UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1951

1620 Cl. No.
T.C.S.O. 1751

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UNITED STATES TARIFF COMMISSION

SYNTHETIC ORGANIC CHEMICALS

United States Production and Sales, 1951

UNDER THE GENERAL PROVISIONS
OF TITLE III, PART II, SECTIONS 332
AND 333 OF THE TARIFF ACT OF 1930

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1952

Report No. 175 Second Series

UNITED STATES TARIFF COMMISSION

Address all communications
UNITED STATES TARIFF COMMISSION
WASHINGTON 25, D. C.

ACKNOWLEDGMENT

In the preparation of this report, the Commission had the services of James H. Hibben, Henry O. Parsons, Deborah K. Emory, Frank Gonet, Pauline T. Eno, and others of its staff

For sale by the Superintendent of Documents, U. S. Government Printing Office

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INTRODUCTION

This is the thirty-fifth annual report of the United States Tariff Commission on production and sales in the United States of synthetic organic chemicals and the raw materials from which they are made. The report gives statistics, for 1951, on the production and sales of crude organic chemicals derived from coal, natural gas, and petroleum; intermediates; and finished synthetic organic chemical products. It groups the finished products according to their principal use--dyes, lakes and toners, medicinals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers, plasticizers, surface-active agents, pesticides and other organic agricultural chemicals, and miscellaneous chemicals. With a few exceptions, the report does not cover organic chemicals (such as wood-distillation products, essential oils, and alkaloids) that are derived from natural (vegetable) sources by simple extraction or distillation. The Commission has compiled the statistics presented in this report from information supplied by more than 560 original (primary) manufacturers listed in part III.

The raw materials covered in this report are obtained from coal, crude petroleum, natural gas, and certain other natural materials such as vegetable oils, fats, rosin, and grains. Thermal decomposition of coal yields coal-tar crudes and other raw materials. Crude organic chemicals are derived also from petroleum and natural gas by catalytic cracking, followed by distillation or absorption, and from other natural sources by fermentation. Production of 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 then are converted into finished chemical products, such as medicinals, plastics and resin materials, and dyes. Intermediates usually are not sold directly to the ultimate consumer, but are used by the producing companies themselves, or by other industrial concerns, in their manufacturing processes.

In this report, the statistics on production include the total output of the reporting companies' plants--the materials produced for consumption within the plants, as well as those produced for sale. The quantities reported as produced, therefore, generally exceed the quantities reported as sold, although changes in inventory may account for some differences. No chemical is reported as produced, however, unless it has been withdrawn from the reaction system.

Data on the chemicals covered in the report usually are given in terms of undiluted materials. Principal exceptions are the statistics on dyes and a few solvents, which are reported in terms of commercial concentrations, and those 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 weighted averages for products which vary widely in unit values and in the quantities sold.

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; data furnished to the Coal Economics Division of the United States Bureau of Mines by coke-oven operators; and data furnished to the American Gas Association by producers of water-gas and oil-gas tar.

Statistics on United States imports in 1951 of coal-tar intermediates and finished coal-tar products which entered under paragraphs 27 and 28 of the Tariff Act of 1930 are given in appendix A. Appendix B includes a table showing the number of technical research workers in the synthetic organic chemical industry and the cost of research in the industry. Appendix C is a glossary of the common (or trivial) names of coal-tar intermediates usually encountered in the trade, together with their equivalent standard (or Chemical Abstracts) names. Appendix D summarizes the data on production and sales of cellulose plastics which were reported to the Commission monthly during 1951.

SUMMARY

Combined production of all synthetic organic chemicals (including their raw materials) in 1951 was 57,501 million pounds, or 17 percent greater than that in 1950 (see table 1). Sales in 1951 totaled 32,635 million pounds, valued at 4,416 million dollars--an increase of 15 percent in quantity and 42 percent in value over 1950. Since these totals include the data for several successive steps in the manufacturing process, they necessarily include much duplication.

The output of tars from all sources in 1951 was 932 million gallons (9,322 million pounds), or 6 percent less than in 1950. Sales in 1951 of all tars, which totaled 5,125 million pounds, valued at 48 million dollars, were 9 percent less in quantity and 4 percent greater in value than in 1950. Production of tar crudes in 1951 totaled 12,073 million pounds, compared with 10,430 million pounds in 1950, an increase of 16 percent. Sales of tar crudes in 1951 totaled 7,799 million pounds, valued at 209 million dollars, an increase of 17 percent in quantity and 53 percent in value compared with 1950. The output of crude products from petroleum and natural gas for chemical conversion in 1951 reached

TABLE 1.--*Synthetic organic chemicals and their raw materials: United States production and sales, 1950 and 1951*

Chemical	Production			Sales					
				Quantity			Value		
	1950	1951	Increase, or decrease (-), 1951 over 1950[1]	1950	1951	Increase, or decrease (-), 1951 over 1950[1]	1950	1951	Increase, or decrease (-), 1951 over 1950[1]
	Million pounds	*Million pounds*	*Percent*	*Million pounds*	*Million pounds*	*Percent*	*Million dollars*	*Million dollars*	*Percent*
Grand total[2]	49,193	57,501	16.9	28,470	32,635	14.6	3,123	4,416	41.4
Tar	9,884	9,322	-5.7	5,652	5,125	-9.3	46	48	4.3
Tar crudes[3]	10,430	12,073	15.8	6,661	7,799	17.1	137	209	52.6
Crude products from petroleum and natural gas	6,353	8,607	31.3	4,057	5,145	26.8	144	287	99.3
Synthetic organic chemicals, total	22,326	27,499	23.2	12,100	14,566	20.4	2,794	3,873	38.6
Intermediates	3,397	4,528	33.3	1,484	1,802	21.5	239	338	41.4
Dyes	196	187	-4.4	188	160	-15.1	193	177	-7.4
Lakes and toners	47	47	-.3	44	40	-8.2	54	53	-1.1
Medicinals	49	74	49.1	49	58	27.1	356	504	41.7
Flavor and perfume materials	28	30	5.4	25	25	-.4	38	40	4.6
Plastics and resin materials	2,151	2,441	13.5	1,876	2,024	7.9	571	711	24.6
Rubber-processing chemicals	115	138	20.9	89	107	20.3	45	58	29.6
Elastomers (synthetic rubbers)	1,166	2,003	71.7	1,239	1,828	47.5	301	515	70.7
Plasticizers	244	281	15.4	187	210	12.4	65	84	29.1
Surface-active agents	676	693	2.5	555	590	6.3	126	126	.1
Pesticides and other organic agricultural chemicals	286	464	62.5	250	364	45.6	98	190	93.2
Miscellaneous chemicals	13,998	16,613	18.7	6,150	7,398	19.6	726	1,116	53.6

[1] Percentages calculated on exact (i.e., unrounded) figures.

[2] [illegible] duplication.

a record high of 8,607 million pounds--an increase of 31 percent over that in 1950. Sales in 1951 totaled 5,145 million pounds, valued at 287 million dollars--an increase of 27 percent in quantity and 99 percent in value compared with 1950.

Production of all synthetic organic chemicals in 1951 (excluding the raw material mentioned above) was 27,499 million pounds, a total also involving considerable duplication. This output represents an increase of 23 percent over the 22,326 million pounds produced in 1950. Production and sales of all but two of the individual groups of synthetic organic chemicals increased in 1951 compared with 1950. Production of elastomers increased to 2,003 million pounds (or by 72 percent); pesticides and other organic agricultural chemicals, to 464 million pounds (63 percent); medicinals, to 74 million pounds (49 percent); intermediates, to 4,528 million pounds (33 percent); rubber-processing chemicals, to 138 million pounds (21 percent); miscellaneous chemicals, to 16,613 million pounds (19 percent); plasticizers, to 281 million pounds (15 percent); and plastics to 2,441 million pounds (14 percent). The output of surface-active agents and flavor and perfume materials increased less than 10 percent. Production of dyes in 1951 declined to 187 million pounds--a decrease of 4.4 percent compared with 1950--and the output of lakes and toners declined by 0.3 percent.

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

Tars

Coal tar is produced chiefly by the steel industry as a by-product in 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.

TABLE 2.--*Tar: United States production and consumption, 1950 and 1951*

[In thousands of gallons]

Product	1950	1951
PRODUCTION		
Total	988,417	932,245
Water-gas and oil-gas tar[1]	239,255	134,010
Coal tar,[2] total	749,162	798,235
Coal tar from coke-oven byproduct plants, total	739,869	795,311
Plants not owned by city gas companies	694,029	751,712
Plants owned by city gas companies (public utilities)	45,840	43,599
Coal tar from coal-gas retort plants	[3] 9,293	2,924
Low- and medium-temperature carbonization tar		(4)
CONSUMPTION		
Total	[illegible]	[illegible]
Tar consumed by distillation, total	611,389	[illegible]
Water-gas and oil-gas tar distilled by producers and tar distillers[5]	56,154	[illegible]
Coal tar distilled or topped by coke-oven operators[2]	203,320	[illegible]
Coal tar distilled by tar distillers[6]	351,915	[illegible]
Tar consumed chiefly as fuel, total	205,217	168,408
Water-gas and oil-gas tar consumed as fuel[7]	76,006	45,328
Coal tar sold or consumed as fuel by coke-oven operators[2]	129,211	123,080
As fuel under boilers	2,613	1,805
In open-hearth or affiliated plants	95,280	106,641
Sold as fuel by coke-oven operators to affiliates	27,307	14,410
Sold as fuel by coke-oven operators to others	4,011	224
Tar consumed otherwise than by distillation or as fuel, total	91,613	[illegible]
Coal tar from retort plants sold for consumption[2]	3,527	1,051
Coal tar consumed at coke-oven plants for roads and upkeep[2]	2,842	2,108
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[8]	85,244	[illegible]

[1] Reported to the American Gas Association.
[2] Reported to the U.S. Bureau of Mines, Department of the Interior.
[3] Combined to prevent disclosing confidential information.
[4] Data are confidential and may not be published.
[5] Reported to the U.S. Tariff Commission.
[6] Represents coal tar distilled from coke-oven and gas-retort plants and distilled by chemical companies operating tar-distillation plants as reported to the U.S. Tariff Commission. Includes tar purchased and distilled by corporations affiliated with coke-oven plants.
[7] Reported to the American Gas Association and to the U.S. Tariff Commission. Includes a small quantity of coal tar consumed as fuel and produced by tar distillers.
[8] Reported to the American Gas Association and to the U.S. Tariff Commission.

The quantity of tar recovered in the United States from all sources in 1951 was 932 million gallons, or 6 percent less than the output in 1950. Of the total quantity produced in 1951, about 798 million gallons was coal tar and 134 million gallons was water-gas and oil-gas tar (see table 2). The corresponding figures for 1950 were 749 million gallons of coal tar and 239 million gallons of water-gas and oil-gas tar. The increase in output of coal tar in 1951 was due to the increased production of coke by the steel industry. The sharp decline in the output of water-gas and oil-gas tar was due to the increased consumption of natural gas for industrial and household uses.

Of the total consumption of tar in 1951 (924 million gallons), 670 million gallons was consumed by distillation, 169 million gallons was used as fuel, and 85 million gallons was consumed in miscellaneous uses such as refinery upkeep and the making of road-tar blends.

The quantity of tar distilled in 1951 was 59 million gallons greater than in 1950; the quantity consumed as fuel, however, was 37 million gallons less than in 1950. The quantity of coal tar distilled in 1951 by tar distillers totaled 385 million gallons and that distilled by coke-oven operators, 252 million gallons. Tar sold or consumed as fuel by coke-oven operators in 1951 amounted to 123 million gallons, compared with 129 million gallons in 1950. Sales of all tars in 1951 totaled 513 million gallons, valued at 48 million dollars.

Tar Crudes

Benzene, toluene, xylene, and naphthalene are the most important tar crudes derived from coke-oven gas and coal tar. Road tar and creosote oil are also important products. Statistics on tar and tar crudes are given in tables 3 and 4A.[1]

Production of benzene (except motor benzene) from all sources in 1951 amounted to 266 million gallons. This figure includes data for benzene produced from tar, from petroleum, and from imported crude light oil and motor-grade benzene. Production of benzene in 1950 was 186 million gallons. Sales of benzene in 1951 were 234 million gallons, valued at 83 million dollars, compared with 173 million gallons, valued at 45 million dollars, in 1950. The increase in the output of benzene in 1951 resulted from the increased demand for benzene for the production of styrene (for use in synthetic rubber and plastics), phenol, and other products. Coke-oven operators produced 173 million gallons of benzene in 1951, or 65 percent of the total; tar distillers produced 60 million gallons, or 23 percent; and petroleum operators produced 33 million gallons, or 12 percent. Production of benzene from petroleum in 1950 accounted for only 5 percent of the total in that year.

The output of toluene in 1951 (including production from petroleum) was 101 million gallons, compared with 84 million gallons in 1950. Sales in 1951 were 82 million gallons, valued at 24 million dollars. Of the total output of toluene in 1951, petroleum sources accounted for 56 million gallons, or 55 percent; tar distillers produced 11 million gallons; and coke-oven operators, 34 million gallons.

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

TABLE 3.--*Tar and tar crudes: Summary of production and sales of specified products, average 1945-49, annual 1950 and 1951*

Chemical[1]	Unit of quantity	Average 1945-49	1950	Increase, or decrease (-), 1950 over 1945-49	1951	Increase, or decrease (-), 1951 over 1950
				Percent		*Percent*
Tar: Production[2]	1,000 gal.	935,705	988,417	5.6	[3]932,265	-5.7
Benzene:						
Production	1,000 gal.	153,468	186,152	21.3	265,711	42.7
Sales	1,000 gal.	137,678	172,522	25.3	234,035	35.7
Value of sales	1,000 dol.	22,805	45,141	97.9	82,950	83.8
Motor benzene:						
Production	1,000 gal.	23,571	14,202	-39.7	[4]5,106	-64.1
Sales	1,000 gal.	23,098	10,857	-53.0	[4]5,169	-52.4
Value of sales	1,000 dol.	2,487	1,968	-20.7	[4]1,903	-22.8
Toluene:[5]						
Production	1,000 gal.	78,436	83,871	6.9	101,415	20.9
Sales	1,000 gal.	73,783	70,456	-4.8	82,416	17.4
Value of sales	1,000 dol.	18,435	16,702	-9.4	24,170	44.7
Xylene:						
Production	1,000 gal.	52,155	71,892	37.8	75,649	5.2
Sales	1,000 gal.	42,146	56,408	33.8	58,517	3.7
Value of sales	1,000 dol.	8,118	13,067	61.0	15,615	19.4
Naphthalene:						
Production	1,000 lb.	281,629	288,513	2.4	355,762	23.3
Sales	1,000 lb.	218,146	206,686	-5.3	255,313	23.5
Value of sales	1,000 dol.	8,242	9,327	13.2	14,864	59.3
Creosote oil:						
Production	1,000 gal.	146,308	142,318	-2.7	150,617	5.8
Sales	1,000 gal.	141,604	133,351	-5.8	146,275	9.7
Value of sales	1,000 dol.	22,675	22,205	-2.1	26,857	21.0

[1] For detailed explanation of statistics shown in this table, see table on production and sales of tar crudes.
[2] Includes production of water-gas and oil-gas tars reported to the American Gas Association, and of coal tar reported to the Coal Economics Division, U. S. Bureau of Mines.
[3] Does not include production of low- and medium-temperature carbonization tar.
[4] Includes data for coke-oven operators only.
[5] Includes statistics for all grades of toluene derived from coal tar and petroleum, except that produced in Government plants under the ordnance program during the war.

NOTE.--Although road oil is economically an important crude, its output usually varies only slightly, averaging about 150 million gallons a year.

Production of xylene in 1951 amounted to 76 million gallons, compared with 72 million gallons in 1950--an increase of 5 percent. Production of xylene from petroleum in 1951 was 64 million gallons, or 85 percent of the total output. Production of naphthalene in 1951 was 356 million pounds, an increase of 67 million pounds over the 289 million pounds reported for 1950. Sales in 1951 were 255 million pounds, valued at 15 million dollars.

Creosote oil (a mixture of xylenols, cresols, and their homologues, with some anthracene and phenol) is used chiefly as a wood preservative. Production of creosote oil for this purpose in 1951 was 151 million gallons, compared with 142 million gallons in 1950. Sales of creosote oil in 1951 amounted to 146 million gallons, valued at 27 million dollars. The output of road tar in 1951 was 143 million gallons, slightly less than the 151 million gallons reported for 1950. Sales of road tar in 1951 were 133 million gallons, valued at 18 million dollars. Production of tar pitches in 1951 was 1.75 million tons, or about 250,000 tons more than in 1950.

Some of the products covered by the statistics in table 4A are derived from other products, data for which are also included. The statistics, therefore, involve some duplication, and for this reason

TABLE 6.--*Synthetic organic chemicals: Summary of United States production and sales of intermediates and finished products, average 1945-49, annual 1950 and 1951*

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

Chemical	Average 1945-49	1950	Increase, or decrease (-), 1950 over 1945-49	1951	Increase, or decrease (-), 1951 over 1950
			Percent		Percent
Production, grand total	16,167,478	22,325,710	38.1	27,499,355	23.2
Sales, grand total	9,494,743	12,099,717	(1)	14,565,467	20.4
Sales value, grand total	2,045,427	2,796,034	(1)	3,871,595	38.6
I. ORGANIC CHEMICALS, CYCLIC					
Production, total	5,145,269	6,869,284	32.9	9,245,949	34.6
Sales, total	3,609,943	4,586,238	(1)	5,759,761	25.6
Sales value, total	1,055,644	1,512,960	(1)	2,117,988	40.0
A. INTERMEDIATES					
Production	2,555,357	3,396,699	32.9	4,527,925	33.3
Sales	1,224,984	1,483,661	(1)	1,801,980	21.5
Sales value	164,669	238,866	(1)	337,676	41.4
B. FINISHED PRODUCTS					
Production, total	2,589,912	3,472,585	34.1	4,718,024	35.9
Sales, total	2,384,949	3,102,577	(1)	3,957,781	27.6
Sales value, total	890,974	1,274,094	(1)	1,780,312	39.7
1. Dyes					
Production, total	176,918	195,713	10.6	187,082	-4.4
Sales, total	170,268	188,382	(1)	159,992	-15.1
Sales value, total	135,656	190,786	(1)	176,679	-7.4
a. Colour Index Group					
Production	137,371	142,403	3.7	129,818	-8.8
Sales	132,388	138,443	(1)	113,530	-18.0
Sales value	81,326	101,064	(1)	92,450	-8.5
b. Prototype Group					
Production	21,912	28,454	29.9	32,354	13.7
Sales	20,982	26,840	(1)	26,215	-2.3
Sales value	31,291	47,123	(1)	46,560	-1.2
c. Ungrouped					
Production	17,635	24,856	50.6	24,910	.2
Sales	16,898	23,099	(1)	20,247	12.3
Sales value	23,038	42,599	(1)	37,669	-11.6
2. Lakes and Toners					
Production	34,443	47,617	37.7	47,272	-.3
Sales	30,863	43,703	(1)	40,109	-8.2
Sales value	31,364	54,379	(1)	52,691	-3.1
3. Medicinals					
Production	38,352	41,424	8.0	61,315	48.0
Sales	34,299	37,011	(1)	48,757	31.7
Sales value	208,506	328,644	(1)	477,429	45.3
4. Flavor and Perfume Materials					
Production	14,273	18,617	30.4	18,934	1.7
Sales	12,029	15,806	(1)	14,812	-6.3
Sales value	16,932	23,457	(1)	23,291	-.7

See footnotes at end of table.

TABLE 6.--*Synthetic organic chemicals: Summary of United States production and sales of intermediates and finished products, average 1945-49, annual 1950 and 1951--Continued*

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

Chemical	Average 1945-49	1950	Increase, or decrease (-), 1950 over 1945-49	1951	Increase, or decrease (-), 1951 over 1950
I. ORGANIC CHEMICALS, CYCLIC--Continued					
B. FINISHED PRODUCTS--Continued					
5. Plastics and Resin Materials			Percent		Percent
Production	709,782	1,283,856	80.9	1,421,762	10.7
Sales	608,296	1,057,385	(1)	1,152,342	9.0
Sales value	154,033	258,733	(1)	326,550	26.2
6. Rubber-Processing Chemicals					
Production	79,349	98,160	23.7	116,009	18.2
Sales	65,891	74,781	(1)	87,642	17.2
Sales value	27,936	33,905	(1)	43,927	30.0
7. Elastomers (Synthetic Rubbers)					
Production	1,091,785	802,377	-26.5	1,560,856	94.5
Sales	1,040,101	879,840	(1)	1,404,146	59.8
Sales value	202,500	170,684	(1)	351,549	106.0
8. Plasticizers					
Production	111,534	180,631	62.0	203,790	12.8
Sales	93,450	136,919	(1)	151,777	10.9
Sales value	29,475	46,387	(1)	57,446	23.8
9. Surface-Active Agents					
Production	137,033	383,274	179.7	458,308	19.6
Sales	110,293	308,341	(1)	386,328	25.3
Sales value	23,751	52,821	(1)	72,277	36.8
10. Pesticides and Other Organic Agricultural Chemicals[2]					
Production	[3] 127,849	248,843	94.6	406,966	63.5
Sales	[3] 102,726	218,910	(1)	318,801	45.9
Sales value	[3] 37,808	69,218	(1)	134,590	94.4
11. Miscellaneous[2]					
Production	[3] 108,710	198,239	82.4	235,530	18.8
Sales	[3] 97,525	173,500	(1)	190,825	10.0
Sales value	[3] 31,393	50,477	(1)	63,923	26.6
II. ORGANIC CHEMICALS, ACYCLIC (INTERMEDIATES AND FINISHED PRODUCTS)					
Production, total	11,022,209	15,456,426	40.2	18,253,406	18.1
Sales, total	5,884,800	7,513,479	(1)	8,805,706	17.2
Sales value, total	989,783	1,281,074	(1)	1,753,607	36.9
1. Medicinals					
Production	5,572	7,903	41.9	12,228	54.7
Sales	4,856	8,257	(1)	8,779	6.3
Sales value	17,200	27,185	(1)	26,823	-1.3
2. Flavor and Perfume Materials					
Production	6,360	9,661	47.3	10,872	12.5
Sales	6,113	9,610	(1)	10,496	9.2
Sales value	8,435	14,537	(1)	17,208	18.4

See footnotes at end of table.

TABLE 4A.--*Organic chemicals: United States production and sales of tar crudes, 1951*

[Listed below are all tar crudes for which any reported data on production or sales may be published. Table 4B in part III lists separately all products for which data on production or sales were reported and identifies the manufacturers reporting to the U. S. Tariff Commission]

Product	Unit of quantity	Production	Sales		
			Quantity	Value	Unit value[1]
				1,000 dollars	
Crude light oil	1,000 gal	293,833	24,544	4,753	$0.19
Intermediate light oil	1,000 gal	845	819	131	.16
Light-oil distillates:					
Benzene, motor grade: Coke-oven operators	1,000 gal	5,104	5,189	1,503	.29
Benzene, all other grades, total	1,000 gal	265,731	234,035	82,950	.35
Tar distillers[2]	1,000 gal	60,310	45,422	17,081	.38
Coke-oven operators	1,000 gal	172,849	171,024	57,589	.34
Petroleum operators	1,000 gal	32,572	17,589	8,280	.47
Toluene, all grades, total	1,000 gal	101,415	82,416	24,372	.30
Tar distillers	1,000 gal	11,406	9,423	3,441	.37
Coke-oven operators	1,000 gal	34,301	34,055	10,387	.31
Petroleum operators	1,000 gal	55,708	38,938	10,544	.27
Xylene, all grades, total	1,000 gal	75,660	58,512	15,605	.27
Tar distillers	1,000 gal	2,150	1,866	645	.35
Coke-oven operators	1,000 gal	9,097	8,847	2,812	.32
Petroleum operators	1,000 gal	64,413	47,799	12,148	.25
Solvent naphtha: Coke-oven operators	1,000 gal	6,036	6,039	1,389	.23
All other light-oil distillates:					
Tar distillers	1,000 gal	4,016	3,680	1,467	.26
Coke-oven operators	1,000 gal	6,921	4,694	616	.13
Pyridine, crude[3]	1,000 gal	537	529	846	1.60
Naphthalene, crude (solidifying at less than 79° C.):[4]					
Tar distillers	1,000 lb	224,625	125,112	7,956	.06
Coke-oven operators	1,000 lb	131,117	130,201	6,850	.05
Crude tar-acid oils:[5]					
Tar distillers	1,000 gal	3,249	941	419	.45
Coke-oven operators	1,000 gal	24,960	23,916	6,595	.28
Cresylic acid, crude (less than 75% distilling over 215° C.): Petroleum operators	1,000 lb	20,386	9,731	491	.05
Creosote oil (Dead oil):[6]					
Tar distillers:					
Sold or consumed as such	1,000 gal	86,036	85,086	15,889	.19
Sold or consumed in coal-tar solution	1,000 gal	21,609	21,878	3,920	.18
Coke-oven operators:					
Distillate as such	1,000 gal	35,252	34,169	6,226	.18
In coal-tar solution	1,000 gal	7,720	5,142	822	.16
Coal tar sold or consumed in coal-tar solution (tar distillers only)	1,000 gal	8,809	8,872	1,044	.12
All other distillates[7]	1,000 gal	40,587	33,338	7,395	.22
Tar, road[8]	1,000 gal	143,348	133,046	18,386	.14
Tar (crude and refined) for other uses	1,000 gal	48,367	33,563	7,913	.24
Pitch of tar:					
Soft (Water softening point less than 110° F. ASTM D61-24)	1,000 tons	562	29	839	28.93
Medium (Water softening point 110° F. to 160° F.)	1,000 tons	478	453	15,715	34.69
Hard (Water softening point above 160° F.)	1,000 tons	710	413	11,744	28.44
Pitch of tar coke[10]	1,000 tons	45	47	1,375	29.26

[1] Unit value per gallon, pound, or ton, according to the unit specified.
[2] Includes data for benzene distilled from imported crude light oil and motor-grade benzene.
[3] Includes data for only the crude pyridine reported to the Bureau of Mines by coke-oven operators.
[4] The statistics on crude naphthalene are for three grades, data for which have been combined to prevent the disclosure of the operations of individual companies. The three grades are as follows: Material solidifying at less than 74° C.; material solidifying at 74° C. to less than 76° C.; and material solidifying at 76° C. to less than 79° C. As there is some conversion between the grades of crude naphthalene, the statistics contain some duplication.
[5] Includes data for crude tar-acid oil having a tar-acid content of 5% to less than 24%, and of 24% to 90%. Data for crude tar-acid and for crude phenol are also included.
[6] Includes data for only that distillate of tar sold or consumed for wood-preserving purposes. The figures do not represent the total distillate that could be used for creosote oil from which crude tar acids, naphthalene, anthracene, and other products reported under "All other distillates" are to be extracted.
[7] Includes data for crude cresylic acid, solvent naphtha, crude and semirefined pyridine, anthracene, crude sodium phenolate and carbolate, and other distillate products.
[8] Includes data for tar distillers and coke-oven operators.
[9] Includes data for tar used or sold for paints, pipe coating, saturating, etc.
[10] Includes data for a small amount of pitch emulsion.

NOTE.—Statistics for materials produced in coke and gas-retort ovens are reported to the Coal Economics Division, U. S. Bureau of Mines, and those for materials produced in tar and petroleum refineries are reported to the U. S. Tariff Commission.

group totals and grand totals are not given. After eliminating as much duplication as possible, the net value of the total output of these products, and of tar burned as fuel in 1951, is estimated to be 314 million dollars, compared with a net value of 218 million dollars in 1950, of 197 million dollars in 1949, and of 198 million dollars in 1948.

Crude Products from Petroleum and Natural Gas for Chemical Conversion

The crude products that are produced from petroleum and natural gas are related to the products derived from them in the same way that crude chemicals derived from the distillation of coal tar are related to their intermediates and finished products. In fact, many of the crude chemicals derived from petroleum and natural gas are identical with those produced from coal tar (e.g., benzene, toluene, and xylene). Because some crude chemicals are converted to other crudes, and because data for both may be reported, there is considerable duplication of data in the statistics on production and sales of petroleum crudes (see table 5A[2]). Despite these duplications, however, the statistics are sufficiently accurate to serve as a basis for general comparison, and to indicate trends in the petrochemicals industry. Many of the crude products derived from petroleum and natural gas can be used either as fuel or as basic materials from which to derive other chemicals, depending on prevailing economic conditions. In this report every effort has been made to exclude data on materials which have been used as fuels.

Production in 1951 of crude chemicals from petroleum and natural gas as a group amounted to 8,607 million pounds, compared with the 6,553 million pounds (revised figure) reported for 1950. The data for 1950 have been revised because the output of ethylene was overstated in that year. The increased output of petrochemical crudes in 1951 indicates the continued growth of the industry; during that year existing plants were enlarged, and new plants came into operation. Sales of petrochemicals in 1951 amounted to 5,145 million pounds, valued at 287 million dollars.

Production of all aromatic and naphthenic products in 1951 amounted to 1,599 million pounds, compared with 1,425 million pounds in 1950; sales in 1951 were 1,157 million pounds, valued at 42 million dollars. In this group, the greatest increase in output was reported for benzene. In 1951, production of benzene (except motor grade) from petroleum sources amounted to 235 million pounds, compared with 73 million pounds in 1950. The continued shortage of benzene produced from the usual sources is responsible for the increased output of this chemical from petroleum. In 1951, production of crude cresylic acid was 20 million pounds, compared with 16 million pounds in 1950. The production of toluene increased in 1951 to 403 million pounds from 329 million pounds in 1950, and that of xylene, to 464 million pounds in 1951 from 450 million pounds in 1950. Sales of toluene in 1951 were 282 million pounds, valued at 11 million dollars. Sales of xylene were 345 million pounds, valued at 12 million dollars.

The output of all aliphatic hydrocarbons and derivatives from petroleum and natural gas in 1951 was 7,008 million pounds, compared with 5,128 million pounds (revised figure) in 1950. Sales of

aliphatic hydrocarbons in 1951 amounted to 3,989 million pounds, valued at 245 million dollars. Combined production of ethane and ethylene in 1951 was 1,799 million pounds, compared with 1,440 million pounds in 1950. Sales of ethane and ethylene in 1951 were 223 million pounds, valued at 9.6 million dollars. The production

TABLE 5A.--*Synthetic organic chemicals: United States production and sales of crude products from petroleum and natural gas for chemical conversion, 1951*

[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 confidential and may not be published or where no data were reported.) Table 5B in part III lists separately all products from petroleum and natural gas for chemical conversion for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	8,606,862	5,144,799	287,080	$0.056
AROMATICS AND NAPHTHENICS[1]				
Total	1,998,507	1,197,174	41,865	.036
Alkyl aromatics, distillates, and solvents[2]	432,139	372,073	7,937	.021
Benzene (except motor grade)	234,521	126,642	8,280	.065
Cresylic acid, crude	20,386	9,731	491	.050
Naphthenic acids, total	38,528	17,183	1,828	.106
Acid No. 225-249	11,195	...	...	...
All other	27,333	17,183	1,828	.106
Toluene, all grades[3]	403,327	281,914	10,544	.039
Xylene, all grades[4]	464,416	344,633	12,148	.035
All other[5]	5,190	4,998	637	.127
ALIPHATIC HYDROCARBONS				
Total	7,008,355	3,987,625	245,215	.061
C_2 hydrocarbons: Ethane and ethylene	1,798,915	223,151	9,567	.043
C_3 hydrocarbons, total	2,122,015	1,239,179	15,188	.012
Propane	973,561	...	...	...
Propylene and propane-propylene mixture	1,148,454	1,239,179	15,188	.012
C_4 hydrocarbons, total	2,819,441	2,302,072	211,195	.092
1,3-Butadiene, grade for rubber (elastomers)[6]	1,222,411	1,214,523	180,040	.148
1-Butene, 2-butene, and mixtures[7]	1,136,188	991,754	27,544	.028
All other[8]	460,842	95,795	3,611	.038
All other aliphatic hydrocarbons and derivatives, total	267,984	223,223	9,265	.042
Dodecene (Tetrapropylene)	93,510	93,569	3,383	.036
Di-isobutylene	21,670	...	...	...
Hydrocarbon derivatives[9]	22,758	23,361	726	.031
All other[10]	130,046	106,293	5,156	.049

[1] The chemical raw materials designated as aromatics include some compounds identical with those obtained from the distillation of coal tar. The statistics in this table, however, apply only to products derived from petroleum and natural gas.

[2] Includes data for motor-grade benzene, high-molecular-weight alkyl benzenes, and aromatic distillates and solvents.

[3] Includes data for pure commercial and solvent-grade toluenes and for toluene concentrate on a 90-percent basis for use in aviation fuel.

[4] Includes data for nitration, aviation, and industrial-grade xylenes, and for o- and p-xylene.

[5] Includes data for dicyclopentadiene, methylcyclohexane, methylcyclopentane, petroleum phenols, and sodium carbolate and phenate.

[6] Statistics include data for new butadiene only and exclude data for recycled material. The statistics represent the total quantity of butadiene produced and sold for both Government and private account.

[7] Statistics represent 1-butene and 2-butene produced and sold as such, and the butene content of crude refinery gases for use in the manufacture of butadiene.

[8] Statistics include data for n-butane, isobutane, isobutene, and butadiene-butene mixture.

[9] Includes data for di-tert-butyl disulfide, miscellaneous mercaptans, mixed alkylsulfonic acids, hydroformer residue and hydrocarbon polymers.

[10] Includes data for pentanes and pentenes, hexane, heptenes, nonene, eicosane, polybutenes, and hydrocarbon mixtures.

of propane, propylene, and propane-propylene mixture in 1951 amounted to 2,122 million pounds, compared with 1,693 million pounds in 1950. The output in 1951 of 1,3-butadiene--one of the principal constituents of the GR-S type of synthetic rubber--was 1,222 million pounds, compared with the 610 million pounds reported for 1950.

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

General

On the basis of their principal uses, the synthetic organic chemicals covered in this report are classified as intermediates and as finished products. Finished products, in turn, are grouped as follows: Dyes, lakes and toners, medicinals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers (synthetic rubbers), plasticizers, surface-active agents, pesticides and other organic agricultural chemicals, and miscellaneous synthetic organic chemicals. Most of these groups are further subdivided, according to chemical classes, into cyclic and acyclic compounds. This classification roughly parallels the distinction made in earlier reports in this series between chemicals of coal-tar and non-coal-tar origin--a distinction then made because synthetic organic chemicals are thus grouped for tariff purposes. However, the cyclic and acyclic classification is more accurate than the "coal-tar" and "non-coal-tar" classification because important products formerly made exclusively from coal tar are now obtained also from non-coal-tar sources.

As many of the intermediates are used in the manufacture of finished products, aggregate figures which cover both intermediates and finished products necessarily include much duplication.

Total production of all synthetic organic chemicals (intermediates and finished products combined) was 27,499 million pounds in 1951, or 5,173 million pounds greater than the previous record output in 1950 (see table 6); sales in 1951 totaled 14,565 million pounds, valued at 3,872 million dollars, a gain of 20 percent in volume and 39 percent in value over the preceding year. The output of cyclic intermediates was 4,528 million pounds in 1951, compared with 3,397 million pounds in 1950, an increase of 33 percent. Production of finished cyclic products in 1951 totaled 4,718 million pounds, or 36 percent more than the output of 3,473 million pounds in 1950. Production of acyclic finished products and acyclic intermediates (included with acyclic miscellaneous chemicals) in 1951 totaled 18,253 million pounds, an increase of 18 percent over the 15,456 million pounds produced in 1950.

Among the individual groups of finished products, the output in 1951 increased notably for elastomers (cyclic, an increase of 95 percent, and acyclic, 22 percent); pesticides and other organic agricultural chemicals (cyclic, 64 percent, and acyclic, 55 percent); medicinals (cyclic, 48 percent, and acyclic, 55 percent); rubber-processing chemicals (cyclic, 18 percent, and acyclic, 37 percent); and plasticizers (cyclic, 13 percent, and acyclic, 23 percent). There was a decline in the total output of dyes of 4.4 percent and of lakes and toners of 0.3 percent in 1951 compared with 1950.

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TABLE 6.--*Synthetic organic chemicals: Summary of United States production and sales of intermediates and finished products, average 1945-49, annual 1950 and 1951*--Continued

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

Chemical	Average 1945-49	1950	Increase, or decrease (-), 1950 over 1945-49	1951	Increase, or decrease (-), 1951 over 1950
II. ORGANIC CHEMICALS, ACYCLIC (INTERMEDIATES AND FINISHED PRODUCTS)--Continued					
3. Plastics and Resin Materials			*Percent*		*Percent*
Production	504,541	866,662	71.8	1,019,670	17.7
Sales	465,352	818,219	(1)	871,574	6.5
Sales value	205,240	312,184	(1)	384,860	23.3
4. Rubber-Processing Chemicals					
Production	15,305	16,349	6.8	22,450	37.3
Sales	14,257	13,936	(1)	19,069	36.6
Sales value	10,823	10,600	(1)	13,748	29.7
5. Elastomers (Synthetic Rubbers)					
Production	296,140	363,949	22.9	442,279	21.5
Sales	298,651	359,255	(1)	421,573	17.3
Sales value	88,464	130,790	(1)	163,231	24.8
6. Plasticizers					
Production	36,139	62,687	73.5	76,914	22.7
Sales	29,731	49,985	(1)	58,283	16.6
Sales value	10,861	18,700	(1)	26,587	42.2
7. Surface-Active Agents					
Production	167,444	293,072	75.0	234,416	-20.0
Sales	133,884	246,435	(1)	203,487	-17.4
Sales value	42,500	72,974	(1)	53,692	-26.4
8. Pesticides and Other Organic Agricultural Chemicals[2]					
Production	[3] 12,978	36,706	182.8	57,032	55.4
Sales	[3] 11,168	31,725	(1)	45,618	43.8
Sales value	[3] 5,632	8,457	(1)	15,512	83.4
9. Miscellaneous[4]					
Production	[3] 11,979,928	13,799,435	19.2	16,377,545	18.7
Sales	[3] 5,066,669	5,976,037	(1)	7,166,829	19.9
Sales value	[3] 639,422	685,647	(1)	1,051,966	53.4

[1] Not calculated; see note below.
[2] Data on pesticides and other organic agricultural chemicals for 1951 are shown for the first time in a separate section in this report; the data for 1948-50 have been adjusted to make them comparable with those for 1951.
[3] 2-year average, 1948 and 1949.
[4] Data on miscellaneous chemicals given in this table exclude pesticides and other organic agricultural chemicals for the years 1948-50. Data on pesticides and other organic agricultural chemicals were included with those on miscellaneous chemicals in reports for years before 1951. Statistics on miscellaneous chemicals for 1948-50 have been adjusted to make these data comparable with those for 1951.

NOTE.--The statistics on sales of intermediates and finished products in 1948, 1949, 1950, and 1951 do not include the quantity and value of interplant transfers as the statistics for 1947 and earlier years did. The sales statistics for 1948, 1949, 1950, and 1951, therefore, are not strictly comparable with the sales statistics given for the earlier years. For this reason, the percentage increases or decreases of sales in 1950 over 1945-49 are not given in this table.

The tabulation below shows, by chemical group, the number of companies which reported production in 1951 of one or more of the chemicals included in the group listed in table 6:

Group	*Number of companies*	*Group*	*Number of companies*
Intermediates	104	Rubber-processing chemicals	20
Dyes	47	Elastomers (synthetic rubbers)	21
Lakes and toners	43	Plasticizers	55
Medicinals	116	Surface-active agents	102
Flavor and perfume materials	45	Pesticides and other organic agricultural chemicals	75
Plastics and resin materials	148		

Cyclic Intermediates

Cyclic intermediates are synthetic organic chemicals derived principally from coal-tar crudes produced by destructive distillation (pyrolysis) of coal. In recent years, however, increasing quantities of cyclic intermediates have been obtained 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, medicinals, explosives, elastomers (synthetic rubbers), insecticides, and plastics and resin materials. Some intermediates, however, are sold as end products without further processing. Thus, refined naphthalene may be used as a raw material in the manufacture of phthalic anhydride, 2-naphthol, or other more advanced intermediates, or it may be packaged and sold as a moth repellent or as a deodorant. In general, the way in which the greater part of the output of a given chemical is consumed determines its use classification in this report.

Table 7A[1] shows statistics on production and sales of cyclic intermediates in 1951. Intermediates for which individual statistics are given in the table represent 82 percent of the total quantity produced. Since many of the intermediates included in the statistics represent successive steps in production, the totals necessarily include considerable duplication. In 1951, 40 percent 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.

The total output of all cyclic intermediates in 1951--4,528 million pounds--was 33 percent more than the previous record output of 3,397 million pounds reported for 1950, and 81 percent more than the 2,501 million pounds reported for 1949. Sales in 1951 amounted to 1,802 million pounds, valued at 338 million dollars, compared with 1,484 million pounds, valued at 239 million dollars, in 1950--an increase of 22 percent in quantity and 41 percent in value.

