. Lake St., Chicago, IL 60612.
NTC	National Casein Co----------	601 W. 80th St., Chicago, IL 60620.
	National Dairy Products Corp.:	
SHF	Sheffield Chemical Div----------	2400 Morris Ave., Union, NJ 07083.
USI	National Distillers & Chemical Corp.:	
	National Petro Chemical Corp. Div----------	99 Park Ave., New York, NY 10016.
	U.S. Industrial Chemicals Co. Div----------	99 Park Ave., New York, NY 10016.
NTL	National Lead Co----------	111 Broadway, New York, NY 10006.
NMC	National Milling & Chemical Co----------	4601 Flat Rock Rd., Philadelphia, PA 19127.
NPI	National Polychemicals, Inc----------	51 Eames St., Wilmington, MA 01887.
NSC	National Starch & Chemical Corp----------	750 3d Ave., New York, NY 10017.
NES	Nease Chemical Co., Inc----------	P.O. Box 221, State College, PA 16801.
NEP	Nepera Chemical Co., Inc----------	Route 17, Harriman, NY 10926.
NEV	Neville Chemical Co----------	Neville Island P.O., Pittsburgh, PA 15225.
NIL	Nilok Chemicals, Inc----------	5030 Millington Rd., P.O. Box 27134, Memphis, TN 38127.
JDC	Nipak, Inc----------	301 S. Hanwood St., Dallas, TX 75221.
SHL	Nitini, Inc., Sub. of Shulton, Inc----------	697 Rt. 46, Clifton, NJ 07015.
NIT	Nitrin, Inc----------	P.O. Box 233, Cordova, IL 61242.
NON	A. P. Nonweiler Co----------	P.O. Box 1007, Oshkosh, WI 54901.
NOC	Norac Co., Inc----------	405 S. Motor Ave., Azusa, CA 91703.
NEO	Norda Essential Oil & Chemical Co., Inc----------	475 10th Ave., New York, NY 10001.
NPV	Norris Paint & Varnish Co----------	P.O. Box 2023, Salem, OR 97308.
NRS	Norse Chemical Corp----------	2121 Norse Ave., Cudahy, WI 53110.
LMI	North American Chemical Co----------	19 Chestnut St., Cambridge, MA 02139.
VAC	Northern Petrochemical Co., Varney Div----------	2001 Afton Rd., Janesville, WI 53545.
NCA	Northrop Carolina, Inc----------	P.O. Box 3049, Asheville, NC 28802.
NW	Northwestern Chemical Co----------	120 N. Aurora St., W. Chicago, IL 60185.
NPC	Northwest Petrochemical Corp----------	P.O. Box 99, Anacortes, WA 98221.
NOR	Norwich Pharmacal Co----------	17 Eaton Ave., Norwich, NY 13815.
TCI	Texize Chemicals, Inc. Div----------	P.O. Box 368, Greenville, SC 29602.
NCW	Nostrip Chemical Works, Inc----------	P.O. Box 160, Pedricktown, NJ 08067.
NVT	Novamont Corp., Neal Works----------	P.O. Box 189, Kenova, WV 25530.
CMG	Nyanza, Inc----------	Magunko Rd., Ashland, MA 01721.
O8C	O'Brien Corp----------	2001 W. Washington Ave., South Bend, IN 46621.
BST	Occidental Petroleum Corp., Occidental Chemical Co. Div.	P.O. Box 198, Lathrop, CA 95330.
OMC	Olin Corp----------	120 Long Ridge Rd., Stamford, CT 06904.
	Agricultural Chemicals Div----------	1120 Marshall St., P.O. Box 991, Little Rock, AR 72203.
THC	Thompson Plastics----------	Assonet, MA 02702.
OPC	Orbis Products Corp----------	475 10th Ave., New York, NY 10018.
ORG	Organics, Inc----------	1724 W. Greenleaf Ave., Chicago, IL 60628.
BSW	Original Bradford Soap Works, Inc----------	200 Providence St., W. Warwick, RI 02893.
OSB	C. J. Osborn Co----------	1301 W. Blancke St., Linden, NJ 07036.
OTA	Ottawa Chemical Co----------	700 N. Wheeling St., Toledo, OH 43605.
OTC	Ott Chemical Co----------	500 Agard Rd., Muskegon, MI 49445.
OCF	Owens-Corning Fiberglas Corp----------	P.O. Box 901, Toledo, OH 43601.