In 1951 production of many intermediates was substantially larger than it was in 1950. For example, the output of styrene, used in the manufacture of plastics materials and of GR-S synthetic rubber, reached a record total of 707 million pounds in 1951, compared with 539 million pounds in 1950 and 390 million pounds in 1949. The output of monochlorobenzene--used chiefly in the manufacture of phenol--was 471 million pounds, or 23 percent more than the 383 million pounds reported for 1950. Production of phenol--which in turn is used chiefly in the manufacture of phenolic resins--was 388 million pounds, or 24 percent more than the 312 million pounds produced in 1950. Other large-volume intermediates for which sizable increases in output were reported in 1951 compared with 1950 were the following: o-Dichlorobenzene (an increase of 63 percent), naphthalene (27 percent), aniline (25 percent), nitrobenzene (24 percent), 2-naphthol (22 percent), p-dichlorobenzene (22 percent), phthalic anhydride (15 percent), and cresylic acid (13 percent). The output of 1-chloro-2,4-dinitrobenzene declined to 6.1 million pounds in 1951 from 7.7 million

[1] See also table 7B, part III, which lists these products alphabetically and identifies the manufacturers, and part C of the appendix which is a glossary of synonymous names of cyclic intermediates.

TABLE 7A.--*Synthetic organic chemicals: United States production and sales of cyclic intermediates, 1951*

[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 confidential and may not be published or where no data were reported.) Table 7B in part III lists alphabetically all cyclic intermediates for which data on production or sales were reported and identifies the manufacturer of each. Part C in the appendix lists alphabetically all the important common names of cyclic intermediates usually met with in the trade and gives the corresponding standard (Chemical Abstracts) name under which data are presented in tables 7A and 7B]

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	4,527,925	1,801,180	337,676	$0.19
Chemicals for which separate statistics may not be shown	812,235	264,507	93,098	.35
Chemicals for which separate statistics are shown below	3,715,690	1,535,473	244,578	.16
1-Acetamido-7-naphthol	25	---	---	---
Acetanilide, tech	8,078	6,544	1,685	.26
p-Acetotoluidide	1,187	---	---	---
N-Acetylsulfanilyl chloride	6,325	---	---	---
p-Aminoacetanilide (Acetyl-p-phenylenediamine)	414	87	128	1.47
2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	28	---	---	---
1-Aminoanthraquinone and salt	1,755	---	---	---
2-Aminoanthraquinone and salt	865	---	---	---
6-Amino-3,4'-azobis[benzenesulfonic acid]	70	---	---	---
6-(m-Aminobenzamido)-1-naphthol-3-sulfonic acid	35	---	---	---
6-(p-Aminobenzamido)-1-naphthol-3-sulfonic acid	91	---	---	---
2-Amino-p-benzenedisulfonic acid [SO_3H=1]	50	---	---	---
m- and p-Aminobenzyl-m-phenylenediamines, total	9	---	---	---
1-Amino-4-bromo-2-anthraquinonesulfonic acid	95	---	---	---
1-Amino-2-bromo-4-(p-toluidino)anthraquinone	16	---	---	---
1-Amino-5-chloroanthraquinone	87	---	---	---
3-Amino-4-chlorobenzoic acid	35	---	---	---
2-Amino-4-chlorophenol	66	---	---	---
2-Amino-4-chloro-1-phenol-6-sulfonic acid	120	---	---	---
2-Amino-5-chloro-p-toluenesulfonic acid [SO_3H=1]	720	206	195	.95
1-Amino-2,4-dibromoanthraquinone	13	---	---	---
5-Amino-6-ethoxy-2-naphthalenesulfonic acid	8	---	---	---
3-Amino-1,5-naphthalenedisulfonic acid (Cassella acid)	462	84	146	1.75
3-Amino-2,7-naphthalenedisulfonic acid	18	---	---	---
4-Amino-1,5-naphthalenedisulfonic acid	321	---	---	---
6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid)	1,590	---	---	---
8-Amino-1,6-naphthalenedisulfonic acid	44	---	---	---
2-Amino-1-naphthalenesulfonic acid (Tobias acid)	3,896	1,682	1,332	.71
5-Amino-1-naphthalenesulfonic acid (Laurent's acid)	137	---	---	---
5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)	231	58	53	.90
5 and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed)	251	35	28	.79
6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	114	---	---	---
8-Amino-1-naphthalenesulfonic acid (Peri acid)	483	44	47	1.08
8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)	326	---	---	---
6-Amino-2-naphthol	40	---	---	---
8-Amino-1-naphthol-3,6-disulfonic acid (H acid), monosodium salt	5,530	---	---	---
8-Amino-1-naphthol-5,7-disulfonic acid (Chicago acid)(2S acid), monosodium salt	173	---	---	---
1-Amino-2-naphthol-4-sulfonic acid (1,2,4-Acid)	1,033	---	---	---
6-Amino-1-naphthol-3-sulfonic acid (J acid), sodium salt	1,068	141	320	2.27
7-Amino-1-naphthol-3-sulfonic acid (Gamma acid), sodium salt	1,075	162	234	1.44
8-Amino-1-naphthol-5-sulfonic acid (S acid), sodium salt	76	---	---	---
2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	105	---	---	---
2-Amino-4-nitrophenol	133	---	---	---
m-Aminophenol	619	---	---	---
p-Aminophenol and salts	859	680	566	.83
2-Amino-1-phenol-4-sulfonic acid	92	20	21	1.08
4-(p-Aminophenylazo)benzenesulfonic acid	140	---	---	---
p-(p-Aminophenylazo)benzenesulfonic acid	98	---	---	---
5-Aminosalicylic acid	20	---	---	---
2-Aminothiazole	1,030	---	---	---
4-Amino-m-toluenesulfonic acid [SO_3H=1]	378	60	56	.92
4-(4-Amino-m-tolylazo)-m-toluenesulfonic acid	16	---	---	---
2-Amino-3,5-xylenesulfonic acid [SO_3H=1]	21	---	---	---
Aniline (Aniline oil)	122,675	54,795	9,208	.17
Anilinomethanesulfonic acid and salt	168	---	---	---
8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)	316	72	153	2.12
6-Anilino-1-naphthol-3-sulfonic acid (Phenyl J acid)	135	5	16	3.09
7-Anilino-1-naphthol-3-sulfonic acid (Phenyl gamma acid)	81	---	---	---
o-Anisidinomethanesulfonic acid	26	---	---	---
Anisoin (4,4'-Dimethoxybenzoin), tech	4	---	---	---
Anthranilic acid (o-Aminobenzoic acid)	561	---	---	---
Anthra[1,9]pyrazol-6(2)-one (Pyrazolanthrone)	54	---	---	---
1,5-Anthraquinonedisulfonic acid	809	---	---	---
1,5(and 1,8)-Anthraquinonedisulfonic acid and salt	339	---	---	---

See footnotes at end of table.

TABLE 7A.--*Synthetic organic chemicals: United States production and sales of cyclic intermediates, 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
2,6-Anthraquinonedisulfonic acid and salt	437	---	---	---
1-Anthraquinonesulfonic acid and salt	3,572	---	---	---
Anthrarufin (1,5-Dihydroxyanthraquinone)	203	---	---	---
Benzaldehyde, tech	2,122	1,760	789	$0.45
1-Benzamido-5-chloroanthraquinone	157	---	---	---
7-Benz[de]anthracen-7-one (Benzanthrone)	1,993	---	---	---
Benzidine hydrochloride and sulfate	2,096	567	519	.91
Benzoic acid, tech	[2]	931	323	.35
o-Benzoylbenzoic acid	10,336	---	---	---
4-(N-Benzyl-N-ethylamino)-o-toluenesulfonic acid	22	---	---	---
[4,4'-Bi-7-bens[de]anthracen]-7,7'-dione	434	---	---	---
1,4-Bis[1-anthraquinonylamino]anthraquinone	81	---	---	---
3,9-Bis[1-anthraquinonylamino]-7-bens[de]anthracen-7-one	397	---	---	---
4,4'-Bis(dimethylamino)benzhydrol (Michler's hydrol)	21	---	---	---
4,4'-Bis(dimethylamino)benzophenone (Michler's ketone)	122	---	---	---
3-Bromo-7-bens[de]anthracen-7-one (Bromobenzanthrone)	274	---	---	---
a-Bromo-p-nitroacetophenone	1,172	864	4,822	6.00
3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate	45	---	---	---
1-Chloroanthraquinone	347	---	---	---
Chlorobenzene (mono)	470,804	81,683	7,289	.09
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	6,068	1,872	305	.16
4-Chloroanthranilic acid	28	---	---	---
1-Chloro-2-methylanthraquinone	295	---	---	---
2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	738	---	---	---
4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	452	291	220	.75
4-Chloro-3-nitrobenzenesulfonamide	234	---	---	---
2-Chloro-5-nitrobenzenesulfonic acid	427	---	---	---
a-Chlorotoluene (Benzyl chloride)	11,196	5,846	1,211	.21
4-Chloro-o-toluidine [CH_3=1] (Red KB base)	314	---	---	---
4-Chloro-o-toluidine hydrochloride	41	---	---	---
4-Chloro-o-tolylmercaptoacetic acid	230	---	---	---
4-Chloro-2,5-xylylmercaptoacetic acid	39	---	---	---
Cresols, total[3]	27,280	21,440	4,275	.20
Cresols, (o-), (m-), and (p-)	6,402	4,723	1,025	.35
Cresols, (meta, para, and ortho, meta, para)[3]	20,878	16,717	2,250	.16
Cresylic acid, refined, total[3]	41,406	34,186	4,477	.10
From coal tar	25,054	17,991	2,407	.13
From petroleum	16,352	16,195	1,070	.07
Cyclohexane	25,195	10,909	4,108	.04
2,6-Diaminoanthraquinone	259	---	---	---
2,4-Diaminobenzenesulfonic acid [SO_3H=1]	82	---	---	---
4,4'-Diamino-3,3'-biphenyldisulfonic acid	11	---	---	---
2,2'-Diamino-5,5'-bi-m-toluenesulfonic acid	21	---	---	---
4,4'-Diaminodiphenylamine-2-sulfonic acid	28	---	---	---
N,N'-Di(m-aminophenyl)oxamide	24	---	---	---
N,N'-Di(p-aminophenyl)oxamide	39	---	---	---
4,4'-Diamino-2,2'-stilbenedisulfonic acid	153	59	153	2.60
1,3-Dianilino-2,6-anthraquinonedicarboxylic acid	40	---	---	---
4,5'-Dibenzamido-1,1'-dinaphthanthraquinone	278	---	---	---
3,9-Dibromo-7-bens[de]anthracen-7-one	287	---	---	---
2,5-Dichloroaniline and hydrochloride [NH_2=1]	407	244	195	.80
1,5-Dichloroanthraquinone	87	---	---	---
1,8-Dichloroanthraquinone	91	---	---	---
o-Dichlorobenzene	28,418	18,310	1,820	.10
p-Dichlorobenzene	98,725	46,553	6,998	.15
3,3'-Dichlorobenzidine base and salts	440	---	---	---
1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)	1,07	---	---	---
2,5-Dichlorosulfanilic acid [SO_3H=1]	43	---	---	---
1-(2,5-Dichloro-4-sulfophenyl)-3-methyl-5-pyrazolone	120	---	---	---
2,4-and 2,6-Dichlorotoluene, total	71	---	---	---
N,N-Diethyl-3-aminophenol	249	---	---	---
4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid)	17	---	---	---
4,5-Dihydroxy-1-naphthalenesulfonic acid (Dioxy S acid)	18	---	---	---
6,7-Dihydroxy-2-naphthalenesulfonic acid	114	99	80	1.00
16,17-Dihydroxyviolanthrone (Dihydroxyflavanthrone)	418	---	---	---
3,3'-Dimethoxybenzidine and sulfate	252	---	---	---
N,N-Dimethylaniline	4,224	---	---	---
2,2'-Dimethyl-1,1'-dianthraquinone	183	---	---	---

See footnotes at end of table.

TABLE 7A.--*Synthetic organic chemicals: United States production and sales of cyclic intermediates, 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
p-(2,4-Dinitroanilino)phenol (Dinitrohydroxydiphenylamine)	90	---	---	---
4,4'-Dinitro-2,2'-stilbenedisulfonic acid	1,141	48	62	$1.31
1,4-Di(p-toluidino)anthraquinone	106	---	---	---
Dodecylbenzene (Karylbenzene)	230,221	201,191	26,275	.13
2-(N-Ethylanilino)ethanol	81	---	---	---
4-(N-Ethylanilino)-p-toluenesulfonic acid	809	---	---	---
Ethylbenzene	669,758	---	---	---
N-Ethyl-N-phenylbenzylamine (N,N-Ethylbenzylaniline)	853	---	---	---
o-Formylbenzenesulfonic acid	221	---	---	---
p-Hydrazinobenzenesulfonic acid	226	---	---	---
o-, m-, and p-Hydroxyacetophenones, total	14	---	---	---
3-Hydroxy-2-naphthoic acid (B.O.N.)	3,032	937	1,177	1.26
6,6'-Iminobis(1-naphthol-3-sulfonic acid)[I (or J) acid imide]	58	---	---	---
1,1'-Iminodi-4-aminoanthraquinone	339	---	---	---
1,1'-Iminodianthraquinone (Dianthrimide)	346	---	---	---
1,1'-Iminodi-4-nitroanthraquinone	171	---	---	---
Isoviolanthrone (Indodibenzanthrone)	52	---	---	---
Leuco-1,4-diamioanthraquinone	100	---	---	---
Leuco quinizarin (1,4,9,10-Anthratetrol)	109	---	---	---
Metanilic acid (m-Aminobenzenesulfonic acid)	1,387	---	---	---
3-Methyl-1-phenyl-5-pyrazolone (Developer E)	734	---	---	---
3-Methyl-1-(p-sulfophenyl)-5-pyrazolone	145	---	---	---
Naphthalene, solidifying at 79° C., or above (refined flake), total	106,818	57,963	7,167	.13
From American crude naphthalene	93,577	---	---	---
From imported crude naphthalene	13,241	---	---	---
1,5-Naphthalenedisulfonic acid	329	---	---	---
Naphthionic acid, sodium salt	1,553	---	---	---
1-Naphthol (α-Naphthol)	489	287	247	.85
2-Naphthol, tech. (β-Naphthol)	39,045	---	---	---
2-Naphthol-3,6-disulfonic acid, disodium salt	808	---	---	---
2-Naphthol-6,8-disulfonic acid (G acid)	1,052	---	---	---
1-Naphthol-4-sulfonic acid (Neville and Winther's acid)	251	---	---	---
1-Naphthol-5-sulfonic acid	172	17	20	1.16
2-Naphthol-6-sulfonic acid (Schaeffer's acid)	269	78	58	.75
2-Naphthol-6-sulfonic acid, sodium salt	64	---	---	---
1,8-Naphthosultone	90	---	---	---
2-Naphthylmercaptoacetic acid (β-Naphthylthioglycolic acid)	188	---	---	---
m-Nitroaniline	492	228	232	1.02
2-Nitro-p-anisidine [NH_2=1]	104	5	13	2.78
4-Nitro-o-anisidine [NH_2=1]	157	30	57	1.91
5-Nitro-o-anisidine [NH_2=1]	344	---	---	---
1-Nitro-2-anthraquinonecarboxylic acid	40	---	---	---
6-(m-Nitrobenzamido)-1-naphthol-3-sulfonic acid (m-Nitrobenzoyl J acid)	35	---	---	---
6-(p-Nitrobenzamido)-1-naphthol-3-sulfonic acid (p-Nitrobenzoyl J acid)	87	---	---	---
Nitrobenzene	164,298	10,506	1,027	.10
m-Nitrobenzenesulfonic acid	710	143	59	.41
3-Nitro-1,5-naphthalenedisulfonic acid	470	---	---	---
p-Nitrophenol	4,514	3,031	1,350	.45
1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid	43	---	---	---
p-Nitrosophenol	300	---	---	---
o-Nitrotoluene	---	821	78	.09
3-Nitro-p-toluenesulfonic acid [SO_3H=1]	436	55	19	.34
5-Nitro-o-toluenesulfonic acid	2,124	---	---	---
2-Nitro-p-toluidine [NH_2=1]	1,708	806	1,196	1.48
4-Nitro-o-toluidine [NH_2=1]	32	---	---	---
5-Nitro-o-toluidine [NH_2=1]	125	---	---	---
Nitroxylenes, mixed, total	1,125	---	---	---
5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T)	32	---	---	---
Phenol, total[3]	388,429	244,011	43,885	.18
Natural, from coal tar and petroleum	23,831	19,092	3,154	.17
Synthetic	364,598	224,919	40,729	.18
α-Phenylacetamide (α-Toluamide)	301	353	392	1.10
Phenylacetic acid (α-Toluic acid)	1,310	1,278	1,035	.81
Phenylacetic acid, ethyl ester, all grades	311	---	---	---

See footnotes at end of table.

TABLE 7A.--*Synthetic organic chemicals: United States production and sales of cyclic intermediates, 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
p-Phenylazoaniline (p-Aminoazobenzene) and hydrochloride	194	---	---	---
o-, m-, and p-Phenylenediamines, total	1,966	832	984	$1.18
Phenylglycine, potassium and sodium salts	6,372	---	---	---
2,2'-(Phenylimino)diethanol (Phenyldiethanolamine)	125	---	---	---
Phthalamide	56	---	---	---
Phthalic anhydride	248,042	201,080	42,480	.21
2-, 3-, 4-, and 3,4-Picolines,[4] total	879	788	284	.36
Piperidine	225	---	---	---
Pseudocumidine (Cumidine)	18	---	---	---
Pyrazole anthrone yellow (Dipyrazoledianthrone)	56	---	---	---
Pyridine, refined[4]	2,135	2,127	2,120	.99
Quinaldine	24	---	---	---
Quinizarin	1,287	74	121	1.67
Salicylic acid, tech	---	2,475	838	.34
Styrene	709,780	419,244	62,102	.15
Sulfanilic acid (p-Aminobenzoic acid) and salt	2,229	---	---	---
1,4,5,8-Tetrachloroanthraquinone	274	---	---	---
1,2,4,5-Tetrachlorobenzene	6,735	---	---	---
1,4,5,8-Tetrakis[1',1'',1''',1''''-anthrasquinonylamino]-anthraquinone (Pentaanthramide)	681	---	---	---
o-Toluidine and salts	317	---	---	---
Toluene-2,4-diamine (4-m-Tolylenediamine)	1,041	337	323	.96
6-p-Toluidinonaphthalenesulfonic acid	23	---	---	---
o-Toluidinomethanesulfonic acid	4	---	---	---
8-(p-Toluidino)-1-naphthalenesulfonic acid (Tolyl peri acid)	50	---	---	---
4-(o-Tolylazo)-o-toluidine (o-Aminoazotoluene)	604	30	34	1.14
6,6'-Ureylenebis[1-naphthol-3-sulfonic acid] (J acid urea)	382	13	44	3.41
Violanthrone (Dibenzanthrone)	562	---	---	---
m-Xylene	287	---	---	---
2,3-, 2,4-, 2,5-, and 3,4-Xylidines, total	201	---	---	---
Xylidines, mixed	805	---	---	---

[1] Unit values calculated on unrounded figures.
[2] Includes data for coke ovens and gas-retort ovens, reported to the Coal Economics Division, U. S. Bureau of Mines, and for tar and petroleum refineries and other producers, reported to the U. S. Tariff Commission.
[3] Includes some mixed cresols.
[4] Includes data for coke ovens and gas-retort ovens, reported to the Coal Economics Division, U. S. Bureau of Mines, and for tar refineries and other producers, reported to the U. S. Tariff Commission.

pounds in 1950; that of N,N-dimethylaniline declined to 4.2 million pounds in 1951 from 6.4 million pounds in 1950.

Dyes

Table 8A shows United States production and sales of dyes in 1951, total and by individual dyes, grouped by Colour Index number and by Foreign Prototype number.[2] Production of dyes in 1951 was 187 million pounds, or 4.4 percent less than the 196 million pounds produced in 1950. Sales in 1951 amounted to 160 million pounds, valued at 177 million dollars, compared with 188 million pounds, valued at 191 million dollars, in 1950--a decrease of 15 percent in quantity and 7 percent in value. This decrease in both production and sales chiefly reflects a general decline in the demand for most dyes in both domestic and foreign markets. The average unit value of sales of all dyes, however, increased to $1.10 per pound in 1951 from $1.01 per pound in 1950, largely because of the general increase in prices of most dyes and because of the greater decline in the output of the cheaper dyes.

Dyes for which separate statistics are given in table 8A represent 80 percent of the total quantity of all dyes produced in 1951. In 1951, as in previous years, dyes grouped by Colour Index number accounted for the greater part of the output of all dyes (69 percent). The output of Colour Index dyes totaled 130 million pounds--

a decline of 8.8 percent from the 142 million pounds produced in 1950. Production of dyes having recognized Foreign Prototypes totaled 32 million pounds, or 14 percent more than the output of 28 million pounds reported for 1950. This increase, however, is due in part to classification in the Foreign Prototype group of a number of dyes which formerly were considered as ungrouped dyes. Notwithstanding this reclassification, production of ungrouped dyes was slightly higher in 1951 than in 1950. The output of food, drug, and cosmetic dyes totaled 1.6 million pounds in 1951, compared with the 1.7 million pounds reported for 1950.

Among the individual dyes shown in table 8A, the greatest decline in quantity was reported for low-priced synthetic indigo, sulfur black, and direct black EW. Production of synthetic indigo in 1951 was 20.5 million pounds, or 22 percent less than the 26.2 million pounds produced in 1950. Production of sulfur black in 1951 was 11.2 million pounds, or 17 percent less than the 13.5 million pounds produced in 1950. The output of direct black EW (C.I. 581) in 1951 was 7.1 million pounds, or 14 percent less than the 8.2 million pounds reported for 1950. Decreased output in 1951, compared with 1950, was reported also for many other low- and medium-priced dyes: Direct blue 2B (C.I. 406), a decrease of 77 percent; xylene light yellow (C.I. 639), 63 percent; amido naphthol red G (C.I. 31), 57 percent; anthraquinone vat blue RS (C.I. 1106), 34 percent; and Helindon pink R (Pr. 109), 32 percent.

The output of a number of dyes increased in 1951 compared with 1950. Production of indanthrene khaki 2G (Pr. 122) in 1951 was 4.8 million pounds, or 272 percent more than the 1.3 million pounds reported for 1950. That of indanthrene olive green B (Pr. 293) in 1951 was 1.9 million pounds, or 195 percent more than the 646,000 pounds produced in 1950. Important increases were reported also for a number of other dyes: Anthraquinone vat olive R (C.I. 1150), an increase of 159 percent; chrome blue black R (C.I. 202), 81 percent; anthraquinone vat green B and black B (C.I. 1102), 50 percent; Sudan I (C.I. 24), 39 percent; and auramine (C.I. 655), 34 percent.

Table 8A shows for the first time statistics on production and sales of a number of new coal-tar dyes. One of these is direct white--an optical bleach or white dye derived chiefly from stilbene. The output of this dye in 1951 was 1.5 million pounds; sales totaled 1.2 million pounds, valued at 5.3 million dollars.

Table 9 shows production and sales of dyes in 1951, by chemical class. Four chemical classes of dyes accounted for more than 80 percent of the total output of all dyes in 1951: Azo dyes, 36 percent; anthraquinone vat dyes, 22 percent; indigoid dyes, 13 percent; and sulfur dyes, 11 percent. The anthraquinone vat class was the only one of this group for which production and sales increased in 1951. Production of these anthraquinone vat dyes increased 16 percent in 1951 compared with 1950; the quantity of sales increased 7 percent. On the other hand, production of indigoid and thioindigoid dyes declined 26 percent in 1951 compared with 1950; the output of sulfur dyes declined 11 percent, and that of azo dyes, 8 percent. Of the remaining smaller classes of

TABLE 8A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951*

[Listed below are all coal-tar dyes for which any reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 8B in part III lists all dyes for which data on production or sales were reported and identifies the manufacturer of each]

Colour Index or Prototype No.	Dye	Production	Sales		
			Quantity	Value	Unit value
		1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
	Grand total	187,082	159,992	176,679	$1.10
	Dyes for which separate statistics may not be shown	37,323	26,443	44,112	1.67
	Dyes for which separate statistics are shown below	149,759	133,549	132,567	.99
	DYES GROUPED BY COLOUR INDEX NUMBER				
	Total	129,818	113,530	92,450	.81
	Azo Dyes				
	Monoazo Dyes				
17	Spirit yellow R	158	174	192	1.10
19	Oil yellow	114	96	96	1.00
20	Chrysoidine Y	524	460	288	.63
21	Chrysoidine R	191	177	110	.62
24	Sudan I	927	798	742	.93
27	Orange G	383	311	233	.75
30	Fast acid fuchsine B	12	7	5	.74
31	Amido naphthol red G	435	301	176	.58
36	Chrome yellow 2G	325	281	203	.72
40	Chrome yellow R	73	46	41	.90
52	Azo alizarin yellow GP	...	73	50	.68
53	Victoria violet 4BS	77	52	43	.83
57	Amido naphthol red 6B	132	106	75	.71
69	Fast red GL salt	157	155	161	1.04
73	Sudan II	265	232	289	1.25
79	Ponceau R	332	272	198	.73
86	Fast red B	91	93	70	.76
98	Chrome brown R	239	218	214	.98
114	Azo eosine G	19	14	19	1.36
117	Fast red A base and salt	247	192	325	1.69
118	Fast scarlet R base and salt	697	649	711	1.10
138	Metanil yellow	464	385	320	.84
161	Orange R	347	336	174	.52
168	Acid chrome garnet R	35	27	27	1.00
169	Acid chrome violet N	...	3	4	1.62
176	Fast red A	212	187	166	.89
179	Azo rubine	138	132	106	.80
180	Fast red VR	72	49	42	.85
185	Cochineal red A	113	99	81	.82
202	Chrome blue black R	1,564	1,428	784	.55
203	Chrome black T	...	486	305	.63
204	Chrome black A	...	32	24	.74
208	Fast acid blue R	...	80	62	.77
209	Fast acid blue B	...	11	13	1.02
216	Acid chrome red B	60	32	29	.90
219	Chrome flavine A	...	141	204	1.44
	Disazo Dyes				
234	Resorcin brown	509	405	314	.78
235	Resorcin dark brown	230	207	193	.93
246	Acid black 1(A)	1,200	1,036	716	.68
247	Azo dark green A	80	49	46	.94
252	Brilliant croceine M	391	330	467	1.41
275	Cloth scarlet G	8	5	7	1.25
278	Direct fast red 8BL	364	278	669	2.40
280	Scarlet BC	...	9	14	1.44
288	Fast acid cyanine G	30	...	...	...
289	Fast acid cyanine 3R ex	300	308	279	.90
299	Acid chrome black F	115	120	105	.88
304	Fast acid black 2BN	...	86	66	.77
307	Fast acid cyanine black B	199	167	183	1.09
317	Developed blue B	343	...	...	...
319	Direct fast heliotrope	56	42	96	2.27
326	Direct fast scarlet	965	842	1,487	1.77

TABLE 6A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951--Continued*

Colour Index or Prototype No.	Dye	Production	Sales		
			Quantity	Value	Unit value
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued				
	Azo Dyes--Continued				
	Disazo Dyes--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
327	Direct fast scarlet 4BA	237	181	249	$1.38
331	Bismarck brown G	108	104	65	.62
332	Bismarck brown R	1,117	935	707	.76
346	Direct fast yellow 5GL	50	35	88	2.47
349a	Direct fast yellow RL	97	81	193	2.39
353	Direct fast pink 2BL	62	41	114	2.82
364	Brilliant yellow	351	318	381	1.20
375	Congo corinth G	378	351	343	.98
382	Direct scarlet B	205	166	223	1.34
387	Direct violet B	35	19	21	1.10
396	Direct violet N	...	25	37	1.47
401	Developed black BH	2,720	2,496	1,469	.59
406	Direct blue 2B	672	849	260	.31
415	Direct orange R	116	125	74	.59
419	Direct fast red F	326	253	246	.98
420	Direct brown M	564	446	353	.79
423	Direct brown B	...	11	15	1.43
430	Polar red	239	162	203	1.25
443	Milling red G	29	19	25	1.33
448	Benzopurpurine 4B	814	695	719	1.03
466	Benzo new blue 5B	74	39	61	1.56
472	Direct blue BX	...	6	6	.89
477	Direct blue 3B	191	150	56	.37
478	Direct orange G	18	...	...	...
487	Acid anthracene red 3B	57	46	64	1.39
499	Fast blue B base and salt	203	196	243	1.24
502	Direct amarine G	245	194	185	.95
512	Direct blue RW	123	71	85	1.21
518	Direct sky blue FF	537	469	647	1.38
520	Direct pure blue	116	87	71	.81
	Trisazo Dyes				
539	Direct fast black FF	241	234	174	.74
545	Flutofora black	330	274	150	.55
561	Direct brown BT	273	212	404	1.90
581	Direct black EW	7,104	6,735	3,018	.45
582	Direct black RX	374	309	171	.56
583	Direct green ET	278	202	129	.64
589	Chloramine green B	56	35	18	.51
593	Direct green B	899	726	404	.56
594	Direct green G	110	80	49	.61
596	Direct brown 3GO	742	741	436	.59
598	Congo brown G	115	77	58	.75
	Stilbene Dyes				
620	Direct yellow R	1,305	1,174	960	.80
621	Chloramine orange G	159	143	133	.93
622	Stilbene yellow	409	326	374	1.15
	Pyrazolone Dyes				
636	Fast light yellow G	77	61	90	1.47
639	Xylene light yellow	166	134	176	1.32
640	Tartrazine	444	381	424	1.11
642	Polar yellow	111	79	121	1.54
652	Chrome red B	231	218	293	1.34
653	Pyrazol orange	47	40	67	1.68
	Ketonimine Dyes				
655	Auramine	1,362	1,299	1,676	1.29
	Triphenylmethane and Diphenylnaphthylmethane Dyes				
657	Malachite green	326	343	595	1.74
662	Brilliant green	96	80	192	2.39

TABLE 6A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951--Continued*

Colour Index or Prototype No.	Dye	Production	Sales		
			Quantity	Value	Unit value
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued				
	Triphenylmethane and Diphenylnaphthylmethane Dyes--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
663	Setocyanine	5	...	...	...
666	Acid green B	223	171	146	$0.85
667	Fast acid green B	54	34	116	3.45
671	Acid glaucine blue	1,102	790	880	1.11
676	Para fuchsine	...	10	29	2.79
677	Magenta	...	37	105	2.87
680	Methyl violet B and base	1,526	1,222	1,142	.94
681	Crystal violet	904	810	1,689	2.09
682	Ethyl violet	36	20	52	2.65
698	Acid violet	154	110	150	1.37
707	Soluble blue	123	112	319	2.86
720	Acid chrome azurol B	197	156	347	2.23
722	Acid chrome cyanine R	30	34	84	2.49
729	Victoria blue B	224	203	459	2.26
735	Naphthalene green V	132	...	...	...
737	Wool green S	103	75	75	1.00
	Xanthene Dyes				
766	Fluorescein	252	37	79	2.14
768	Tetrabromofluorescein	791	411	505	1.23
	Acridine Dyes				
793	Phosphine	...	51	69	1.36
	Quinoline Dyes				
801	Quinoline yellow	66	60	156	2.61
	Thiazole Dyes				
812	Primuline	...	261	240	.91
814	Direct fast yellow	555	471	676	1.44
	Azine Dyes				
833	Wool fast blue	...	85	183	2.15
841	Safranine	353	327	635	1.94
860	Induline, spirit-soluble	30	...	...	...
864	Nigrosine, spirit-soluble	...	3,142	1,864	.59
865	Nigrosine, water-soluble	925	906	568	.63
	Thionine Dyes				
922	Methylene blue	456	438	632	1.44
	Sulfur or Sulfide Dyes				
	Total[1]	21,311	20,991	6,711	.32
	Sulfur black	11,226	11,410	2,560	.22
	Sulfur blue	3,571	3,432	1,378	.40
	Sulfur brown	2,771	2,716	795	.29
	Sulfur green	1,810	1,712	1,208	.71
	Sulfur maroon	581	383	268	.70
	Sulfur olive	406	419	191	.46
	Sulfur tan	253	263	93	.35
	Sulfur yellow	685	628	239	.38
	All other	10	8	5	.66
	Anthraquinone Dyes				
1034	Alizarin red S	68	70	161	2.30
1053	Acid alizarin blue SE	57	39	110	2.84
1054	Acid alizarin blue B	725	520	1,203	2.31
1073	Alizarin irisol R	...	17	72	4.24
1078	Alizarin cyanine green	515	499	1,218	2.44
1085	Anthraquinone blue black B	301	269	581	2.16
1088	Acid anthraquinone sky blue B	29	23	112	4.91

See footnotes at end of table.

TABLE 8A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951*--Continued

Colour Index or Prototype No.	Dye[1]	Production	Sales		
			Quantity	Value	Unit value
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued				
	Anthraquinone Vat Dyes	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
1096	Anthraquinone vat golden orange G, 12%	1,021	305	548	$1.80
1098	Anthraquinone vat scarlet G, 16-2/3%	814	479	1,096	2.28
1099	Anthraquinone vat dark blue BO, 25%	698	662	1,154	1.74
1101	Anthraquinone vat jade green, 6%	5,682	4,697	5,810	1.24
1102	Anthraquinone vat green B and black B, 12-1/2%	2,600	2,402	1,503	.63
1104	Anthraquinone vat violet 2R, 12-1/2%	439	287	735	2.56
1106	Anthraquinone vat blue RS, 10%	1,188	174	231	1.32
1112	Anthraquinone vat blue OCS, 8-1/3%	1,261	1,063	1,000	.94
1113	Anthraquinone vat blue OCD, 8-1/3%	1,888	1,676	2,680	1.60
1150	Anthraquinone vat olive R, 12-1/2%	1,858	1,473	1,492	1.01
1151	Anthraquinone vat brown R, 12-1/2%	1,094	845	1,265	1.50
1152	Anthraquinone vat brown O, 12-1/2%	1,241	1,159	1,521	1.31
1162	Anthraquinone vat red BN ex., 12-1/2%	50	...	...	...
1163	Anthraquinone vat violet BN, 25%	93	...	...	...
	Indigoid and Thioindigoid Dyes				
1177	Indigo, synthetic, 20%	20,503	18,278	4,919	.27
1184	Bromindigo blue 2BD, 16%	...	905	532	.59
1212	Vat red 3B, 20%	146	179	240	1.34
1217	Vat orange R, 10%	452	400	505	1.26
	Food, Drug, and Cosmetic Dyes				
	Total	1,574	1,319	4,984	3.78
	Food, Drug, and Cosmetic Colors				
	Total	1,331	1,107	4,293	3.84
	Blue # 1	33	21	303	14.22
	Blue # 2	...	3	47	16.71
	Orange # 1	184	179	522	2.91
	Red # 1	112	85	492	5.32
	Red # 2	340	291	922	3.17
	Red # 3	25	18	343	18.86
	Red # 4	60	32	153	4.75
	Yellow # 3	...	25	53	2.11
	Yellow # 4	48	41	87	2.11
	Yellow # 5	253	211	655	3.10
	Yellow # 6	179	144	439	3.05
	All other	97	55	237	4.43
	Drug and Cosmetic Colors				
	Total[2]	243	212	711	3.35
	Orange # 5	7	6	21	3.87
	Red # 8	5	4	10	2.53
	Red # 11	...	16	32	2.09
	Red # 21	27	28	84	3.02
	Red # 34	7	...	...	...
	Yellow # 1, # 5, # 6, # 7, # 8, # 10, # 11	34	20	58	2.96
	All other	163	136	506	3.62
	All Other Dyes Grouped by Colour Index Number				
	Total	17,993	10,376	12,648	1.22
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER				
	Total	32,354	26,215	46,560	1.78
1	Acid alizarin flavine R	103	52	66	1.23
4	Acid anthracene brown FG	212	145	288	2.00
7	Acid chrome blue 2R	156	127	141	1.11
9	Algol yellow GC[3]	2,306	2,017	3,078	1.53
12	Alizarin supra blue A	...	35	140	4.07
14	Anthracene chromate brown FB	185	165	196	1.19
19	Benso Bordeaux 6B	42	45	62	1.39
20	Benso chrome black blue B	135	107	111	1.04
24	Benzo fast black L	250	212	247	1.17
26	Benso fast blue 4GL	118	100	243	2.42

See footnotes at end of table.

TABLE 8A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951*--Continued

Colour Index or Prototype No.	Dye	Production	Sales		
			Quantity	Value	Unit value
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued				
		1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
30	Benso red 12B	19	18	43	$2.41
32	Benso rhodulina red 3B	...	6	11	1.79
35	Brilliant benso violet B	95	99	146	1.47
40	Brilliant wool blue FFR	...	46	110	2.42
43	Celliton orange GR	103	54	64	1.18
47	Chlorantine fast brown BRL	481	409	561	1.37
53	Chlorantine fast yellow 4GL	298	239	442	1.85
54	Chlorantine fast yellow RL	209	107	248	2.32
67	Diamine Bordeaux B	78	82	99	1.21
69	Diamine catechine G	55	...	...	...
70	Diamine catechine 3G	101	80	75	.94
71	Diamine fast blue FFB	486	369	673	1.82
72	Diamine fast orange EG	86	69	114	1.66
73	Diamine fast orange EN	70	49	84	1.71
74	Diaminogen blue M2B	341	329	557	1.70
77	Diazo Bordeaux 7B	191	146	222	1.52
78	Diazo brilliant green 3G	60	51	128	2.50
79	Diazo brilliant scarlet 2BL ex	38	29	100	3.43
80	Diazo brilliant scarlet RON	200	...	...	...
84	Diazo fast red 5BL	26	...	...	...
85	Diazo fast red 7BL	81	66	142	2.15
94	Fast scarlet 2G base and salt	232	202	179	.89
101	Guinea fast red BL	36	35	44	1.25
109	Helindon pink R ex	730	676	993	1.47
118	Indanthrene brown BR	688	440	986	2.24
121	Indanthrene brown RRD	919	859	1,260	1.47
122	Indanthrene khaki 2G	4,786	4,040	5,271	1.30
124	Indanthrene rubine R	271	...	...	...
138	Milling yellow N5G	34	23	57	2.49
144	Neolan blue GG	360	246	327	1.33
146	Neolan orange R	...	14	27	1.86
147	Oxydiaminogen CB	376	320	455	1.42
148	Paper red A ex	82	94	201	2.15
152	Polar orange R	52	31	37	1.21
164	Rapidogen blue D	106	97	440	4.53
168	Rapidogen red GS	143	134	345	2.58
169	Rapidogen red RS	94	96	151	1.57
170	Rapidogen scarlet RS	127	106	266	2.51
171	Rapidogen yellow G	68	61	230	3.80
172	Rosanthrene fast Bordeaux 2BL	82	61	132	2.17
173	Rosanthrene orange R	112	110	247	2.25
187	Sulphon yellow R	28	22	27	1.22
197	Victoria fast violet 2R ex	106	86	81	.94
198	Victoria pure blue B	117	84	269	3.20
201	Zambesi black D	68	51	62	1.22
202	Zambesi black V	153	112	130	1.16
206	Alizarin fast gray BBLW	186	193	915	4.75
228	Celliton fast blue FFR	367	338	610	1.80
235	Celliton fast pink FF3B	44	19	78	4.18
236	Celliton fast red GG	130	...	...	...
237	Celliton fast red violet RN	...	72	179	2.50
238	Celliton fast rubine B	56	30	37	1.20
242	Celliton fast yellow G	312	249	356	1.42
244	Celliton scarlet B	128	89	107	1.20
245	Celliton yellow 5G	11	...	...	...
260	Fast Bordeaux GP base	51	33	91	2.73
260	Fast Bordeaux GP salt	152	136	150	1.10
264	Fast orange GC base and salt	40	35	48	1.41
265	Fast orange GR base and salt	12	12	14	1.20
267	Fast red AL salt	171	156	270	1.47
269	Fast red 3GL salt	441	455	421	.93
270	Fast red KB base	190	113	324	2.87
270	Fast red KB salt	13	...	...	...
271	Fast red RC base and salt	28	28	56	1.99
274	Fast violet B base	...	9	39	4.40
275	Fast yellow GC base and salt	...	6	9	1.49
278	Sirius supra turquoise blue GL	208	170	481	2.84
291	Indanthrene golden yellow GK	587	482	935	1.94
293	Indanthrene olive green B	1,908	1,472	2,457	1.67
299	Monochrome black blue G	28	25	62	2.48
302	Naphthol AS	862	571	760	1.33
303	Naphthol AS-BO	...	60	258	4.31

TABLE 8A.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, 1951*--Continued

Colour Index or Prototype No.	[b]Dye	Production	Sales		
			Quantity	Value	Unit value
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
304	Naphthol AS-BR	17	16	55	$3.37
305	Naphthol AS-BS	307	78	183	2.35
306	Naphthol AS-D	247	61	129	2.13
309	Naphthol AS-G	48	26	112	4.29
310	Naphthol AS-ITR	26	20	93	4.75
311	Naphthol AS-OL	92	21	65	3.06
312	Naphthol AS-RL	...	4	17	3.82
313	Naphthol AS-SW	517	467	1,141	2.44
314	Naphthol AS-TR	...	8	37	4.40
315	Neolan orange G	...	44	58	1.32
316	Neolan yellow GR	71	48	63	1.30
318	Palatine fast blue BR	...	6	12	1.87
322	Palatine fast marine blue REH	11	17	28	1.68
326	Palatine fast pink BN	35	26	74	2.85
330	Palatine fast yellow ELH	...	59	77	1.29
351	Rapidogen violet B	33	31	174	5.60
357	Variamine blue BD salt	...	56	154	2.73
	All other dyes grouped by Foreign Prototype number	8,772	7,231	14,982	2.07
	UNGROUPED DYES[4]				
	Total	24,910	20,247	37,669	1.86
	Acetate rayon dyes, total (see tables 10 and 11 for total of all acetate rayon dyes)[5]	6,056	4,445	5,921	1.33
	Black, 1V ex., B, BGD, BMF, DB, EC, G, 3G, GS, GT, J, LMB, MS, PL, R, RB, SDF, SN, SS[6]	1,787	1,427	1,081	.76
	Blue, #15, A-40, A8-7, A8-45, AGF, B, B ex., BGF, BN, BNN, BNT, BP, BR, BRN, C, EC, FFR, FFRN, G, GLF, GLT, GP, GR, JL, KL, LB, LD, M, MC, MR, MVC, MVT, PV, P-20, P-23, P-34, P-37, RDA, RLF-40, 2R, SL[7]	2,447	1,860	3,192	1.72
	Brown #6, B, JO, R, ROO, 2R, 3R[8]	109	64	94	1.47
	Orange, III, FSI, GR, GAN, R, RB, 2R, 2RP, 3R, 4R[9]	228	124	142	1.15
	Red, III, VI-N, B, 2B, BG, BPS, BX, C, FSI, G, GLF, LS, LMB, MBS, MB, P-30, R, RP, 3RN, W, Y, YP, 2Y[10]	681	416	531	1.28
	Violet, 3B, BGF, 2R, 3RGLF, 4R, 5RLF[11]	51	49	102	2.09
	Yellow GLF	129	138	193	1.40
	Yellow 4RLF	339	(12)	(12)	(12)
	Yellow CW, G, GRP, 5G, 8GLF, GL, GL ex., 6GN ex., GN, GOO, GR, GRJT, M, R, RL, RN, 2RGLF, 4RL[13]	283	367	590	1.61
	Acid red B, BB, 3B, BR, G, GB, GL, OA, RB	38	17	44	2.63
	Anthraquinone vat navy blue, BN, BR	778	766	1,078	1.41
	Anthraquinone vat olive G, OGL, OFN, T, TA	2,787	2,268	3,908	1.72
	Azoic dyes and their components, total (see tables 10, 11, and 14 for data on all azoic dyes and their components)[14]	957	747	1,909	2.56
	Chrome orange 2G, LC, RL, 3R	12	11	17	1.56
	Direct black AMG, CW, 3G, 5G, HN, NV, ULR	260	241	159	.66
	Direct blue B, CF, 2GFL, GL, 8GLN, 8GUF, HP, HR, R, RDW, RL, 2HCF, 2RFL, 3HCF, YRS	274	235	434	1.85
	Direct brilliant violet B, 4B, R	...	66	74	1.14
	Direct brown CVR, GB, 3GS, G2R, KRS, M2, RR, 2R, 3RLL	105	81	99	1.23
	Direct fast blue BLL, CPL, 8G, 8GL, 4GLN, LPGL, L5GA, L7GA, L9R, RL, 3RL, 5FGL, 5FRL, 5RL	136	81	195	2.41
	Direct fast orange 4B, G, 2G, 4G, GL, 2GL, L4GL, LRRL, R, RGL	141	117	252	2.15
	Direct fast red 6BLN	153	124	246	1.98
	Direct fast red 3BL, 6BLSW, 7BWL, R, RL, WL	42	29	54	1.84
	Direct fast rubine B, BB, BL, LP, WL	43	44	75	1.70
	Direct navy DSU, G, R	41	42	48	1.13
	Direct navy blue B, BV, DB, RY	166	109	83	.76
	Direct orange DB, 5G, 5GFL, GRA, LLUWF, LR, RT	113	80	166	2.11
	Direct red 2B, 9B, 3BL, 6BLN, BLWN	160	146	330	2.26
	Direct violet, BCW, BGF, 2R	13	...	...	...
	Direct white, ACC, B, 4B, 5B, BV, CLC, GG, MR, 3P, RN, RW, SC, SFS, SP, WSN, WT	1,490	1,166	5,337	4.58
	Fast yellow 2G, 3GLN, 3GU, N	54	41	73	1.80
	Oil red, # 322, # 430, # 6634, EGN, N-1700, O, OB, RO	577	557	679	1.21
	All other ungrouped dyes	10,558	8,836	16,482	1.87

See footnotes on page 25.