PLB	P-L Biochemicals, Inc----------	1037 W. McKinley Ave., Milwaukee, WI 53205.
PPG	PPG Industries, Inc----------	1 Gateway Center, Pittsburgh, PA 15222.
FBR	Pabco Paint Corp----------	1710 59th St., P.O. Box 8502, Emeryville, CA 94608.
AMR	Pacific Resins & Chemical Co----------	3400 13th Ave. SW., Seattle, WA 98134.
PAN	Pan American Petroleum Corp----------	P.O. Box 591, Tulsa, OK 74102.
PNT	Pantasote Co. of New York, Inc----------	26 Jefferson St., Passaic, NJ 07055.
PD	Parke, Davis & Co----------	Foot of Jos. Campau, Detroit, MI 48232.
PSC	Passaic Color & Chemical Co----------	28-36 Paterson St., Paterson, NJ 07501.
PAT	Patent Chemicals, Inc----------	335 McLean Blvd., Paterson, NJ 07504.
CHP	C. H. Patrick & Co., Inc----------	P.O. Box 2526, Greensville, SC 29602.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
CCH	Pearsall Co	P. O. Box 108, Phillipsburg, NJ 08865.
PEK	Peck's Products Co	610 E. Clarence Ave., St. Louis, MO 63147
PCH	Peerless Chemical Co	3850 Oakman Blvd., Detroit, MI 48204.
PEL	Pelron Corp	7847 W. 47th St., Lyons, IL 60534.
PAI	Pennsylvania Industrial Chemical Corp	120 State St., Clairton, PA 15025.
PAR	Pennsylvania Refining Co	Union Bank Bldg., Butler, PA 16001.
PAS	Pennwalt Corp	3 Penn Center, Philadelphia, PA 19102.
PER	Perry & Derrick Co., Inc	2510 Highland Ave., Norwood, OH 45212.
PHF	Peter Hand Foundation, Inc	2 E. Madison St., Waukegan, IL 60085.
UDI	Petrochemicals Co., Inc	1825 E. Spring St., Long Beach, CA 90806.
PTT	Petro-Tex Chemical Corp	P.O. Box 2584, Houston, TX 77001.
PFN	Pfanstiehl Laboratories, Inc	1219 Glen Rock Ave., Waukegan, IL 60085.
PCW	Pfister Chemical, Inc	Linden Ave., Ridgefield, NJ 07657.
PFZ	Chas. Pfizer & Co., Inc	235 E. 42d St., New York, NY 10017.
PHR	Pharmachem Corp	Broad and Wood Sts., Bethlehem, PA 18018.
PLC	Phillips Petroleum Co	440 Frank Phillips Bldg., Bartlesville, OK 74003.
PPR	Phillips Puerto Rico Cove, Inc	GPO Box 4129, San Juan, PR 00936.
PIC	Pierce Organics, Inc	3747 Meridian Rd., Rockford, IL 61103.
PBY	Pillsbury Co	608 2d Ave. S., Minneapolis, MN 55402.
PIL	Pilot Chemical Co	11756 Burke St., Santa Fe Springs, CA 90670.
PCI	Pioneer Chemical Works, Inc	P.O. Box 237, Route 73, Maple Shade, NJ 08052.
PPL	Pioneer Plastics Corp	Pionite Rd., Auburn, ME 04210.
PIT	Pitt-Consol Chemical Co	191 Doremus Ave., Newark, NJ 07105.
PLS	Plastics Engineering Co	1607 Geele Ave., Sheboygan, WI 53081.
PMC	Plastics Manufacturing Co	2700 S. Westmoreland, Dallas, TX 75224.
PLX	Plex Chemical Corp	1205 Atlantic St., Union City, CA 94487.
PLU	Plumb Chemical Corp	4837 James St., Philadelphia, PA 19137.
PFW	Polak's Frutal Works	33 Sprague Ave., Middletown, NY 10940.
PYL	Polychemical Laboratories, Inc	490 Hunts Point Ave., Bronx, NY 10474.
POL	Polymer Corp	2120 Fairmont Ave., Reading, PA 19603.
PYI	Polymer Industries, Inc	Viaduct Rd., Springdale, CT 06879.
PYR	Poly Resins	11655 Wicks St., Sun Valley, CA 91352.
PYZ	Polyrez Co., Inc	P.O. Box 320, Woodbury, NJ 08096.
PVI	Polyvinyl Chemicals, Inc	730 Main St., Wilmington, MA 01887.
GRS	Pontiac Refining Corp	3400 Lawrence Dr., Corpus Christi, TX 78409.
PRT	Pratt & Lambert, Inc	P.O. Box 22, Buffalo, NY 14240.
PMP	Premier Malt Products, Inc	917 W. Juneau Ave., Milwaukee, WI 53201.