Footnotes for table 8A

[1] Does not include derivative of carbazole (Colour Index No. 969).
[2] Includes drug and cosmetic dyes, external, data on which are confidential.
[3] Includes Colour Index dye No. 1095.
[4] See tables 12 and 13 for statistics on ungrouped dyes arranged according to chemical class and to class of application.
[5] Does not include acetate rayon dyes that appear under "Dyes grouped by Foreign Prototype number."
[6] Includes developed black, diazo black, and fast black.
[7] Includes brilliant blue, developed blue, direct blue, navy blue, royal blue, and special blue.
[8] Includes cupramine brown and fast brown.
[9] Includes celanthrene orange, cupramine orange, golden orange, light orange, and monocel orange.
[10] Includes monocel red, pink, rubine, and scarlet.
[11] Includes purple.
[12] Confidential. Sales are included with other yellow acetate dyes.
[13] Includes fast yellow and golden yellow.
[14] Does not include azoic dyes and their components that appear under "Dyes Grouped by Colour Index Number" and "Dyes Grouped by Foreign Prototype Number."

dyes, large percentage increases in production were recorded for the stilbene dyes (41 percent) and the ketonimine dyes (34 percent).

Average annual production of dyes in the period 1945-49, together with annual data for 1950 and 1951, are shown in table 10 by class of application. Table 11 gives corresponding data for sales. Based on method of application, three classes of dyes accounted for about two-thirds of the total output of all dyes in 1951. Vat dyes, the largest single class, accounted for 36 percent; direct dyes, for 20 percent; and acid dyes, for 10 percent. The most noticeable increase in output since World War II was in vat dyes other than indigo. Output of these dyes, which averaged 34 million pounds annually during the period 1945-49, increased to 42 million pounds in 1950 and to 47 million pounds in 1951. Although the volume of output of acetate rayon dyes was much smaller than that of vat dyes, it likewise was appreciably larger in 1950 and 1951 than during 1945-49. From an annual average of 5.8 million pounds during 1945-49, the output increased to 8.9 million pounds in 1950; it declined slightly to 8.4 million pounds in 1951.

Production and sales of ungrouped dyes (those having neither a Colour Index nor a Foreign Prototype number) are shown by chemical class in table 12 and, by class of application, in table 13. The azo dyes, the largest single chemical class of ungrouped dyes, accounted for slightly more than half the total output of ungrouped dyes in 1951, and the anthraquinone vat dyes, for slightly more than one-fourth. Compared with 1950, the output of azo dyes in 1951 declined 11 percent while that of the ungrouped anthraquinone vat dyes increased 26 percent. For ungrouped dyes arranged by class of application, three classes of dyes accounted for four-fifths of the total output. Vat dyes, the output of which was 26 percent greater in 1951 than in 1950, accounted for 32 percent of the total output of ungrouped dyes. Direct and acetate rayon dyes each accounted for 24 percent.

Table 14 shows production and sales of azoic dyes and their components in 1951. The output of these products in 1951 totaled 7.5 million pounds, compared with 8.4 million pounds in 1950 and 7.4 million pounds in 1949. The output of rapidogens in 1951 was 1.4 million pounds, or 26 percent less than the 1.9 million pounds reported in 1950. Production of all the components of azoic dyes decreased in 1951 compared with 1950. The decrease was smallest in the Naphthols, production of which totaled 2.7 million pounds in 1951, compared with 2.8 million pounds in 1950.

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TABLE 9.--*Synthetic organic chemicals: United States production and sales of coal-tar dyes, by chemical class, 1951*

Chemical class	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Total	187,082	159,992	176,679	$1.10
Azo	67,683	57,447	68,368	1.19
Sulfur or sulfide[1]	21,311	20,991	6,713	.32
Indigoid and thioindigoid	24,548	22,283	8,612	.39
Anthraquinone vat[2]	41,304	33,033	47,406	1.44
Triphenylmethane and diphenylnaphthylmethane	7,162	5,034	8,821	1.75
Anthraquinone	7,051	6,025	12,005	1.99
Azine	5,129	4,340	3,321	.77
Stilbene	3,417	2,859	6,879	2.41
Pyrazolone	1,555	1,297	2,319	1.79
Xanthene	1,853	1,084	3,303	3.05
Ketoimine	1,342	1,299	1,676	1.29
Thiazole	1,033	831	1,199	1.44
Thiazine	499	440	637	1.45
Acridine	128	89	174	1.96
Quinoline	204	182	586	3.22
Oxazine	29	(3)	(3)	(3)
All other[4]	2,872	2,358	4,660	1.82

[1] Colour Index dyes only.
[2] Includes carbazole vat dyes.
[3] Included in "All other."
[4] Includes aniline black and related colors, and naphthalimide, nitro, nitroso, copper phthalocyanine, and oleate dyes; also includes rubber colors and miscellaneous mixtures, as well as sulfur dyes which are not included in the Colour Index group. Statistics for these groups cannot be published separately without disclosing confidential information.

TABLE 10.--*Synthetic organic chemicals: United States production of coal-tar dyes, by class of application, average 1945-49, annual 1950 and 1951*

Class of application	Average 1945-49	1950	1951
	Quantity (1,000 pounds)		
Total	176,916	195,713	187,082
Acetate rayon	5,611	8,936	8,375
Acid	21,703	20,932	17,839
Azoic	7,611	8,336	7,311
Basic	8,470	8,201	6,855
Direct	38,842	41,056	36,938
Lake and spirit-soluble	5,241	6,005	6,926
Mordant and chrome	7,733	3,121	7,904
Sulfur	[1] 25,384	[1] 23,996	[1] 21,311
Vat, total	53,739	68,307	67,758
Indigo	19,429	26,160	20,503
All other	34,310	42,147	47,255
All other coal-tar dyes	2,384	4,823	3,847
	Percent of total quantity		
Total	100.0	100.0	100.0
Acetate rayon	3.3	4.6	4.5
Acid	12.3	10.7	9.5
Azoic	4.3	4.3	3.9
Basic	4.8	4.2	4.7
Direct	21.9	20.9	19.8
Lake and spirit-soluble	3.0	3.1	3.7
Mordant and chrome	4.4	2.6	4.2
Sulfur	[1] 14.3	[1] 12.3	[1] 11.4
Vat, total	30.4	34.9	36.2
Indigo	11.0	13.4	10.9
All other	19.4	21.5	25.3
All other coal-tar dyes	1.3	2.4	2.1

[1] Colour Index sulfur dyes only. Other sulfur dyes are included in "All other coal-tar dyes" to prevent disclosing confidential information.

NOTE.--The leuco vat esters are included with vat dyes in 1945, 1946, 1949-51, and with direct dyes in 1947 and 1948.

TABLE 11.--*Synthetic organic chemicals: United States sales of coal-tar dyes, by class of application, average 1945-49, annual 1950 and 1951*

Class of application	Average 1945-49	1950	1951
	Quantity (1,000 pounds)		
Total	170,268	188,382	159,992
Acetate rayon	5,431	8,492	6,331
Acid	20,627	19,678	13,803
Azoic	6,720	7,400	5,952
Basic	7,803	7,628	7,406
Direct	38,500	41,516	32,022
Lake and spirit-soluble	4,952	5,682	5,819
Mordant and chrome	7,631	5,197	7,114
Sulfur	[1] 25,414	[1] 24,308	[1] 20,991
Vat, total	50,860	64,137	57,075
Indigo	19,066	26,580	18,278
All other	31,794	37,557	38,797
All other coal-tar dyes	2,310	4,344	3,479
	Percent of total quantity		
Total	100.0	100.0	100.0
Acetate rayon	3.2	4.5	4.0
Acid	12.1	10.5	8.6
Azoic	3.9	3.9	3.7
Basic	4.6	4.1	4.6
Direct	22.6	22.0	20.0
Lake and spirit-soluble	2.9	3.0	3.6
Mordant and chrome	4.5	2.8	4.5
Sulfur	[1] 14.9	[1] 12.9	[1] 13.1
Vat, total	29.9	34.0	35.7
Indigo	11.2	14.1	11.4
All other	18.7	19.9	24.3
All other coal-tar dyes	1.4	2.3	2.2
	Value (1,000 dollars)		
Total	135,656	190,786	176,679
Acetate rayon	6,480	12,312	9,880
Acid	18,749	22,960	17,646
Azoic	11,973	14,788	12,160
Basic	9,214	11,428	11,431
Direct	28,291	43,503	37,641
Lake and spirit-soluble	3,551	4,896	6,155
Mordant and chrome	5,235	5,238	7,974
Sulfur	[1] 7,216	[1] 7,628	[1] 6,713
Vat, total	39,884	57,262	58,676
Indigo	3,619	5,853	2,919
All other	36,275	51,409	55,757
All other coal-tar dyes	5,053	10,731	8,163
	Percent of total value		
Total	100.0	100.0	100.0
Acetate rayon	4.8	6.4	5.6
Acid	13.8	12.0	10.0
Azoic	8.8	7.8	7.0
Basic	6.8	6.0	6.5
Direct	20.9	22.8	21.3
Lake and spirit-soluble	2.6	2.6	3.5
Mordant and chrome	3.9	2.8	4.5
Sulfur	[1] 5.3	[1] 4.0	[1] 3.8
Vat, total	29.4	30.0	33.2
Indigo	2.7	3.1	1.7
All other	26.7	26.9	30.4
All other coal-tar dyes	3.7	5.6	4.6

[1] Colour Index sulfur dyes only. Other sulfur dyes are included in "All other coal-tar dyes" to prevent disclosing confidential information.

NOTE.--The leuco vat esters are included with vat dyes in 1945, 1946, and 1949-51, and with direct dyes in 1947 and 1948.

The statistics on sales of dyes in 1948-50 do not include the quantity and value of interplant transfers, as the statistics for 1947 and earlier years did. The sales statistics for 1948-50, therefore, are not strictly comparable with the sales statistics for earlier years. Before 1948, interplant transfers probably [illegible] 10 percent of the total of sales [illegible]

TABLE 12.--*Synthetic organic chemicals: United States production and sales of ungrouped dyes, by chemical class, 1951*

Chemical class	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	24,910	20,247	37,669	$1.86
Azo	12,813	10,262	16,391	1.60
Indigoid and thioindigoid	172	([1])	([1])	([1])
Anthraquinone vat	6,819	5,649	9,588	1.70
Anthraquinone	1,930	1,525	2,984	1.96
Stilbene	1,491	1,167	5,340	4.58
All other[2]	1,685	1,644	3,366	2.07

[1] Included in "All other."
[2] Includes acridine, pyrazolone, quinoline, sulfur, triphenylmethane and diphenylnaphthylmethane, xanthene, and miscellaneous dyes.

TABLE 13.--*Synthetic organic chemicals: United States production and sales of ungrouped dyes, by class of application, 1951*

Class of application	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Total	24,910	20,247	37,669	$1.86
Acetate rayon	6,054	4,445	5,925	1.32
Acid	852	627	1,500	2.39
Azoic	957	747	1,909	2.56
Direct	6,146	5,071	12,040	2.36
Lake and spirit-soluble	1,129	1,012	2,455	2.43
Mordant and chrome	132	128	282	2.20
Vat	7,942	6,591	11,055	1.68
All other[1]	1,698	1,626	2,503	1.54

[1] Includes basic, sulfur, and miscellaneous dyes.

TABLE 14.--*Synthetic organic chemicals: United States production and sales of azoic dyes and their components, 1951*

Foreign Prototype No.	Dye or component	Production	Sales		
			Quantity	Value	Unit value
		1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
	Grand total[1]	7,456	6,077	12,654	$2.08
	Dyes and components for which separate statistics may not be shown[2]	119	114	328	2.88
	Dyes and components for which separate statistics are shown below	7,337	5,963	12,326	2.07
	DYES				
	Rapidogen, total	1,412	1,305	4,772	3.66
	Black	122	110	411	3.74
164	Blue D	106	97	440	4.54
	Blue[3]	176	166	761	4.58
	Bordeaux	88	97	321	3.31
	Brown[4]	80	79	361	4.57
168	Red GS	143	134	349	2.58
169	Red RS	94	94	331	3.52
170	Scarlet RS	127	106	266	2.51
351	Violet B	33	31	174	5.60
	Yellow[5]	116	113	442	3.91
	All other	327	278	920	3.31
	COMPONENTS				
	Fast color bases, total	1,106	988	1,707	1.73
260	Bordeaux GP	51	33	91	2.73
270	Red KB	150	113	324	2.87
274	Violet B	...	5	39	7.78
	All other	905	837	1,253	1.50
	Fast color salts, total	2,163	2,047	2,561	1.25
[6]69	Red GL	157	155	161	1.04
260	Bordeaux GP	152	136	150	1.10
267	Red AL	171	154	226	1.47
269	Red 3GL	441	453	421	.93
270	Red KB	13	...	...	...
357	Variamine blue BD	...	56	154	2.73
	All other	1,229	1,093	1,449	1.33
	Naphthols, total	2,656	1,623	3,286	2.02
302	Naphthol AS	862	571	740	1.30
303	Naphthol AS-BO	...	60	206	3.41
304	Naphthol AS-BR	17	16	55	3.37
305	Naphthol AS-BS	307	78	183	2.35
306	Naphthol AS-D	247	61	129	2.13
309	Naphthol AS-G	48	26	112	4.29
310	Naphthol AS-ITR	26	20	93	4.75
311	Naphthol AS-OL	92	21	65	3.06
312	Naphthol AS-RL	...	4	17	4.62
313	Naphthol AS-SW	517	467	1,141	2.44
314	Naphthol AS-TR	...	8	37	4.40
	All other	540	291	508	1.75

[1] Totals shown represent all azoic dyes and their components. Totals shown in tables 8A and 13 represent ungrouped dyes and their components only.
[2] Includes fur dyes.
[3] Includes navy blue.
[4] Includes dark brown and seal brown.
[5] Includes golden yellow.
[6] Colour Index number.

Lakes and Toners

As the terms are used in this report, lakes and toners are synthetic organic pigments. Statistics on production and sales of all lakes and toners in 1951 are given in table 15A.[3] Statistics on the commercial forms of a few selected pigments (dry, flushed, or pulp) are given in table 16.

Lakes and toners are used chiefly as pigments for paints and related products, printing inks, and plastics and resin materials. They are made as full-strength colors (toners) and as extended colors (lakes and reduced toners). In the statistics they are grouped as (1) lakes or lake colors, (2) toners or full-strength colors, and (3) reduced or extended toners. Whenever possible, individual lakes and toners are identified by the Colour Index number or Foreign Prototype number of the dyes from which they may be made.

Total production of lakes and toners in 1951 was 47.3 million pounds--slightly less than the record output of 47.4 million pounds reported for 1950. Sales in 1951 amounted to 40.1 million pounds, valued at 52.7 million dollars, compared with 43.7 million pounds, valued at 54.4 million dollars, in 1950--a decline in 1951 of 8 percent in quantity and 3 percent in value.

Production of full-strength colors (toners) in 1951--25.2 million pounds--was less than 1 percent below the 25.5 million pounds reported for 1950. Production of extended colors (lakes and reduced toners) in 1951--22.0 million pounds--was approximately the same as in 1950. Sales of full-strength colors in 1951 totaled 21.0 million pounds, valued at 36.4 million dollars, compared with 24.1 million pounds, valued at 38.1 million dollars, in 1950. Sales of extended colors totaled 19.1 million pounds, valued at 16.3 million dollars, in 1951, compared with 19.6 million pounds, valued at 16.3 million dollars, in 1950.

More than half the output of full-strength colors in 1951 consisted of red toners (15.4 million pounds). Individual toners produced in the largest quantities were lithol red R (C. I. 189), 5.6 million pounds; toluidine red (C. I. 69), 2.7 million pounds; benzidine yellow, 1.7 million pounds; phthalocyanine blue B (Pr. 481), 1.6 million pounds; and light para red (C. I. 44), 1.1 million pounds. Of the extended pigments, blues constituted the leading group, accounting for about one-third of the total output. Production of the leading blue lake--fugitive peacock blue, or patent blue (C. I. 671)--totaled 2.6 million pounds.

The statistics on selected dry, flushed, and pulp colors in table 16 show that in 1951 production and sales (the latter on a value basis) of fugitive peacock blue (C. I. 671), alkali blue (C. I. 704), eosine (C. I. 768), and phloxine (C. I. 774) toners in the flushed form exceeded production and sales in the dry form. For lithol red R (C. I. 189), toluidine red (C. I. 69), and permanent methyl violet B (C. I. 680), production and sales in the dry form exceeded those in the flushed form. In 1951, production and sales of either the dry or flushed form exceeded those of the pulp form for most pigments.

[3] See also table 15B, part III, which lists these products alphabetically and identifies the manufacturers.

TABLE 15A.--*Synthetic organic chemicals: United States production and sales of lakes and toners, 1951*

[Listed below are all lakes and toners for which any reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 15B in part III lists all lakes and toners 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	47,272	40,109	52,691	$1.31
LAKES OR LAKE COLORS				
Total	10,176	8,840	7,631	.86
Products for which separate statistics may not be shown[2]	2,079	2,145	1,166	.54
Products for which separate statistics are shown below	8,097	6,695	6,465	.96
Black lakes	139	120	95	.79
Blue lakes, total	3,240	2,303	2,438	1.06
Indanthrene blues (RS and OCD)	135	136	670	4.93
Methylene blue (C.I. 922)	18	17	20	1.14
Peacock blue, fugitive (Patent blue) (C.I. 671)	2,629	1,732	1,492	.87
Phthalocyanine blue, sulfonated	347	...	...	...
Victoria blue B (C.I. 729)	29	29	37	1.30
Victoria pure blue B (Pr. 198)	16	17	12	.71
All other	66	394	207	.52
Brown lakes	16	14	13	.97
Green lakes, total	1,306	1,233	811	.66
Acid green B (C.I. 669)	29	28	17	.60
Brilliant green (C.I. 662)	9	8	12	1.48
Malachite green (C.I. 657)	11	11	12	1.07
Pigment green B (Pr. 149)	1,183	1,119	702	.59
All other	74	67	70	1.05
Maroon lakes:				
Ako Bordeaux (C.I. 88)	304	276	135	.49
Helio fast rubine 4BL (Pr. 406)	170	155	325	2.10
Orange lakes, total	298	280	148	.53
Persian orange (Acid orange Y) (Orange II) (C.I. 151)	268	254	128	.50
All other	30	26	20	.74
Red lakes:				
Alizarin red B (C.I. 1027)	310	223	525	2.36
Carmine (C.I. 1239)	28	26	108	4.11
Eosine (Bromo acid lake) (C.I. 768)	49	...	...	...
Naphthol AS (Pr. 302)	367	354	236	.66
Permanent red 2B	587	541	580	1.07
Pigment scarlet 3B (C.I. 216)	320	300	398	1.33
Rhodamine B (C.I. 749)	15	15	39	2.63
Rhodamine 6G (Rhodamine Y) (C.I. 752)	24	22	20	.90
Scarlet 2R (C.I. 79)	543	514	272	.53
Violet lakes, total	123	123	129	1.05
Acid violet (C.I. 698)	9	9	7	.80
Methyl violet B (C.I. 680)	95	94	99	1.06
All other	19	20	23	1.13
Yellow lakes, total	238	194	191	.98
Fast light yellow (C.I. 636)	57	19	27	1.40
Quinoline yellow (C.I. 801)	16	12	15	1.25
Tartrazine (C.I. 640)	165	146	135	.93
All other	20	17	14	.86
TONERS OR FULL-STRENGTH COLORS				
Total	25,248	20,973	36,406	1.74
Products for which separate statistics may not be shown[2]	105	111	411	3.68
Products for which separate statistics are shown below	25,143	20,862	35,973	1.64
Black toners	41	41	62	1.52
Blue toners, total	3,638	2,704	7,564	2.80
Alkali blue (C.I. 704)	1,108	694	1,426	2.06
Peacock blue R (C.I. 664), PMA, PTA, and PTMA	10	9	57	6.22
Phthalocyanine blue B (Pr. 481)	1,637	1,191	3,935	3.30
Phthalocyanine blue, other	157	131	479	3.66
Setoglaucine (Peacock blue O) (C.I. 658), PMA, PTA, and PTMA	43	43	161	3.77

See footnotes at end of table.

TABLE 15A.--*Synthetic organic chemicals: United States production and sales of lakes and toners, 1951*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
TONERS OR FULL-STRENGTH COLORS--Continued				
Blue toners--Continued				
Victoria blue B (C.I. 729), PMA, PTA, and PTMA	109	108	367	$3.40
Victoria pure blue B (Pr. 198), PMA	36	26	91	3.55
Victoria pure blue B (Pr. 198), PTA and PTMA	47	46	224	4.91
All other	491	454	822	1.81
Green toners, total	1,759	1,457	3,966	2.72
Brilliant green (C.I. 662), PMA, PTA, and PTMA	39	37	168	4.52
Brilliant green (C.I. 662) and thioflavine (C.I. 815), PMA	26	14	61	4.49
Brilliant green (C.I. 662) and thioflavine (C.I. 815), PTA and PTMA	50	50	230	4.57
Malachite green (C.I. 657), PMA, PTA, and PTMA	26	25	94	3.83
Pigment green B (Pr. 149)	810	599	737	1.23
All other	810	732	2,676	3.66
Maroon toners, total	848	780	2,541	3.26
β-Hydroxynaphthoic maroon (B.O.N. maroon) (Lithol maroon)	351	326	513	1.57
Naphthol AS-D (Pr. 306)	...	4	12	3.08
Toluidine maroon	122	99	371	3.75
All other	375	351	1,645	4.68
Orange toners, total	365	313	516	1.65
Benzidine orange	61	51	155	3.05
2,4-Dinitroaniline orange	187	154	193	1.26
o-Nitroaniline orange	67	66	69	1.04
All other	50	42	101	2.39
Red toners, total	15,375	13,090	16,330	1.25
o-Chloronitroaniline red (Chlorinated para red)	617	566	661	1.17
Eosine (Bromo acid toner) (C.I. 768)	900	350	550	1.57
Lithol red R (C.I. 189), total	5,620	5,092	4,341	.85
Barium toner	3,107	2,747	2,299	.84
Calcium toner	1,888	1,732	1,492	.86
Sodium toner	625	613	550	.90
Lithol rubine B (C.I. 163)	661	649	899	1.38
Naphthol AS (Pr. 302)	221	91	251	2.75
Naphthol AS-BS (Pr. 305)	49	31	110	3.51
Naphthol AS-D (Pr. 306)	25	17	51	3.01
C.I. 44, Para red, light	1,079	956	819	.86
Para red, dark	526	445	376	.85
Permanent red 2B	868	825	1,666	2.02
Pigment rubine 3G	17	10	16	1.62
Red lake C (C.I. 165)	1,029	838	953	1.14
Red lake D (C.I. 214)	9	...	...	...
Rhodamine B (C.I. 749), PMA	12	3	17	5.28
Rhodamine B (C.I. 749), PTA and PTMA	32	30	171	5.64
Rhodamine 6G (C.I. 752), PMA	13	11	44	3.99
Rhodamine 6G (C.I. 752), PTA and PTMA	92	91	508	5.57
C.I. 69, Toluidine red	2,725	2,184	3,151	1.44
All other	880	901	1,746	1.94
Violet toners:				
Methyl violet B (C.I. 680), PMA	292	258	419	1.63
Methyl violet B (C.I. 680), PTA and PTMA	105	96	296	3.07
Methyl violet B (C.I. 680), fugitive	342	282	362	1.28
Yellow toners, total	2,378	1,841	3,915	2.13
Benzidine yellow	1,726	1,314	2,697	2.05
Pr. 103, Hansa yellow G	363	327	659	2.02
Pr. 104, Hansa yellow 5G	5	4	7	1.75
Pr. 105, Hansa yellow 10G	132	83	179	2.16
All other	152	113	373	3.31
REDUCED OR EXTENDED TONERS				
Total	11,848	10,296	8,636	.84
Products for which separate statistics may not be shown[4]	6,318	5,338	4,506	.84
Products for which separate statistics are shown below	5,530	4,958	4,130	.84
Blue toners, reduced, total	3,889	3,337	3,085	.92
Peacock blue R (C.I. 664), PMA, PTA, and PTMA	17	14	28	1.98
Setoglaucine (Peacock blue G) (C.I. 658), PMA, PTA, and PTMA	23	20	37	1.85

See footnotes at end of table.

TABLE 15A.--*Synthetic organic chemicals: United States production and sales of lakes and toners, 1951*--Continued

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
REDUCED OR EXTENDED TONERS--Continued				
Blue toners, reduced--Continued				
Victoria blue B (C.I. 729), PMA, PTA, and PTMA	58	41	50	$1.22
All other	3,791	3,262	2,970	.91
Green toners, reduced:				
Brilliant green (C.I. 662), PMA, PTA, and PTMA	121	123	98	.79
Malachite green (C.I. 657), PMA, PTA, and PTMA	8	11	10	.90
Orange toners, reduced: o-Nitroaniline orange	9	12	7	.56
Red toners, reduced, total	828	883	552	.63
Lithol red R (C.I. 189), total	121	118	50	.42
Barium toner	...	100	37	.37
All other	...	18	13	.70
Lithol rubine B (C.I. 163)	133	167	88	.53
Para red, total	124	125	31	.25
Light	...	53	11	.21
Dark	...	72	20	.28
Rhodamine B (C.I. 749), PMA and PTMA	51	49	51	1.05
Rhodamine 6G (C.I. 752), PMA, PTA, and PTMA	72	79	70	.88
C.I. 69, Toluidine red	162	187	85	.46
All other	165	158	177	1.13
Violet toners, reduced:				
Methyl violet B (C.I. 680), PMA	147	132	103	.78
Methyl violet B (C.I. 680), PTA and PTMA	31	34	37	1.08
Methyl violet B (C.I. 680), fugitive	62	61	51	.84
Yellow toners, reduced:				
Benzidine yellow	87	74	40	.53
Pr. 103, Hansa yellow G	341	283	163	.58
Pr. 104, Hansa yellow 5G	7	8	4	.53

[1] Calculated on the exact (i. e., unrounded) figures.
[2] Includes unspecified maroon and red lakes.
[3] Includes all brown toners and unspecified violet toners.
[4] Includes all brown and maroon reduced toners and unspecified green, orange, violet, and yellow reduced toners.

NOTE.--The C.I. and Pr. numbers stand for Colour Index and Foreign Prototype numbers of the dyes from which the lakes or toners may be produced. When the number precedes the name of the toner, it signifies that the toner is the same as the dye described in the Colour Index or Foreign Prototype listing.

The abbreviations PMA, PTA, and PTMA stand for phosphomolybdic, phosphotungstic, and phosphotungstomolybdic acids, respectively.

TABLE 16.--*Synthetic organic chemicals: United States production and sales of selected dry, flushed, and pulp colors, 1951*[1]

[Listed below are selected dry, flushed, and pulp colors for which data on production may be published. (Leaders are used where the data are confidential and may not be published or where no data were reported.)]

Dry, flushed, and pulp forms	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Alkali blue toner (C.I. 704):[2]				
Dry form	...	80	150	$1.88
Flushed form	537	430	382	.89
Benzidine yellow toner:				
Dry form	1,191	911	1,894	1.95
Flushed form	2,390	2,225	1,197	.54
Pulp form	176	...	...	...
Eosine (C.I. 768) and phloxine (C.I. 774) toners:[2]				
Dry form	525	250	350	1.40
Flushed form	1,500	1,300	1,000	.77
Lithol red R (C.I. 189), barium toner:				
Dry form	2,485	2,150	1,801	.84
Flushed form	1,473	1,392	520	.37
Pulp form	264	...	...	...
Lithol red R (C.I. 189), calcium toner:				
Dry form	1,620	1,484	1,260	.85
Flushed form	616	560	251	.45
Pulp form	135	47	19	.41
Lithol red R (C.I. 189), sodium toner:[2]				
Dry form	473	458	387	.85
Flushed form	401	310	142	.46
Methyl violet B (C.I. 680), fugitive:				
Dry form	292	284	342	1.20
Flushed form	508	376	222	.59
Pulp form	124	...	...	...
Methyl violet B (C.I. 680), permanent (PMA, PTA, and PTMA):				
Dry form	322	289	499	1.73
Flushed form	92	87	88	1.01
Pulp form	77	...	...	...
Peacock blue (C.I. 671), fugitive:				
Dry form	1,289	670	513	.76
Flushed form	2,529	2,351	1,306	.56
Pulp form	1,110	...	...	...
Toluidine red toner (C.I. 69):				
Dry form	2,428	1,913	2,781	1.45
Flushed form	484	334	224	.67
Pulp form	299	251	123	.49

[1] Statistics on production and sales of the organic pigments (color lakes and toners) listed in this table are given in terms of the commercial (physical) forms in which they enter commercial channels. Data on the flushed and pulp forms therefore are in terms of total weight, including pigment and vehicle (water or oil).
[2] Data on pulp form are confidential and may not be published.

NOTE.--The statistics reported above represent more than 90 percent coverage of the statistics given in the preceding table.

Medicinals

In this report medicinal chemicals are divided into three major groups: (1) Benzenoid compounds, derived principally from coal tar; (2) alicyclic and heterocyclic compounds, usually derived from vegetable products and animal tissues but sometimes also from coal tar; and (3) acyclic compounds, usually derived from petroleum, from natural gas, or from grain by fermentation. The report does not cover alkaloids and other medicinal chemicals obtained from plant materials by simple extraction.

Statistics on production of medicinals are in terms of 100-percent content of the medicinal itself, exclusive of all diluents or other materials used in mixing or compounding tablets, solutions, and suspensions for consumer use. Except for antibiotics, the statistics on sales include only that part of the original (primary) production which was sold in undiluted or uncompounded form, including that sold in bulk and that sold in packages (tablets, ampoules, etc.). For antibiotics, however, the statistics on sales include all forms, both undiluted and uncompounded and diluted or compounded.

In 1951, production of all the medicinal chemicals covered in this report amounted to 74 million pounds (see table 17A[4])--an increase of 49 percent over the 49 million pounds reported for 1950. Sales in 1951 totaled 58 million pounds, valued at 504 million dollars, compared with 45 million pounds, valued at 356 million dollars, in 1950.

The output of all cyclic medicinals in 1951 was 61 million pounds, of which 44 million pounds consisted of benzenoid compounds. Production of acyclic medicinals in 1951 was 12 million pounds. In terms of quantity, acetylsalicylic acid (aspirin) was the most important cyclic medicinal produced in 1951. The output in that year was 13 million pounds; sales were 12 million pounds, valued at 6 million dollars. Production of sulfa drugs in 1951 was 6 million pounds, or 20 percent more than the 5 million pounds produced in 1950; sales totaled 4 million pounds, valued at 25 million dollars. Production of barbituric acid derivatives in 1951 was 789,000 pounds, or 15 percent more than the output of 689,000 pounds reported for 1950; sales totaled 481,000 pounds, valued at 3 million dollars.

As a group, the antibiotics were the most important medicinals produced in 1951, in terms of value. The combined output of all antibiotics for veterinary and medicinal purposes was 1,286,000 pounds, an increase of 51 percent over that in 1950. Sales in 1951 totaled 1,055,000 pounds, valued at 317 million dollars, compared with 711,600 pounds, valued at 214 million dollars, in 1950. Production of penicillin salts in 1951 was 625,000 pounds (319 trillion international units), compared with 429,000 pounds (220 trillion international units), in 1950. Sales in 1951 totaled 487,000 pounds (250 trillion international units), valued at 138 million dollars, compared with sales in 1950 of 350,000 pounds (183 trillion international units), valued at 93 million dollars. In 1951,

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

TABLE 17A.--*Synthetic organic chemicals: United States production and sales of medicinals, 1951*

[Listed below are all synthetic organic medicinals for which any reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 17B in part III lists alphabetically all medicinals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production[1]	Sales[2] Quantity	Sales[2] Value	Sales[2] Unit value[3]
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	73,543	57,536	504,252	$8.76
MEDICINALS, CYCLIC				
Total	61,315	48,757	477,429	9.79
Chemicals for which separate statistics may not be shown	15,115	11,336	19,456	1.72
Chemicals for which separate statistics are shown below	46,200	37,421	457,973	12.24
Benzenoid				
Total	43,992	34,202	49,287	1.44
Acetylsalicylic acid (Aspirin)	13,481	11,608	5,913	.51
Adrenaline (Epinephrine)	(4)	(4)	5	138.48
p-Aminobenzoic acid	48	45	184	4.08
p-Aminobenzoic acid salts	143	124	411	3.31
p-Aminobenzoic acid derivatives, total	680	570	2,220	3.89
Benzocaine (Ethyl p-aminobenzoate)	106	...	...	...
Procaine (2-Diethylaminoethyl p-aminobenzoate) hydrochloride	532	455	1,660	3.65
All other	42	115	560	4.88
4-Aminosalicylic acid	275	174	827	4.76
4-Aminosalicylic acid, sodium salt	328	247	1,099	4.44
Antihistamines	60	...	...	...
Benzoic acid salts	9	9	12	1.35
Benzyl alcohol.[5]				
Benzyl benzoate, for all uses	286	300	207	.69
Bismuth subgallate	49	46	149	3.24
Bismuth subsalicylate	106	34	120	3.52
α,α-Diethyl-4,4'-stilbenediol (Diethylstilbestrol)	6	5	434	86.77
N,α-Dimethylphenethylamine (Desoxyephedrine) hydrochloride	(6)	(6)	14	13.80
Dyes, medicinal	55	45	554	12.44
Gentisic acid (2,5-Dihydroxybenzoic acid), sodium salt	...	14	103	7.55
p-Hydroxybenzoic acid esters	177	155	298	1.92
Mandelic acid derivatives	7	...	...	...
α-Methylphenethylamine (β-Phenylisopropylamine) (Amphetamine), base and sulfate	32	...	...	...
2-Naphthyl benzoate	10	8	14	1.81
Phenolsulfonic acid salts, total	1,017	830	330	.40
Sodium phenolsulfonate	257	...	...	...
All other	760	830	330	.40
Salicylic acid	7,842	5,808	2,053	.35
Salicylic acid salts, total	1,294	1,135	691	.61
Calcium salicylate	7	3	5	1.78
Sodium salicylate	1,241	1,083	613	.57
All other	46	49	73	1.49
Sulfa drugs, total	6,411	4,269	24,613	5.77
Sulfathiazole	1,456	...	...	...
All other	4,955	4,269	24,613	5.77
Thymol iodide	50	40	350	9.31
3-o-Toloxy-1,2-propanediol (o-Cresyl α-glyceryl ether)	...	135	281	2.08
Vitamins	(7)	(7)	25	38.22
All other benzenoid medicinals	11,626	8,601	8,360	.97
Alicyclic and Heterocyclic				
Total	17,323	14,555	428,142	29.42
Antibiotics for human or veterinary use, total	1,286	1,055	317,058	300.53
Dihydrostreptomycin	315	264	40,703	154.18
Penicillin salts, total[8]	625	487	137,517	(9)
Penicillin potassium	142	120	39,515	(9)
Penicillin procaine	445	340	88,572	(9)

See footnotes at end of table.