PPC	Premier Petrochemical Co	P.O. Box 100, Pasadena, TX 77501.
PTP	Preservative Paint Co	8033 36th St. So., Seattle, WA 98108.
PRC	Princeton Chemical Research, Inc	P.O. Box 651, Princeton, NJ 08540.
PBI	Private Brands, Inc	300 S. 3d St., Kansas City, KS 66118.
PG	Procter & Gamble Co	Ivorydale Technical Ctr., Cincinnati, OH 45217.
PC	Proctor Chemical Co., Inc	P.O. Box 399, Salisbury, NC 28144.
PRD	Productol Chemical Co., Inc	615 S. Flower St., Los Angeles, CA 90017.
PRC	Products Research & Chemical Corp	2919 Empire Ave., Burbank, CA 91504.
PUB	Publicker Industries, Inc	1429 Walnut St., Philadelphia, PA 19102.
PTO	Puerto Rico Chemical Co., Inc	P.O. Box 157, Arecibo, PR 00612.
PRX	Purex Corp., Ltd	5101 Clark Ave., Lakewood, CA 90712, and 2244 N. Elston Ave., Chicago, IL 60614.
PUR	Puritan Chemical Co	916 Ashby St., NW., Atlanta, GA 30318.
QCP	Quaker Chemical Corp	Lime, Elm and Sandy Sts., Conshohocken, PA 19428.
QKO	Quaker Oats Co	345 Merchandise Mart Plaza, Chicago, IL 60654.
QUN	K. J. Quinn & Co., Inc	195 Canal St., Malden, MA 02148.
RSA	R.S.A. Corp	690 Sawmill River Rd., Ardsley, NY 10502.
RLS	Rachelle Laboratories, Inc	700 Henry Ford Ave., Long Beach, CA 90810.
RAB	Raybestos-Manhattan, Inc., Raybestos Div	75 E. Main St., Stratford, CT 06601.
RED	Red Spot Paint & Varnish Co., Inc	966 E. Columbia St., Evansville, IN 47708.
REH	Reheis Chemical Co., Div. of Armour Pharmaceutical Co.	325 Snyder Ave., Berkeley Heights, NJ 07922.
RCI	Reichhold Chemicals, Inc	525 N. Broadway, White Plains, NY 10602.
CCO	Rubber Chemicals Group	2508 E. Bailey Rd., Cuyahoga Falls, OH 44221.
RIL	Reilly Tar & Chemical Corp	11 S. Meridian St., Indianapolis, IN 46204.
REL	Reliance Universal, Inc	6901 Cavalcade St., Houston, TX 77001.
	Rel-Rez Div	4730 Crittenden Dr., Louisville, KY 40221.
REM	Remington Arms Co., Inc	939 Barnum Ave., Bridgeport, CT 06602.
REN	Renroh Resins	P.O. Box 1191, New Bern, NC 28560.
RTF	Retzloff Chemical Co	P.O. Box 45296, Houston, TX 77045.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
RCC	Rexall Drug & Chemical Co., Rexall Chemical Co. Div.	P.O. Box 37, Paramus, NJ 07652.
FBF	Fiberfil Div	1701 N. Heidelbach Ave., Evansville, IN 47717.
REZ	Rezolin, Inc	20701 Nordhoff St., Chatsworth, CA 91311.
RDA	Rhodia, Inc	600 Madison Ave., New York, NY 10022.
RCD	Richardson Co	2708 Lake St., Melrose Park, IL 60160.
PLA	Richardson Polymers Div	425 Morgan Lane, West Haven, CT 06516.
RIK	Riker Laboratories, Div. of Rexall Drug & Chemical Co.	19901 Nordhoff St., Northridge, CA 91324.
RT	F. Ritter & Co	4001 Goodwin Ave., Los Angeles, CA 90039.
RTC	Ritter Chemical Co., Inc	403 W. Main St., Amsterdam, NY 12010.
RIV	Riverdale Chemical Co	220 E. 17th St., Chicago Heights, IL 60411.
ROB	Robeco Chemicals, Inc	51 Madison Ave., New York, NY 10010.
RBC	Roberts Chemicals, Inc	P.O. Box 546, Nitro, WV 25143.
ORT	Roehr Chemicals, Inc	52-20 37th St., Long Island City, NY 11101.
RGC	Rogers Corp	Main St., Rogers, CT 06263.
RH	Rohm & Haas Co	Independence Mall West, Philadelphia, PA 19105.
RSB	Rosenberg Bros. & Co	100 Landing Ave., Smithtown, NY 11787.
ROY	Royce Chemical Co	E. Rutherford P.O., E. Rutherford, NJ 07073.
RUC	Rubicon Chemicals, Inc	P.O. Box 517, Geosmar, LA 70734.