TABLE 17A.--*Synthetic organic chemicals: United States production and sales of medicinals, 1951*--Continued

Chemical	Production[1]	Sales[2] Quantity	Sales[2] Value	Sales[2] Unit value[3]
MEDICINALS, CYCLIC--Continued				
Alicyclic and Heterocyclic--Continued				
Antibiotics for human or veterinary use--Continued	*1,000 pounds*	*1,000 pounds*	*1,000 dollars*	*Per pound*
Penicillin salts[8]--Continued				
Penicillin sodium	...	25	8,769	(9)
All other	38	2	661	(9)
Streptomycin	39	36	6,051	$168.08
All other	307	268	132,787	496.03
Antibiotics for animal feed supplements	[10] 236	[10] 196	17,532	89.31
Antihistamines	82	37	1,273	34.41
Barbituric acid derivatives, total	789	481	2,934	6.09
5,5-Diethylbarbituric acid (Barbital)	44	...	...	...
5-Ethyl-5-phenylbarbituric acid (Phenobarbital) (Luminal)	449	324	1,363	4.20
5-Ethyl-5-phenylbarbituric acid, calcium and sodium salts	55	38	169	4.45
All other	241	119	1,402	[illegible]
Bile acids and salts, total	264	186	3,615	19.44
Dehydrocholic acid	43	37	646	17.47
Desoxycholic acid	83	75	1,513	20.22
All other	138	74	1,456	19.68
5-Chloro-7-iodo-8-quinolinol	27	5	33	6.27
Caffeine, natural and synthetic	2,279	1,920	7,745	4.03
Caffeine derivatives	22	31	84	2.73
5,7-Diiodo-8-quinolinol	27	12	81	6.75
Homatropine methyl bromide	(11)	(11)	131	258.34
Hormones (steroid)	8	3	4,169	1,512.15
Papaverine base and hydrochloride	...	7	401	57.29
Phenothiazine	5,486	5,323	2,504	.47
Rutin	13	9	122	14.05
Terpinol hydrate	17	...	...	...
Theobromine and derivatives, total	364	270	1,273	4.71
Theobromine sodium acetate	...	1	6	5.80
Theobromine sodium salicylate	83	...	...	...
All other	281	269	1,267	4.71
Theophylline base (1,3-Dimethylxanthine)	176	124	[illegible]	5.17
Theophylline derivatives	212	111	634	5.71
Vitamins, total	2,546	2,050	56,707	[illegible]
A (Alcohol and esters),[12] from all sources	234	211	8,573	(13)
B_1 (Thiamin hydrochloride)	268	184	12,060	[illegible]
B_2 (Riboflavin) for human and for animal and poultry consumption, 100%	245	168	8,622	51.32
B_6 (Pyridoxine)	22	16	3,345	[illegible]
B_{12}, all grades	(14)	(14)	11,664	[illegible]
D_2 (Irradiated ergosterol)	(15)	(15)	578	(13)
D_3 (Irradiated animal sterol)	(16)	(16)	1,638	(13)
Niacin (Nicotinic acid), niacinamide, and niacinamide hydrochloride	1,596	1,328	4,907	[illegible]
All other	181	144	6,000	[illegible]
All other alicyclic and heterocyclic medicinals	3,489	2,735	11,076	[illegible]
MEDICINALS, ACYCLIC				
Total	12,228	8,779	26,923	[illegible]
Chemicals for which separate statistics may not be shown	4,828	3,577	3,235	.92
Chemicals for which separate statistics are shown below	7,400	5,202	23,588	[illegible]
Acetylcholine halides	(17)	(17)	[illegible]	[illegible]
Acetyl-β-methylcholine chloride	(18)	(18)	21	[illegible]
Amino acids, total	1,526	1,251	3,104	[illegible]
β-Alanine	207	152	541	[illegible]
All other	1,319	1,099	2,563	[illegible]
Calcium succinate	106	82	[illegible]	[illegible]
Chloretone (tert-Trichlorobutyl alcohol)	36	...	...	...
Choline bitartrate	56	52	111	[illegible]

See footnotes at end of table.

TABLE 17A.--*Synthetic organic chemicals: United States production and sales of medicinals, 1951*--Continued

Chemical	Production[1]	Sales[2]		
		Quantity	Value	Unit value[3]
MEDICINALS, ACYCLIC--Continued				
Choline chloride for animal and poultry feed and for use as intermediate	1,000 pounds 3,179	1,000 pounds 1,713	1,000 dollars 1,280	Per pound $0.75
Choline chloride, medicinal grade only	79	62	116	1.89
Choline dihydrogen citrate	173	166	342	2.06
Glycerophosphoric acid salts:				
Calcium glycerophosphate	407	296	586	1.98
Manganese glycerophosphate	42	39	177	4.55
Methyl iodide, all grades	6	9	29	3.30
Vitamins, total	1,792	1,532	17,700	11.55
B_5 (Pantothenic acid and derivatives)	240	170	4,622	27.19
C (Ascorbic acid and derivatives)	1,552	1,362	13,078	9.60

[1] Production of medicinals in bulk only by original manufacturers. The statistics do not include the production of finished preparations, such as tablets, capsules, and ampoules, which are manufactured from bulk medicinals.

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

[3] Calculated on the exact (i.e., unrounded) figures.

[4] Production of adrenaline totaled 165 pounds; sales totaled 36 pounds.

[5] The data for benzyl alcohol are included in the section on flavor and perfume materials.

[6] Production and sales of N,α-dimethylphenethylamine hydrochloride totaled 980 pounds.

[7] Production of vitamin K and derivatives totaled 1,900 pounds; sales amounted to 700 pounds.

[8] Penicillin salts, in terms of international units, were reported as follows:

Chemical	Production	Sales		
		Quantity	Value	Unit value
	Billion international units	Billion international units	1,000 dollars	Per billion international units
Total	318,622	290,407	137,217	$569
Penicillin potassium	101,653	85,353	39,515	463
Penicillin procaine	191,749	146,559	88,572	604
Penicillin sodium	...	17,540	8,769	500
All other	25,220	955	661	692

[9] Commercial sales are based on international units.

[10] Quantities reported in units have been converted to pounds, using as a factor the average units per pound of the medicinal grade as determined by the Food and Drug Administration.

[11] Production of homatropine methyl bromide totaled 980 pounds; sales totaled 940 pounds.

[12] Production of vitamin A alcohol and esters made from lemon-grass oil and fish oil totaled 67,167 billion U.S.P. units; sales totaled 53,706 billion U.S.P. units.

[13] Commercial sales are based on U.S.P. units.

[14] Production of vitamin B_{12} totaled 84 pounds; sales totaled 48 pounds.

[15] Production of vitamin D_2 totaled 25,982 billion U.S.P. units; sales totaled 22,381 billion. Calculated at the rate of 18.14 billion units per pound, production totaled 1,400 pounds and sales totaled 1,200 pounds.

[16] Production of vitamin D_3 totaled 29,029 billion U.S.P. units; sales totaled 19,220 billion. Calculated at the rate of 18.14 billion units per pound, production totaled 1,300 pounds and sales totaled 1,000 pounds.

[17] Production of acetylcholine bromide and chloride totaled 400 pounds. Sales totaled 360 pounds.

[18] Production and sales of acetyl-β-methylcholine chloride totaled 300 pounds each.

as in 1950, penicillin procaine was the penicillin salt produced in largest volume. In 1951 the output of dihydrostreptomycin was 315,000 pounds--nearly double that in 1950; sales totaled 264,000 pounds in 1951, valued at 41 million dollars. Production of streptomycin, however, continued to decline in 1951, decreasing to 39,000 pounds from the 46,000 pounds produced in 1950. The combined output in 1951 of other antibiotics, such as aureomycin, chloroamphenicol, and terramycin, totaled 307,000 pounds; sales were 268,000 pounds, valued at 133 million dollars. The output of antibiotics for animal feed supplements in 1951 was 236,000

pounds (based on average units per pound of the medicinal grade). Sales totaled 196,000 pounds, valued at 18 million dollars.

Production in 1951 of all antihistamine medicinals amounted to 142,000 pounds--a substantial decline from the 277,000 pounds reported for 1950. Among other important medicinals produced in 1951 were the vitamins. Production of vitamins as a group in that year amounted to 4.3 million pounds; sales totaled 3.6 million pounds, valued at 74 million dollars. The output of some of the more important vitamins in 1951 was as follows: Niacin and niacinamide, 1.6 million pounds; thiamin hydrochloride, 268,000 pounds; riboflavin, 245,000 pounds; and vitamin A alcohol and esters, 234,000 pounds (67 trillion U.S.P. units).

Flavor and Perfume Materials

Flavor and perfume materials, which are chemicals with desirable flavors or odors, are used in the manufacture of food, beverages, cosmetics, and soaps, and to disguise unpleasant odors in industrial products. This report covers flavor and perfume materials derived from natural products by actual chemical processes, and from coal tar. It does not cover purely natural products, such as floral essences, essential oils, and other perfume materials obtained by simple extraction or by distillation from natural vegetable and animal sources.

On the basis of their chemical structure, the flavors and perfumes covered in this report are grouped as either cyclic or acyclic materials. Cyclic materials are further classified as (1) benzenoid and napthalenoid, and (2) terpenoid, heterocyclic, and alicyclic. Statistics on the production and sales of flavor and perfume materials in 1951 are given in table 18A.[5]

Production of flavor and perfume materials as a group totaled 30 million pounds in 1951, an increase of 5 percent from the 28 million pounds reported for 1950. Sales in 1951 were 25 million pounds, valued at 40 million dollars, compared with 25 million pounds, valued at 38 million dollars, in 1950.

The output of benzenoid and naphthalenoid flavor and perfume materials in 1951 was 12 million pounds, an increase of 4 percent over the 11 million pounds reported for 1950. Sales in 1951, which totaled 10 million pounds, valued at 12 million dollars, were approximately the same as in 1950. Methyl salicylate (synthetic wintergreen oil) and synthetic vanillin are the two most important products in this group. In 1951 production of methyl salicylate was 3 million pounds--approximately the same as in 1950. Production of synthetic vanillin was 1 million pounds--an increase of 4 percent over that in 1950.

In 1951 the output of terpenoid, heterocyclic, and alicyclic flavor and perfume materials was 7.4 million pounds, compared with 7.5 million pounds in 1950--a decline of 1 percent. Sales in 1951 were 5.1 million pounds, valued at 11.0 million dollars, compared with 5.6 million pounds, valued at 11.6 million dollars, in 1950. In volume of production, the most important chemicals in this group in 1951 were terpineols (α - and β -) (1,266,000 pounds), coumarin (521,000 pounds), and menthol, technical and U.S.P. (398,000 pounds).

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

TABLE 18A.--*Synthetic organic chemicals: United States production and sales of flavor and perfume materials, 1951*

[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 confidential and may not be published, or where no data were reported.) Table 18B in part III lists alphabetically all flavor and perfume materials for which data on production or sales were reported and identifies the manufacturer of each]

Material	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	29,806	25,308	40,499	$1.60
FLAVOR AND PERFUME MATERIALS, CYCLIC				
Total	18,934	14,812	23,291	1.57
Materials for which separate statistics may not be shown	7,283	4,999	7,888	1.58
Materials for which separate statistics are shown below	11,651	9,813	15,403	.78
Benzenoid and Naphthalenoid				
Total	11,565	9,757	12,283	1.25
a-Amylcinnamaldehyde	175	132	216	1.64
Amyl salicylate	315	245	180	.74
Anisaldehyde	189	164	371	2.26
Benzyl acetate	536	460	270	.59
Benzyl alcohol [2]	721	639	344	.54
Benzyl benzoate,[3]				
Benzyl butyrate	...	2	3	1.41
Benzyl cinnamate	...	2	4	2.74
Benzyl propionate	9	8	10	1.20
Benzyl salicylate	33	31	45	1.45
p-Cresyl acetate	2	...	...	...
Ethyl benzoate	...	3	2	.66
Ethyl methylphenylglycidate (Ethyl α,β-epoxy-β-methylhydrocinnamate)	3	4	21	5.40
Eugenol	79	64	190	4.96
Isobutyl phenylacetate (Isobutyl a-toluate)	23	15	24	1.59
Isoeugenol	49	...	...	...
Methyl cinnamate	55	50	62	1.24
Methyl phenylacetate (Methyl a-toluate)	534	493	367	.74
Methyl salicylate (Synthetic wintergreen oil)	3,023	2,701	1,217	.45
Phenethyl acetate	35	33	48	1.43
Phenethyl alcohol	823	647	903	1.40
Phenethyl isovalerate	...	1	5	4.30
Phenethyl phenylacetate (Phenethyl a-toluate)	...	1	4	3.63
Vanillin	999	906	2,634	2.93
All other benzenoid and naphthalenoid materials	3,962	3,156	5,343	1.69
Terpenoid, Heterocyclic, and Alicyclic				
Total	7,369	5,055	11,008	2.18
Cedryl acetate	28	22	50	2.27
Citral	38	35	235	6.63
Citronellol	92	72	204	2.85
Citronellyl acetate	2	1	6	4.01
Coumarin	521	460	1,252	2.72
Geraniol	298	260	535	2.06
Geranyl acetate	45	38	87	2.32
Geranyl butyrate	1	1	4	4.49
Geranyl formate	...	1	7	5.22
Hydroxycitronellal	89	77	563	7.35
a-Ionone	27	17	152	8.70
Ionone, other [4]	53	39	241	6.15
Linalool	102	69	410	5.94
Linalyl acetate	124	93	512	5.50
Menthol, synthetic, total	398	260	1,751	6.72
Tech	172	...	...	...
U.S.P.	226	...	...	...
Methylionones (α, β, and α- and β-)	125	99	768	7.72
Nerol	2	2	31	12.71
Piperonal (Heliotropin)	330	295	820	2.77
Rhodinol	7	4	160	44.40
Safrole	197	62	67	1.08
Terpineols (α, β, and α- and β-)	1,266	1,098	259	.24
Terpinyl acetate	287	194	109	.56

See footnotes at end of table.

TABLE 18A.--*Synthetic organic chemicals: United States production and sales of flavor and perfume materials, 1951*--Continued

Material	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued				
Terpenoid, Heterocyclic, and Alicyclic--Continued				
Terpinyl propionate	6	8	13	$ 1.54
Vetivenyl acetate	10	7	227	33.75
All other terpenoid, heterocyclic, and alicyclic materials [5]	3,321	1,843	2,345	1.38
FLAVOR AND PERFUME MATERIALS, ACYCLIC				
Total	10,872	10,496	17,208	1.66
Materials for which separate statistics may not be shown	645	368	578	1.57
Materials for which separate statistics are shown below	10,227	10,128	16,630	1.66
Allyl caproate	7	4	11	2.66
Amyl butyrate	5	4	4	1.07
2,3-Butanedione (Diacetyl)	10	10	43	4.26
n-Butyl butyrate	2	...	...	...
Ethyl butyrate	165	158	100	.63
Ethyl caprylate (Ethyl octoate)	1	1	2	2.35
Ethyl laurate	4	...	...	...
Glutamic acid, monosodium salt (Monosodium glutamate)	10,001	9,926	16,442	1.66
Isoamyl butyrate	30	23	18	.78
γ-Undecalactone (4-Hydroxyhendecanoic acid, γ-lactone)	2	2	10	5.39

[1] Calculated on the exact (i.e., unrounded) figures.
[2] Includes some technical and medicinal benzyl alcohol.
[3] The data for benzyl benzoate are included in the section on medicinal chemicals.
[4] Includes β-ionone and α- and β-ionone mixtures.
[5] Includes chemically modified essential oils.

Production of acyclic flavor and perfume materials in 1951 totaled 11 million pounds, an increase of 13 percent over the 10 million pounds produced in 1950. In volume of production, the most important material in this group in 1951 was monosodium glutamate, the output of which amounted to 10 million pounds--an increase of 17 percent over that in 1950.

Plastics and Resin Materials

The materials covered in this section of the report are synthetic plastics and resins formed by the polymerization or condensation of organic chemicals in combination with necessary plasticizers, fillers, extenders, colors, and stabilizers. Some of these materials can be formed into finished products by casting, by molding under heat and pressure, and by extrusion. Others are used as adhesives, for laminating paper, wood, and textiles, for the treatment of textiles and paper, and for surface coatings. Some plastics materials are processed to form sheeting and film of varying thicknesses. Cellulose plastics, being derived from natural sources, are not included in the main part of this report. (See appendix D.)

Except for those on vinyl resins, the statistics in this report on the production and sales of plastics and resin materials are given on a dry basis. The data, therefore, represent the total dry weight of the materials, including the weight of the resin, plasticizers, fillers, extenders, stabilizers, and colors, but excluding the weight of solvents, water, and other liquid diluents. Statistics on vinyl resins are given on the basis of net resin content.

In table 19A,[6] statistics on the production and sales of plastics and resins in 1951 are given according to chemical composition; in table 20 they are given according to broad end uses. In 1951 the output of all plastics and resin materials amounted to 2,441 million pounds--an increase of 14 percent over the 2,151 million pounds reported for 1950. Sales in 1951 amounted to 2,024 million pounds, valued at 711 million dollars, compared with 1,876 million pounds, valued at 571 million dollars, in 1950.

Total production of benzenoid plastics and resin materials in 1951 was 1,422 million pounds, an increase of 11 percent over the output of 1,284 million pounds in 1950. Sales of benzenoid plastics and resin materials in 1951 were 1,153 million pounds, valued at 327 million dollars, compared with 1,057 million pounds, valued at 259 million dollars, in 1950. In 1951 phenolic and other tar-acid resins comprised the group of benzenoid plastics and resins produced in the largest quantity. Production of these resins in 1951 amounted to 474 million pounds, compared with 451 million pounds in 1950. Sales of phenolic and other tar-acid resins in 1951 were 408 million pounds, valued at 111 million dollars. In 1951 styrene resins ranked second in volume of production in the benzenoid group. The output of styrene and styrene derivative polymer and copolymer resins in 1951 was 394 million pounds, compared with 355 million pounds in 1950. Sales of styrene resins in 1951 were 356 million pounds, valued at 118 million dollars, compared with 355 million pounds, valued at 101 million dollars, in 1950. Phthalic alkyd resins ranked third in volume of output among the benzenoid resins in 1951. In that year production totaled 368 million pounds; sales were 211 million pounds, valued at 77 million dollars.

Production of nonbenzenoid plastics and resin materials in 1951 was 1,020 million pounds, compared with 867 million pounds in 1950--an increase of 18 percent. Sales of nonbenzenoid plastics and resin materials in 1951 were 872 million pounds, valued at 385 million dollars. In this group, vinyl resins were produced in the largest volume in 1951. Production of vinyl resins in 1951 was 476 million pounds, or 25 percent more than the 381 million pounds reported for 1950. Sales of vinyl resins in 1951 were 388 million pounds, valued at 165 million dollars. Production of urea and melamine resins in 1951 was 237 million pounds--an increase of 8 percent over that in 1950. Sales in 1951 amounted to 214 million pounds, valued at 64 million dollars.

In table 20, the statistics on production and sales of plastics and resins, by uses, are on the same basis as those given in table 19A; the statistics have been compiled principally from the Tariff Commission's monthly reports on production and sales of these materials. In 1951 the largest single use for plastics and resins was for molding and extrusion; this use accounted for more than one-third of all the plastics materials produced in that year. The next largest use for plastics and resin materials was the manufacture of protective coatings.

[6] See also table 19B, part III, which lists these products according to chemical composition, and identifies the manufacturers.

TABLE 19A.--*Synthetic organic chemicals: United States production and sales of plastics and resin materials, grouped according to chemical composition, 1951*

[Quantities and values are given in terms of the total weight of the materials (dry basis). Listed below are all synthetic plastics and resin materials for which any reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 19B in part III lists all plastics and resin materials for which data on production or sales were reported and identifies the manufacturer of each]

Material	Production	Sales: Quantity	Sales: Value	Sales: Unit value
	1,000 pounds, dry basis[1]	*1,000 pounds, dry basis*[1]	*1,000 dollars*	*Per pound*
Grand total	2,441,432	2,024,116	711,410	$0.35
PLASTICS AND RESIN MATERIALS, BENZENOID				
Total	1,421,762	1,152,542	326,550	.28
Materials for which separate statistics may not be shown[2]	8,688	4,444	2,258	.51
Materials for which separate statistics are shown below	1,413,074	1,148,098	324,292	.28
Coumarone-indene and petroleum polymer resins	176,901	173,270	18,960	.11
Phenolic and other tar-acid resins, total	473,587	408,291	110,541	.27
Unmodified, total	425,961	365,508	99,083	.27
p-tert-Amylphenol-and butylphenol-formaldehyde	8,208	7,641	2,976	.39
Cresols-formaldehyde	7,483	6,642	2,128	.32
Cresols-xylenols-formaldehyde	2,158	...	...	...
Cresylic acid-formaldehyde	5,140	...	...	...
Phenol-p-tert-butylphenol-formaldehyde	1,346	1,166	518	.44
Phenol-cresols-formaldehyde	9,390	6,036	2,467	.41
Phenol-cresols-xylenols-formaldehyde	8,207	...	...	...
Phenol-cresylic acid-formaldehyde	3,346	...	...	...
Phenol-formaldehyde	357,741	320,890	81,124	.25
Phenol-furfural	3,228	...	...	...
Phenol-resorcinol-formaldehyde	1,364	1,071	808	.75
Resorcinol-formaldehyde	1,496	1,501	1,351	.90
Xylenols-formaldehyde	590	586	198	.34
All other	16,264	19,975	7,513	.38
Modified, total	47,626	42,783	11,458	.27
Except rosin and rosin ester modified, total	9,983	7,213	2,643	.37
Phenol-formaldehyde-aniline	3,600	...	...	...
Phenol-formaldehyde, sulfonated	407	157	96	.61
All other[3]	5,976	7,056	2,551	.36
Rosin and rosin ester modified, total	37,643	35,570	8,815	.25
Bisphenol-formaldehyde-rosin and rosin ester	9,536	9,016	2,031	.23
p-tert-Butylphenol-formaldehyde-rosin and rosin ester	4,388	4,184	972	.23
Phenol-formaldehyde-glycerol-rosin and rosin ester	11,835	10,924	2,638	.24
Phenol-formaldehyde-rosin and rosin ester	8,552	8,372	2,312	.28
All other	3,334	3,086	862	.28
Phthalic alkyd resins, total	368,352	210,582	76,815	.36
Unmodified, total[4]	260,833	130,179	47,543	.37
Phthalic anhydride-glycerol	146,652	69,872	26,686	.38
Phthalic anhydride-glycerol-glycol	6,103	2,875	976	.34
Phthalic anhydride-glycerol-pentaerythritol	29,861	9,699	3,329	.34
Phthalic anhydride-glycerol-sorbitol	756	...	...	...
Phthalic anhydride-glycol-pentaerythritol	19,776	14,948	4,914	.33
Phthalic anhydride-pentaerythritol	55,596	30,759	10,792	.35
All other	2,493	2,026	846	.41
Modified, total	107,519	80,403	29,272	.36
Except rosin and rosin ester and styrene modified, total	50,351	41,879	16,463	.39
Phthalic anhydride-adipic acid-glycol	122	...	...	...
Phthalic anhydride-fumaric acid-glycerol	1,051	268	180	.67
Phthalic anhydride-glycerol-phenol-formaldehyde	2,411	460	210	.46
Phthalic anhydride-maleic anhydride-glycerol	27,521	24,151	9,134	.38
Phthalic anhydride-maleic anhydride-glycerol-pentaerythritol	11,245	10,786	4,645	.43
Phthalic anhydride-maleic anhydride-pentaerythritol	806	905	262	.29
All other	7,105	5,327	2,667	.50
Rosin and rosin ester modified, total	57,168	38,524	12,809	.33
Phthalic anhydride-glycerol-rosin and rosin ester	26,273	23,514	6,662	.28
Phthalic anhydride-glycerol-pentaerythritol-phenol-formaldehyde-rosin ester	596	...	...	...
Phthalic anhydride-glycerol-pentaerythritol-rosin and rosin ester	3,996	...	...	...
Phthalic anhydride-glycerol-phenol-formaldehyde-rosin and rosin ester	8,125	...	...	...
Phthalic anhydride-maleic anhydride-glycerol-rosin and rosin ester	2,066	864	444	.51
Phthalic anhydride-maleic anhydride-glycerol-phenol-formaldehyde-rosin and rosin ester	1,264	601	289	.48

See footnotes at end of table.

TABLE 19A.--*Synthetic organic chemicals: United States production and sales of plastics and resin materials, grouped according to chemical composition, 1951*--Continued

Material [1]	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds, dry basis[2]	*1,000 pounds, dry basis*[2]	*1,000 dollars*	*Per pound*
PLASTICS AND RESIN MATERIALS, BENZENOID--Continued				
Phthalic alkyd resins--Continued				
Modified--Continued				
Rosin and rosin ester modified--Continued				
Phthalic anhydride-maleic anhydride-pentaerythritol-rosin ester	977	...	...	...
Phthalic anhydride-maleic anhydride-pentaerythritol-tall oil	637	...	...	...
Phthalic anhydride-pentaerythritol-rosin and rosin ester	2,420	266	660	$2.41
Phthalic anhydride-pentaerythritol-tall oil	2,999	1,085	289	.27
All other	7,819	12,212	4,519	.37
Styrene and styrene derivative polymer and copolymer resins, total	394,234	355,955	117,976	.33
Polystyrene	271,999	248,058	79,487	.32
Styrene-alkyd polyesters, total	21,581	17,461	8,147	.47
Phthalic anhydride-glycerol-styrene	5,826	...	...	...
All other	15,755	17,461	8,147	.47
Styrene-butadiene copolymer	56,666	51,832	17,307	.33
All other styrene resins[3]	43,990	38,604	13,035	.34
PLASTICS AND RESIN MATERIALS, NONBENZENOID				
Total	1,019,670	871,574	384,860	.44
Materials for which separate statistics may not be shown[4]	160,607	151,003	126,020	.83
Materials for which separate statistics are shown below	859,063	720,571	258,840	.36
Acetone-formaldehyde resins	118	132	158	1.20
Alkyd resins (except phthalic), total	72,233	50,496	15,564	.31
Unmodified, total	12,343	10,241	5,553	.54
Maleic anhydride-pentaerythritol	759	...	...	...
All other[5]	11,584	10,241	5,553	.54
Modified, total	59,890	40,255	10,011	.25
Fumaric acid polyesters, total	5,281	4,200	1,254	.30
Fumaric acid-glycerol-rosin and rosin ester	2,212	1,800	484	.27
All other	3,069	2,400	770	.32
Maleic anhydride polyesters, total	33,207	35,523	8,568	.24
Maleic anhydride-glycerol-rosin and rosin ester	20,936	15,776	4,261	.27
Maleic anhydride-glycerol-pentaerythritol-rosin and rosin ester	3,100	2,718	672	.25
Maleic anhydride-pentaerythritol-rosin and rosin ester	19,766	15,560	3,237	.21
Maleic anhydride-pentaerythritol-tall oil	6,775	...	...	...
All other	2,630	1,469	398	.27
All other modified alkyd resins (except phthalic)	1,402	532	189	.36
Rosin adduct resins	9,290	8,514	2,273	.27
Rosin esters, unmodified, total	63,303	59,109	11,216	.19
Rosin-glycerol	28,465	25,977	5,634	.22
Rosin-glycerol-pentaerythritol	1,205	997	210	.21
All other	33,633	32,131	5,372	.17
Silicone resins	1,282	...	...	...
Urea and melamine resins, total	237,059	214,307	64,377	.30
Urea-formaldehyde type, total[6]	189,643	171,549	43,131	.25
Butylurea-formaldehyde	13,436	8,895	4,884	.55
Urea-formaldehyde	171,674	158,407	36,952	.23
All other	4,533	4,247	1,295	.30
Melamine-formaldehyde type[7]	47,416	42,758	21,246	.50
Vinyl and vinyl copolymer resins (resin content), total	475,778	388,017	165,252	.43
Polyvinyl acetate (resin content)	32,549	27,488	11,785	.43
Polyvinyl butyral (resin content)	14,384	14,307	13,601	.95

See footnotes at end of table.

TABLE 19A.--*Synthetic organic chemicals: United States production and sales of plastics and resin materials, grouped according to chemical composition, 1951*--Continued

Material	Production	Sales		
		Quantity	Value	Unit value
PLASTICS AND RESIN MATERIALS, NONBENZENOID--Continued	*1,000 pounds, dry basis*[1]	*1,000 pounds, dry basis*[1]	*1,000 dollars*	*Per pound*
Vinyl and vinyl copolymer resins (resin content)--Continued				
Polyvinyl chloride and copolymers (resin content), total	410,965	333,100	130,564	$0.39
Polyvinyl chloride (resin content)	166,123	125,360	49,465	.39
All other (resin content)	244,842	207,740	81,099	.39
All other vinyl and vinyl copolymer resins (resin content)[10]	17,880	13,122	9,302	.71

[1] Dry basis, for the purpose of this report, is defined as the total weight of the plastics or resin material, including resin, plasticizers, fillers, extenders, colors, and stabilizers, but excluding the weight of solvents, water, and other liquid diluents.

[2] Includes data for aniline-formaldehyde, epichlorohydrin-phenol, and toluenesulfonamide resins.

[3] Includes data for phenolic and other tar-acid resins modified with oil or fatty acids, vinyl derivatives, styrene, alcohols, and other materials except rosin and rosin esters.

[4] Includes data for some materials containing oil and fatty acids.

[5] Includes data for styrene-acrylonitrile, and styrene-isoprene copolymers, methyl styrene, and other styrene resins.

[6] Includes data for acrylic, polyamide (Nylon), polyethylene, polytetrafluoroethylene, and other nonbenzenoid synthetic plastics and resins.

[7] Includes data for unmodified esters of adipic, azelaic, citric, fumaric, and other acids.

[8] Includes data for urea, substituted urea, and modified urea resins. Mixed urea and melamine resins are included in the statistics for the melamine-formaldehyde type.

[9] Includes data for melamine, substituted melamine, and modified melamine resins, and for mixed urea and melamine resins.

[10] Includes data for polyvinyl alcohol and formal, for some latices, and for unspecified materials.

TABLE 20.--*Synthetic organic chemicals: United States production and sales of plastics and resin materials, grouped according to classes and uses, 1951*

[In thousands of pounds, dry basis[1]]

Material	Production	Sales
Phenolic and other tar-acid resins, total	473,587	406,291
Laminating resins	74,199	47,482
Adhesive resins	41,874	38,007
Molding and casting materials	229,829	205,623
Protective-coating resins, total	53,914	46,009
Unmodified, and modified except by rosin	29,209	23,404
Modified by rosin and rosin ester	24,709	22,605
Resins for miscellaneous uses	73,811	71,170
Urea and melamine resins, total	237,059	214,307
Adhesive resins	78,668	75,109
Textile-treating resins	34,252	29,345
Paper-treating resins	18,526	17,795
Protective-coating resins	25,489	17,529
Resins for miscellaneous uses[2]	80,124	74,529
Styrene and styrene derivative polymer and copolymer resins, total[3]	396,234	359,955
Molding materials	269,947	244,866
Protective-coating resins	51,422	48,006
Resins for miscellaneous uses	72,865	63,083
Vinyl and vinyl copolymer resins (resin content), total	475,778	388,017
Sheeting and film (resin content)	189,037	148,020
Adhesive resins (resin content)	22,806	17,647
Textile- and paper-treating resins (resin content)	47,531	44,904
Molding and extrusion materials (resin content)	149,110	131,091
Resins for protective coatings (resin content)	22,129	21,740
Resins for miscellaneous uses (resin content)	51,165	25,015
Alkyd resins, for protective coatings, total[4]	440,585	261,078
Phthalic alkyd resins, total	368,352	210,582
Unmodified	260,833	130,179
Modified[5]	107,519	80,403
Polybasic acid alkyd resins (except phthalic), total	72,233	50,496
Unmodified	12,343	10,241
Modified[5]	59,890	40,255
Rosin modifications, for protective coatings, total	72,275	67,235
Rosin adduct resins	9,290	8,514
Rosin esters, unmodified, total	62,985	58,721
Rosin-glycerol	28,465	25,977
All other	34,520	32,744
Coumarone-indene and petroleum polymer resins	176,901	173,270
All other synthetic plastics and resin materials, total[6]	170,695	151,579
Molding materials	82,908	73,512
Protective-coating resins	22,037	21,249
Resins for miscellaneous uses	65,750	60,818

[1] Dry basis, for the purpose of this report, is defined as the total weight of the plastic or resin material, including resin, plasticizers, extenders, fillers, colors, and stabilizers, but excluding the weight of solvents, water, and other liquid diluents. Statistics on vinyl resins are on the basis of resin content.

[2] Includes data for laminating resins and for molding materials.

[3] Includes data for styrene-alkyd polyester resins.

[4] Alkyd resins are used chiefly for protective coatings, but some quantities reported for other uses are included in these statistics.

[5] Includes data for all modifications with rosin and rosin esters, and other materials, except styrene.

[6] Includes data for acrylic, aniline-formaldehyde, epichlorohydrin, polyamide (Nylon), polyethylene, silicone, and other synthetic plastics and resin materials.

NOTE.--The figures in the above table are based on the Commission's monthly reports on the production and sales of synthetic plastics and resin materials. The group totals given in this table are in substantial agreement with those derived from the Commission's release for January 1952 which gave a summation of the data reported monthly for 1951. Changes in classification of some products in this table result in differences in the detail figures from those given in the January 1952 report.

Rubber-Processing Chemicals

Rubber-processing chemicals are organic compounds used in the compounding of natural and synthetic rubbers before their manufacture into finished rubber goods. In this report, statistics are given for cyclic and acyclic compounds by uses such as accelerators, antioxidants, and peptizers. Statistics on the production and sales of rubber-processing chemicals in 1951 are given in table 21A.[7]

Production of rubber-processing chemicals as a group in 1951 was 138 million pounds, compared with 115 million pounds in 1950, or an increase of 21 percent. Sales in 1951 were 107 million pounds, valued at 58 million dollars, compared with 89 million pounds, valued at 45 million dollars, in 1950.

TABLE 21A.--*Synthetic organic chemicals: United States production and sales of rubber-processing chemicals, 1951*

[Listed below are all rubber-processing chemicals for which any reported data on production or sales may be published. Table 21B in part III lists separately all rubber-processing chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	138,[illegible]	[illegible],711	[illegible],[illegible]	[illegible]
RUBBER-PROCESSING CHEMICALS, CYCLIC				
Total	116,[illegible]	[illegible],[illegible]	43,[illegible]	[illegible]
Accelerators, total	[illegible]	[illegible]	[illegible]	[illegible]
Butyraldehyde-aniline	[illegible]	[illegible]	[illegible]	[illegible]
Guanidines	[illegible]	[illegible]	[illegible]	[illegible]
Thiazole derivatives, total	47,[illegible]	[illegible]	12,[illegible]	[illegible]
2,2'-Dithiobis [benzothiazole] (2,2'-Benzothiazyl disulfide)	17,[illegible]	[illegible]	[illegible]	[illegible]
2-Mercaptobenzothiazole	[illegible]	[illegible]	[illegible]	[illegible]
All other	[illegible]	[illegible]	[illegible]	[illegible]
All other accelerators	[illegible]	[illegible]	[illegible]	[illegible]
Antioxidants, total	[illegible]	[illegible]	[illegible]	[illegible]
Amino or hydroxy compounds	[illegible]	[illegible]	[illegible]	[illegible]
All other	[illegible]	[illegible]	[illegible]	[illegible]
Peptizers, tackifiers, and inhibitors	2,563	2,511	2,[illegible]	[illegible]
RUBBER-PROCESSING CHEMICALS, ACYCLIC				
Total	22,[illegible]	[illegible]	[illegible]	[illegible]
Accelerators, total	[illegible]	[illegible]	[illegible]	[illegible]
Diethyldithiocarbamic acid, zinc salt[1]	[illegible]	[illegible]	[illegible]	[illegible]
Tetramethylthiuram sulfides, total[2]	[illegible]	[illegible]	[illegible]	[illegible]
Tetramethylthiuram disulfide	[illegible]	[illegible]	[illegible]	[illegible]
Tetramethylthiuram mono- and tetrasulfide	[illegible]	[illegible]	[illegible]	[illegible]
All other	[illegible]	[illegible]	[illegible]	[illegible]
Peptizers, total	[illegible]	[illegible]	[illegible]	[illegible]
Dodecyl mercaptans	[illegible]	[illegible]	[illegible]	[illegible]
All other	[illegible]	[illegible]	[illegible]	[illegible]

[1] The dithiocarbamates for which data are included in this table are used entirely in the processing of natural and synthetic rubbers. Data on dithiocarbamates which are used as fungicides are included in the section "Pesticides and Other Organic Agricultural Chemicals."

[2] Includes data for small amounts of tetramethylthiuram sulfides reported as produced for uses other than the processing of natural and synthetic rubbers.

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

The output of cyclic rubber-processing chemicals in 1951 amounted to 116 million pounds, an increase of 18 percent over the 98 million pounds reported for 1950. Sales in 1951 were 88 million pounds, valued at 44 million dollars, compared with 75 million pounds, valued at 34 million dollars, in 1950. In this report, statistics on cyclic accelerators are included for several chemical classes of compounds such as derivatives of thiazole and guanidine. Statistics on cyclic rubber-processing chemicals are also given according to use, such as accelerators, antioxidants, and peptizers, tackifiers, and inhibitors. Of the total production of cyclic rubber-processing chemicals in 1951, accelerators accounted for about 56 million pounds; antioxidants, for about 58 million pounds; and peptizers, tackifiers, and inhibitors as a group, for about 3 million pounds.

Production of acyclic rubber-processing chemicals in 1951 amounted to 22 million pounds, or 37 percent more than the 16 million pounds reported for 1950. Sales in 1951 were 19 million pounds, valued at 14 million dollars, compared with 14 million pounds, valued at 11 million dollars, in 1950. Accelerators and peptizers each accounted for about one-half of the output of acyclic rubber-processing chemicals in 1951.

Elastomers (Synthetic Rubbers)

Total production of elastomers (synthetic rubbers) in 1951 was 2,003 million pounds, an increase of 72 percent over the output reported for 1950. The increase in 1951 resulted from the heavy demand for rubber for civilian and defense uses, and from continuation of unsettled conditions in the areas that produce natural rubber. Sales of elastomers in 1951 amounted to 1,828 million pounds, valued at 515 million dollars. Statistics on production and sales of elastomers are given in table 22A.[8]

Production in 1951 of cyclic elastomers, which consisted entirely of the polybutadiene-styrene (Buna-S, GR-S) type, amounted to 1,561 million pounds, compared with 802 million pounds in 1950. All but a small fraction of the 1951 output was produced at Government-owned plants, under the supervision of the Office of Rubber Reserve, Reconstruction Finance Corporation. Sales in 1951 were 1,406 million pounds, valued at 352 million dollars, compared with sales of 880 million pounds, valued at 171 million dollars, in 1950--an increase of 60 percent in quantity and 106 percent in value. The GR-S type of synthetic rubber is used principally in the manufacture of tire casings for automobiles and trucks.

Production of the special-purpose types of acyclic elastomers in 1951 was 442 million pounds, an increase of 22 percent over the 364 million pounds reported for 1950. Sales in 1951 amounted to 422 million pounds, valued at 163 million dollars. Included in this group of elastomers are neoprene (used to make gasoline and oil hose and for other specialized purposes); GR-I, or butyl rubber (used to make inner tubes for automobile tires); polyvinyl elastomers; and silicone elastomers.

[8] See also table 22B, part III, which lists these products alphabetically and identifies the manufacturers.

TABLE 22A.--*Synthetic organic chemicals: United States production and sales of elastomers (synthetic rubbers),[1] 1951*

[Listed below are all synthetic elastomers for which reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 22B in part III lists alphabetically all elastomers for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production[2]	Sales[3]		
		Quantity	Value	Unit value
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	2,003,135	1,827,769	514,780	$0.28
ELASTOMERS, CYCLIC				
Polybutadiene-styrene type (GR-S, Buna S), total	1,560,856	1,406,196	351,549	.25
Produced at Government plants	1,555,861	...	...	...
Produced at private plants	[4] 4,995	...	...	...
ELASTOMERS, ACYCLIC				
Total	442,279	421,573	163,231	.39
Products for which separate statistics may not be shown[5]	19,921	19,089	13,166	.69
Products for which separate statistics are shown below	422,358	402,484	150,065	.37
Polybutadiene-acrylonitrile type (N type)	34,352	32,268	16,659	.52
Polychloroprene type (GR-M, Neoprene)	131,952	124,867	47,649	.38
Polyisobutylene-isoprene type (GR-I, Butyl)	166,000	155,958	32,961	.21
Polyvinyl type[6]	90,054	89,391	53,616	.60

[1] An elastomer is defined as a material which will stretch repeatedly to 150 percent or more and will return rapidly and with force to its approximate original shape.
[2] Statistics on production, except for polyvinyl and miscellaneous elastomers, are as reported to the Office of Rubber Reserve, Reconstruction Finance Corporation, and to the U. S. Department of Commerce.
[3] Quantities of sales of domestically produced elastomers (except for polyvinyl and miscellaneous types) were calculated from data on production, consumption, and inventories as supplied by the Department of Commerce. Values of sales of elastomers produced for the Office of Rubber Reserve were calculated from the base prices as established by that Office. The values of sales of polyvinyl, neoprene, N type, and miscellaneous elastomers were calculated from data reported to the Tariff Commission and from data obtained from trade journals.
[4] Includes data for high styrene (over 50% styrene) resins produced during January and February 1951. Data on such resins were excluded for the rest of the year.
[5] Includes data for thiokol, polyisobutylene, silicone, and chlorinated rubber elastomers.
[6] Includes data for polyvinyl butyral, polyvinyl alcohol, and polyvinyl chloride elastomers.

Plasticizers

Plasticizers are organic chemicals used in the production of synthetic plastics and resin materials to impart to the finished products certain necessary physical properties such as flexibility and rigidity. Statistics on the production and sales of plasticizers are given in table 23A.[9] The output of all plasticizers in 1951 was 281 million pounds, compared with the 243 million pounds reported for 1950, or an increase of 15 percent. Sales in 1951 were 210 million pounds, valued at 84 million dollars, compared with 187 million pounds, valued at 65 million dollars, in 1950.

The output of all cyclic plasticizers in 1951 was 204 million pounds, an increase of 13 percent over the 181 million pounds reported for 1950. Sales in 1951 amounted to 152 million pounds, valued at 57 million dollars, compared with 137 million pounds, valued at 46 million dollars, in 1950. The group of cyclic plasticizers produced in the largest volume in 1951 (as in 1950) was the esters of phthalic anhydride. Production of phthalic anhydride esters in 1951 was 157 million pounds, compared with 143 million pounds in 1950. Of the individual cyclic plasticizers, di-2-ethylhexyl phthalate was produced in the largest volume in 1951 (65 million pounds).

[9] See also table 23B, part III, which lists these products alphabetically and identifies the manufacturers.

TABLE 23A.--*Synthetic organic chemicals: United States production and sales of plasticizers, 1951*

[Listed below are all plasticizers for which reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 23B in part III lists all plasticizers for which data on production or sales were reported and identifies the manufacturers of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	280,704	210,060	84,033	$0.40
PLASTICIZERS, CYCLIC				
Total	203,790	151,777	57,446	.38
Chemicals for which separate statistics may not be shown[1]	22,007	20,851	7,427	.36
Chemicals for which separate statistics are shown below	181,783	130,926	50,019	.38
Phosphoric acid esters:				
Tricresyl phosphate	17,255	16,680	5,905	.35
Triphenyl phosphate	7,240	...	...	...
Phthalic anhydride esters, total	157,288	114,246	44,114	.39
Dibutyl phthalate	19,004	13,948	5,397	.39
Di-2-ethylhexyl phthalate	84,861	45,345	18,222	.40
Diethyl phthalate	17,938	12,018	3,550	.30
Di-iso-octyl phthalate	8,278	7,526	3,019	.40
Di(2-methoxyethyl) phthalate (Di(methyl cellosolve) phthalate)	1,976	...	...	...
Dimethyl phthalate	4,362	3,468	844	.24
Di-n-octyl phthalate	...	12,317	4,996	.41
All other[2]	40,869	19,604	8,086	.41
PLASTICIZERS, ACYCLIC				
Total	76,914	58,283	26,587	.46
Chemicals for which separate statistics may not be shown[3]	23,771	18,193	8,102	.45
Chemicals for which separate statistics are shown below	53,143	40,090	18,485	.46
Adipic acid esters, total	7,119	4,577	2,160	.47
Di(2-ethylhexyl) adipate	1,082	...	...	...
Di-iso-octyl adipate	2,455	1,346	622	.46
All other[4]	3,582	3,231	1,538	.48
Lauric acid esters, total	1,107	736	316	.43
1,2-Propylene glycol monolaurate	143	...	...	...
All other[5]	964	736	316	.43
Oleic acid esters, total	6,697	3,793	1,316	.40
Diethylene glycol mono-oleate	500	366	147	.40
Glyceryl mono-oleate	952	563	246	.44
Polyethylene glycol dioleate	31	17	7	.41
Polyethylene glycol mono-oleate	571	251	98	.39
All other[6]	4,643	2,596	1,018	.39
Phosphoric acid esters[7]	9,240	6,802	3,007	.44
Polyethylene glycol ester of coconut oil fatty acid	118	...	...	...
Ricinoleic acid and acetylricinoleic acid esters[8]	4,707	3,261	1,406	.43
Sebacic acid esters, total	7,133	5,563	4,351	.78
Dibutyl sebacate	2,812	...	...	...
All other[9]	4,321	5,563	4,351	.78
Stearic acid esters, total	17,022	15,356	5,729	.37
Butyl stearate	1,977	1,517	523	.34
Diethylene glycol monostearate	433	435	149	.34
Glyceryl monostearate	8,411	7,530	2,972	.39
1,2-Propylene glycol monostearate	170	163	66	.40
All other[10]	6,031	5,711	2,019	.35

[1] Includes data for synthetic camphor, coumarone-indene, toluenesulfonamides, phosphoric acid esters, tetrahydrofurfuryl oleate, and other cyclic plasticizers.
[2] Includes data for phthalic anhydride esters of phenols, fatty alcohols, castor oil, mono- and polyhydric alcohols, cellosolves, and phthalyl glycolates.
[3] Includes data for butyl and isopropyl myristate, polyethylene glycol esters of fatty acids, and esters of azelaic, citric, maleic, pelargonic, tartaric, and other acids.
[4] Includes data for adipic acid esters of monohydric alcohols, cellosolves, and glycols.
[5] Includes data for lauric acid esters of mono- and dihydric alcohols, and cellosolves.
[6] Includes data for methyl, ethyl, and butyl oleates, n-propyl oleate, glyceryl diacetyltartrate monooleate, glyceryl trioleate, and oleic acid esters of cellosolves and other alcohols.
[7] Includes data for tributyl, triethyl, and trioctyl phosphates, and for tributyl (cellosolve) phosphate.
[8] Includes ricinoleic and acetylricinoleic acid esters of mono-, di-, and polyhydric alcohols, and cellosolves.
[9] Includes data for sebacic acid esters of monohydric alcohols and cellosolves.
[10] Includes data for stearic, monohydroxystearic, and chlorinated stearic acid esters of monohydric alcohols, glycols, and cellosolves.

Production of acyclic plasticizers in 1951 amounted to 77 million pounds, compared with 63 million pounds in 1950, or an increase of 23 percent. Sales in 1951 were 58 million pounds, valued at 27 million dollars, compared with 50 million pounds, valued at 19 million dollars, in 1950. The stearic acid esters were the largest group of acyclic plasticizers produced in 1951. Production of these products in 1951 was 17 million pounds; sales were 15 million pounds, valued at 6 million dollars. Glyceryl monostearate was the acyclic plasticizer produced in largest volume in 1951.

Surface-Active Agents

The surface-active agents covered in this report include synthetic organic detergents, wetting agents, and emulsifying agents; soaps are excluded. As the data are given in terms of 100-percent active material, they exclude all inorganic salts, water, and other diluents.

Although they were originally developed as soap substitutes, surface-active agents have proved valuable in many other applications because of their varied and specific properties. Since they do not form insoluble precipitates, as do some soaps, surface-active agents are especially valuable as detergents in hard water. For certain industrial purposes, they are used as emulsifying and wetting agents for agricultural, leather, and textile chemicals; they are also used in dentifrices and shampoos.

Statistics on production and sales of surface-active agents in 1951 are given in table 24A.[10] In 1951, production of surface-active agents as a group totaled 693 million pounds, or 2.5 percent more than the 676 million pounds reported for 1950. Sales in 1951 were 590 million pounds, valued at 126 million dollars, compared with 555 million pounds, valued at 126 million dollars, in 1950.

Production in 1951 of all anion-active surface-active agents (sulfated and sulfonated cyclic and acyclic compounds) was 612 million pounds, or 21 million pounds more than the output in 1950. Sales in 1951 totaled 516 million pounds, valued at 99 million dollars, compared with 477 million pounds, valued at 101 million dollars, in 1950.

Production in 1951 of all cation-active surface-active agents (chiefly cyclic and acyclic nitrogen-containing compounds, non-sulfonated) was 30 million pounds; sales totaled 28 million pounds, valued at 10 million dollars. In 1951 the output of all polyhydric alcohol esters and ethers (generally nonionic materials) totaled 47 million pounds, compared with 51 million pounds in 1950--a decline of 7.8 percent. Sales in 1951 totaled 41 million pounds, valued at 17 million dollars, compared with 48 million pounds, valued at 15 million dollars, in 1950.

In volume of production, the principal items in this group in 1951 were as follows: The dodecylbenzenesulfonic acid type of surface-active agent (315 million pounds); petroleum aromatic sulfonates (83 million pounds); and sulfonated oils, fats, and waxes (43 million pounds).

[10] See also table 24B, part III, which lists these products alphabetically and identifies the manufacturers.

TABLE 24A.--*Synthetic organic chemicals: United States production and sales of surface-active agents,[1] 1951*

[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 confidential and may not be published or where no data were reported.) Table 24B in part III lists all surface-active agents for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	692,924	589,815	125,969	$0.21
SURFACE-ACTIVE AGENTS, CYCLIC				
Total	438,508	386,328	72,277	.19
Esters and others, nonsulfonated[2]	25,885	23,167	9,769	.42
Nitrogen-containing surface-active agents, nonsulfonated[3]	3,152	2,910	2,556	.88
Sulfated and sulfonated cyclic surface-active agents, total	429,471	360,251	59,952	.17
Alkyl benzenoid compounds, sulfated and sulfonated, total	317,633	269,736	45,313	.17
Dodecylbenzenesulfonic acid type	314,982	267,169	44,654	.17
All other	2,651	2,567	659	.26
Alkyl naphthalenoid compounds, sulfated and sulfonated:				
Amylnaphthalenesulfonic acid, mono and di, and salt	132	120	61	.51
Butylnaphthalenesulfonic acid, mono and di, and salt	1,166	1,060	406	.39
Isopropylnaphthalenesulfonic acid, mono and di, and salt	1,173	872	362	.42
Petroleum aromatic compounds, sulfonated, total	82,839	63,357	10,901	.17
Oil-layer-type petroleum sulfonate, sodium salt	47,424	39,894	7,180	.18
All other	35,415	23,463	3,721	.16
All other sulfated and sulfonated cyclic surface-active agents[4]	26,528	25,126	2,909	.16
SURFACE-ACTIVE AGENTS, ACYCLIC				
Total	234,416	203,487	53,692	.26
Esters and others, nonsulfonated,[2] total	20,821	18,240	6,827	.37
Polyethoxyethyl monolaurate	84	...	...	...
Polyethoxyethyl mono-oleate	1,132	1,160	454	.39
All other	19,605	17,080	6,373	.37
Nitrogen-containing surface-active agents, nonsulfonated, total	26,390	25,168	7,422	.29
N-(Aminoethyl)-N-(hydroxyethyl)oleamide (Oleamide of aminoethylethanolamine)	61	60	35	.58
N-(Aminoethyl)-N-(hydroxyethyl)stearamide (Stearamide of aminoethylethanolamine)	947	922	752	.82
Coconut oil amide of mono(diethanolamine) (Diethanol lauramide)	1,318	1,303	571	.44
Coconut oil amide of bis(diethanolamine)	1,760	1,720	798	.46
Coconut oil amide of isopropanolamine	278	...	...	...
N,N-Di(2-hydroxyethyl)oleamide (Diethanol oleamide) (Diethanolamine oleate)	517	383	161	.42
N,N-Di(2-hydroxyethyl)stearamide (Diethanol stearamide)	241	212	83	.39
Stearamide of diethylenetriamine	226	220	183	.83
Stearamide of tetraethylenepentamine	37	37	41	1.13
Triethanolamine oleate	30	...	...	...
All other[5]	20,955	20,311	4,798	.24
Phosphorus-containing surface-active agents	570	542	227	.42
Salts of fatty acids, total	4,020	3,931	590	.15
Potassium oleate	432	375	77	.20
Potassium salt of tall oil (Potassium tallate)	151	142	20	.14
Sodium oleate	1,278	1,293	198	.15
Sodium stearate	270	269	80	.30
All other	1,889	1,852	215	.12
Sulfated and sulfonated acyclic surface-active agents, total	182,615	155,696	38,626	.25
Acids, sulfated and sulfonated, total	4,330	4,191	1,447	.35
Oleic acid, sulfonated (Sulfonated red oil)	2,569	2,255	765	.35
All other	1,761	1,936	682	.36
Esters, sulfated and sulfonated: Isopropyl sulfo-oleate	751	724	434	.60
Nitrogen-containing surface-active agents, sulfated and sulfonated, total	5,563	4,427	2,638	.60
Coconut oil amide of monoethanolamine, sulfated, sodium and potassium salts	727	633	536	.85
All other	4,836	3,794	2,102	.55
Oils, fats, and waxes, sulfated and sulfonated, total	43,916	26,800	5,313	.20
Animal fats and oils, sulfated and sulfonated:				
Neat's-foot oil, sulfonated	1,762	1,081	247	.22
Tallow, sulfonated	13,471	11,009	1,692	.15

See footnotes at end of table.

TABLE 24A.--*Synthetic organic chemicals: United States production and sales of surface-active agents,[1] 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
SURFACE-ACTIVE AGENTS, ACYCLIC--Continued				
Sulfated and sulfonated acyclic surface-active agents--Continued				
Oils, fats, and waxes, sulfated and sulfonated--Continued				
Fish and marine-animal oils, sulfated and sulfonated:				
Cod oil, sulfonated	2,934	1,865	406	$0.21
Herring oil, sulfonated	4,139	...	...	...
Sperm oil, sulfonated	3,202	822	168	.20
Tall oil, sulfonated	554	460	75	.16
Vegetable oils, fats, and waxes, sulfated and sulfonated:				
Castor oil, sulfonated	7,193	4,823	1,321	.27
Coconut oil, sulfonated	509	169	32	.19
Corn oil, sulfonated	336	...	...	...
Peanut oil, sulfonated	1,828	1,410	489	.35
Rice-bran oil, sulfonated	1,585	977	199	.20
Soybean oil, sulfonated	788	367	149	.41
All other oils, fats, and waxes, sulfated and sulfonated	5,581	3,797	615	.16
All other sulfated and sulfonated acyclic surface-active agents[6]	128,055	119,464	28,796	.24

[1] Data are given in terms of bulk surface-active agents, that is, in terms of 100-percent content of surface-active agents, exclusive of all inorganic salts, water, or other ingredients.
[2] Includes polyhydric alcohol ethers and esters.
[3] Includes quaternary ammonium compounds.
[4] Includes salts of lignosulfonic acids, sulfated and sulfonated phenyl ethers, substituted biphenyls and phenylphenols, and naphthalenoid compounds which are not listed separately in the table.
[5] Includes amine salts of fatty acids; esters of hydroxyamines; fatty acid amides; quaternary ammonium compounds; salts of nitrilo acids; and fatty acid derivatives of guanidine, glycine, polypeptides, and others.
[6] Includes sulfated and sulfonated alcohols, esters, and aliphatic petroleum compounds.

Pesticides and Other Organic Agricultural Chemicals

In 1951, for the first time, statistics on organic pesticides and other organic agricultural chemicals are shown in a separate section in the Commission's final report on synthetic organic chemicals. In previous years, the statistics on these chemicals were included in the section on miscellaneous chemicals. Although the 1951 statistics on these products are not strictly comparable with those for 1950, they are sufficiently comparable for the purposes of general comparison.

The pesticides and other organic agricultural chemicals covered in this section include such materials as fungicides, seed disinfectants, herbicides, plant hormones, insecticides, rodenticides, and fumigants. As in other sections of this report, the data (except where otherwise indicated) are given in terms of 100-percent active material, thus excluding such materials as wetting agents, emulsifiers, and diluents. Statistics on production and sales are given in table 25A.[11]

In 1951 production of all pesticides and other organic agricultural chemicals amounted to 464 million pounds, an increase of 63 percent over the 286 million pounds reported for 1950. Sales in 1951 amounted to 364 million pounds, valued at 150 million dollars, compared with 250 million pounds, valued at 78 million dollars, in 1950.

Production in 1951 of all insecticides (both cyclic and acyclic) was 319 million pounds, or 69 percent of the total output of all organic pesticides. Sales in 1951 totaled 247 million pounds, valued at 103 million dollars.

[11] See also table 25B, part III, which lists these products alphabetically and

TABLE 25A.--*Synthetic organic chemicals: United States production and sales of pesticides and other organic agricultural chemicals, 1951*

[Listed below are all pesticides and other organic agricultural chemicals for which any reported data on production or sales may be published. (Leaders are used where the reported data are confidential and may not be published or where no data were reported.) Table 25B in part III lists all pesticides and other organic agricultural chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Product	Production	Sales		
		Quantity	Value	Unit value[1]
	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Grand total	463,998	364,419	150,062	$0.41
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC				
Total	406,966	318,801	134,550	.42
Fungicides and seed disinfectants, total	49,377	42,870	12,329	.29
Naphthenic acid, copper salt	8,156	7,827	2,005	.26
All other[2]	41,221	35,043	10,324	.30
Herbicides and plant hormones, total	41,922	31,346	20,797	.66
Naphthalene- and naphthoxyacetic acid derivatives	60	36	134	3.75
Phenoxyacetic acid derivatives, total	39,655	29,531	19,534	.66
2,4-Dichlorophenoxyacetic acid (2,4-D)	17,671	9,961	4,970	.50
2,4-Dichlorophenoxyacetic acid esters, total	11,992	10,837	6,419	.59
Isopropyl 2,4-dichlorophenoxyacetate	7,021	6,780	3,930	.58
All other[3]	4,971	4,057	2,489	.61
2,4-Dichlorophenoxyacetic acid salts, total	5,532	5,460	2,988	.55
2,4-Dichlorophenoxyacetic acid, diethanolamine salt	1,496	...	...	...
All other[4]	4,036	5,460	2,988	.55
2,4,5-Trichlorophenoxyacetic acid, isopropyl ester	236	188	277	1.48
All other phenoxyacetic acid derivatives	4,624	3,083	4,880	1.58
All other herbicides and plant hormones	2,207	1,779	1,129	.63
Insecticides, total	315,667	244,585	101,224	.41
O,O-Diethyl O,p-nitrophenyl thiophosphate (Parathion)	4,638	...	...	...
Benzenehexachloride (Benzene hexachloride)[5]	116,988	71,233	19,829	.28
1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane (DDT)	106,139	94,606	39,284	.42
All other[6]	87,902	78,746	42,111	.53
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC				
Total	57,032	45,618	15,312	.34
Fumigants, total	33,227	23,639	3,369	.14
Methyl bromide	3,711	...	...	...
All other[7]	29,516	23,639	3,369	.14
Fungicides and seed disinfectants, total	13,223	12,584	8,133	.64
Dimethyldithiocarbamic acid, zinc salt (Ziram)	1,511	1,395	889	.64
All other[8]	11,712	11,189	7,244	.65
Herbicides:[9] Trichloroacetic acid and derivatives	7,487	7,245	2,261	.31
Insecticides, total	3,095	2,150	1,749	.81
Tetraethyl pyrophosphate (TEPP)[10]	1,870	1,171	839	.72
All other[11]	1,225	979	910	.93

[1] Calculated on the unrounded figures.
[2] Includes pentachlorophenol, 8-quinolinol (copper salt), 2,4,5-trichlorophenol, and others.
[3] Includes butyl and ethyl esters of 2,4-dichlorophenoxyacetic acid.
[4] Includes the dimethylamine, triethylamine, sodium and other salts of 2,4-dichlorophenoxyacetic acid.
[5] Includes lindane. Production of the gamma-isomer content in lindane and benzene hexachloride totaled 17.1 million pounds; sales amounted to 11.3 million pounds/
[6] Includes aldrin, allethrin, chlordane, dieldrin, DDD, and other insecticides, plus a small amount of rodenticides.
[7] Includes D-D mixture, chloropicrin, and others.
[8] Includes dimethyldithiocarbamic acid, ferric salt (Ferbam); ethylenebis(dithiocarbamic acid), sodium salt (Nabam); zinc undecylenate; and others.
[9] A small amount of herbicides is included under all other insecticides.
[10] Basis, 40 percent TEPP.
[11] Includes a small amount of herbicides and rodenticides.

In 1951 the output of cyclic pesticides and other cyclic chemicals in this group totaled 407 million pounds, compared with 249 million pounds in 1950, or an increase of 64 percent. Sales in 1951 were 319 million pounds, valued at 135 million dollars, compared with 219 million pounds, valued at 69 million dollars, in 1950. Production of cyclic insecticides in 1951 amounted to 316 million pounds, or 78 percent of the total output of cyclic pesticides. The chemical in this subgroup that was produced in the greatest quantity in 1951 was the insecticide benzene hexachloride. Production of this insecticide in 1951 amounted to 117 million pounds, with a gamma-isomer content of 17 million pounds.

Production of acyclic pesticides and other acyclic organic agricultural chemicals in 1951 amounted to 57 million pounds, compared with 37 million pounds reported for 1950. Sales in 1951 were 46 million pounds, valued at 16 million dollars, compared with 32 million pounds, valued at 8 million dollars, in 1950. Fumigants--the largest subgroup in the acyclic pesticides group--include methyl bromide, D-D mixture, and chloropicrin. Production of fumigants, which amounted to 33 million pounds in 1951, accounted for 58 percent of the total output of acyclic pesticides.

Miscellaneous Synthetic Organic Chemicals

As used in this report, the term "miscellaneous synthetic organic chemicals" includes products such as halogenated hydrocarbons, paint driers, photographic chemicals, solvents, and tanning materials that are not included in the use groups covered in the separate sections of this report. In previous reports in this series, statistics on miscellaneous synthetic organic chemicals included data on pesticides and other organic agricultural chemicals, which in this report are discussed in a separate section for the first time. The statistics given here on production and sales of miscellaneous chemicals in 1950 have therefore been adjusted to make the data for the 2 years comparable.

Production of miscellaneous synthetic organic chemicals as a group in 1951 was 16,613 million pounds, an increase of 18.7 percent from the 13,998 million pounds reported for 1950. Sales in 1951 totaled 7,358 million pounds, valued at 1,116 million dollars, compared with 6,150 million pounds, valued at 736 million dollars, in 1950. Statistics on production and sales in 1951 of miscellaneous chemicals are given in table 26A.[12]

In 1951 the output of cyclic miscellaneous chemicals as a group totaled 236 million pounds, compared with 198 million pounds in 1950. Sales in 1951 totaled 191 million pounds, valued at 64 million dollars, an increase of 10 percent in quantity and 27 percent in value over those in 1950. Production of cyclic tanning materials amounted to 33 million pounds in 1951, compared with 23 million in 1950. The output of photographic chemicals in 1951 totaled 5 million pounds, compared with 3.5 million pounds in 1950.

[12] See also table 26B, part III, which lists these products alphabetically and identifies the manufacturers.

Production in 1951 of acyclic miscellaneous chemicals as a group totaled 16,378 million pounds, an increase of 19 percent over the output in 1950. Sales in 1951 totaled 7,167 million pounds, valued at 1,052 million dollars, compared with 5,976 million pounds, valued at 686 million dollars, in 1950. This group consists chiefly of solvents, refrigerants, and acyclic intermediates.[13]

In 1951 the output of halogenated hydrocarbons (a group consisting of chlorine, bromine, fluorine, and iodine derivatives of hydrocarbons) totaled 2,691 million pounds, compared with 2,090 million pounds in 1950. This subgroup includes such chemicals as carbon tetrachloride, ethylene dichloride, perchloroethylene, and vinyl chloride.

The output of most of the acyclic miscellaneous chemicals that are produced in large volume increased in 1951 compared with 1950. Production of synthetic methanol was 1,224 million pounds in 1951, compared with 902 million pounds in 1950; acetic anhydride, 976 million pounds, compared with 908 million; formaldehyde, 987 million pounds, compared with 835 million; cellulose esters and ethers, 706 million pounds, compared with 681 million; and isopropyl alcohol, 1,175 million pounds, compared with 866 million. The output of synthetic ethyl alcohol in 1951[14] increased to 857 million pounds from the 735 million pounds produced in 1950 because of the sustained demand for ethyl alcohol for use in the production of synthetic rubber.

[13] The large difference between production and sales indicates that a substantial portion of the output of acyclic miscellaneous chemicals is consumed at the producing plants in the manufacture of other more advanced products. Acyclic miscellaneous chemicals so used are, therefore, acyclic intermediates. They correspond in function to cyclic intermediates, although no group of acyclic miscellaneous chemicals is commonly recognized by the chemical industry as intermediates.

[14] This report does not include statistics on the production of ethyl alcohol from natural sources by fermentation. The Alcohol Tax Unit, Bureau of Internal Revenue, United States Treasury Department, issues such statistics monthly and annually.

TABLE 26A.--*Synthetic organic chemicals: United States production and sales of miscellaneous chemicals, 1951*

[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 confidential and may not be published or where no data were reported.) Table 26B in part III lists alphabetically all miscellaneous chemicals for which data on production or sales were reported and identifies the manufacturer of each]

Chemical	Production	Sales		
		Quantity	Value	Unit value
	1,000 pounds	*1,000 pounds*	*1,000 dollars*	*Per pound*
Grand total	16,613,075	7,357,652	1,115,869	$0.15
MISCELLANEOUS CHEMICALS, CYCLIC				
Total	235,530	190,825	63,923	.33
Chemicals for which separate statistics may not be shown	96,991	101,746	29,387	.29
Chemicals for which separate statistics are shown below	138,539	89,079	34,536	.39
Benzoic acid salts: Sodium benzoate, tech. and U.S.P.	4,605	4,069	1,441	.35
Benzoyl peroxide	1,604	723	535	.74
Centralite (N,N'-DiEthyl-N,N'-diphenylurea)	1,455	1,363	1,380	1.01
Chemical reagents	19	13	82	5.47
Cyclopropane	95	67	1,168	17.43
Flotation reagents[1]	5,446	4,002	1,561	.39
Hexamethylenetetramine, tech	25,699	...	...	...
Insecticides.[2]				
Lubricating oil additives[3]	43,745	30,389	11,475	.38
Naphthenic acid salts, total[4]	16,686	16,094	5,377	.33
Calcium naphthenate	1,464	1,429	482	.34
Cobalt naphthenate	2,809	2,888	1,467	.51
Iron naphthenate	195	171	51	.30
Lead naphthenate	9,050	8,512	2,376	.28
Manganese naphthenate	1,991	1,907	556	.29
Zinc naphthenate	785	774	244	.32
All other	392	413	201	.49
Organic mercury compounds[5]	56	43	239	5.56
Photographic chemicals, total	5,064	4,877	5,667	1.16
Benzotriazole	6	6	56	9.33
p-Diaso-N,N-diethylaniline, zinc chloride salt	13	13	63	4.85
All other[5]	5,045	4,858	5,548	1.14
Plant hormones.[2]				
Research chemicals	20	20	327	16.35
Rosin acid salts, total[4]	1,282	985	294	.30
Calcium resinate	150	108	20	.19
Cobalt resinate	166	164	101	.62
Manganese resinate	230	205	60	.29
All other	736	508	113	.22
Tanning materials, total	32,763	26,430	4,990	.19
Naphthalenesulfonic acid condensates	26,809	21,051	3,202	.15
All other[6]	5,954	5,379	1,788	.33
MISCELLANEOUS CHEMICALS, ACYCLIC				
Total	16,377,545	7,166,827	1,051,946	.15
Chemicals for which separate statistics may not be shown	4,518,878	2,641,130	530,704	.20
Chemicals for which separate statistics are shown below	11,858,667	4,525,697	521,242	.12
Acetaldehyde	...	28,577	3,107	.11
Acetic acid, synthetic, 100%[5]	454,010	87,611	7,910	.09
Acetic acid salts, total	18,128	16,103	2,780	.17
Aluminum acetate	622	...	...	...
Lead subacetate	79	...	...	...
Potassium acetate	601	397	117	.30
All other	16,826	15,708	2,663	.17
Acetic anhydride, 100%, from all sources	975,878	...	...	...
Acetone, total	559,666	236,328	18,118	.08
By fermentation	21,218	21,092	1,873	.09
From isopropyl alcohol and other sources	538,448	215,236	16,245	.08
Amines	106,433	25,562	13,379	.52

See footnotes at end of table.

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TABLE 26A.--*Synthetic organic chemicals: United States production and sales of miscellaneous chemicals, 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Amyl acetates, 90%+	11,995	9,815	2,113	$0.22
Amyl alcohols, 100%	17,885	7,697	1,768	.23
Bis(2-chloroethyl) ether (Dichlorodiethyl ether), all grades	11,547	9,480	758	.08
Butyl acetates, 90%+	67,783	56,956	10,956	.19
Butyl alcohols, 100%, total	348,977	98,790	19,274	.20
Primary, normal	153,115	80,239	17,192	.21
All other	195,862	18,551	2,082	.11
Carbon disulfide	483,979	462,552	21,462	.05
Cellulose esters and ethers, total	703,982	179,057	75,043	.42
Cellulose acetate	551,578	...	...	...
Sodium carboxymethylcellulose, 100%	16,733	15,480	6,538	.42
All other	137,671	163,577	68,505	.42
Chloral (Trichloroacetaldehyde)	25,158	...	...	...
Chloroacetic acid, mono	33,551	...	...	...
Cyanoacetic acid	736	...	...	...
Diethyl diethylmalonate (Diethyl malonic ester)	84	...	...	...
Diethylene glycol	49,913	36,849	6,808	.18
Diethyl ethylmalonate (Ethyl malonic ester)	300	...	...	...
Diethyl malonate (Malonic ester)	1,244	...	...	...
Dipropylene glycol	5,928	4,600	680	.15
Ethyl acetate, 85%+	85,471	61,737	8,739	.14
Ethyl alcohol, synthetic[10]	856,913	...	...	...
o-Ethylcaproic (2-Ethyl-1-hexoic) acid salts	...	410	179	.44
Ethyl cyanoacetate	125	98	110	1.12
Ethylene, from ethyl alcohol (medicinal grade)	273	259	283	1.09
Ethylene glycol	596,737	445,713	71,111	.16
Ethylene oxide	...	81,207	14,948	.18
Ethyl ether, tech., U.S.P., and absolute	75,942	48,795	5,513	.11
Ethyl formate	316	249	115	.46
Fatty acid esters, not included with plasticizers	1,927	842	393	.47
Flotation reagents[11]	21,283	21,139	5,863	.28
Formaldehyde (37% HCHO by weight)	987,436	601,161	22,046	.04
Formic acid, 90%+	16,960	13,597	2,122	.16
Formic acid salts, total	17,675	12,252	1,084	.09
Sodium formate, total	15,620	10,415	522	.05
Crude	15,614	10,412	519	.05
Refined	6	3	3	1.00
All other	2,055	1,837	562	.31
Fumaric acid	4,635	...	...	...
Fungicides.[2]				
Halogenated hydrocarbons, total	2,690,882	1,132,948	124,636	.11
Bromoethane (Ethyl bromide)	873	...	...	...
Carbon tetrachloride	244,469	235,391	15,991	.07
Chlorinated paraffins	46,195	43,198	5,343	.12
Chloroethane (Ethyl chloride), tech. and U.S.P.	419,106	...	...	...
Chloroform, tech. and U.S.P.	25,968	21,831	2,959	.14
Chloromethane (Methyl chloride), all grades	36,833	29,542	3,731	.13
1,2-Dichloroethane (Ethylene dichloride)	436,360	61,247	3,833	.06
Dichloromethane (Methylene chloride), all grades	39,894	38,390	3,690	.10
Iodoethane (Ethyl iodide), all grades	8	7	24	3.26
Tetrachloroethylene (Perchloroethylene)	109,779	103,002	9,577	.09
Trichloroethylene	...	233,227	22,467	.10
Vinyl chloride and vinylidene chloride, monomers	430,762	...	...	...
All other	902,635	367,113	57,021	.16
Insecticides.[2]				
Isopropyl acetate	23,155	21,070	2,665	.12
Isopropyl alcohol[12]	1,075,416	...	...	...

See footnotes at end of table.

TABLE 26A.--*Synthetic organic chemicals: United States production and sales of miscellaneous chemicals, 1951*--Continued

Chemical	Production	Sales		
		Quantity	Value	Unit value
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	1,000 pounds	1,000 pounds	1,000 dollars	Per pound
Lactic acid, 100%, total	5,290	5,033	1,753	$0.35
Edible and medicinal	3,736	...	...	...
Tech.	1,554	...	...	...
Lactic acid salts, total	1,472	1,473	518	.35
Sodium lactate	...	78	33	.42
All other	1,472	1,395	485	.35
Linoleic acid salts, total[4]	2,339	2,148	725	.34
Calcium linoleate	718	551	107	.19
Cobalt linoleate	343	345	192	.56
Lead linoleate	190	114	35	.31
Manganese linoleate	669	588	200	.34
All other	619	550	191	.35
Maleic anhydride	23,718	...	...	...
Methanol, synthetic[13]	1,223,798	622,014	26,158	.04
1- and 2-Octanol	9,042	3,158	1,036	.33
Oleic acid salts, total[14]	201	254	90	.35
Lead oleate	109	116	38	.33
All other	92	138	52	.38
Oxalic acid	24,238	18,273	2,995	.16
Palmitic acid salts	595	...	...	...
Palmitoyl chloride	108	...	...	...
Paraformaldehyde	7,212	6,664	1,102	.17
Pentaerythritol	45,357	37,769	12,888	.34
Pentaerythritol tetranitrate	1,007	1,007	758	.75
Polyglycerol	114	...	...	...
Propylene glycol (1,2-Propanediol)	88,712	81,786	13,177	.16
Propylene oxide	43,713	...	...	...
Research chemicals	21	21	178	8.48
Sarcosin (N-Methylaminoacetic acid)	67	...	...	...
Sodium formaldehydesulfoxylate	10,424	8,944	2,308	.26
Stearic acid salts, total[15]	21,735	20,365	8,084	.39
Aluminum stearates, total	9,042	8,966	3,487	.39
Aluminum distearate	5,792	5,796	2,246	.39
All other	3,250	3,170	1,241	.39
Barium stearate	297	239	122	.51
Calcium stearate	3,929	3,780	1,522	.40
Lead stearate	571	511	225	.44
Magnesium stearate	574	549	247	.45
Zinc stearate	5,639	5,122	2,224	.43
All other	1,683	1,398	257	.18
Tall oil salts, total[4]	11,852	11,443	3,197	.28
Calcium tallate	86	92	17	.18
Cobalt tallate	3,790	3,718	1,340	.36
Iron tallate	122	128	28	.22
Lead tallate	5,060	4,788	1,151	.24
Manganese tallate	2,212	2,080	481	.23
All other	622	637	180	.28
Thioglycolic acid salts: Ammonium thioglycolate	1,234	1,189	1,470	1.24
Zinc formaldehydesulfoxylate	2,625	2,480	838	.34

[1] Includes dioresyldithiophosphoric acid and salts, di-o-tolylthiourea, and others.
[2] Detailed statistics are given in the section "Pesticides and Other Organic Agricultural Chemicals."
[3] Detergents used as lubricating oil additives are included with surface-active agents (see table 24A).
[4] Quantities are given on the basis of solid naphthenate, resinate, linoleate, or tallate content.
[5] Statistics given are for miscellaneous naphthenates, excluding copper naphthenate. Statistics on copper naphthenate are given in the section "Pesticides and Other Organic Agricultural Chemicals."
[6] Does not include medicinal mercury compounds or phenyl mercuric acetate used as a pesticide.
[7] Includes p-methylaminophenol sulfate, catechol, hydroquinone, and others.
[8] Includes lignosulfonic acid salts, styrene-maleic anhydride interpolymer, and others.
[9] In addition, production of natural acetic acid totaled 19,419,052 pounds.
[10] Statistics on production of ethyl alcohol from natural sources by fermentation are issued by the Alcohol Tax Unit, U. S. Bureau of Internal Revenue.
[11] Includes dithiophosphates, fatty amine salts, xanthates, and others.
[12] Data, which were reported on the basis of 88%, 91%, 95%, and 99%, have been converted to 100% basis.
[13] In addition, production of methanol from natural sources totaled 11,371,173 pounds.
[14] Statistics given are for miscellaneous oleates, excluding potassium and sodium oleates. Statistics on potassium and sodium oleates are given in the section "Surface-Active Agents."
[15] Statistics given are for miscellaneous stearates, excluding sodium stearate.

TABLE 4B.--*Organic chemicals: Tar crudes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Product	Manufacturers' identification numbers (according to list in table 27)
*Coal tar in coal-tar solution, sold or consumed	240, 314, 343, 513, 542, 545.
*All other distillates	55, 88, 122, 240, 244, 343, 344, 430, 513.
*Tar, road	88, 126, 240, 343, 344, 430, 513, 537, 541, 542, 545.
*Tar for other uses:	
Crude	23, 170, 240, 343, 344, 513.
Refined	88, 240, 314, 343, 344, 395, 513, 545.
Pitch of tar:	
Soft (water softening point less than 110° F. ASTM D61-24).	55, 188, 343, 344, 430, 542.
Medium (water softening point 110°F. to 160°F.)	72, 88, 240, 314, 343, 344, 395, 513, 537, 545.
Hard:	
Water softening point of—	
161°F. to 212°F	240, 343, 344, 513.
213°F. to 230°F	343, 344, 430, 513.
231°F. to 290°F	240, 513.
291°F. and over	240, 344, 513, 545.
*Pitch of tar coke	240, 343, 344, 542.
Pitch emulsion	537.

Crude Products from Petroleum and Natural Gas for Chemical Conversion

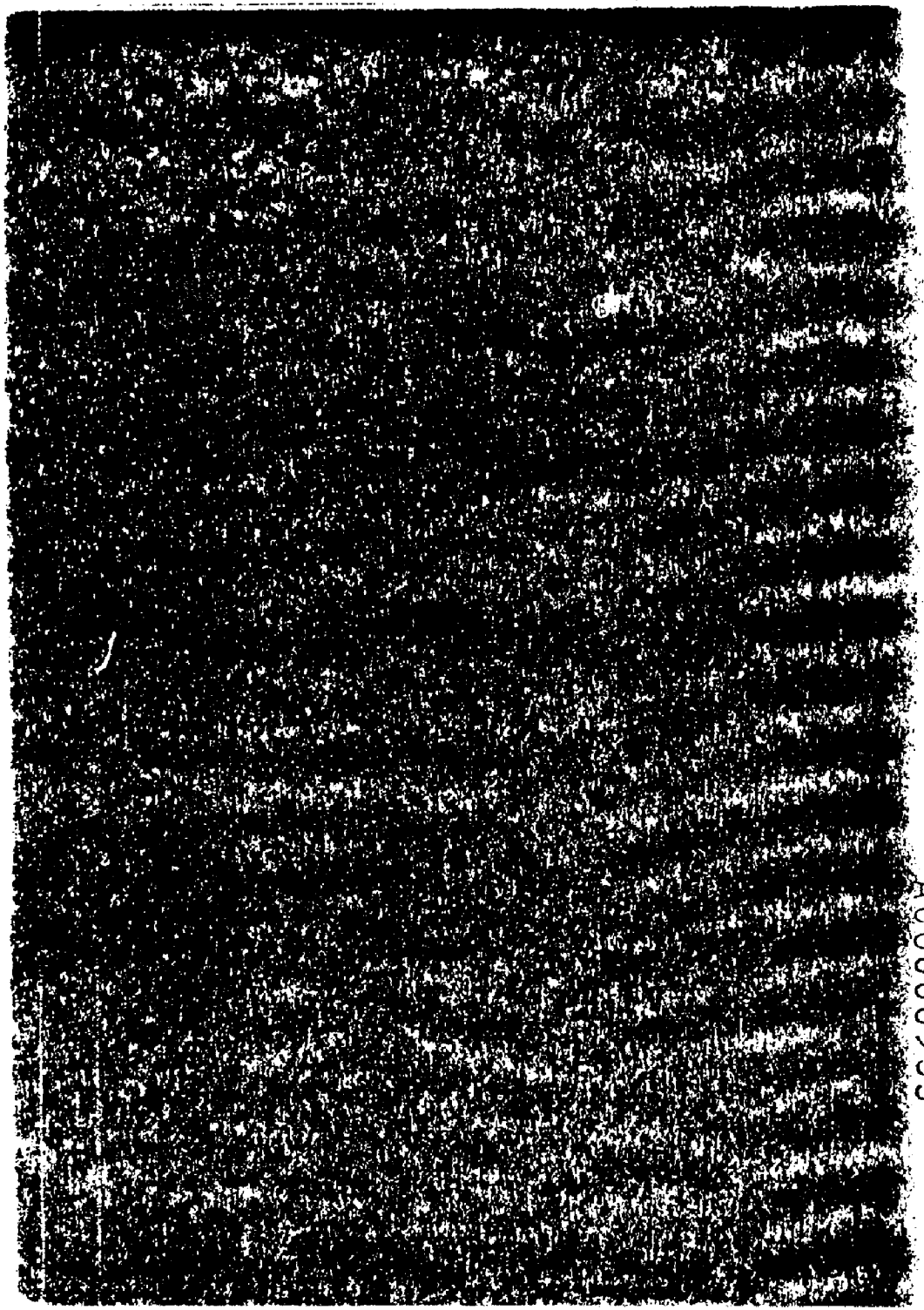
TABLE 5B.--*Organic chemicals: Crude products from petroleum and natural gas for chemical conversion for which United States production or sales were reported, identified by manufacturer, 1951*

[Crude products from petroleum and natural gas for chemical conversion for which separate statistics are given in table 5A are marked below with an asterisk (*); products not so marked do not appear in table 5A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27]

Product	Manufacturers' identification numbers (according to list in table 27)
AROMATICS AND NAPHTHENES	
*Aromatic distillates and solvents	103, 186, 298, 354, 360, 374, 475, 516.
*Benzene (except motor grade):	
1°	264.
2°	199, 205, 258, 337, 407, 478, 490.
100%	62, 508.
Benzene, motor grade	407.
*Cresylic acid, crude	186, 217, 258, 431, 478.
Cyclopentane	354.
Dicyclopentadiene	337, 475.
Methylcyclohexane	354.
Methylcyclopentane	354.
*Naphthenic acids:	
Acid number less than 150	389, 403.
Acid number 150-199	190, 431, 478.
Acid number 200-224	190, 196, 431.
*Acid number 225-249	190, 258, 351, 431, 478.
Acid number 250 and over	431.
Petroleum phenols	298, 360.
Sodium phenolate (Sodium carbolate)	186.
*Toluene:	
Pure commercial grade, 2°	62, 168, 258, 350, 360, 420.
Solvent grade, 90%	490, 508.
All other	199, 360, 407, 478.
*Xylene:	
Aviation grade	420, 478.
Nitration grade, 3°	258.
All other	258, 337, 360, 407, 378, 508.
ALIPHATIC HYDROCARBONS	
C_1 hydrocarbons: Methane	354, 490.
*C_2 hydrocarbons:	
Ethane	354, 403, 475, 490.
Ethylene	62, 168, 240, 264, 350, 354, 374, 403, 412, 475, 490.
*C_3 hydrocarbons:	
*Propane	186, 258, 337, 354, 389, 420, 475, 490.
Propylene	62, 258, 350, 354, 475, 490.
Propane-propylene mixture	403.