GLD	SCM Corp.:	
	Famous Foods Div	2333 W. Logan Blvd., Chicago, IL 60647.
	Glidden-Durkee Div	900 Union Commerce Bldg., Cleveland, OH 44115.
NPR	Safeway Stores, Inc., Newport Products Co. Div.	1501 Mariposa St., San Francisco, CA 94107.
SAL	Salsbury Laboratories	500 Gilbert St., Charles City, IA 50616.
SLM	Salem Oil & Grease Co	60 Grove St., Salem, MA 01970.
S	Sandoz, Inc	P.O. Box 357, Fair Lawn, NJ 07410.
	Dyestuff & Chemical Div	Route No. 10, Hanover, NJ 07936.
SAR	Sartomer Resins, Inc	P.O. Box 56, Essington, PA 19029.
SCF	Schaefer Varnish Co., Inc	1350 S. 15th St., Louisville, KY 40210.
SCN	Schenectady Chemicals, Inc	Congress St. and 10th Ave., Schenectady, NY 12301.
SBC	Scher Bros., Inc	P.O. Box 538, Allwood Station, Clifton, NJ 07012.
SCR	R.P. Scherer Corp	9425 Grinnell Ave., Detroit, MI 48213.
SCH	Schering Corp	1011 Morris Ave., Union, NJ 07083.
SCO	Scholler Bros., Inc	Collins and Westmoreland Sts., Philadelphia, PA 19134.
SEA	Seaboard Chemicals, Inc	30 Foster St., Salem, MA 01970.
SRL	G. D. Searle & Co	P.O. Box 5110, Chicago, IL 60680.
SEL	Selney Co., Inc	7 Park Ave., New York, NY 10016.
SEY	Seydel-Woolley & Co., Inc	762 Marietta Blvd., NW., Atlanta, GA 30318.
SHA	Shanco Plastics & Chemicals, Inc	111 Wales St., Tonawanda, NY 14150.
SHO	Shell Oil Co	52 W. 52d St., New York, NY 10020.
SHC	Shell Chemical Co. Div	52 W. 52d St., New York, NY 10020.
SHP	Shepherd Chemical Co	5000 Poplar St., Cincinnati, OH 45212.
SW	Sherwin-Williams Co	101 Prospect Ave., NW., Cleveland, OH 44101.
SID	George F. Siddall Co., Inc	P.O. Box 925, Spartanburg, SC 29301.
SOG	Signal Oil & Gas Co	P.O. Box 5008, Houston, TX 77012.
SIM	Simpson Timber Co	2301 N. Columbia Blvd., Portland, OR 97217.
SKC	Sinclair-Koppers Chemical Co	9822 La Porte Freeway, Houston, TX 77012.
KPP	Sinclair-Koppers Co	900 Koppers Bldg., Pittsburgh, PA 15219.
SPI	Sinclair Oil Corp. & Chemical Div.	600 5th Ave., New York, NY 10020.
SPC	Sinclair Paint Co	3960 E. Washington Blvd., Los Angeles, CA 90023.
SIP	James B. Sipe & Co	P.O. Box 13090, Pittsburgh, PA 15243.
SKO	Skelly Oil Co	P.O. Box 1650, Tulsa, OK 74102.
GFS	G. Frederick Smith Chemical Co	867 McKinley Ave., Columbus, OH 43223.
SK	Smith, Kline & French Laboratories	1500 Spring Garden St., Philadelphia, PA 19101.
SOL	Solar Chemical Corp	15 Fuller St., Leominster, MA 01453.
SLC	Soluol Chemical Co., Inc	Green Hill and Market Sts., W. Warwick, RI 02893.
SVT	Solvent Chemical Co., Inc	341 Commercial St., Malden, MA 02148.
SFD	Sonford Chemical Co	P.O. Box 127, Port Neches, TX 77651.
SNC	Sonoco Products Co	2d St., Hartsville, SC 29550.
STC	Sou-Tex Chemical Co., Inc	E. Catawba Ave., Mount Holly, NC 28120.
SAC	Southeastern Adhesives Co	P.O. Box 791, Lenoir, NC 28645.
SBO	Southern Biochemical Corp	P.O. Box 2526, Greenville, SC 29602.
SOP	Southern Chemical Products Co	420 Lower Boundary St., P.O. Box 205, Macon, GA 31202.
SOS	Southern Sizing Co	P.O. Box 909B7, East Point, GA 30344.
SPL	Spaulding Fibre Co., Inc	310 Wheeler St., Tonawanda, NY 14150.
OMS	E. R. Squibb & Sons, Inc	460 Park Ave., New York, NY 10022.
UBS	Staley Chemicals	320 Schuyler Ave., Kearny, NJ 07032.
STA	A. E. Staley Manufacturing Co	22d and Eldorado Sts., Decatur, IL 62525

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
SMC	Stamford Chemical Industries, Inc----------	P.O. Box 1131, Stamford, CT 06940.
CLN	Standard Brands, Inc., Clinton Corn Processing Co. Div.	1251 Beaver Channel Parkway, Clinton, IA 52733.
SBI	Standard Brands Chemical Industries, Inc-------	P.O. Drawer K, Dover, DE 19901.
MRN	Paisley Div----------	P.O. Drawer K, Dover, DE 19901.
SCP	Standard Chemical Products, Inc----------	1301 Jefferson St., Hoboken, NJ 07030.
SCC	Standard Chlorine of Delaware, Inc----------	1035 Belleville Turnpike, Kearny, NJ 07032.
SOC	Standard Oil Co. of California, Chevron Chemical Co.	200 Bush St., San Francisco, CA 94120.
SIO	Standard Oil Co. of Ohio----------	Midland Bldg., Cleveland, OH 44115.
SPY	Standard Pyroxoloid Corp----------	85 Pleasant St., Leominster, MA 01453.
STG	Stange Co----------	342 N.Western Ave., Chicago, IL 60612.
	Stauffer Chemical Co.:	
SF	Agricultural Div----------	299 Park Ave., New York, NY 10017.
CHO	Calhio Chemicals Div----------	299 Park Ave., New York, NY 10017.
CWL	Cowles Chemical Div----------	12000 Shaker Blvd., Cleveland, OH 44120.
BPC	Cowles Chemical Div., Benzol Products--------	Menlo Park Office Bldg., Edison, NJ 08817.
SFI	Industrial Chemical Div----------	299 Park Ave., New York, NY 10017.
SFA	Specialty Chemical Div----------	299 Park Ave., New York, NY 10017.
SH	Stein, Hall & Co., Inc----------	605 3d Ave., New York, NY 10016.
STP	Stepan Chemical Co----------	R.R. #1, Elwood, IL 60421.
MYW	Maywood Div----------	100 W. Hunter Ave., Maywood, NJ 07607
	Sterling Drug, Inc.:	
SDG	Glenbrook Laboratories Div----------	90 Park Ave., New York, NY 10016.
SDH	Hilton-Davis Chemical Co. Div----------	2235 Langdon Farm Rd., Cincinnati, OH 45237.
SLV	Salvo Chemical Div----------	Military Rd., Rothschild, WI 54474.
TMS	Thomasset Colors Div----------	120 Lister Ave., Newark, NJ 07105.
SDW	Winthrop Laboratories Div----------	90 Park Ave., New York, NY 10016.
SBP	Sugar Beet Products Co----------	302 Waller St., Saginaw, MI 48605.
SVC	Sullivan Varnish Co----------	410 N. Hart St., Chicago, IL 60622.
SUM	Summit Chemical Products Corp----------	11 Williams St., Belleville, NJ 07109.
CFC & TV	Sun Chemical Corp----------	1106 Harrison Ave., Kearny, NJ 07032 and 135 W. Lake St., North Lake, IL 60164.
SNW	Chemicals Div----------	Wood River Junction, RI 02894.
SNA	Pigments Div----------	441 Tompkins Ave., Staten Island, NY 10305.
SKG	Sunkist Growers, Inc----------	720 E. Sunkist St., Ontario, CA 91764.
	Sun Oil Co.:	
DXS	DX Div----------	P.O. Box 2039, Tulsa, OK 74102.
SUN	Sunoco Div----------	1608 Walnut St., Philadelphia, PA 19103.
SNO	SunOlin Chemical Co----------	P.O. Box F, Claymont, DE 19703.
SNT	Suntide Refining Co----------	P.O. Box 2608, Corpus Christi, TX 78403.
SWT	Swift & Co., Swift Chemical Co. Div----------	1211 W. 22d St., Oak Brook, IL 60521.
SYC	Synthetic Chemicals, Inc----------	335 McLean Blvd., Paterson, NJ 07504.
SYP	Synthetic Products Co----------	1636 Wayside Rd., Cleveland, OH 44112.
SYV	Synvar Corp----------	917 Washington St., Wilmington, DE 19899.
IRC	TRW, Inc., IRC Div----------	401 N. Broad St., Philadelphia, PA 19108.
TCC	Tanatex Chemical Corp----------	P.O. Box 388, Lyndhurst, NJ 07071.
CST	Charles S. Tanner Co----------	P.O. Box 3867, Greensville, SC 29608.
TEK	Teknor Apex Co----------	505 Central Ave., Pawtucket, RI 02662.
HN	Tenneco Chemicals, Inc----------	280 Park Ave., New York, NY 10017.
CIK	Cal/Ink Div----------	711 Camelia St., Berkeley, CA 94710.
HNX	Nuodex Div----------	P.O. Box 2, Piscataway, NJ 08854.
TCD	Tenneco Colors Div----------	P.O. Box 51, Reading, PA 19603.
CRY	Tenneco Plastics Div----------	P.O. Box 2, Piscataway, NJ 08854.
TOC	Tenneco Oil Co., Refining & Marketing Accounting.	P.O. Box 2511, Houston, TX 77001.
TEN	Tennessee Copper Co., Div. of Tennessee Corp---	Copperhill, TN 37317.
TER	Terra Chemicals International, Inc----------	507 6th St., Sioux City, IA 51121.
TX	Texaco, Inc----------	135 E. 42d St., New York, NY 10017.
TSA	Texas Alkyls, Inc----------	P.O. Box 600, Deer Park, TX 77536.
TUS	Texas-U.S. Chemical Co----------	P.O. Box 667, Port Neches, TX 77651.
TXC	Tex Chem Co----------	20-21 Wagaraw Rd., Fair Lawn, NJ 07410.
TXT	Textilana Corp----------	12607 Cerise Ave., Hawthorne, CA 90250.
TXN	Textilana-Nease, Inc----------	2140 S. 88th St., Edwardsville, KS 66022.
SKT	Textron, Inc., Spencer Kellogg Div----------	120 Delaware Ave., Buffalo, NY 14240.
TKL	Thiokol Chemical Corp----------	P.O. Box 27, Bristol, PA 19007.
SOR	Thomason Industries, Inc., Southern Resin Div.	P.O. Drawer 1600, Fayetteville, NC 28302.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968--Continued