TABLE 5B.--*Organic chemicals: Crude products from petroleum and natural gas for chemical conversion for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Product	Manufacturers' identification numbers (according to list in table 27)
ALIPHATIC HYDROCARBONS--Continued	
*C_4 hydrocarbons:	
*1,3-Butadiene (grade for elastomers)	95, 120, 234, 240, 264, 350, 354, 360, 475, 490, 505.
Butadiene and butylene mixture	62, 298, 350, 475.
n-Butane	258, 354, 389, 420.
*1-Butene, 2-butene, and mixtures	186, 196, 234, 258, 337, 354, 360, 403, 420, 478.
Isobutane	354, 389, 490.
Isobutylene	360, 475.
C_5 hydrocarbons:	
Isopentane	354.
Isoprene	475.
n-Pentane	354.
1-Pentene	354.
2-Pentene	354, 520.
Pentenes, mixed	520.
C_6 hydrocarbons:	
Di-isopropyl (2,3-Dimethylbutane)	354.
Hexane	354, 360.
Isohexane	354.
Neohexane	354.
C_7 hydrocarbons:	
n-Heptane	354, 360.
Isoheptane	354.
Isoheptene	354.
All other	475.
C_8 hydrocarbons:	
*Di-isobutylene	186, 264, 351, 354.
2,2,4-Trimethylpentane (Iso-octane)	354.
All other	354, 360.
Hydrocarbons, C_9 and above:	
*Dodecene (Tetrapropylene)	199, 258, 403, 475, 505.
Eicosane	186.
Hydrocarbon mixtures and polymers	62, 298, 420, 475.
Nonene	186, 337.
Polybutene	478, 508.
Tri-isobutylene	186, 354.
Tripropylene	475.
All other	205, 271, 478.
*Hydrocarbon derivatives:	
Alkanesulfonic acids, mixed	205.
Di-tert-butyl disulfide	354.
Mercaptans:	
tert-Butyl mercaptan	354.
Ethyl mercaptan	103, 488.
Mercaptans, crude	186.
Methyl mercaptan	103, 354.
n-Propyl mercaptan	488.



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

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

Each table in part III lists alphabetically the individual items in each group for which data on production or sales were reported for 1951.[1] The manufacturers of each product are indicated by an identification number, which is listed in the Directory of Manufacturers (table 27). A few companies, however, have specifically requested the Tariff Commission to withhold such information on certain items. These manufacturers are indicated by the letter "X" in the tables.

Tar Crudes

TABLE 4B.--Organic chemicals: Tar crudes for which United States production or sales were reported, identified by manufacturer, 1951

[Tar crudes for which separate statistics are given in table 4A, are marked below with an asterisk (*); products not so marked do not appear in table 4A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. Table 27 identifies all United States producers of tar crudes (except producers who report to the Coal Economics Division, U. S. Bureau of Mines)]

Product	Manufacturers' identification numbers (according to list in table 27)
*Crude light oil	55, 88, 170, 314, 395.
Light-oil distillates:	
*Benzene (except motor grade):	
1°	240, 498, 513.
2°	170, 513.
90%	170, 513.
All other	350, 430, 546.
Benzene, motor grade	430, 513.
*Toluene:	
Nitration grade, 1°	240, 498, 513, 546.
Pure commercial grade, 2°	98, 170, 513, 546.
All other	23.
*Xylene:	
3°	170, 498.
10°	240.
Commercial	430, 498, 513, 546.
Solvent naphtha	122, 170, 240, 244, 343, 344, 430, 498, 513.
*All other light-oil distillates	98, 122, 240, 513.
Pyridine:	
Crude bases	240, 513.
Semirefined or denaturing grade	240, 513.
*Naphthalene, crude, solidifying at--	
Less than 74°C	122, 170, 188, 343, 395, 430.
74°C. to less than 76°C	240, 244, 343.
76°C. to less than 79°C	240, 314, 343, 513.
*Crude tar-acid oils, having a tar-acid content of--	
7% to less than 25%	88, 240, 343, 344, 498, 513, 542.
25% to 50%	244, 314, 343, 513.
All other	513.
Cresylic acid, crude	240, 343, 344, 513.
*Creosote oil (Dead Oil):	
*Sold or consumed as such	55, 72, 88, 188, 210, 240, 314, 343, 344, 349, 430, 498, 513, 542, 545.
*Sold or consumed in coal-tar solution	240, 314, 343, 513, 537, 542.

[1] Where an asterisk (*) precedes the name of an item in the tables in part III,

Cyclic Intermediates

TABLE 7B.--Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951

[Cyclic intermediates for which separate statistics are given in table 7A are marked below with an asterisk (*); cyclic intermediates not so marked do not appear in table 7A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product. (Part C in the appendix lists alphabetically all the important common names of cyclic intermediates usually encountered in the trade and gives the corresponding standard (Chemical Abstracts) name under which the manufacturers' identification numbers are given in this table)]

Chemical	Manufacturers' identification numbers (according to list in table 27)
Aceanthra[2,1-a]aceanthrylene-5,13-dione (Acedianthrone).	374.
Acenaphthylene (Acenaphthene)	343.
5-Acetamido-2-aminobenzenesulfonic acid	481.
5-Acetamido-2-amino-4'-methylphenyl sulfone	445.
8-Acetamido-5-amino-2(and 3)-naphthalenesulfonic acid (Acetylamino Cleve's acid).	374.
3-Acetamido-5-amino-p-toluenesulfonic acid	481.
2-(p-Acetamidoanilino)-5-aminobenzenesulfonic acid	481.
2-Acetamido-3-chloroanthraquinone	481.
2-Acetamido-p-cresol	445.
8-Acetamido-2-naphthalenesulfonic acid	374.
*1-Acetamido-7-naphthol	374, 421, 445, 481.
8-Acetamido-1-naphthol-3,5-disulfonic acid	481.
5-Acetamidosalicylic acid	521.
*Acetanilide, tech	168, 330, 368, 445, 451.
Acetoacetanilide	404, 490.
Acetoaceto-1-naphthylamide	404, 502.
p-Acetoacetophenetidide	374.
o-Acetoacetotoluidide	404, 490.
o-Acetotoluidide	421.
*p-Acetotoluidide	183, 451, 498.
21-Acetoxy-4-bromo-17-hydroxy-3,11,20-triketopregnane	X.
N-Acetylanthranilic acid	374.
Acetylphenyl benzoate	183.
Acetylsulfadiazine	498.
Acetylsulfamerazine	498.
*N-Acetylsulfanilyl chloride	168, 183, 222, 451, 498.
Acetylsulfathiazole	168, 498.
Acridine	343, 374.
Acridine yellow	421.
Aminoaceanthra[2,1-a]aceanthrylene-5,13-dione (Aminoacedianthrone).	374.
m-Aminoacetanilide	445.
*p-Aminoacetanilide	368, 374, 421, 440, 445, 481.
m-Aminoacetanilide hydrochloride	481.
4-Amino-o-acetanisidide	481.
m-Aminoacetophenone	183, 330, 511.
5-Amino-2-anilinobenzenesulfonic acid	374, 421, 445, 481.
*2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid	232, 421, 445, 502.
6-(m-Aminoanisoyl)-1-naphthol-3-sulfonic acid	374.
*1-Aminoanthraquinone and salt	301, 374, 416, 421, 423, 462, 481, 498.
*2-Aminoanthraquinone and salt	374, 421, 498, 502.
1-Aminoanthraquinone-2-sulfonic acid	374, 481.
1-Aminoanthraquinone-5(and 8)-sulfonic acid	445.
4-Aminoantipyrine	320.
4-Aminoazobenzene-3,4'-disulfonic acid	495.
*4-Amino-3,4'-azobis[benzenesulfonic acid]	232, 374, 421, 445, 462, 481.
5-Aminobenz[c]acridin-7(12)-one	374.
8-Aminobenz[c]acridin-7(12)-one	374, 421.
1-Amino-4-benzamidoanthraquinone	374, 498.
1-Amino-5-benzamidoanthraquinone	374, 421, 481.
6-[p-(p-Aminobenzamido)benzamido]-1-naphthol-3-sulfonic acid.	374.
5-Amino-2-benzamido-1,4-diethoxybenzene	502.
*6-(m-Aminobenzamido)-1-naphthol-3-sulfonic acid	301, 374, 421, 444, 445, 462, 481, 502.
*6-(p-Aminobenzamido)-1-naphthol-3-sulfonic acid	232, 301, 374, 421, 462, 481, 502.
*2-Amino-p-benzenedisulfonic acid[SO_3H=1]	374, 421, 445, 481, 502.
5-Aminobenzimidazol-2-one	374.
p-Aminobenzoic acid, tech	374, 421, 481.
p-Aminobenzoic acid, ethyl ester (Benzocaine, tech.)	320, 445.
5-[α-(p-Aminobenzoyl)acetamido]isophthalic acid	481.
p-Aminobenzoyl-m-nitroanilide	445.
*m-Aminobenzoyl-m-phenylenediamine	421, 445.
*p-Aminobenzoyl-m-phenylenediamine	374, 421.
o-Aminobenzyl alcohol	374.
*1-Amino-4-bromo-2-anthraquinonesulfonic acid	374, 421, 481.
1-Amino-2-bromo-4-hydroxyanthraquinone	374.
1-Amino-4-bromo-2-methylanthraquinone	374.
*1-Amino-2-bromo-4-(p-toluidino)anthraquinone	374, 423, 481.
1-Amino-5-(2'-carboxyanilino)anthraquinone	374.

TABLE 7B.--Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
1-Amino-8-(2'-carboxyanilino)anthraquinone	374.
4-Amino-3-carboxybenzenesulfonanthranilide	445.
2-Amino-4-chloroacetanilide	481.
*1-Amino-5-chloroanthraquinone	374, 421, 498.
1-Amino-5(and 8)-chloroanthraquinone	421, 498.
1-Amino-8-chloroanthraquinone	374, 421.
2-Amino-1-chloroanthraquinone	374.
2-Amino-3-chloroanthraquinone	481.
2-Amino-5-chlorobenzenesulfonic acid	374, 481.
2-Amino-4-chlorobenzoic acid	374.
*3-Amino-6-chlorobenzoic acid	374, 421, 445, 481, 502.
2-Amino-5-chlorobenzothiazole	374.
2-Amino-5-chlorobenzothiazole hydrochloride	374.
o-(3-Amino-4-chlorobenzoyl)benzoic acid	481.
2-Amino-5-chloro-4-ethylbenzenesulfonic acid	498.
1-Amino-5-chloro-4-hydroxyanthraquinone	481.
2-Amino-4-chloro-5-nitrophenol	445, 481.
2-Amino-6-chloro-4-nitrophenol	502.
*2-Amino-4-chlorophenol	177, 374, 421, 445, 481, 502.
*2-Amino-4-chloro-1-phenol-6-sulfonic acid	232, 374, 421, 445, 481.
2-Amino-4-chlorophenyl benzyl ether	502.
2-Amino-5-chloropyridine	343.
6-Amino-4-chloro-m-toluenesulfonic acid[SO_3H=1]	183, 374.
*2-Amino-5-chloro-p-toluenesulfonic acid[SO_3H=1]	183, 195, 398, 451, 495, 498.
3-Amino-5-chloro-p-toluenesulfonic acid[SO_3H=1]	183.
N-(4-Amino-5-chloro-o-tolyl)-p-toluenesulfonamide	502.
*1-Amino-2,4-dibromoanthraquinone	374, 421, 423.
2-Amino-1,3-dibromoanthraquinone	374.
4'-Amino-2',5'-diethoxybenzanilide	481.
4'-Amino-2',5'-dimethoxybenzanilide	481.
1-Amino-2,5-dimethoxybenzonitrile	481.
2-Amino-4,6-dimethylpyrimidine	498.
2-Amino-3,5-dinitrobenzenesulfonethylamide	368.
*5-Amino-6-ethoxy-2-naphthalenesulfonic acid	374, 445, 481, 502.
2-Amino-N-ethylbenzenesulfonanilide	445.
p-Amino-N-ethyl-N-1-naphthylbenzamide	481.
2-Amino-N-ethyl-5-nitrobenzenesulfonanilide	481.
m-Aminoformanilide	374, 481.
5-Amino-8-(p-hydroxyanilino)-2-naphthalenesulfonic acid.	374.
5(and 8)-Amino-8(and 5)-(p-hydroxyanilino)-2-naphthalenesulfonic acid.	374.
3-Amino-2-hydroxyanthraquinone	421, 481.
2-Amino-4-hydroxybenzenearsonic acid	320.
3-Amino-6-hydroxy-2-methylphenazine (Tolazine base)	421, 445.
5-Aminoisophthalic acid	481.
5-Aminoisophthalic acid, dimethyl ester	481.
6-Amino-2,4-lutidine	343.
4-Amino-3-methoxyazobenzene-5'-sulfonic acid	374.
5-Amino-6-methoxy-2-naphthalenesulfonic acid	421, 445.
m-(4-Amino-3-methoxyphenylazo)benzenesulfonic acid	445.
8-Amino-6-methoxyquinoline (Amichin)	320, 521.
1-Amino-2-methoxy-4-(p-toluenesulfonamido)anthraquinone.	481.
4-Amino-N-methylacetanilide	421, 481.
1-Amino-2-methylanthraquinone	374.
4'-Amino-6'-methylbenzanisidide	481.
2-Amino-4-methyldiazine	498.
8-Amino-7-methyl-2-phenazinol	374, 481.
4-Amino-4'-(3-methyl-5-pyrazolone)-2,2'-stilbenedisulfonic acid.	445.
1-Amino-2-methyl-4-(p-toluidino)anthraquinone	374.
3-Amino-5-myristoylamino-p-toluenesulfonic acid	481.
2-Amino-1,5-naphthalenedisulfonic acid	183, 498.
*3-Amino-1,5-naphthalenedisulfonic acid (Cassella acid).	374, 421, 445, 451, 481, 495.
*3-Amino-2,7-naphthalenedisulfonic acid	374, 421, 445, 481.
*4-Amino-1,5-naphthalenedisulfonic acid	374, 421, 445.
4-Amino-1,6-naphthalenedisulfonic acid	421.
5-Amino-2,7-naphthalenedisulfonic acid	301, 481, 495.
*6-Amino-1,3-naphthalenedisulfonic acid (Amino I or J acid).	301, 374, 421, 445, 462, 481, 498, 502.
7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid)	183, 374, 421, 445, 451, 481, 495.
*8-Amino-1,6-naphthalenedisulfonic acid	374, 445, 481.
1-Amino-3,6-naphthalenedisulfonic acid, 8-phenylsulfon ester (Benzenesulfon-H acid).	445.
1-Amino-2-naphthalenesulfonic acid (o-Naphthionic acid).	374, 498.
*2-Amino-1-naphthalenesulfonic acid (Tobias acid)	183, 195, 215, 445, 451, 477, 498.
4(and 5)-Amino-1-naphthalenesulfonic acid	498.
*5-Amino-1-naphthalenesulfonic acid (Laurent's acid)	232, 374, 421, 445, 498, 502.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
•5-Amino-2-naphthalenesulfonic acid (1,6-Cleve's acid)	374, 421, 445, 481, 502.
•5(and 8)-Amino-2-naphthalenesulfonic acid (Cleve's acid, mixed).	374, 421, 445, 481, 502.
6-Amino-1-naphthalenesulfonic acid (Dahl's acid)	374.
6(and 7)-Amino-1-naphthalenesulfonic acid	445.
•6-Amino-2-naphthalenesulfonic acid (Broenner's acid)	215, 421, 445, 451, 477.
7-Amino-1-naphthalenesulfonic acid	421.
•8-Amino-1-naphthalenesulfonic acid (Peri acid)	232, 233, 374, 421, 445, 481, 498.
•8-Amino-2-naphthalenesulfonic acid (1,7-Cleve's acid)	374, 421, 445, 481, 502.
7-Amino-1,3,6-naphthalenetrisulfonic acid	374, 421.
8-Amino-1,3,6-naphthalenetrisulfonic acid (Koch's acid).	374, 421.
8-Amino-1-naphthole acid	481.
5-Amino-1-naphthol	481.
•8-Amino-2-naphthol	374, 445, 481.
7-Amino-1-naphthol-3,6-disulfonic acid (2R acid), monosodium salt.	374, 421.
8-Amino-1-naphthol-3,5-disulfonic acid (K acid)	168.
•8-Amino-1-naphthol-3,6-disulfonic acid (H acid), monosodium salt.	168, 374, 421.
•8-Amino-1-naphthol-5,7-disulfonic acid (Chicago acid) (2S acid), monosodium salt.	301, 374, 421, 445.
8-Amino-1-naphthol-3,6-disulfonic acid ester	495.
•1-Amino-2-naphthol-4-sulfonic acid (1,2,4-Acid)	374, 421, 445, 481, 495, 498, 502.
•6-Amino-1-naphthol-3-sulfonic acid (I or J acid), sodium salt.	232, 301, 374, 421, 444, 445, 462, 481, 495, 498, 502.
6-Amino-2-naphthol-4-sulfonic acid	445.
•7-Amino-1-naphthol-3-sulfonic acid (Gamma acid), sodium salt.	301, 374, 421, 445, 462, 481, 498.
•8-Amino-1-naphthol-5-sulfonic acid (S acid), sodium salt.	374, 421, 445.
5-Amino-2-(p-nitroanilino)benzenesulfonic acid	495.
•2-Amino-5-nitrobenzenesulfonic acid [SO_3H=1]	374, 421, 445, 481, 498.
•2-Amino-4-nitrophenol	232, 374, 421, 481.
2-Amino-5-nitrophenol	183, 481, 502.
4-Amino-2-nitrophenol	445.
2-Amino-4-nitro-1-phenol-6-sulfonic acid	232, 374, 421, 445, 481.
2-Amino-6-nitro-1-phenol-4-sulfonic acid	481.
4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid	445.
2-Amino-5-nitrothiazole	168.
3-Amino-5-nitro-p-toluenesulfonic acid [SO_3H=1]	481.
o-Anisocaranilic acid	445.
p-Anisocaranilic acid	481.
•o-Aminophenol	301, 368, 448, 481, 498.
o-Aminophenol	374, 419.
•p-Aminophenol and salts	371, 374, 419, 448, 498.
4-Amino-1-phenol-4,6-disulfonic acid	445.
2-Amino-1-phenol-4-sulfonamide	374, 421, 445.
2-Amino-1-phenol-4-sulfonanthranilide	445.
•2-Amino-1-phenol-4-sulfonic acid	301, 374, 421, 445, 462.
•p-(p-Aminophenylazo)benzenesulfonic acid	374, 445, 462, 495, 502.
•p-(p-Anisophenylazo)benzenesulfonic acid	232, 421, 445, 481, 495, 498, 502.
5(and 8)-Amino-8(and 5)-phenylazo-2-naphthalenesulfonic acid.	445, 481.
4-(4-Aminophenylazo-3-sulfonic acid)benzenesulfonic acid.	502.
5-(p-Aminophenylazo)salicylic acid	445.
4-Amino-α-phenyl-m-cresol hydrochloride	445.
2-(p-Aminophenyl)-6-methylbenzothiazole	374, 421.
1-(m-Aminophenyl)-3-methyl-5-pyrazolone	374.
2-(p-Aminophenyl)-1-octadecyl-5-benzimidazolesulfonic acid.	X.
1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.	374, 421.
2-Amino-4-picoline	343.
6-Amino-2-picoline	343.
6-Amino-3-picoline	343.
7-Amino-3-picoline	343.
2-Aminopyridine	201, 343.
2-Aminopyrimidine	498.
•5-Aminosalicylic acid	374, 421, 445, 462, 481.
3-(4'-Amino-2-sulfanilino)-2(3)-benzimidazolone	374.
2-(4-Amino-3-sulfophenyl)-6-methylbenzothiazolesulfonic acid.	374, 421, 445.
7-Amino-N-(p-sulfophenyl)-1-naphthol-3-sulfonic acid	374.
•2-Aminothiazole	168, 222, 498.
6-(8-Amino-p-toluamido)-1-naphthol-3-sulfonic acid	374.
1-Amino-4-(p-toluenesulfonamido)-2-anthraquinonesulfonic acid.	481.
•4-Amino-o-toluenesulfonic acid [SO_3H=1]	374, 421, 451, 498, 502.
4-Amino-o-toluenesulfonic acid [SO_3H=1]	183.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
5-Amino-o-toluenesulfonic acid [SO_3H=1]	215, 481.
6-Amino-o-toluenesulfonic acid [SO_3H=1]	374.
•4-(4-Amino-o-tolylazo)-o-toluenesulfonic acid	374, 421, 445, 481, 495, 502.
16-Aminoviolanthrone	481, 498.
4-Aminoxanthopurpurin	481.
•2-Amino-3,5-xylenesulfonic acid [SO_3H=1]	176, 183, 374, 421.
Amylnaphthalenes	520.
o-Amylphenol	520.
p-sec-Amylphenol	520.
p-tert-Amylphenol	520.
2-Amylpyridine	343.
4-Amylpyridine	343.
•Aniline (Aniline oil)	168, 221, 284, 350, 374, 397, 421, 498.
Aniline salt	443, 498.
Aniline sulfate	498.
2-Anilinoethanol (Phenylethanolamine)	490.
8-Anilino-5-(p-hydroxyanilino)-1-naphthalenesulfonic acid.	374.
1-Anilino-4-hydroxyanthraquinone	374.
4-Anilino-4'-hydroxydiphenylamine	445.
4-Anilino-4'-hydroxydiphenylamine	232, 374, 421, 481, 495, 498, 502.
•Anilinoethanesulfonic acid and salt	445.
6-Anilino-2-methoxymetanilic acid	232, 374, 421, 481.
•8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid).	232, 374, 421, 444, 445, 462, 481, 495, 502.
•4-Anilino-1-naphthol-3-sulfonic acid (Phenyl J acid)	232, 374, 421, 445, 462, 481, 498, 502.
•7-Anilino-1-naphthol-3-sulfonic acid (Phenyl gamma acid).	445.
8-Anilino-1-napthol-5-sulfonic acid	481.
2-Anilino-5-nitrobenzenesulfonic acid	292.
Anisic acid	168, 374.
o-Anisidine	168, 184, 374.
p-Anisidine	481.
o-Anisidine nitrate	495.
o-Anisidine-p-sulfonic acid	232, 374, 421, 502.
•o-Anisidinomethanesulfonic acid	292, 386, X, X.
•Anisoin (4,4'-Dimethoxybenzoin), tech	292, 374.
Anisole, tech	386.
α-(p-Anisyl)-α-ethyl-p-methoxyacetophenone	386.
α-(p-Anisyl)-p-methoxyacetophenone	240, 343.
Anthracene, refined	481.
Anthraflavic acid	374.
6-Anthra[1,9]isothiazole-3-carbonyl chloride	233, 350, 374, 481.
•Anthranilic acid (o-Aminobenzoic acid)	445.
Anthranilic-p-sulfonanthranilide	374, 421, 481.
•Anthra[1,9]pyrazol-6(2)-one (Pyrazolanthrone)	374, 421, 481, 498.
Anthraquinone, 100%	445, 481.
N,N'-(1,5-Anthraquinone)dioxalic acid	374, 421, 423, 481, 498, X.
•1,5-Anthraquinonedisulfonic acid	374, 421, 481, X.
•1,5(and 1,8)-Anthraquinonedisulfonic acid and salt	374, 421, 423.
1,8-Anthraquinonedisulfonic acid	374, 421, 423, 481, 498.
•2,6-Anthraquinonedisulfonic acid and salt	374, 416, 421, 423, 445, 462, 481, 498.
•1-Anthraquinonesulfonic acid and salt	374, 421, 462.
2-Anthraquinonesulfonic acid and salt (Silver salt)	374, 416, 481.
3-(1-Anthraquinonylamino)-7-bens[de]anthracen-7-one	374.
3-(1-Anthraquinonylamino)-9-bromo-7-bens[de]anthracen-7-one.	374.
1,1'-[1,5(and 1,8)-Anthraquinonylenediimino]bis-[naphth[2,3-c]acridene-5,8,14(13)-trione].	374, 481.
1-(1-Anthraquinonyl)-1,2-hydrazinedisulfonic acid, disodium salt.	232, 374, 421, 445, 481, 498.
•Anthrarufin	374.
Anthrarufin-chrysazin, mixed	521.
Arsanilic acid and salt, tech	421.
Asobenzene	374.
Asobis-4-biphenylcarboxylic acid	233.
Azoxybenzene	481, 502.
m,m-Azoxydianiline	208, 369, 449.
•Benzaldehyde, tech	423, 448.
Benzamide	421.
1-Benzamido-4-aminoanthraquinone	374.
4-Benzamido-6',5(H)-benzacridine-1,1'-dianthrimide	374, 481.
1-Benzamido-4-chloroanthraquinone	374, 421, 481, 498.
•1-Benzamido-5-chloroanthraquinone	374.
1-Benzamido-5-chloro-4-methoxyanthraquinone	902.
4-Benzamido-5-chloro-2-toluidine [NH_2=1]	502.
N-(4-Benzamido-5-chloro-o-tolyl)-p-toluenesulfonamide.	445.
p-Benzamido-m-cresol	183.
Benzamido-2,5-diethoxybenzene	183.
Benzamido-2,5-diethoxynitrobenzene	481.
2-[3-(4-Benzamido-2,5-diethoxyphenyl)-1-methyldiazoamino]ethanesulfonic acid.	

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
2-[3-(4-Benzamido-2,5-diethoxyphenyl)-1-methyldiazo-amino]ethanesulfonic acid.	481.
4-Benzamido-4'-methoxy-3-(p-toluenesulfonamido)toluene	481.
[3-(4-Benzamido-6-methoxy-m-tolyl)-1-methyldiazo-amino]acetic acid.	183, 481.
8-Benzamido-1-naphthol-3,5-disulfonic acid.	481.
6-Benzamido-1-naphthol-3-sulfonic acid (Benzoyl J acid).	232, 445.
7-Benz[de]anthracen-7-one (Benzanthrone)	58, 368, 374, 416, 421, 423, 462, 481, 498.
5-(3-Benzanthronylamino)-3'-methyl-1,2'-dianthrimide-	374.
m-Benzenedisulfonic acid and sodium salt	240, 374.
Benzenesulfonamide	516.
Benzenesulfonic acid	513, 516.
Benzenesulfonic acid, ethyl ester	516.
Benzenesulfonic acid, methyl ester	516.
Benzenesulfonic acid, n-propyl ester	516.
Benzenesulfonic acid, sodium salt	516.
o-Benzenesulfonotoluidide	183, 374.
Benzenesulfonyl chloride	445, 516.
Benzhydrol (Diphenylmethanol)	X.
Benzidine base	374, 421.
Benzidine hydrochloride and sulfate	233, 374, 421, 445, 481, 498, 511.
2-Benzofuryl cyanomethyl ketone	448.
Benzoic acid, tech	16, 168, 208, 248, 369.
Benzoic anhydride	511.
Benzoin	164, 208, 222.
Benzonitrile	251.
Benzo(f)quinaldine	374.
o-Benzoylbenzoic acid	374, 421, 481, 498.
Benzoyl chloride	248, 369.
Benzylamine	292.
o-Benzyl-p-chlorophenol	168.
Benzyl disulfide	42, 248, 448, 511, 523.
Benzyl ether (Dibenzyl ether)	208, 369, X.
4-(N-Benzyl-N-ethylamino)-o-toluenesulfonic acid	374, 421, 481.
N-Benzyl-N-ethyl-m-toluidine	374, 421.
4-Benzylidenaminoantipyrine	320.
p,p'-Benzylidenebis[N,N-diethylaniline]	447.
p,p'-Benzylidenebis[N,N-dimethylaniline]	447.
3-Benzyl-4-methylumbelliferone	42, 323.
2-Benzylpyridine	343.
4-Benzylpyridine	343.
4,4'-Biacetoacetanilide	502.
[3,3'-Bi-7-benz[de]anthracen]-7,7'-dione	374, 423.
4,4'-Bi-7-benz[de]anthracen]-7,7'-dione	368, 374, 416, 421, 423, 481.
[1,1'-Binaphthalene]-8,8'-dicarboxylic acid	481.
1,1'-Bi-2-naphthol	364.
Biphenyl	168, 350.
2-Biphenylamine (2-Aminobiphenyl)	168.
5,8-Bis[p-aminobenzamido]-2-naphthalenesulfonic acid	481.
1,4-Bis[1-anthraquinonylamino]anthraquinone	374, 416, 421, 481, 498.
1,5-Bis[1-anthraquinonylamino]anthraquinone	374, 421.
3,9-Bis[1-anthraquinonylamino]-7-benz[de]anthracen-7-one.	374, 416, 421, 423, 481.
3,3'-Bis[1-benz[de]anthracen-7-one] sulfide	416.
4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base).	183, 374, 447, 481.
2,7-Bis[dimethylamino]acridine hydrochloride	502.
4,4'-Bis[dimethylamino]benzhydrol (Michler's hydrol)	374, 447, 481.
4,4'-Bis[dimethylamino]benzophenone (Michler's ketone).	183, 374, 421, 447, 481.
Bis[p-dimethylaminophenyl]methanesulfonic acid and salt.	421.
1,8-Bis[2,4-dinitrophenoxy]-4,5-dinitroanthraquinone	374.
Bis[p-methoxyphenyl]phenylmethane	481.
2,5-Bis[1-nitro-2-anthraquinonyl]-1,3,4-oxadiazole	374.
5,8-Bis[p-nitrobenzamido]-2-naphthalenesulfonic acid	481.
4,4'-Bis[p-nitrobenzamido]-2,2'-stilbenedisulfonic acid.	374.
m-Bromoacetylphenyl benzoate	183.
3-Bromo-7-benz[de]anthracen-7-one (Brombenzanthrone)	374, 416, 421, 423, 462, 481.
Bromobenzene, mono	329, 350.
2-Bromo-4,6-dinitroaniline	481.
Bromodiphenylmethane	492.
5-Bromoisatin	481.
1-Bromo-4-(N-methylacetamido)anthraquinone	481.
4-Bromo-1-methylaminoanthraquinone	374.
2-Bromo-3-methylanthraquinone	374.
6-Bromo-3-methyl-7-dibenz[f,ij]isoquinoline-2,7(3)-dione.	481.
1-Bromonaphthalene	448.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
α-Bromo-p-nitroacetophenone	168, 390, 481.
p-Bromophenol	350.
2-Bromo-4-phenylphenol	350.
2-Bromopyridine	343.
Bromquinizarin	462.
o-(α-Bromo-p-tolyl)benzoic acid	374.
1-Bromo-2,4,6-triethylbenzene	374.
2-tert-Butylanthraquinone	374.
sec-Butylbenzene	240.
Butyl-m-cresol	240.
tert-Butylcresol, tech	292.
2-tert-Butyl-p-cresol	240.
3-tert-Butyl-p-cymene	397.
6-tert-Butyl-2,4-dimethylacetophenone	397.
N¹-Butyl-4-methoxymetanilamide	481.
2-tert-Butyl-5-methylanisole	397.
p-tert-Butylphenol	350, 432, 523.
5-n-Butylsalicyl-o-acetanisidide	481.
5-tert-Butyl-m-xylene	397.
Carbazole, refined	343, 374.
1,3,6,7-Carbazoletetrasulfonic acid	481.
1-Carbethoxyamino-4-hydroxyanthraquinone	374.
α,o'-Carbonyldioxydibenzoic acid, diethyl ester	350.
5-(o-Carboxybenzoyl)-2-chlorobenzanilic acid	481.
3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate	374, 421, 481.
o-(Carboxymethylmercapto)benzoic acid	481.
Chelidamic acid	222, 320.
p-Chloroacetanilide	481.
α-Chloroacetoacetanilide	404, 490.
p-Chloroacetoacetanilide	374.
Chloroacetylcatechol	228, 320.
m-Chloroaniline	168, 421, 481.
o-Chloroaniline	168, 419.
p-Chloroaniline	168.
2-(Chloroanilino)ethanol	368.
5-Chloro-o-anisidine[NH_2:1](4-Chloro-o-anisidine) [OCH_3:1].	419.
3-Chloro-2-anthracenecarboxylic acid	481.
1-Chloroanthraquinone	374, 416, 421, 423, 481, 498.
2-Chloroanthraquinone	421, 481, 498.
1-Chloro-2-anthraquinonecarboxylic acid	374, 421.
3-Chloro-2-anthraquinonecarboxylic acid	481.
o-Chlorobenzaldehyde	374, 421, 449.
p-Chlorobenzaldehyde	449.
Chloro-7-benz[de]anthracen-7-one (Chlorobenzanthrone)	421, 498.
Chlorobenzene, mono	168, 225, 248, 289, 350, 374, 449, 450, 528.
N-Chlorobenzenesulfonamide, sodium salt	516.
p-Chlorobenzenesulfonic acid	481, 495.
p-Chlorobenzenesulfonyl chloride	X.
4-Chlorobenzhydrol	521.
m-Chlorobenzoic acid	481.
o-Chlorobenzoic acid	449.
p-Chlorobenzoic acid	449.
4-Chlorobenzophenone	521.
2-Chlorobenzothiazole	448.
o-(m-Chlorobenzoyl)benzoic acid	374, 498.
o-(p-Chlorobenzoyl)benzoic acid	421, 481.
2-Chloro-2',4-carboxylidibenzoic acid	481.
Chloro-o-cresol	168.
4-Chloro-m-cresol	513.
7-Chlorocymene	374.
ω-Chloro-3,4-dihydroxyacetophenone	386.
N-(3-Chloro-9,10-dihydroxy-2-anthryl)acetamidebis-(acid sulfate).	481.
5-Chloro-2,4-dimethoxyaniline	481.
4-Chloro-1,3-dimethoxy-4-nitrobenzene	481.
5-Chloro-4,7-dimethyl-3(2)-thianaphthenone	374.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	168, 374, 421, 462, 481, 498.
2-Chloro-3,5-dinitrobenzenesulfonethylamide	368.
2-Chloro-3,5-dinitrobenzenesulfonic acid	368, 374, 481.
2-Chloro-3,5-dinitrobenzenesulfonyl chloride	368.
4-Chloro-2,4-dinitrophenol	445, 502.
2-Chloro-N-ethyl-5-nitrobenzenesulfonanilide	481.
β-Chloroethyl-p-toluenesulfonate	421.
5-Chloro-2-formylbenzenesulfonic acid	481.
4-Chloro-3-hydroxynitrobenzenesulfonic acid	481.
4-Chlorometanilic acid	481.
5-Chlorometanilic acid	374, 421.
ω-Chlorometanilic acid	301, 421, 481.
[3-(5-Chloro-2-methoxyphenyl)-1-methyldiazoaminolacetic acid.	481.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
*1-Chloro-2-methylanthraquinone	374, 421, 481, 498.
5-Chloro-2-methylbenzimidazole	481.
6-Chloro-4-methylbenzo-1,3-thiazo-2-thionium chloride.	374.
1-(Chloromethyl)naphthalene	439.
6-Chloro-2-methylquinoline	374.
Chloronaphthalene	418.
8-Chloro-1-naphthalenesulfonic acid, sodium salt	481.
4-Chloro-1-naphthalenesulfonyl chloride	481.
4-Chloro-1-naphthol-3,6-disulfonic acid (Chloro H acid).	421, 481.
4-Chloronaphtho[1,2-b]thiophen-3(2)-one	481.
[8-Chloro-1-naphthylmercapto]acetic acid	481.
4-Chloro-2-nitroacetanilide	481.
*2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)	195, 215, 390, 374, 462, 498.
*4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)	390, 374, 419, 421.
4-Chloro-2-nitroanisole	374.
1-Chloro-5-nitroanthraquinone	374, 421.
1-Chloro-5(and 8)-nitroanthraquinone	421.
1-Chloro-8-nitroanthraquinone	374, 421.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	168, 374, 538.
1-Chloro-2(and 4)-nitrobenzene	374, 538.
1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)	168.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	168, 374, 421, 462, 538.
*4-Chloro-3-nitrobenzenesulfonamide	368, 374, 462.
2-Chloro-4-nitrobenzenesulfonic acid	445, 462.
*2-Chloro-5-nitrobenzenesulfonic acid	232, 368, 374, 421, 481, 498.
2-Chloro-5-nitrobenzenesulfonic acid, sodium salt	368.
4-Chloro-2-nitrobenzenesulfonic acid	445.
4-Chloro-3-nitrobenzenesulfonic acid	421, 462, 481, 502.
2-Chloro-5-nitrobenzenesulfonyl chloride	368.
4-Chloro-3-nitrobenzenesulfonyl chloride	368.
2-Chloro-4-nitrobenzoic acid	374, 421.
2-Chloro-5-nitrobenzoic acid	445, 502.
o-(4-Chloro-3-nitrobenzoyl)benzoic acid	421, 481.
4-Chloro-3-nitrodimethylbenzenesulfonamide	368.
Chloronitrodiphenyl ether	502.
4-Chloro-2-nitrophenol	177, 445, 481.
4-Chloro-2-nitro-1-phenol-6-sulfonic acid	445, 481.
6-Chloro-2-nitro-1-phenol-4-sulfonic acid	502.
4-Chloro-2-nitrophenylbenzyl ether	502.
2-Chloro-5-nitrophenylmethylsulfone	368.
o-Chloro-m-nitrotoluene	374.
m-Chloro-p-nitrotoluene	374.
2-Chloro-4-nitrotoluene	374, 421.
4-Chloro-2-nitrotoluene	374, 421, 481.
4-Chloro-3-nitrotoluene	462.
6-Chloro-2-nitrotoluene	374, 421.
4-Chloro-5-nitro-o-toluenesulfono-o-toluidide	502.
o-Chlorophenol	168, 350.
p-Chlorophenol	168, 350, 374.
5-Chloro-2-phenoxyaniline	502.
(p-Chlorophenyl)acetonitrile	336.
4-Chloro-o-phenylenediamine	164.
1-(o-Chlorophenyl)-3-methyl-5-pyrazolone	481.
2-[1-(m-Chlorophenyl)triazeno]-4-sulfobenzoic acid	481.
4-Chlorophthalic acid	374.
Chlorophthalic anhydride	168.
2-Chloropyridine	164.
2-Chloroquinalsarin	421, 423.
5-Chloro-8-quinolinol	445.
6-Chloroquinophthalone	374.
2-Chloro-5-sulfobenzoic acid	481, 502.
1-(6-Chloro-3-sulfophenyl)-3-methyl-5-pyrazolone	374, 481.
o-(3-Chloro-p-tolory)benzoic acid	248, 481.
m-Chlorotoluene	248.
o-Chlorotoluene	374, 421, 449.
p-Chlorotoluene	449.
*α-Chlorotoluene (Benzyl chloride)	168, 208, 248, 449.
3-Chloro-p-toluenesulfonic acid and salt [SO_3H=1]	168.
5-Chloro-o-toluenesulfonic acid and salt [SO_3H=1]	481.
5-Chloro-p-toluenesulfono-o-toluidine	502.
3-Chloro-o-toluidine	374, 421.
3-Chloro-p-toluidine	374.
*4-Chloro-o-toluidine [CH_3=1] (Red KB base)	374, 421, 462, 481, 498.
5-Chloro-o-toluidine [CH_3=1] (Fast red TR base)	421, 498.
*4-Chloro-o-toluidine hydrochloride	374, 481, 498.
5-Chloro-o-toluidine hydrochloride	374, 416.
5-Chloro-o-toluidine sulfate	421.
(4-Chloro-o-tolyl)ethylxanthate oil	481.
*4-Chloro-o-tolylmercaptoacetic acid	374, 421, 481, 494, 498.
1-(5-Chloro-o-tolyl)-3-methyl-3-triazenoacetic acid	481.
4-Chloro-α,α,α-trifluoro-3-nitrotoluene	183, 481.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
4-Chloro-α,α,α-trifluorotoluene	248.
4-Chloro-α,α,α-trifluoro-m-toluidine	183.
6-Chloro-α,α,α-trifluoro-m-toluidine	481.
Chlorotriphenylsilane (Triphenyl silicon chloride)	X.
2-Chloro-p-xylene	374.
4-Chloro-2,5-xylenesulfonyl chloride	481.
4-Chloro-2,5-xylenethiol [SH=1]	374.
4-Chloro-3,5-xylenol	513.
*4-Chloro-2,5-xylylmercaptoacetic acid	374, 421, 481.
Chrysazin	374, 481.
α-Collidine (2,4,6-Trimethylpyridine)	343.
*Cresols:	
m-Cresol	240, 343, 344, 513.
o-Cresol	240, 343, 513.[1]
p-Cresol	343, 451, 513.
*Cresols, mixed:	
Cresol (meta, para)	240, 343, 513.[1]
Cresol (ortho, meta, para)	343, 344, 513.[1]
2,3-Cresotic acid	350.
*Cresylic acid, refined	24, 40, 205, 217, 240, 258, 343, 344, 478, 498, 513.[1]
Cumaldehyde	374.
Cumene	350.
8-Cyano-1-naphthalenesulfonic acid	374, 481.
Cyanuric chloride	509, X.
*Cyclohexane	258, 350, 354, 360, 374, 431, 513.
Cyclohexaneacetic acid	350.
Cyclohexanesulfonic acid, isopropyl ester	374.
Cyclohexanol	248, 350, 374.
Cyclohexanone	374.
Cyclohexanone oxime	374.
Cyclohexene	350.
Cyclohexylamine	168.
p-Cymene	211.
p-Cymenesulfonic acid, sodium salt	516.
Decylbenzene	168.
N,N'-Diacetoacet-4,4'-diamino-3,3'-dimethyldiphenyl	233.
1,5(and 1,8)-Diacetamidoanthraquinone	374, 462.
1,4-Diaminoanthraquinone	374, 421, 481.
1,5-Diaminoanthraquinone	374, 421, 445, 481.
1,5(and 1,8)-Diaminoanthraquinone	423, 462.
*2,6-Diaminoanthraquinone	374, 421, 423, 462, 481, 498.
1,4-Diamino-2,3-anthraquinonedisulfonic acid	374.
1,4-Diamino-2-anthraquinonesulfonic acid	374.
4,8-Diaminoanthrarufin	374.
3,3'-Diaminoazoxybenzene	374.
4,4'-(p,p'-Diaminobenzamido)diphenylurea-3,3'-disulfonic acid.	502.
4,4'-Diaminobenzanilide	481.
*2,4-Diaminobenzenesulfonic acid [SO_3H=1]	421, 445, 481.
2,5-Diaminobenzenesulfonic acid [SO_3H=1]	232, 445.
4,4'-Diamino-2,2'-biphenyldisulfonic acid	233, 481.
*4,4'-Diamino-3,3'-biphenyldisulfonic acid	445, 462, 498, 502.
*2,2'-Diamino-5,5'-bi-m-toluenesulfonic acid	421, 445, 462, 502.
1,4-Diamino-2,3-dichloroanthraquinone	374.
3,6-Diamino-2,7-dimethylacridan	481.
4,4'-Diamino-5,5'-dimethyl-2,2'-biphenyldisulfonic acid.	408, 481.
2,4-Diamino-5,5'-dimethyldiphenylmethylmethane	502.
4,4'-Diamino-3,3'-dimethyltriphenylmethane	498.
*4,4'-Diaminodiphenylamine-2-sulfonic acid	232, 374, 421, 445, 481, 495, 502.
4,4'-Diaminodiphenyl sulfone	421, 481, 521.
4,4'-Diaminodiphenylurea-3,3'-disulfonic acid	502.
1,4-Diamino-5-nitroanthraquinone	481.
*N,N'-Di(m-aminophenyl)oxamide	232, 374, 421, 502.
*N,N'-Di(p-aminophenyl)oxamide	374, 495, 502.
2,6-Diaminopyridine	201, 343.
*4,4'-Diamino-2,2'-stilbenedisulfonic acid	374, 421, 445, 481, 498, 502.
2,4-Diamino-m-toluenesulfonic acid [SO_3H=1]	421, 462.
3,5-Diamino-p-toluenesulfonic acid [SO_3H=1]	421.
4,6-Diamino-m-toluenesulfonic acid [SO_3H=1]	374.
2,4-Di-sec-amylphenol	520.
2,4-Di-tert-amylphenol	520.
*1,5-Dianilino-2,6-anthraquinonedicarboxylic acid	374, 421, 481.
2,4-Dianilino-1-hydroxyanthraquinone	421, 481.
2-Diazo-1-naphthol-4,8-disulfonic acid	445.
1,5-Dibenzamidoanthraquinone	481.
4,4'-Dibenzamido-1,1'-iminodianthraquinone	416.
*4,5'-Dibenzamido-1,1'-iminodianthraquinone	374, 421, 481, 498.
5,5'-Dibenzamido-1,1'-iminodianthraquinone	374, 481.
Dibenzofuran	343.