Identification code	Name of company	Office address
THM	Wm. T. Thomspon Co., Thompson Chemicals Div.	3028 Locust St., St. Louis, MO 63103.
TMH	Thompson-Hayward Chemical Co	5200 Speaker Rd., Kansas City, KS 66110.
TIC	Ticonderoga Chemical Corp	P.O. Box 745, Marguerite Ave., Leominster, MA 01453.
TZC	Tizon Chemical Corp	Flemington, NJ 08822.
TRC	Toms River Chemical Corp	P.O. Box 71, Toms River, NJ 08753.
ACT	Arthur C. Trask Co	327 S. LaSalle St., Chicago, IL 60604.
TRO	Troy Chemical Co	338 Wilson Ave., Newark, NJ 07105.
TCH	Trylon Chemicals, Inc	P.O. Box 600, Mauldin, SC 29662.
JTC	Joseph Turner & Co	Pleasant View Terrace, Ridgefield, NJ 07451.
ARM	USS Agri-Chemicals, Inc	P.O. Box 1685, Atlanta, GA 30301.
PCC	USS Chemicals Div. of U.S. Steel Corp	Grant Bldg., Pittsburgh, PA 15219.
UHL	Paul Uhlich & Co., Inc	90 West St., New York, NY 10006.
UNG	Ungerer & Co	161 Avenue of the Americas, New York, NY 10013.
NCI	Union-Camp Corp., Chemical Div	P.O. Box 6170, Jacksonville, FA 32205.
UCC	Union Carbide Corp	270 Park Ave., New York, NY 10017.
UOC	Union Oil Co. of California	461 S. Boylston St., Los Angeles, CA 90017.
UNS	Union Starch & Refining Co., Inc	900 19th St., Granite City, IL 62040.
USR	Uniroyal, Inc., Chemical Div	Naugatuck, CT 06770.
UNN	United Chemical Corp. of Norwood	P.O. Box 367, Endicott St., Norwood, MA 02062.
UNP	United Chemical Products Corp	York and Colgate Sts., Jersey City, NJ 07302.
ROM	United Merchants & Manufacturers, Inc., Roma Chemical Div.	749 Quequechan St., Fall River, MA 02721.
UNO	United Oil Manufacturing Co	2d and Cascade Sts., Erie, PA 16512.
USB	U.S. Borax Research Corp	3075 Wilshire Blvd., Los Angeles, CA 90005.
USO	U.S. Oil Co., Inc	P.O. Box 4228, E. Providence, RI 02914.
UPF	U.S. Pipe & Foundry Co	3300 1st Ave. N., Birmingham, AL 35202.
UPL	U.S. Plywood-Champion Papers, Inc., California Div., Shasta Operations.	P.O. Box 2317, Redding, CA 96001.
UVC	Universal Chemicals Corp	1224 Mendon Rd., Ashton, RI 02864.
UPM	Universal Oil Products Co	30 Algonquin Rd., Des Plaines, IL 60018.
	UOP Chemical Div	State Highway 17, E. Rutherford, NJ 07073.
UPJ	Upjohn Co	7000 Portage Rd., Kalamazoo, MI 49001.
CWN	Carwin Organic Chemicals	Sackett Point Rd., North Haven, CT 06473.
VAL	Valchem	1407 Broadway, New York, NY 10018.
VSV	Valentine Sugars, Inc., Valite Div	726 Whitney Bldg., New Orleans, LA 70130.
VLN	Valley Nitrogen Producers, Inc	1221 Van Ness Ave., Fresno, CA 93721.
VDM	Van De Mark Chemical Co., Inc	N. Transit Rd., Lockport, NY 14094.
VNC	Vanderbilt Chemical Corp	33 Winfield St., E. Norwalk, CT 06801.
VND	Van Dyk & Co., Inc	Main & Williams Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp	341 E. Ohio St., Chicago, IL 60611.
MHI	Ventron Corp., Metal Chemicals Div	Congress St., Beverly, MA 01915.
VB	Vermilye-Bell	21707 Bothell Way, Bothell, WA 98011.
VPC	Verona-Pharma Chemical Corp	Ionio Ct., Union, NJ 07083.
VPT	Vickers Refining Co., Inc	P.O. Box 2240, Wichita, KS 67201.
VIN	Vineland Chemical Co	W. Wheat Rd., Vineland, NJ 08360.
VGC	Virginia Chemicals, Inc	3340 W. Norfolk Rd., Portsmouth, VA 23703.
SOH	Vistron Corp	720 Republic Bldg., Cleveland, OH 44115.
SIC	Silmar Div	12335 S. Van Ness Ave., Hawthorne, CA 90250.
VTM	Vitamins, Inc	401 N. Michigan Ave., Suite 2730, Chicago, IL 60611.
FRO	Vulcan Materials Co., Chemicals Div	P.O. Box 545, Wichita, KS 67201.
	Wallace & Tiernan, Inc.:	
WTH	Harchem Div	110 E. Hanover Ave., Cedar Knolls, NJ 07927.
WTL	Lucidol Div	1740 Military Rd., Buffalo, NY 14240.
WJ	Warner-Jenkinson Manufacturing Co	2526 Baldwin St., St. Louis, MO 63106.
WMP	Warner Machine Products, Inc., Warner Chemical Div.	1200 Rochester Ave., Muncie, IN 47302.
WSN	Washine Chemical Corp	165 Main St., Lodi, NJ 07644.
WCA	West Coast Adhesives Co	11104 NW. Front Ave., Portland, OR 97231.
EW	Westinghouse Electric Corp., Industrial Plastics Div., Chemical Products Plant.	Manor, PA 15665.
WES	Weston Chemical Co., Inc	104 E. 40th St., New York, NY 10016.
WVA	Westvaco Corp.:	
	Chemical Div., Tall Oil Dept	P.O. Box 5207, N. Charleston, SC 29406.
	Polychemicals Div	P.O. Box 5207, N. Charleston, SC 29406.
WRD	Weyerhaeuser Co	115 S. Palmetto Ave., Marshfield, WI 54449.
WBG	White & Bagley Co	P.O. Box 1171, Worcester, MA 01601.
WHI	White & Hodges, Inc	576 Lawrence St., Lowell, MA 01852.

TABLE 2.--Synthetic organic chemicals: Alphabetical directory of manufacturers, by company, 1968

Identification code	Name of company	Office address
WLI	White Laboratories, Inc	Galloping Hill Rd., Kenilworth, NJ 07033.
WHL	Whitmoyer Laboratories, Inc	19 N. Railroad St., Myerstown, PA 17067.
WHC	Whittaker Corp., Research & Development/ San Diego.	3540 Aero Ct., San Diego, CA 92123.
WHW	Whittemore-Wright Co., Inc	62 Alford St., Boston, MA 02129.
WIC	Wica Chemicals, Inc	P.O. Box 506, Charlotte, NC 28201.
	Wilson Pharmaceutical & Chemical Corp.:	
WIL	Wilson Laboratories Div	4221 S. Western Blvd., Chicago, IL 60609.
WM	Wilson-Martin Div	Jackson and Swanson Sts., Philadelphia, PA 19148.
WTC	Witco Chemical Co., Inc	P.O. Box 305, Paramus, NJ 07652.
KEN	Kendall Refining Co. Div	77 N. Kendall Ave,, Bradford, PA 16701.
WCC	Witfield Chemical Div	P.O. Box 1243, Wilmington, CA 90744.
WOB	Woburn Chemical Corp	1200 Harrison Ave., Harrison, NJ 07029.
WOD	Woodbury Chemical Co	P.O. Box 788, St. Joseph, MO 64505.
WAW	W. A. Wood Co	108 Spring St., Everett, MA 02149.
WRC	Wood Ridge Chemical Corp	Park Pl. E., Wood Ridge, NJ 07075.
WON	Woonsocket Color & Chemical Co	176 Sunnyside Ave., Woonsocket, RI 02895.
WBC	Worthington Biochemical Corp	Halls Mills Rd., Freehold, NJ 07728.
WYN	Wyandotte Chemicals Corp	1609 Biddle Ave., Wyandotte, MI 48192.
WYC	Wycon Chemical Co	P.O. Box 1087, Colorado Springs, CO 80901.
WYT	Wyeth Laboratories, Inc., Div. of American Home Products Corp.	P.O. Box 8299, Paoli, PA 19101.
YAW	Young Aniline Works, Inc	2731 Boston St., Baltimore, MD 21224.