See footnote at end of table.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
2,8-Dibenzothiophenedisulfonic acid-5,5-dioxide, disodium salt.	498.
1,5-Dibenzoylnaphthalene	423, 481.
N,N-Dibenzylsulfanilic acid and sodium salt	481.
*2,9-Dibromo-7-benz[de]anthracen-7-one	374, 416, 421, 423, 462, 481, 498.
p-Dibromobenzene	350.
7,16-Dibromoindanthrone	374.
5,5'-Dibromoindigotin	481.
2,6-Dibromo-1,5-naphthalenediol	448.
Dibromo-8,16-pyranthrenedione	374.
4,6-Di-tert-butyl-m-cresol	240.
N,N-Diearboxyethylbenzenesulfonamide	516.
*2,5-Dichloroaniline and hydrochloride [NH$_2$=1]	168, 183, 374, 419, 421, 445, 481.
*1,5-Dichloroanthraquinone	374, 421, 423, 481.
1,5(and 1,8)-Dichloroanthraquinone	374, 421, 481.
*1,8-Dichloroanthraquinone	374, 421, 423, X.
4,8(and 4,5)-Dichloro-1,5(and 1,8)-anthraquinonedisulfonic acid.	481.
2,6-Dichlorobenzaldehyde	421, 481.
o-Dichlorobenzene	167, 168, 220, 248, 289, 350, 374, 450.
o(and p)-Dichlorobenzene	225, 452.
p-Dichlorobenzene	167, 168, 220, 248, 289, 350, 374, 450.
N,N-Dichlorobenzenesulfonamide	516.
*3,3'-Dichlorobenzidine base and salts	233, 374, 491, 477, 494.
4,4'-Dichloro-3,3'-dinitrophenylsulfone	X.
Dichlorodiphenylsilane (Diphenyl silicon dichloride)	X.
2,5-Dichloro-4-hydroxinobenzenesulfonic acid	374, 445, 481.
2,6-Dichloro-4-nitroaniline	368, 481.
1,2-Dichloro-4-nitrobenzene	374.
*1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene)	374, 419, 421, 445, 481.
2,4-Dichlorophenol	168, 350.
Dichlorophenol and trichlorophenol, mixed	450.
2,5-Dichlorophenylhydrazine	502.
4,4'-Dichlorophenylsulfone	X.
o-(3,5-Dichlorosalicyloyl)benzoic acid	421, 423.
p-(Dichlorosulfamyl)benzoic acid	538.
*2,5-Dichlorosulfanilic acid [SO$_3$H=1]	374, 421, 481, 495, 502.
*1-(2,5-Dichloro-4-sulfophenyl)-3-methyl-5-pyrazolone	232, 374, 445, 481, 495, 502.
1-(2,5-Dichloro-4-sulfophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.	481, 495.
α,α-Dichlorotoluene (Benzal chloride)	248, 449.
*2,4-Dichlorotoluene	449.
*2,6-Dichlorotoluene	374, 421, 481.
N,N-Dicyanoethylbenzenesulfonamide	516.
Dicyclohexylamine	168.
2,5-Diethoxyaniline	481.
2',5'-Diethoxybenzanilide	481.
p-Diethoxybenzene	481.
2',5'-Diethoxy-4'-nitrobenzanilide	481.
1,4-Diethoxy-2-nitrobenzene	481.
p-Diethylaminobenzaldehyde	421, 481.
7-Diethylamino-4-methylcoumarin	42.
*N,N-Diethyl-3-aminophenol	374, 481, 498.
N,N-Diethylaniline	183, 374, 421, 447.
Diethylbenzene	240, 390.
N,N-Diethylcyclohexylamine	374.
N,N-Diethylmetanilic acid	374, 481.
N^1,N^3-Diethyl-4-methoxymetanilamide	481.
N,N-Diethyl-p-nitrosoaniline	481.
N,N-Diethyl-p-phenylenediamine	481.
N,N-Diethyl-p-phenylenediamine hydrochloride	481.
α,α'-Diethyl-4,4'-stilbenediol, dimethyl ether	386.
3-Diethylsulfamyl-p-acetanisidide	481.
N,N-Diethyl-m-toluidine	374.
N-(β,β-Difluoroethyl)aniline	368.
N-(β,β-Difluoroethyl)-N-(β-hydroxyethyl)aniline	368.
N,N'-Diformyltoluene-2,5-diamine	421.
N,N-Di(β-hydroxyethyl)aniline	368.
N,N-Di(β-hydroxyethyl)-m-toluidine	368.
3,4-Dihydroxy-α-isopropylaminoacetophenone	386.
*4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid).	177, 374, 421, 445, 462.
*4,5-Dihydroxy-1-naphthalenesulfonic acid (Dioxy S acid).	374, 421, 445, 462, 481.
4,6-Dihydroxy-2-naphthalenesulfonic acid	481.
*4,7-Dihydroxy-2-naphthalenesulfonic acid	164, 385, 421, 523, X.
3,5-Dihydroxy-2-naphthoic acid	183, 481.
2,4-Dihydroxyquinoline	374.
*16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	368, 374, 416, 421, 423, 481.
3,5-Diiodochelidamic acid	435.
Diisobutyl-o-cresol	364.
2,5-Dimethoxyacetophenone	292.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
2,5-Dimethoxyaniline	481.
2',5'-Dimethoxybenzanilide	481.
m-Dimethoxybenzene	374.
p-Dimethoxybenzene	374, 481.
*3,3'-Dimethoxybenzidine and sulfate	233, 374, 445.
2,4-Dimethoxybenzoic acid	498.
2,2'-[3,3'-(3,3'-Dimethoxy-4,4'-biphenylene)bis(1-methyldiazoamino)]-di(ethanesulfonic acid).	481.
2,2'-Dimethoxy-5,5'-disulfocarbanilide	445.
2',5'-Dimethoxy-4'-nitrobenzanilide	481.
1,4-Dimethoxy-2-nitrobenzene	481.
2,5-Dimethoxy-4-nitrobenzonitrile	481.
3,4-Dimethoxy-α-toluic acid nitrile	168.
16,17-Dimethoxyviolanthrone	416.
1,4-Dimethylamino-9,10-anthradiol	374.
p-Dimethylaminobenzaldehyde	374, 421, 911.
o-(Dimethylaminomethyl)-p-butylphenol	364.
o-(Dimethylaminomethyl)-p-octylphenol	364.
o-(Dimethylaminomethyl)phenol	364.
N,N-Dimethyl-7-amino-1-naphthol-3-sulfonic acid	421.
m-Dimethylaminophenol	243.
N-(p-Dimethylaminophenyl)-1,4-naphthoquinone imine	374, 421.
*N,N-Dimethylaniline	183, 374, 421, 447, 498.
N,N-Dimethylbenzylamine	364.
*2,2'-Dimethyl-1,1'-binaphthraquinone	374, 421, 481, 498.
2,8-Dimethylcaroxene	481.
2,8-Dimethylcaroxenol	481.
Dimethyl-1,3-cyclohexanedione	368.
N,N-Dimethylcyclohexylamine	168.
2',7'-Dimethylfluoran	265, 481.
2,7-Dimethyl-N-glyceryltetrahydroquinoline	368.
2,8-Dimethyl-13-hydroxy-9(13)-caroxenone	265.
N,N-Dimethyl-1-naphthylamine	448.
N,N-Dimethyl-p-nitrosoaniline	164, 374, 421, 498.
N,N-Dimethyl-3-nitro-p-toluenesulfonamide	481.
N,N-Dimethyl-p-phenylazoaniline	164.
N,N-Dimethyl-p-phenylenediamine and salts	421, 448.
2-[3-(5-Dimethylsulfamyl-o-tolyl)-1-methyldiazoamino]-5-sulfobenzoic acid.	481.
N,N-Dimethylsulfanilic acid	481.
2,7-Dimethyltetrahydroquinoline	368.
1,1'-Dimaphthyl-8,8'-dicarboxylic acid	374.
2,4-Dinitroaniline	168, 498.
*p-(2,4-Dinitroanilino)phenol (Dinitrohydroxydiphenylamine)	374, 421, 445, 481, 538.
2,4-Dinitroanisole	419.
1,5(and 1,8)-Dinitroanthraquinone	232, 374, 423.
N,N'-(4,8-Dinitroanthraquinone)-1,5-diaramic acid	374, 445.
4,8-Dinitroanthrarufin	374.
4,8-Dinitroanthrarufin-2,6-disulfonic acid, disodium salt and 4,5-Dinitrochrysazin-2,7-disulfonic acid, disodium salt, mixed.	374.
3,3'-Dinitrobenzanilide	445.
4,4'-Dinitrobenzanilide	481.
m-Dinitrobenzene	374, 421.
2,4-Dinitrobenzenesulfonic acid	445, 481.
3,5-Dinitrobenzoic acid	164, 374, 448.
3,5-Dinitrobenzoyl chloride	374.
Dinitro(3,3'-bi-7-benz[de]anthracen)-7,7'-dione	374.
4,4'-Dinitrobibenzyl-2,2'-disulfonic acid	374.
4,5-Dinitrochrysazin-2,7-disulfonic acid, disodium salt.	374.
1,5-Dinitronaphthalene	481.
1,5(and 1,8)-Dinitronaphthalene	481.
2,4-Dinitrophenol, tech	368, 374, 421, 481.
N,N'-Di(p-nitrophenyl)oxamide	374, 495.
*4,4'-Dinitro-2,2'-stilbenedisulfonic acid	232, 374, 421, 445, 481.
2,4-Dinitrotoluene	374, 421.
Dinitrotoluene, mixed isomers	421.
3,5-Dinitro-p-toluenesulfonic acid	481.
Dipentene (limonene)	211.
1,5-Diphenoxyanthraquinone	374.
Diphenylacetic acid	208, 320, 424, 435.
Diphenylacetonitrile	320.
Diphenylamine	168, 350, 374, 421.
8-Diphenylamino-1,6-naphthalenedisulfonic acid (Diphenyl epsilon acid).	445.
6,8-Diphenylamino-1-naphthalenesulfonic acid	421.
sym-N,N'-Diphenylethylenediamine	374.
1,3-Diphenyltriazine	374.
*2,4-Di(p-toluidino)anthraquinone	374, 421, 423, 481.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
1,5-Di(p-toluidino)anthraquinone	423.
Divinylbenzene	240, 350.
*Dodecylbenzene (Kerylbenzene)	168, 186, 199, 421, 478.
6-Ethoxy-3-hydroxythianaphthene	374.
6-Ethoxy-2-mercaptobenzothiazole	374.
3(and 4)-Ethoxy-4(and 3)-methoxybenzaldehyde	168.
a-(4-Ethoxy-3-methoxyphenyl)acetamide	168.
2-Ethoxynaphthalene	421, 481.
6-Ethoxy-2-naphthalenesulfonic acid	502.
2-Ethoxy-1-naphthylamine	374, 421.
2-Ethoxy-1-nitronaphthalene	374, 481.
6-Ethoxy-5-nitro-2-naphthalenesulfonic acid	502.
4-Ethoxy-m-phenylenediamine	498.
3-Ethylamino-p-cresol	374.
3-Ethylamino-p-toluenesulfonic acid [SO3H=1]	374.
o-Ethylaniline	168.
N-Ethylaniline:	
Crude	183, 445, 498.
Refined	374, 421, 498.
*2-(N-Ethylanilino)ethanol	445, 481, 490.
*a-(N-Ethylanilino)-p-toluenesulfonic acid	176, 183, 374, 421, 445, 481, 498, 502.
N-Ethyl-p-anisidine	368.
*Ethylbenzene	62, 240, 350, 490.
Ethylenebis(phenylamino)dimethanesulfonic acid	374.
N-Ethyl-N-(β-hydroxyethyl)aniline	368.
2-[1-Ethyl-3-(2-methoxy-5-nitrophenyl)diazoamino]-5-sulfobenzoic acid.	481.
N-Ethyl-1-naphthylamine	183, 374, 447.
N-Ethyl-N-1-naphthyl-p-nitrobenzamide	481.
1-Ethyl-2-nitrobenzene	168.
1-Ethyl-4-nitrobenzene	168.
N-Ethyl-4-nitrobenzenesulfonanilide	445.
*N-Ethyl-N-phenylbenzylamine (N,N-Ethylbenzylaniline)-	183, 374, 421, 481.
Ethylphenylmalonic acid, diethyl ester	208, 320, 521.
5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine)	201, 490.
1-Ethylpiperidine	X.
N-Ethyl-3-sulfoanthranilic acid	481.
N-Ethyl-m-toluidine	374, 421.
N-Ethyl-o-toluidine	374.
Fluorene	240, 343.
Formanilide	374.
4-Formyl-m-benzenedisulfonic acid	481.
m-Formylbenzenesulfonic acid	481.
*o-Formylbenzenesulfonic acid (o-Sulfobenzaldehyde)	183, 374, 481.
Furan	374.
Furfuryl alcohol	219, 248.
Hexachlorocyclopentadiene	248.
Hexachlorodiphenyl oxide	350.
Hexachloro-m-xylene	248.
Hexachloro-p-xylene	248.
Hexahydrophthalic acid	374.
Homoveratric acid	168.
Homoveratrylamine (3,4-Dimethoxyphenethylamine)	168.
Homoveratrylamine homoveratrate	292.
*p-Hydrazinobenzenesulfonic acid	176, 421, 481, 498, 502.
4-Hydrazino-m-toluenesulfonic acid	481.
Hydrazobenzene	421.
Hydroabietyl alcohol	200.
Hydroquinone, tech	173, 368, 419.
*Hydroxyacetophenones:	
m-Hydroxyacetophenone	183, 350, 511.
o-Hydroxyacetophenone	374, 424.
p-Hydroxyacetophenone	350.
1-Hydroxy-4-aminoanthraquinone	374, 421, 481, 494.
3-(4-Hydroxyanilino)carbazole	374.
3-Hydroxy-2-anthracenecarboxylic acid	481.
1-Hydroxyanthraquinone	421, 445.
N-(3-Hydroxy-2-anthraquinonyl)-1-nitro-2-anthraquinonecarboxamide.	481.
p-Hydroxybenzenearsonic acid	521.
2-Hydroxy-11-benzo-a-carbazole-3-carboxylic acid	481.
p-Hydroxybenzoic acid	233, 449.
p-Hydroxybenzoic acid, methyl ester	292.
2-Hydroxycarbazole (2-Oxycarbazole)	481.
2-Hydroxy-3-carbazolecarboxylic acid	481.
4-Hydroxycoumarin	498.
p-Hydroxydiphenylamine	374.
N-(β-Hydroxyethyl)-N-methylaniline	368.
N-(2-Hydroxyethyl)phenylacetamide	186.
1-Hydroxy-4-(3'-hydroxymethylanilino)anthraquinone	374.
4-(3-Hydroxymethylanilino)anthrarufin	374.

TABLE 78.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
3-Hydroxy-2'-methyl-2-naphthanilide	451.
3-Hydroxy-2-naphthanilide	451.
1-Hydroxy-2-naphthoic acid	481.
*3-Hydroxy-2-naphthoic acid (B.O.N.)	195, 233, 368, 374, 421, 426, 451, 481.
1-Hydroxy-2-naphthoyl chloride	481.
[5-(1-Hydroxy-2-naphthoyl)octadecylamino]isophthalic acid, dimethyl ester.	481.
2-(2-Hydroxynaphthyl)-3-thianaphthenol	445.
1-Hydroxy-4-nitroanthraquinone	445.
4-Hydroxy-3-nitro-1-benzenearsonic acid	521.
3-Hydroxy-3'-nitro-2-naphthanilide	451.
1-Hydroxy-N-octadecyl-2-naphthamide	481.
2-Hydroxyphenetole	168.
N-(β-Hydroxypropyl)-o-toluidine	368.
3-Hydroxy-5-sulfo-2-naphthoic acid	183.
p-(3-Hydroxy-7-sulfo-2-naphthylamino)benzoic acid	481.
1-Hydroxy-4-(p-toluidino)anthraquinone	423.
1,1'-Iminobis(4-benzamidoanthraquinone)	416, 498.
*6,6'-Iminobis(1-naphthol-3-sulfonic acid) (I (or J) acid imide).	232, 374, 421, 445, 462, 481, 495, 498, 502.
*1,1'-Iminodi-4-aminoanthraquinone	374, 416, 421, 423, 481, 498.
*1,1'-Iminodianthraquinone (Dianthrimide)	374, 416, 421, 423, 481, 498.
*1,1'-Iminodi-4-nitroanthraquinone	374, 416, 423.
2,2'-Iminodipyridine	343.
2,2'-(1,3-Indandione)quinoline (Quinophthalone)	374.
Indene	513.
Isatin	421.
p-Isobutylaminophenol	374.
Isocyanic acid, phenyl ester	168, 248.
Isocytosine (2-Amino-4(3)-pyrimidone)	498.
Isonicotinic acid	343.
Isophorone	490.
Isophthalic acid (1,3-Benzenedicarboxylic acid)	481.
p,p'-Isopropylidenediphenol	350, 481.
m,p-Isopropylphenol	240.
o-Isopropylphenol	240.
o,m,p-Isopropylphenol	240.
p-Isopropylphenol	240.
Isoquinoline	343.
1,3-Isoquinolinediol	374.
1,9-Isothiazoleanthrone-2-carbonyl chloride	374.
1,9-Isothiazoleanthrone-2-carboxylic acid	374.
*Isoviolanthrone (Isodibenzanthrone)	374, 416, 423, 481.
Lepidine	343.
*Leuco-1,4-diaminoanthraquinone	233, 374, 481, 498.
*Leuco quinizarin (1,4,9,10-Anthratetrol)	368, 374, 421, 445, 462.
Leuco tetrahydroxyanthraquinone	374, 481.
Leuco-1,4,5-trihydroxyanthraquinone	374.
2,3-Lutidine	343.
2,4-Lutidine	240, 343, 513.
2,6-Lutidine	343.
Melamine	168, 498.
Metanilamide	445, 481.
*Metanilic acid (m-Aminobenzenesulfonic acid)	183, 232, 374, 421, 445, 481, 498.
Metanilic acid, sodium salt	498.
1-Methoxyanthraquinone	374, 481.
4-Methoxymetanilic acid	445, 481.
1-Methoxy-4-nitroanthraquinone	374.
2-Methoxy-5-nitrobenzyl alcohol	374.
5-Methoxy-m-phenylenediamine (m-Diaminoanisole)	419, X.
N-(p-Methoxyphenyl)-p-phenylenediamine sulfate	481.
5-Methyl-o-acetanilidine	502.
1-Methylaminoanthraquinone	421, 423, 481.
1-Methylamino-4-(p-toluidino)anthraquinone	481.
N-Methylaniline	374.
2-(N-Methylanilino)ethanol	481.
5-Methyl-o-anisidine (Cresidine)(6-Methoxy-m-toluidine).	374, 445.
N-Methylanthranilic acid	481.
2-Methylanthraquinone	421, 498.
2-Methyl-7-bens[de]anthracen-7-one	421.
2-Methylbenzoxazole	164, 448.
Methylcyclohexane	350.
a-Methyldibenzyl	364.
N-Methyleneanilline	374.
3,3'-Methylenebis[1-(4-nitrophenyl)-2-phenyl ether)-3-triazeneethylacetic acid].	502.
3,3'-Methylenebis[1-(5-chloro-o-anisyl)-3-triazene-methylacetic acid].	502.
3,3'-Methylenebis[1-(5-chloro-o-tolyl)-3-triazene-methylacetic acid].	502.
p,p'-Methylenebis[N,N-diethylaniline] (Methane base)	183, 481, 498, 502.

TABLE 7B.--Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
p,p'-Methylenebis[N,N-dimethylaniline]	183, 374, 421, 481.
p,p'-Methylenebis[N,N-dimethyl-2-nitroaniline]	481.
4,4'-Methylenebis(3-hydroxy-2-naphthoic acid), sodium salt.	320.
4,4'-Methylenebis[octylcresol]	511.
5,5'-Methylenebis[toluene-2,4-diamine]	421.
4,4'-Methylenebis[m-toluidine]	374, X.
p,p'-Methylenedianiline	481.
Methyl 3,9-epoxy-11-keto-12-bromocholanate	323.
2-Methylformanilide	374.
1-Methylnaphthalene	343.
1(and 2)-Methylnaphthalene (mixed)	343.
2-Methylnaphthalene	343.
Methylnaphthalene, crude	240, 343, 407.
N-Methyl-p-nitroacetanilide	481.
N-Methyl-p-nitroaniline	481.
5-Methyl-4-nitro-o-anisidine	502.
4-Methyl-o-nitroanisole	374.
N-(5-Methyl-4-nitro-o-anisyl)-benzenesulfonamide	502.
N-(5-Methyl-4-nitro-o-anisyl)-p-toluenesulfonamide	481.
2-Methyl-1-nitroanthraquinone	374, 421, 481.
3-Methyl-1-(m-nitrophenyl)-5-pyrazolone	374.
3-Methyl-1-(p-nitrophenyl)-5-pyrazolone	481.
2-[1-Methyl-3-(4-nitro-o-tolyl)diazoamino]-5-sulfobenzoic acid.	481.
4-(3-Methyl-5-oxo-2-pyrazolin-1-yl)-m-toluenesulfonic acid.	481.
*3-Methyl-1-phenyl-5-pyrazolone (Developer Z)	232, 320, 350, 374, 445, 462, 502.
N-Methylpiperazine	521.
Methylpropylcarbinylbarbituric acid	386.
4-(3-Methyl-5-pyrazolone)-m-toluenesulfonic acid	445.
1-Methylpyrrole	X.
1-Methyl-2,4(1,3)-quinolinedione	481.
α-Methylstyrene	350.
3-Methyl-1-(m-sulfamoylphenyl)-5-pyrazolone	445.
N-Methyl-5-sulfoanthranilic acid	481.
o-Methylsulfonyl-p-nitroaniline	368.
3-Methyl-1-(m-sulfophenyl)-5-pyrazolone	374, 481.
*3-Methyl-1-(p-sulfophenyl)-5-pyrazolone	232, 374, 445, 462, 481, 495, 498, 502.
Methylsulfophenylpyrazolone, mixed	445.
5'-Methyl-p-toluenesulfon-o-anisidide	481.
3-Methyl-6-(p-toluidino)-7-dibenz[f,ij]isoquinoline-2,7(3)-dione.	481.
(1-Methyl-3-p-tolyldiazoamino)acetic acid	481.
4-Methylumbelliferone	42, 240.
*Naphthalene, solidifying at 79°C., or above (refined flake):	
*From American crude naphthalene	240, 343, 374, 451, 498, 513.
*From imported crude naphthalene	224, 240, 451, 498.
1-Naphthaleneacetonitrile	435.
1,5-Naphthalenediol (1,5-Dihydroxynaphthalene)	368, 421, 426, 481.
2,3-Naphthalenediol	481.
*1,5-Naphthalenedisulfonic acid	374, 421, 445, 481.
1,5-Naphthalenedisulfonic acid, sodium salt	374.
1,6-Naphthalenedisulfonic acid	481.
2,7-Naphthalenedisulfonic acid	374, 421.
2,7-Naphthalenedisulfonic acid, sodium salt	374.
1-Naphthalenesulfonic acid, sodium salt	445, 481.
2-Naphthalenesulfonic acid	421, 511.
2-Naphthalenesulfonic acid, sodium salt	445, 451, 498.
2-Naphthalenesulfonyl chloride	374, 481.
2-Naphthalenethiol	374.
1,3,6-Naphthalenetrisulfonic acid	481.
Naphthalic anhydride	448, 481.
Naphthalimide	481.
Naphthostyril	374.
1,8-Naphthosultam-5,7-disulfonic acid	374.
Naphthionic acid (4-Amino-1-naphthalenesulfonic acid)	374, 498.
*Naphthionic acid, sodium salt	183, 374, 421, 445.
*1-Naphthol (α-Naphthol)	374, 421, 445, 481.
*2-Naphthol, tech. (β-Naphthol)	183, 421, 445, 451, X.
1-Naphthol-3,6-disulfonic acid	445.
1-Naphthol-3,6-disulfonic acid, monosodium salt	421.
1-Naphthol-3,8-disulfonic acid	374.
1-Naphthol-4,8-disulfonic acid	445, 481.
2-Naphthol-3,6-disulfonic acid (R acid)	374, 421, 445.
*2-Naphthol-3,6-disulfonic acid, disodium salt	176, 233, 301, 421, 481, 495, 498.
*2-Naphthol-6,8-disulfonic acid (G acid)	374, 445, 481.
2-Naphthol-6,8-disulfonic acid, disodium salt	498.
1-Naphthol-3,8-disulfonic acid sultone	481.
*1-Naphthol-4-sulfonic acid (Nevile & Winther's acid)	374, 421, 445.
*1-Naphthol-5-sulfonic acid	374, 421, 445, 481, 502.

TABLE 7B.--Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
1-Naphthol-8-sulfonic acid	421, 462, 481, 495.
*2-Naphthol-6-sulfonic acid (Schaeffer's acid)	421, 445, 498.
*2-Naphthol-6-sulfonic acid, sodium salt	176, 451, 481.
2-Naphthol-7-sulfonic acid	374, 451.
1-Naphthol-3,6,8-trisulfonic acid	374.
1-Naphthol-3,6,8-trisulfonic acid-1,8-sultone	445.
1,4-Naphthoquinone	421.
*1,8-Naphthosultone	374, 445, 481, 498.
Naphth[1,2]oxadiazole-5-sulfonic acid	421, 445, 462, 481.
1-Naphthylamine (α-Naphthylamine)	374, 421, 481.
2-Naphthylamine (β-Naphthylamine)	374, 421.
1-(1-Naphthylamino)-2-anthraquinonecarboxylic acid	374.
1-(2-Naphthylamino)-2-anthraquinonecarboxylic acid	421.
*2-Naphthylmercaptoacetic acid	374, 445, 481, 498, 502.
Nicotinonitrile (3-Cyanopyridine)	201.
1-Nitroaceanthra[2,1-a]aceanthrylene-5,13-dione (Nitroacedianthrone).	374.
m-Nitroacetanilide	445, 481.
p-Nitroacetanilide	301, 368, 445, 481.
2-Nitro-p-acetanisidide	481.
4-Nitro-o-acetanisidide	183, 481.
4(and 5)-Nitro-o-acetanisidide	481.
m-Nitroacetophenone	183, 481, 511.
*m-Nitroaniline	374, 419, 421, 445, 498.
o-Nitroaniline	168, 374, 419.
o(and p)-Nitroaniline	538.
p-Nitroaniline	168, 374, 421, 462, 538.
3-Nitroanisic acid	374.
*2-Nitro-p-anisidine [NH_2=1]	183, 374, 416, 481, 498.
3-Nitro-o-anisidine [NH_2=1]	421.
*4-Nitro-o-anisidine [NH_2=1]	183, 374, 416, 421, 481, 498, 502.
*5-Nitro-o-anisidine [NH_2=1]	374, 416, 462, 481, 494, 502.
o-Nitroanisole	168, 374.
p-Nitroanisole	374.
3-Nitroanisoyl chloride	374.
1-Nitro-2-anthraquinonecarbonyl chloride	374.
*1-Nitro-2-anthraquinonecarboxylic acid	374, 421, 481.
1-Nitro-2-anthraquinonecarboxylic acid, hydrazide	374.
5-Nitro-1-anthraquinonesulfonic acid	374, 421.
5(and 8)-Nitro-1-anthraquinonesulfonic acid	421, 445.
8-Nitro-1-anthraquinonesulfonic acid	374.
2-(1-Nitro-2-anthraquinonyl)anthr[2,3]oxazole-5,10-dione.	481.
m-Nitrobenzaldehyde	183, 374, 481.
6-[p-(p-Nitrobenzamido)benzamido]-1-naphthol-3-sulfonic acid.	374.
5-Nitro-2-benzamido-1,4-diethoxybenzene	502.
*6-(m-Nitrobenzamido)-1-naphthol-3-sulfonic acid (m-Nitrobenzoyl J acid).	374, 445, 481, 495, 502.
*6-(p-Nitrobenzamido)-1-naphthol-3-sulfonic acid (p-Nitrobenzoyl J acid).	374, 481, 495, 502.
*Nitrobenzene	168, 221, 374, 421, 481, 498.
m-Nitrobenzenesulfonamide	445, 481.
*m-Nitrobenzenesulfonic acid	232, 374, 421, 445, 462, 481.
p-Nitrobenzenesulfonic acid	368, 498.
m-Nitrobenzenesulfonyl chloride	481.
p-Nitrobenzenesulfonyl chloride	421.
2-Nitrobenzidine sulfate	374.
5-Nitrobenzimidazol-2-one	374.
m-Nitrobenzoic acid	374.
m-Nitrobenzoic acid, sodium salt	339.
p-Nitrobenzoic acid	374, 421, 481.
p-Nitrobenzoic acid, n-butyl ester	292.
p-Nitrobenzoic acid, ethyl ester	292, 320.
p-Nitrobenzoic acid, n-propyl ester	292.
m-Nitrobenzoyl chloride	248, 374.
p-Nitrobenzoyl chloride	248, 374, 481.
p-Nitrobenzoyl-m-nitroanilide	445.
m-Nitrobenzyl alcohol	374.
2-Nitrobiphenyl	168.
4-Nitrobiphenyl	168.
4-Nitrobiphenyl-4'-carboxylic acid	374.
4-Nitro-o-cresol	481.
2-Nitro-p-cresol	374, 445.
Nitrodiphenylamine	498.
m-Nitroformanilide	374.
5-Nitro-2-furaldehyde	243.
5-Nitroisophthalic acid	481.
1-Nitronaphthalene	374, 421, 481.
*3-Nitro-1,5-naphthalenedisulfonic acid	374, 445, 481.
8-Nitro-1-naphthalenesulfonic acid	481.
8(and 5)-Nitro-1(and 2)-naphthalenesulfonic acid	481.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
7(and 8)-Nitronaphth[1,2]oxadiazole-5-sulfonic acid	421, 481.
p-Nitrooxanilic acid	481.
o-Nitrophenetole	374.
p-Nitrophenetole	292, 374.
o-Nitrophenol	374, 419.
*p-Nitrophenol	168, 374, 419, 421, X.
2-Nitro-1-phenol-4-sulfonamide	445.
p-(p-Nitrophenyl)acetophenone	374.
2-(m-Nitrophenyl)-1,3-dioxolane	374.
p-Nitrophenylhydrazine	448.
p-(p-Nitrophenylmercapto)aniline	374.
*1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.	374, 421, 445, 481, 502.
Nitrophenyl phenyl ether	502.
o-Nitrophenyl phenyl sulfone	481.
4-Nitrophthalamide	374.
3(and 5)-Nitrosalicylic acid	481.
4-Nitrosodiphenylamine	481.
1-Nitroso-2-naphthol	448, 511.
*p-Nitrosophenol	374, 421, 426, 445, 481, 498.
*o-Nitrotoluene	374, 421, 481.
*o-Nitrotoluene	374, 421, 481.
p-Nitrotoluene	374, 421, 481.
Nitrotoluene mixtures	374, 421, 481.
*3-Nitro-p-toluenesulfonic acid [SO$_3$H:1]	232, 445, 462, 481, 498.
*5-Nitro-o-toluenesulfonic acid	374, 421, 445, 481.
4'-Nitro-p-toluenesulfono-o-toluidide	481, 502.
3-Nitro-p-toluic acid	374.
*2-Nitro-p-toluidine [NH$_2$:1]	183, 374, 451, 498.
3-Nitro-p-toluidine [NH$_2$:1]	481, 494.
*4-Nitro-o-toluidine [NH$_2$:1]	374, 440, 481, 498.
*5-Nitro-o-toluidine [NH$_2$:1]	183, 374, 481, 502.
3-Nitro-p-tolyl chloride	374.
1&4-Nitrovioleanthrone	481, 498.
2-Nitro-p-xylene	481.
4-Nitro-m-xylene	481.
*Nitroxylenes, mixed	374, 421, 498.
Nonylphenol	240, 364, 520.
Octylcresol	511.
Octylphenol	364.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid	445, 481.
5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester.	481, 494.
*5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid (Pyrazolone T).	462, 481, 495, 502.
Pentabromoindigo	481.
3,4,9,10-Perylenetetracarboxylic acid	481.
3,4,9,10-Perylenetetracarboxylic diimide	481.
Phenanthrene	343.
Phenethylamine	168, 208, 248, 336.
o-Phenetidine	168, 374.
p-Phenetidine	168, 183, 374, 462.
*Phenol:	
*Natural:	
From coal tar:	
U.S.P	343.
39° C., m.p	240.
625-646	240, 343, 344, 513.
All other	240, 343, 513.
From petroleum:	
U.S.P	343.
Other	896.
*Synthetic:	
By caustic fusion:	
U.S.P	168, 497, 513.
625-646	513.
All other	513.
From chlorobenzene by liquid-phase hydrolysis:	
U.S.P	350.
From chlorobenzene by vapor-phase hydrolysis:	
U.S.P	225, 452.
1-Phenol-2-sulfonic acid	240.
1-Phenol-4-sulfonic acid	168.
Phenothiazine	350.
o-Phenoxyaniline	502.
*α-Phenylacetamide (α-Toluamide)	168, 208, 336, 441, X.
*Phenylacetic acid (α-Toluic acid)	168, 208, 320, 397, 424, X.
*Phenylacetic acid, ethyl ester, all grades	208, 320, 336, 397, 424, 432, 521, X.
Phenylacetic acid, potassium salt	168.
Phenylacetic acid, sodium salt	424.
Phenylacetonitrile (α-Tolunitrile)	168, 208, 424.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
p-Phenylacetophenone	481.
2-Phenylanthr[2,3]oxazole-5,10-dione	481.
*p-Phenylazoaniline (p-Aminoazobenzene) and hydrochloride.	374, 421, 445, 462, 481, 498.
N-Phenylbenzylamine	374.
Phenylcyclohexane	523.
Phenyldichlorophosphine sulfide	347.
*Phenylenediamines:	
m-Phenylenediamine	36, 232, 374, 421, 445, 481, 498.
o-Phenylenediamine	164, 222, 523.
p-Phenylenediamine	451, X.
Phenyl ether (Diphenyl oxide)	350.
*Phenylglycine, potassium salt	350.
*Phenylglycine, sodium salt	374, 421.
Phenylhydrazine	350.
Phenylhydrazine hydrochloride	481, 511.
*2,2'-(Phenylimino)diethanol (Phenyldiethanolamine)	374, 481, 490.
Phenylmalonic acid, diethyl ester	208, 320.
o-Phenylphenol	168, 350.
o-Phenylphenol, chlorinated	350.
o-Phenylphenol, hydrogenated	248.
o-Phenylphenol, sodium salt	350.
p-Phenylphenol	350.
N-Phenyl-p-phenylenediamine	164, 374, 481.
Phenylpolyethylene glycol	298.
o-(Phenylsulfonyl)aniline	481.
Phenyl 2-thienyl ketone	168.
4-Phenyl-3-thiosemicarbazide	481.
Phloroglucinol	523, 538.
*Phthalamide	350, 374, 481.
Phthalic acid	374, 481.
*Phthalic anhydride	168, 213, 240, 421, 451, 478, 497, 509, 513.
Phthalic anhydride residue	513.
Phthalide	374.
Phthaloyl chloride (Phthalyl chloride)	168.
*Picolines:	
2-Picoline (α-Picoline)	168, 240, 343, 498, 513.[1]
3-Picoline (β-Picoline)	343.
4-Picoline (γ-Picoline)	343.
Picoline (3,4-mixture)	240, 343, 513.
Picramic acid and salt	374, 421.
Picric acid (Trinitrophenol)	374, 421.
*Piperidine	168, 248, 374.
Piperidinopropanediol	433.
Polychlorobiphenyl	168.
Polyethylbenzene (80% Diethylbenzene)	62, 240.
Primuline base	421, 445.
Primulinesulfonic acid	58, 481.
Propiophenone	240, X.
*Pseudocumidine (Cumidine)	146, 183, 421.
Purpurin (1,2,4-Trihydroxyanthraquinone)	481, 498.
*Pyrazole anthrone yellow (Dipyrazoledianthrone)	374, 421, 481.
*Pyridine, refined	240, 343, 498, 513.[1]
4-Pyridineethanesulfonic acid	343.
2-Pyridinepropanol	343.
*Quinaldine	343, 374, 421, 498, 513.
Quinaldine yellow, base	498.
*Quinizarin	177, 232, 233, 368, 374, 421, 423, 440, 445, 462, 481, 498.
2-Quinizarinsulfonic acid	233, 494.
Quinoline:	
Quinoline 2*	240, 343, 498, 513.
Other grades	448, 513.
Quinoline yellow, base	421.
Quinolinic acid	449.
8-Quinolinol, tech. (8-Hydroxyquinoline)	168.
Resorcinol, tech	240, 374, 449.
β-Resorcylaldehyde	481.
β-Resorcylic acid	240.
*Salicylic acid, tech	168, 183, 350, 449.
Salicylidenesaminoguanidine oleate	374.
Selenocyanic acid, 4-methoxy-2-nitrophenyl ester	481.
Selenocyanic acid, 2-nitrophenyl ester	481.
Styphnic acid, lead salt	X.
*Styrene (Vinylbenzene): Grade for rubber (elastomers)	62, 168, 240, 350, 490.
p-Sulfamylacetanilide	168.
p-Sulfamylbenzoic acid	168, 538.
Sulfanilamide, tech	222.
*Sulfanilic acid (p-Aminobenzoic acid) and salt	183, 421, 445, 498.
4-Sulfoanthranilic acid	232, 445, 481.
4-Sulfo-o-benzoylbenzoic acid (Sulfo BB acid)	374.