Table 3 summarizes, for 1967 and 1968, U.S. imports of benzenoid chemicals and products entered 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 U.S. customs districts, are given in detail in a separate report of the Tariff Commission.[1]

In 1968, general imports of benzenoid intermediates entered under part 1B, comprised 663 items with a total weight of 71.4 million pounds, and an invoice value of $38.8 million, compared with 71.8 million pounds, with an invoice value of $28.2 million, in 1967. Half of these intermediate products were declared to be "competitive" (duty based on "American selling price"). In terms of value, 52 percent of all the intermediates imported in 1968 came from West Germany; 14 percent, from Japan, and 11 percent, from the United Kingdom. The remaining imports came mainly from Switzerland, Italy, Canada, and France. Imports from West Germany in 1968 increased to $19.9 million from $13.2 million in 1967. In 1968, imports from Switzerland increased to $4.0 million, from $2.5 million in 1967. Imports in 1968 from Italy increased to $2.9 million from $2.6 million in 1967. Imports from Canada amounted to $1.1 million in 1968, compared with $2.3 million in 1967, while imports from France totaled $406,000, compared with $640,000 in 1967.

In 1968, 16 chemicals accounted for approximately 63 percent of the quantity of imports of benzenoid intermediates. The large-volume intermediates imported in 1968 and their principal sources are:

Intermediates	Quantity (*1,000 pounds*)	Principal sources (except as noted)
Phthalic anhydride	11,124	West Germany, Italy, Canada
Styrene monomer	9,439	Canada
Polyalkylbenzene	8,283	Italy (all)
2-Naphthol	2,681	Italy, West Germany
4-(p-Chlorophenoxypheny1) isocyanate	1,774	West Germany, Switzerland
H acid and salts	1,705	Italy, West Germany, Japan
m,p-Cresol	1,454	Japan, United Kingdom
Acetoacetanilide	1,112	United Kingdom, Switz., Japan
Phthalocyanine crude, copper salt	1,076	Japan, West Germany
B. O. N.	1,043	West Germany, Italy
Sodium naphthionate	1,020	Japan, West Germany
3,3'-Dichlorobenzidine, base and salts	929	West Germany, Japan
Anthracene, refined	837	West Germany, France
Bromamine acid	791	West Germany, Switzerland
Anthraquinone	745	Japan, West Germany
Ethylbenzene	736	Canada (all)

Imports of the benzenoid intermediates classified as rubber-processing chemicals amounted to 313,000 pounds in 1968, compared with 307,000 pounds in 1967, and 408,000 pounds in 1966.

In 1968 imports of all finished benzenoid products that are dutiable under part 1C comprise 2,198 listed items, with a total weight of 55.4 million pounds and an invoice value of $68.4 million. In 1967, imports consisted of 2,227 items, with a total weight of 45.9 million pounds and an invoice value of $54.3 million. The most important group of finished benzenoid products imported in 1968 was benzenoid dyes. Imports of dyes amounted to $33.7 million (invoice value), or 49.3 percent of the value of all imports under 1C. In 1967, imports of dyes amounted to $23.4 million (invoice value), or 43.0 percent of the value of all imports under part 1C.

[1] *Imports of Benzenoid Chemicals and Products, 1968*, TC Publication 290, 1969 [processed].

Imports of medicinals and pharmaceuticals, the next most important group of products entered under part 1C in 1968, decreased in 1968, compared with 1967. In 1968, imports of medicinals and pharmaceuticals were valued at $11.7 million (invoice value), or 17.1 percent of the total value of imports under part 1C. In 1967, imports of medicinals and pharmaceuticals were valued at $11.9 million, or 22.0 percent of the total value of imports under part 1C.

As in 1967, imports of benzenoid pigments increased in 1968. In 1968, imports of these products were valued at $4.3 million, compared with $2.9 million in 1967.

Imports of benzenoid flavor and perfume materials increased in 1968. In 1968, imports of these products were valued at $4.0 million, compared with $2.8 million in 1967. In 1968, imports of other benzenoid products entered under part 1C (chiefly polyamide resins and pesticides) were valued at $14.7 million, compared with $13.3 million in 1967.

TABLE 3.--*Benzenoid intermediates and finished benzenoid products: U.S. general imports, classified by use, 1967 and 1968*

Product	1967		1968	
	Quantity	Invoice value	Quantity	Invoice value
	1,000 pounds	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*
Intermediates[1]	71,779	28,230	71,426	38,820
Finished benzenoid products, total	45,907	54,340	55,414	68,436
Dyes, total	12,812	23,382	19,133	33,722
Acid	2,168	...	3,055	...
Azoic dyes	5	...	[2]	...
Azoic components:				
Fast color bases	648	...	798	...
Fast color salts	273	...	297	...
Naphthol AS and its derivatives	749	...	716	...
Basic	1,198	...	1,356	...
Direct	794	...	1,155	...
Disperse	2,358	...	3,743	...
Fiber-reactive	1,188	...	1,909	...
Fluorescent brightening agents	250	...	423	...
Mordant	367	...	411	...
Solvent	203	...	385	...
Sulfur	89	...	154	...
Vat	2,455	...	4,585	...
All other	[3] 67	...	[3] 146	...
Pigments (toners and lakes)	1,485	2,944	1,990	4,307
Medicinals and pharmaceuticals	4,581	11,935	4,134	11,710
Flavor and perfume materials	1,740	2,758	2,478	4,022
All other	[4] 25,289	13,321	27,679	14,675

[1] Includes small quantities of rubber-processing chemicals.
[2] Imports of azoic dyes in 1968 were 353 pounds.
[3] Includes ingrain dyes.
[4] Includes organic pesticides and related products, plasticizers, surface-active agents, and textile assistants.

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

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