See footnote at end of table.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
p,p'-Sulfonyldiphenol (4,4'-Dihydroxydiphenylsulfone)	240, 481.
Terephthalic acid	374.
Terephthalic acid, dimethyl ester	136, 374.
Terphenyl (Phenylbiphenyl)	168.
Tetrabromo-8,16-pyranthrenedione	481.
1,4,5,8-Tetrachloroanthraquinone	376, 421, 423, 481.
1,2,4,5-Tetrachlorobenzene	168, 248, 350.
Tetrachlorophthalic anhydride	86.
α,α,2,4-Tetrachlorotoluene	376.
α,α,2,6-Tetrachlorotoluene	248.
Tetrahydrofuran	376.
1,4,5,8-Tetrakis[1',1'',1''',1''''-anthraquinonylamino]anthraquinone (Pentanthramide).	374, 421, 423, 481.
3(2)-Thianaphthenone, fused	481.
3,3'-Thiobis[7-benz[de]anthracen-7-one]	374, 423, 481.
p,p'-Thiodianiline	421.
p,p'-Thiodianiline disulfate	374.
4,4'-Thiodimetanilic acid	421.
2-Thiophenealdehyde	521.
o-Tolidine and salts	233, 374, 421, 445, 511.
2-(o-Toloxy)ethanol	481.
Toluene-2,4-diamine (4-o-Tolylenediamine)	374, 421, 445, 481, 498.
m-Toluene diisocyanate	168.
o-Toluenesulfonamide	168, 538.
p-Toluenesulfonamide	168, 538.
o(and p)-Toluenesulfonic acid	168.
o(and p)-Toluenesulfonic acid, sodium salt	516.
p-Toluenesulfonic acid	448.
p-Toluenesulfonic acid, ethyl ester	364, 419.
p-Toluenesulfonic acid, isopropyl ester	374.
p-Toluenesulfonic acid, methyl ester	168.
p-Toluenesulfono-o-anisidide	502.
p-Toluenesulfono-o-toluidide	481, 502.
o-Toluenesulfonyl chloride	168.
o(and p)-Toluenesulfonyl chloride	538.
p-Toluenesulfonyl chloride	168, 538.
p-Toluic acid	336.
m-Toluidine	374, 421, 481.
o-Toluidine	374, 421, 462, 481.
p-Toluidine	374, 421.
Toluidines, mixed	374, 498.
4-p-Toluidinometanilic acid	374, 421, 445.
m-Toluidinomethanesulfonic acid	502.
o-Toluidinomethanesulfonic acid	374, 421, 495.
8-(p-Toluidino)-1-naphthalenesulfonic acid (Tolyl peri acid).	374, 421, 481.
m-Toluquinaldine	368.
o-(p-Tolyl)benzoic acid	481, 498.
4-(o-Tolylazo)-o-toluidine (o-Azinoazotoluene)	183, 374, 421, 445, 481.
o-(p-Tolyl)benzoic acid	421, 481.
2,2'-(m-Tolylimino)diethanol	445, 481.
2,4,6-Tribromophenol	350.
Trichlorobenzene	350.
1,2,4-Trichlorobenzene	168, 248.
2,4,6-Trichlorometanilic acid	374.
1,2,4-Trichloro-5-nitrobenzene	168, 481.
Trichlorophenylsilane (Phenyl silicon trichloride)	X.
α,α,α-Trichlorotoluene (Benzotrichloride)	248, 449.
1,3,5-Triethylbenzene	374.
1,4,5-Trihydroxyanthraquinone	374.
2,4,6-Trinitrobenzoic acid	523, 538.
1,3,5-Triphenylhexahydro-s-triazine	498.
2,4,6-Tris(dimethylaminomethyl)phenol	364.
6,6'-Ureylenebis[1-naphthol-3-sulfonic acid](J acid urea).	232, 301, 374, 421, 445, 462, 481, 495, 498, 502.
o-Vanillin (2-Hydroxy-3-methoxybenzaldehyde)	168.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	159, 168, 292.
o-Veratraldehyde (2,3-Dimethoxybenzaldehyde)	168.
Veratrole	168.
Veratryl alcohol	168.
2-Vinylpyridine	343.
Violanthrone (Dibenzanthrone)	58, 374, 462, 481, 498.
Xanthene	243.
9-Xanthenecarboxylic acid	243.
Xenylamine (4-Biphenylamine)	168.
m-Xylene	374, 397, 481.
o(and p)-Xylene	481.
Xylenesulfonic acid	516.
Xylenesulfonic acid, sodium salt	516.
Xylenol crystals	513.

TABLE 7B.--*Synthetic organic chemicals: Cyclic intermediates for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
Xylidines:	
2,3-Xylidine (o-Xylidine)	374, 421.
2,4-Xylidine (m-4-Xylidine)	374, 421, 481.
2,5-Xylidine (p-Xylidine)	421, 462, 481.
3,4-Xylidine	222.
Xylidines (mixed):	
Original mixture	374, 421, 498.
Xylidine (ortho, para)	374, 498.
2,5-Xylidine hydrochloride	421.
4-(2,4-Xylylazo)-o-toluidine	421, 498.
4-(2,4-Xylylazo)-2,5-xylidine	421, 462.
4-(3,5-Xylylazo)-3,5-xylidine	481.
o-Xylyl-2-propanone	292.
All other intermediates	445, 451, 481.

[1] Does not include manufacturers' identification numbers for producers who report to the Coal Economics Division, U. S. Bureau of Mines.

Dyes

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*

[Dyes for which separate statistics are given in table 6A are marked below with an asterisk (*); dyes not so marked do not appear in table 6A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER	
	Nitroso Dyes	
5	Naphthol green B	498.
	Nitro Dyes	
10	Naphthol yellow S	421, 498.
11	Amido yellow E	481.
	Azo Dyes	
	Monoazo Dyes	
15	Spirit yellow G	481, 498.
16	Acid yellow G	481, 498.
17	*Spirit yellow R	3, 374, 421, 462, 481, 498.
19	*Oil yellow	3, 374, 421, 462, 481, 498.
20	*Chrysoidine Y	421, 481, 498.
21	*Chrysoidine R	421, 481, 498.
24	*Sudan I	374, 421, 445, 462, 481, 498.
26	Crocein orange G	3, 421.
27	*Orange G	183, 374, 421, 445, 481, 498.
29	Chromotrope 2R	421.
30	*Fast acid fuchsine B	408, 421, 462.
31	*Amido naphthol red G	183, 374, 380, 421, 438, 445, 462, 481, 498.
32	Brilliant sulphon red	408, 421.
36	*Chrome yellow 2G	445, 462, 481, 495, 498.
40	*Chrome yellow R	183, 445, 462, 481, 498.
44	Fast red GG salt	481.
52	*Azo alizarin yellow GP	421, 445, 462, 481.
53	*Victoria violet 4BS	374, 421, 445, 481.
56	Chromotrope 6B	421, 445.
57	*Amido naphthol red 6B	183, 232, 374, 380, 421, 438, 445, 462, 481, 498.
68	Fast scarlet G base	374, 462, 481.
69	*Fast red GL salt	183, 374, 416, 421, 462, 481.
73	*Sudan II	3, 421, 481, 498.
79	*Ponceau R	374, 421, 445, 481, 498.
88	*Fast red B	421, 445, 481, 498.
90	Chromotrope 10B	374.
91	Acid chrome brown RH	374.
98	*Chrome brown R	421, 445, 481.
99	Chrome green 2G	481.
101	Chromate brown B	36.
105	Acid chrome brown R	36, 374.
109	Mordant yellow GRO	374.
110	Chrome flavine G	36, 374, 481.
114	*Azo eosine G	232, 374, 445, 481.
117	*Fast red B base	183, 374, 416, 421, 462, 481.
117	*Fast red B salt	462.
118	*Fast scarlet R base	183, 374, 421, 462, 481, 498, 554.
118	*Fast scarlet R salt	462.
119	Rosamine G	374.
122	Chrome yellow 3G	445.
126	Direct pink 2GN	374.
128	Direct pink	421, 481.
130	Direct fast pink EBN	374.
138	*Metanil yellow	183, 374, 421, 445, 481.
142	Methyl orange	183, 374.
145	Azoflavine RS	445, 462, 481.
146	Azo yellow	421, 462, 481.
148	Resorcin yellow	421.
151	Orange II	408, 421, 445, 481, 498.
161	*Orange R	374, 421, 498.
163	Pigment rubine B	374, 421.
165	Lake red C	498.
167	Acid chrome brown B	421.
168	*Acid chrome garnet B	421, 445, 481.
169	*Acid chrome violet B	36, 421, 462.
170	Chrome black FV	421, 481.
175	Naphthylamine brown	481.
176	*Fast red A	374, 421, 445, 481, 498.
179	*Azo rubine	183, 374, 421, 445, 481.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued	
	Azo Dyes--Continued	
	Monoazo Dyes--Continued	
183	Crocein scarlet 3BX	445.
184	Amaranth	421, 445.
185	*Cochineal red A	183, 421, 445, 481, 498.
193	Mordant yellow O	421, 481.
197	Chrome yellow RN	421, 445, 481.
201	Chrome blue black B	421, 445, 481.
202	*Chrome blue black R	183, 374, 421, 445, 481.
203	*Chrome black T	421, 445, 481.
204	*Chrome black A	36, 421, 445, 481.
208	*Fast acid blue R	374, 421, 481, 498.
209	*Fast acid blue B	374, 421, 481.
216	*Acid chrome red B	374, 421, 445, 481, 498.
219	*Chrome flavine A	374, 421, 445, 481.
225	Direct pink 2B	374.
	Disazo Dyes	
234	*Resorcin brown	374, 408, 421, 445, 462, 481, 498.
235	*Resorcin dark brown	183, 408, 421, 445, 462, 498.
238	Chrome brown G	374, 421.
246	*Acid black 10B	183, 374, 408, 421, 445, 462, 481, 498.
247	*Azo dark green A	374, 421, 445.
252	*Brilliant crocein M	183, 374, 380, 421, 445, 481, 498.
253	Ponceau SS ex	421.
258	Sudan IV	374, 421, 445.
262	Cloth red B	421, 445, 481.
267	Neutral gray G	374.
271	Fast acid black B	481.
274	Milling orange	445, 462, 481, 498.
275	*Cloth scarlet G	408, 445, 462, 498.
278	*Direct fast red 8BL	232, 263, 374, 408, 421, 438, 444, 445, 462, 481, 495, 498, 502.
280	*Scarlet BC	421, 462, 481.
288	*Fast acid cyanine G	421, 445, 481, 498.
289	*Fast acid cyanine 5R ex	374, 421, 481, 498.
292	Acid chrome verdone A	421.
294	Acid black B	421.
299	*Acid chrome black F	374, 421, 445, 481.
302	Acid chrome green 3S	481, 498.
304	*Fast acid black 2BN	374, 421, 445, 481.
306	Fast acid black F	481.
307	*Fast acid cyanine black B	374, 421, 481, 498.
308	Naphthylamine black D	481.
317	*Developed blue B	374, 421, 445, 481.
318	Naphthylamine black V	374.
319	*Direct fast heliotrope	374, 421, 445.
324a	Rosanthrene	374, 421.
325	Direct brilliant violet	421, 462.
326	*Direct fast scarlet	232, 301, 374, 421, 445, 481, 495, 498, 502, X.
327	*Direct fast scarlet 4BA	380, 445, 481, 495, 498.
331	*Bismarck brown G	374, 421, 481, 498.
332	*Bismarck brown R	374, 421, 445, 481, 498.
336	Acid chrome black SE	481.
343	Chrome fast yellow C	374, 421, 498.
346	*Direct fast yellow 5GL	374, 421, 438, 481, 495, 498, X.
349	Direct fast yellow 4GL ex	232, 438.
349a	*Direct fast yellow RL	232, 421, 438, 495, 547.
353	*Direct fast pink 2BL	374, 421, 481, 498, 502.
364	*Brilliant yellow	374, 421, 481, 498.
365	Chrysophenine G	374, 421, 445, 481.
370	Congo red	374, 421, 445.
375	*Congo corinth G	263, 374, 380, 408, 421, 445, 462, 481, 498.
376	Congo rubine	444, 445.
377	Direct orange G	421.
382	*Direct scarlet B	408, 421, 445, 462, 481, 498.
387	*Direct violet B	374, 421, 445, 481.
393	Benzo violet G	481.
394	*Direct violet N	374, 380, 421, 445, 462, 481.
400	Direct brilliant Bordeaux R	421.
401	*Developed black BH	374, 408, 421, 445, 481, 495, 498.
403	Diphenyl fast gray B	445.
405	Direct cyanine R	421.
406	*Direct blue 2B	374, 380, 408, 421, 445, 462, 481, 498.
411	Crocetine yellow G	421, 445.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER—Continued	
	Azo Dyes--Continued	
	Diazo Dyes—Continued	
413	*Direct orange R	374, 421, 445, 481.
419	*Direct fast red F	232, 374, 380, 408, 421, 438, 444, 445, 462, 481, 495, 498.
420	*Direct brown M	232, 374, 380, 408, 421, 444, 445, 462, 481, 495, 498.
423	*Direct brown B	408, 445, 498.
430	*Polar red	232, 374, 408, 421, 444, 445, 481, 498, 502.
431	Acid chrome red	374.
436	Direct brilliant red 4B	445.
441	Chrome fast yellow RD	421, 502.
443	*Milling red G	445, 462, 481, 498, 502.
446	Direct orange R	421, 462.
448	*Benzopurpurine 4B	374, 421, 445.
464	Direct blue 3R	374.
466	*Benzo new blue 5B	374, 408, 421, 445, 481.
471	Direct blue 4R	421, 445.
472	*Direct blue RX	421, 445, 481.
477	*Direct blue 3B	374, 421, 445.
478	*Direct orange G	421, 445, 462.
487	*Acid anthracene red 3B	374, 421, 445, 462, 481, 498, 502.
495	Benzopurpurine 10B	374, 421, 445.
496	*Fast blue B base	183, 374, 462, 481.
499	*Fast blue B salt	183, 380, 416, 554.
502	*Direct azurine G	263, 374, 408, 421, 445, 462, 481, 495.
508	Direct brilliant blue G	374.
512	*Direct blue RW	232, 374, 421, 445, 462, 481, 495.
515	Direct blue B	421.
516	Chicago blue B	481.
518	*Direct sky blue FF	232, 374, 408, 421, 445, 462, 481, 495, 498.
520	*Direct pure blue	374, 421, 438, 445, 481, 495.
	Trisazo Dyes	
533	Direct fast blue FR	374, 462.
539	*Direct fast black FF	374, 421, 445, 481, 495.
543	*Plutoform black	232, 380, 421, 445, 462.
552	Diazo blue black BS	374, 421.
559	Direct bronze G	481.
561	*Direct brown BT	374, 408, 421, 444, 445, 462, 481, 495.
567	Direct fast blue R	445.
576	Direct fast blue B	445.
581	*Direct black EW	374, 380, 408, 421, 445, 481, 495, 498.
582	*Direct black RX	374, 408, 421, 445, 481, 498.
583	*Direct green ET	374, 408, 421, 445, 462, 481, 498.
589	*Chloramine green B	374, 408, 421, 445.
590	Direct steel blue G	374, 495.
593	*Direct green B	374, 408, 421, 445, 462, 481, 495, 498.
594	*Direct green G	374, 408, 421, 445.
595	Direct olive G	462.
596	*Direct brown 3GO	374, 380, 408, 421, 445, 481, 498.
598	*Congo brown G	374, 421, 444, 445, 481, 495.
601	Congo brown R	374.
	Tetrakisazo Dyes	
606	Direct brown G	408, 481.
619	Naphthamine fast black RS	374.
	Stilbene Dyes	
620	*Direct yellow R	374, 421, 445, 481, 498.
621	*Chloramine orange G	374, 421, 445, 481, 498.
622	*Stilbene yellow	374, 421, 481, 498.
628	Diphenyl catechine G	421.
631	Diphenyl chrysoine G	445.
	Pyrazolone Dyes	
636	*Fast light yellow G	374, 421, 481, 502.
639	*Xylene light yellow	183, 232, 374, 421, 438, 445, 481, 495, 498, 502.
640	*Tartrazine	183, 421, 438, 445, 462, 481, 495, 498, 502.
642	*Polar yellow	232, 421, 445, 481, 502.
652	*Chrome red B	232, 374, 421, 445, 481, 498, 502.
653	*Pyrazol orange	421, 438, 444, 445, 462, 481, 495, 502.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER—Continued	
	Ketoneimine Dyes	
655	*Auramine	374, 421, 498.
	Triphenylmethane and Diphenylnaphthylmethane Dyes	
657	*Malachite green	183, 421, 447, 498.
658	Rhoduline blue 6G	183, 374, 421, 447, 481.
662	*Brilliant green	183, 421, 447, 498.
663	*Setocyanine	374, 421, 481.
666	*Acid green B	374, 421, 445, 481, 498.
667	*Fast acid green B	183, 374, 421, 481, 498.
670	Acid light green	481.
671	*Acid glaucine blue	183, 374, 421, 481, 498.
672	Xylene blue VS	421, 481.
673	Xylene blue AS	421, 481.
676	*Para fuchsine	195, 330, 498.
677	*Magenta	330, 451, 498.
680	*Methyl violet B and base	195, 374, 421, 447, 481, 498.
681	*Crystal violet	183, 374, 421, 447, 481.
682	*Ethyl violet	374, 421, 447, 481.
683	Benzyl violet	447.
689	Spirit blue 2B	330.
692	Acid magenta	481.
696	Fast acid violet 10B	374.
697	Wool violet	421.
698	*Acid violet	374, 445, 481, 498.
699	Acid fast violet BO	374, 421.
704	Alkali blue	195, 330.
706	Methyl cotton blue	481.
709	*Soluble blue	195, 330, 481, 498.
710	Brilliant sky blue 3G	481.
714	Patent blue A	498.
720	*Acid chrome azurol B	374, 421, 445, 462, 481.
722	*Acid chrome cyanine R	183, 374, 421, 445, 481.
724	Aurine	374.
728	Victoria blue R	183, 374, 447.
729	*Victoria blue B	183, 374, 421, 447, 481.
735	*Naphthalene green V	183, 374, 421, 481.
737	*Wool green S	183, 374, 481, 498.
	Xanthene Dyes	
748	Xylene red B	481.
749	Rhodamine B conc., 100%	374, 421, 481, 498.
752	Rhodamine 6G conc., 100%	374, 421.
758	Fast acid violet A2R	14, 421.
766	*Fluorescein	14, 183, 215, 330, 421, 473, 498.
766	Uranine (Fluorescein, alkali salt)	183, 330, 498.
767	Tetrachlorofluorescein	473.
768	*Tetrabromofluorescein	183, 307, 330, 498.
768	Eosine G (Tetrabromofluorescein, alkali salt)	330, 498.
771	Dinitrodibromofluorescein	183.
773	Erythrosine bluish	183, 330.
774	Phloxine	330.
778	Phloxine B	183.
779	Rose bengale B	330, 498.
	Acridine Dyes	
788	Acridine orange NO	374, 421, 481, 502.
789	Brilliant phosphine G	374.
793	*Phosphine	421, 445, 498.
794	Phosphine 2G	502.
	Quinoline Dyes	
800	Quinoline yellow, spirit-soluble	421, 498.
801	*Quinoline yellow	374, 421, 498.
802	Quinoline yellow WT	374, 481, 498.
	Thiazole Dyes	
812	*Primuline	374, 421, 445.
813	Direct pure yellow M	374.
814	*Direct fast yellow	58, 374, 421, 481.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued	
	Thiazole Dyes--Continued	
815	Thioflavine T	374.
816	Direct brilliant flavine 5G	58.
	Azine Dyes	
833	*Wool fast blue	421, 445, 481.
841	*Safranine	183, 374, 421, 481.
842	Methylene violet	421.
853	Acid cyanine	481.
860	*Induline, spirit-soluble	421, 481, 498.
861	Induline, water-soluble	421, 481, 498.
864	*Nigrosine, spirit-soluble	421, 481, 498.
865	*Nigrosine, water-soluble	421, 481, 498.
	Aniline Black and Allied Dyes	
871	Diphenyl black base	498.
873	New fast gray	498.
875	Fur black	498.
	Oxazine Dyes	
883	Gallocyanine	177.
909	New blue R	421, 498.
913	Nile blue A	481.
	Thiazine Dyes	
922	*Methylene blue	421, 447, 481, 498.
924	Methylene green B	498.
	Sulfur or Sulfide Dyes	
	Derivatives of Carbazole	
949	Carbazole vat blue R	246, 374.
	Other Sulfur or Sulfide Dyes	
	*Sulfur black	246, 374, 421, 426, 481, 498.
	*Sulfur blue	246, 374, 385, 421, 426, 445, 481, 498.
	*Sulfur brown	246, 374, 385, 421, 426, 445, 481, 498.
	*Sulfur green	246, 374, 385, 421, 481, 498.
	Sulfur khaki	385.
	*Sulfur maroon	374, 421, 498.
	*Sulfur olive	246, 374, 385, 421, 426, 481, 498.
	Sulfur orange	421, 426, 481.
	*Sulfur tan	246, 374, 385, 421, 426, 481.
	*Sulfur yellow	246, 374, 385, 426, 445, 481, 498.
	Anthraquinone Dyes	
1027	Alizarin VI	421, 462, 498.
1034	*Alizarin red S	421, 423, 462, 481, 498.
1035	Alizarin brown	177, 421.
1040	Alizarin SX	421.
1053	*Acid alizarin blue SE	374, 421, 445, 481, 498.
1054	*Acid alizarin blue B	177, 232, 374, 421, 445, 481, 498.
1060	Anthracene blue SWDO	423.
1062	Anthracene blue WR	232, 421.
1063	Anthracene blue SWX	423.
1073	*Alizarin irisol R	177, 374, 423.
1075	Alizarin astrol B	374, 423, 481.
1076	Cyananthrol R	374, 423.
1078	*Alizarin cyanine green	177, 232, 363, 374, 421, 423, 462, 481, 498.
1080	Acid anthraquinone violet	374, 421, 423.
1085	*Anthraquinone blue black B	177, 421, 423, 462, 481, 498.
1088	*Acid anthraquinone sky blue B	374, 421, 423, 481.
1089	Anthraquinone blue SR	423.
1091	Acid alizarin rubine	423, 481.
	Anthraquinone Vat Dyes	
[1] 1095	Anthraquinone vat yellow GC, 12-1/2%.	
1096	*Anthraquinone vat golden orange G, 12%	374, 421, 481, 498.
1098	*Anthraquinone vat scarlet G, 16-2/3%	374, 421, 481, 498.

See footnotes at end of table.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued	
	Anthraquinone Vat Dyes--Continued	
1099	*Anthraquinone vat dark blue BO, 25%	58, 374, 421, 462, 498.
1100	Vat navy blue NTP	374, 498.
1101	*Anthraquinone vat jade green, 6%	368, 374, 416, 421, 423, 438, 462, 481.
1102	*Anthraquinone vat green B and black B, 12-1/2%	58, 374, 421, 481, 498.
1104	*Anthraquinone vat violet 2R, 12-1/2%	374, 416, 421, 423, 481.
1106	*Anthraquinone vat blue RS, 10%	374, 421, 481, 498.
1109	Anthraquinone vat blue 3G, 10%	374.
1112	*Anthraquinone vat blue GCS, 8-1/3%	374, 421, 481.
1113	*Anthraquinone vat blue GCD, 8-1/3%	374, 421, 481, 498.
1118	Anthraquinone vat yellow G, 12-1/2%	374, 421.
1120	Anthraquinone vat brown B, 22%	374.
1132	Anthraquinone vat yellow GK, 12-1/2%	374, 421, 462, 481.
1135	Anthraquinone vat brilliant violet RK, 12-1/2%	374, 481.
1150	*Anthraquinone vat olive R, 12-1/2%	374, 416, 421, 423, 462, 481, 498.
1151	*Anthraquinone vat brown R, 12-1/2%	374, 421, 481, 498.
1152	*Anthraquinone vat brown G, 12-1/2%	374, 416, 421, 498.
1161	Anthraquinone vat red violet RRN, 12-1/2%	374, 421.
1162	*Anthraquinone vat red BN, ex., 12-1/2%	374, 421, 481.
1163	*Anthraquinone vat violet BN, 25%	374, 421, 481.
1167	Anthraquinone vat olive G	58.
1170	Anthraquinone vat yellow R, 12-1/2%	58, 374.
	Indigoid and Thioindigoid Dyes	
1177	*Indigo, synthetic, 20%	350, 374, 421, 481.
1178	Indigo, white, 20%	421.
1180	Indigotin IA	374, 421.
1183	Tribromindigo RB, 20%	350, 421.
1184	*Bromindigo blue 2BD, 16%	350, 421, 481.
1185	Indigo blue GB	481.
1207	Ciba pink B, 20%	350, 481.
1212	*Vat red 3B, 20%	350, 374, 421, 481, 498.
1217	*Vat orange R, 10%	374, 421, 462, 481, 498.
	Food, Drug, and Cosmetic Dyes	
	Food, Drug, and Cosmetic Colors	
	*Blue #1	87, 146, 176, 183, 421.
	Blue #1, aluminum lake	87.
	*Blue #2	87, 146, 183, 247, 421.
	Green #1	146, 176, 421.
	Green #2	146, 176, 183, 421.
	Green #3	176, 183.
	*Orange #1	87, 146, 176, 183, 247, 421.
	Orange #2	421, 498.
	*Red #1	87, 146, 183, 421.
	*Red #2	87, 146, 176, 183, 247, 421.
	*Red #3	87, 146, 183, 247, 421.
	Red #3, aluminum lake	77.
	*Red #4	87, 176, 183, 421.
	Red #32	183, 421, 498.
	Violet #1	421.
	Yellow #1	87, 183.
	*Yellow #3, #4	183, 291, 421, 498.
	*Yellow #5, #6	87, 146, 176, 183, 247, 421.
	Yellow #5, aluminum lake	87.
	Drug and Cosmetic Colors	
	Black #1	421, 498.
	Blue #1	87.
	Blue #4	421.
	Blue #6	87, 421.
	Blue #9	421.
	Brown #1	421.
	Green #1	87.
	Green #5, #6, #7	421.
	Orange #3	87, 421.
	Orange #4	87, 215, 421.
	*Orange #5	183, 215, 330, 473, 498.
	Orange #10, #11, #16	421.
	Orange #15	87.
	Orange #17	87, 215.
	Red #1, #2, #3, #30	87.
	Red #3	87, 183, 421.
	Red #6	215.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY COLOUR INDEX NUMBER--Continued	
	Food, Drug, and Cosmetic Dyes--Continued	
	Drug and Cosmetic Colors--Continued	
	Red #7, #10, #12, #13, #31, #35, #36	87, 215.
	*Red #8	87, 215, 498.
	Red #9	215, 473, 498.
	*Red #11	87, 215, 473.
	Red #17, #28, #33, #37, #39	421.
	Red #18	87, 421.
	Red #19	87, 215, 421.
	*Red #21	87, 183, 215, 307, 330, 473, 498.
	Red #22	330, 421, 498.
	Red #27	473.
	*Red #34	87, 215, 473.
	Violet #1	421.
	*Yellow #1	87, 421.
	*Yellow #5	87, 215.
	*Yellow #6	87, 330.
	*Yellow #7	87, 183, 330, 421, 498.
	*Yellow #8	87, 183, 421, 498.
	*Yellow #10, #11	421.
	Drug and Cosmetic Dyes, External	
	Blue #1	421.
	Green #1	421.
	Red #1, #10, #11	421.
	Red #8, #13	87, 421.
	Violet #2	87, 421.
	Yellow #1, #3	87.
	Yellow #5	87, 215.
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER	
1	*Acid alizarin flavine R	232, 374, 421, 481, 498.
2	Acid anthracene brown B	498.
4	*Acid anthracene brown FG	36, 232, 374, 408, 421, 444, 445, 462, 481, 502.
7	*Acid chrome blue 2R	421, 445, 481.
8 9	*Algol yellow GC	374, 421, 423, 462, 481, 498.
10	Alizarin direct blue A2G	374, 481.
11	Alizarin direct blue AR	374, 421, 481.
12	*Alizarin supra blue A	374, 421, 481.
13	Alkali fast green 10G	421, 481.
14	*Anthracene chromate brown BB	36, 232, 374, 408, 421, 445, 481, 498.
16	Artificial silk black G	421, 445, 481, 495.
19	*Benzo Bordeaux 6B	421, 445, 462, 481.
20	*Benzo chrome black blue B	374, 421, 445, 481.
22	Benzo copper blue B	301, 481.
23	Benzo dark brown ex	481.
24	*Benzo fast black L	374, 421, 445, 462, 481, 502.
26	*Benzo fast blue 4GL	232, 421, 481, 495, 502.
27	Benzo fast blue 8GL	502.
28	Benzo fast brown 3GL	421, 481.
29	Benzo green 2B	481.
30	*Benzo red 12B	374, 421, 495.
31	Benzo rhoduline red B	374, 481.
32	*Benzo rhoduline red 3B	380, 421, 481, 495.
33	Brilliant acid blue 3B	421, 462.
35	*Brilliant benzo violet B	374, 380, 421, 462, 481.
36	Brilliant benzo violet 2R	502.
37	Brilliant milling blue B	374, 421, 481.
39	Brilliant wool blue FFB	421.
40	*Brilliant wool blue FFR	374, 421, 481.
42	Cellitazol B	374, 462, 498.
43	*Celliton orange GR	374, 380, 445, 462, 481.
45	Celliton red violet R	374.
46	Chlorantine fast blue 2GL	445.
47	*Chlorantine fast brown BRL	232, 263, 374, 408, 421, 438, 444, 445, 462, 481, 495, 498, 502, 547.
50	Direct fast red 5BL	445.
53	*Chlorantine fast yellow 4GL	374, 421, 444, 445, 495, 502.
54	*Chlorantine fast yellow RL	374, 444, 445, 502.
55	Chrome yellow DS	445.
56	Chrome yellow G	498.
57	Cibacete brilliant blue 2B	374.
58	Cibacete diazo black B	374, 445.

See footnotes at end of table.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	
59	Cibacete diazo black GN	445.
61	Cibacete red 3B	374, 421, 445.
62	Cibacete sapphire blue G	445, 481.
63	Cibacete scarlet G	380.
64	Cotton black 3G	408, 481.
65	Cross dye green B	421, 498.
66	Diamine azo Bordeaux B	421.
67	*Diamine Bordeaux B	408, 421, 462, 481, 495.
68	Diamine catechine B	374, 421.
69	*Diamine catechine G	374, 421, 462.
70	*Diamine catechine 3G	374, 421, 462, 481.
71	*Diamine fast blue FFB	374, 421, 438, 445, 481, 495, 502.
72	*Diamine fast orange EG	232, 374, 385, 421, 445, 481, 498.
73	*Diamine fast orange ER	232, 374, 385, 481, 498.
74	*Diaminogen blue 4GB	374, 421, 445, 481, 495, 502.
77	*Diazo Bordeaux 7B	232, 374, 445, 462, 481, 502.
78	*Diazo brilliant green 3G	374, 421, 445, 481, 502.
79	*Diazo brilliant scarlet 2BL ex	374, 421, 462, 481, 502.
80	*Diazo brilliant scarlet RDA	232, 374, 421, 462, 481, 502.
81	Diazo brown 6G	421, 481.
82	Diazo brown MR	481.
83	Diazo brown 3RD	421, 481.
84	*Diazo fast red 5BL	232, 374, 421.
85	*Diazo fast red 7BL	232, 263, 374, 421, 438, 462, 495, 502.
86	Diazo indigo blue 4GL	481.
87	Diazo indigo blue 4RL	481.
88	Diazo olive G	481.
89	Diazo rubine B	232, 481, 502.
90	Diazo sky blue B	481.
91	Diazo sky blue 3GL	481.
93	Fast mordant blue B	301, 421.
94	*Fast scarlet 2G base	462, 481.
94	*Fast scarlet 2G salt	183, 374, 380, 416, 421, 462, 481.
95	Sirius supra brown BR	481.
97	Sirius supra orange 5G	481.
99	Sirius supra yellow 5G	421, 481.
100	Quinea carmine B	374, 481.
101	*Quinea fast red BL	232, 374, 421, 481, 498.
102	Quinea fast red 4BL	374.
106	Helindon fast scarlet B	374.
107	Helindon fast scarlet G	462, 481.
108	Helindon pink B ex	498.
109	*Helindon pink R ex	374, 462, 481, 498.
116	Indanthrene brilliant orange RK	374, 481.
117	Indanthrene brilliant violet 4R	423.
118	*Indanthrene brown BR	374, 416, 421, 481, 498.
121	*Indanthrene brown RRD	374, 421, 445, 462, 481, 498, 502.
122	*Indanthrene khaki 2G	374, 421, 423, 481.
124	*Indanthrene rubine R	374, 421, 481.
125	Indanthrene yellow brown 3G	421.
126	Indo carbon GL	246, 481.
129	Katigen chrome blue 5G	481.
135	Metachrome red G	177.
137	Milling orange G	462.
138	*Milling yellow N5G	421, 438, 445, 462, 481, 502.
139	Milling yellow O	421, 481.
141	Naphthol blue black S	421, 481.
143	Neolan black WA	421, 445, 481.
144	*Neolan blue GG	232, 374, 421, 445, 462, 481, 495, 498, 502.
145	Neolan Bordeaux R	232, 421, 445.
146	*Neolan orange R	374, 421, 445.
147	*Oxydiaminogen GB	408, 421, 438, 462, 481, 495, 547.
148	*Paper red A ex	374, 421, 481.
151	Polar orange GS	445.
152	*Polar orange R	232, 374, 421, 445, 481.
157	Pyrogene orange G-CF	445.
158	Pyrogene violet brown V	445.
162	Pyrogene yellow brown 2RS-CF	445.
163	Rapidogen blue BN	380, 481.
164	*Rapidogen blue G	374, 481, 502.
165	Rapidogen Bordeaux R	380, 481, 502.
166	Rapidogen brown GN	481.
168	*Rapidogen red GS	380, 421, 481, 498, 502.
169	*Rapidogen red RS	374, 380, 481, 498, 502.
170	*Rapidogen scarlet RS	374, 380, 421, 481, 498, 502.
171	*Rapidogen yellow G	374, 380, 481, 498, 502.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	
172	*Roseanthrene fast Bordeaux 2BL	232, 263, 374, 421, 438, 445, 462, 481, 495, 502.
173	*Roseanthrene orange R	374, 421, 445, 481, 502.
174	Setacyl direct orange 2R	374.
175	Setacyl direct violet B	374.
178	Sudan brown 3B	481.
181	Sudan orange RT	481.
182	Sudan red BB	481.
186	Sulphon orange G	462, 481.
187	*Sulphon yellow R	232, 445, 462, 481, 498, 502.
188	Supra light rubine BL	421, 481.
189	Supramine black BR	462, 481.
190	Supramine blue R	481.
191	Supramine Bordeaux B	481.
192	Supramine brown R	462.
193	Supramine red 3B	462, 481.
194	Supramine red 2G	481.
195	Supramine yellow R	481.
197	*Victoria fast violet 2R ex	376, 421, 445, 481, 498.
198	*Victoria pure blue B	183, 447, 481.
201	*Zambesi black D	421, 445, 481.
202	*Zambesi black V	376, 445, 481.
203	Acid anthracene brown RR	481, 502.
205	Acid anthracene brown WSO	481.
206	*Alizarin fast gray BBLW	374, 421, 423, 481, 498.
207	Alizarin supra sky R	421, 481.
208	Alphanol brown B	481.
209	Amido naphthol brown 3G	481.
210	Anthralan red B-CF	481.
211	Ascosol fast orange G	481.
213	Ascosol fast red 3B	481.
214	Ascosol fast scarlet CR	481.
216	Ascosol fast yellow GR	481.
217	Benso fast Bordeaux 6BL	481.
218	Benso fast brown RL	421, 481.
219	Benzoform blue BBL	481.
222	Brilliant indocyanine 6B-CF	421, 481.
223	Brilliant indocyanine G	421, 445, 481.
224	Brilliant sulpho flavine FFA	421, 481.
226	Celliton fast blue B	374, 481.
227	Celliton fast blue FR	481.
228	*Celliton fast blue FFR	177, 374, 380, 462, 481.
229	Celliton fast blue green B	374, 380, 481.
230	Celliton fast brown 3R	462, 481.
231	Celliton fast brown 5R	481.
232	Celliton fast navy blue B	462.
234	Celliton fast pink B	380, 462.
235	*Celliton fast pink FF3B	374, 380, 462, 481.
236	*Celliton fast red GG	374, 380, 462, 481.
237	*Celliton fast red violet 3B	380, 462, 481.
238	*Celliton fast rubine B	374, 380, 481.
239	Celliton fast rubine 3B	374, 380, 462, 481, 499.
240	Celliton fast violet B	462.
241	Celliton fast violet 6B	380, 481.
242	*Celliton fast yellow G	374, 380, 445, 462, 481, 495.
244	*Celliton scarlet B	374, 380, 421, 445, 462, 481.
245	*Celliton yellow 3G	380, 462, 481.
247	Chrome fast orange 3RL	481.
248	Diamine orange F	481.
249	Dianil yellow 5G	481.
250	Diazo brown 3R	481.
251	Diazo fast yellow 2G	421, 481.
253	Erio chrome brown DRL	421, 445.
254	Erio chrome olive BL	421, 445.
255	Fast black B salt	481.
256	Fast black K salt	481.
257	Fast black LB base	481.
258	Fast blue BB base	380, 481, 554.
258	Fast blue BB salt	380, 481, 554.
259	Fast Bordeaux BD salt	481.
260	*Fast Bordeaux GP base	183, 374, 416, 462, 481.
260	*Fast Bordeaux GP salt	183, 416, 421, 462, 481.
261	Fast corinth V salt	481.
263	Fast garnet GC base	3.
263	Fast garnet GC salt	481.
264	*Fast orange GC base	416, 421, 481.
264	*Fast orange GC salt	183, 416, 462, 481.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	
265	*Fast orange GR base	183, 416.
265	*Fast orange GR salt	416, 481.
266	Fast orange RD salt	183, 481.
267	*Fast red AL salt	183, 421, 462, 481.
269	*Fast red 3GL salt	183, 416, 421, 462, 481.
270	*Fast red RB base	183, 374, 421, 462, 554.
270	*Fast red RB salt	380, 462, 498.
271	*Fast red RC base	416, 462, 481.
271	*Fast red RC salt	183, 374, 380, 416, 481.
272	Fast red RL base	481.
272	Fast red RL salt	183, 380, 481.
273	Fast red TR base	416, 462.
273	Fast red TR salt	416, 421, 481.
274	*Fast violet B base	380, 462, 481, 554.
274	Fast violet B salt	481, 554.
275	*Fast yellow GC base	416, 462.
275	*Fast yellow GC salt	183, 416, 481.
276	Sirius supra orange LOOL	481.
277	Sirius supra red violet RL	374, 481.
278	*Sirius supra turquoise blue GL	301, 374, 380, 421, 481.
285	Immedial new blue FBL ex	481.
288	Indanthrene brilliant violet 3B	374, 481.
289	Indanthrene direct black RR	421, 481.
290	Indanthrene golden orange 3G	374, 421, 481.
291	*Indanthrene golden yellow GK	374, 421, 423, 462, 481.
292	Indanthrene golden yellow RK	423, 481.
293	*Indanthrene olive green B	374, 421, 423, 462, 481, 498.
295	Indanthrene printing black BL	481.
296	Indanthrene red FBB	421, 481.
298	Metomega chrome brown RLL	445.
299	*Monochrome black blue G	232, 374, 421, 481.
300	Monochrome red PO	481.
301	Monochrome violet FB	481.
302	*Naphthol AS	183, 368, 374, 421, 426, 462, 481, 494, 498, 502.
303	*Naphthol AS-BO	183, 374, 421, 426, 462, 481, 502.
304	*Naphthol AS-BR	183, 421, 426, 462, 481.
305	*Naphthol AS-BS	183, 374, 421, 426, 462, 481, 494, 498, 502.
306	*Naphthol AS-D	183, 374, 380, 421, 426, 462, 481, 494, 498, 502.
307	Naphthol AS-DB	481.
308	Naphthol AS-E	183, 421, 481.
309	*Naphthol AS-G	374, 380, 416, 421, 462, 481, 492, 498.
310	*Naphthol AS-ITR	183, 380, 426, 481, 554.
311	*Naphthol AS-OL	183, 374, 421, 462, 481, 494, 498, 502.
312	*Naphthol AS-RL	183, 462, 481.
313	*Naphthol AS-SW	374, 421, 426, 462, 481, 498.
314	*Naphthol AS-TR	416, 421, 462, 481.
315	*Neolan orange G	421, 445, 481, 502.
316	*Neolan yellow GR	232, 374, 421, 445, 481, 502.
317	Omega chrome yellow ME	445.
318	*Palatine fast blue BH	481, 498, 502.
319	Palatine fast blue BWW	232.
321	Palatine fast green BLN	445, 481, 502.
322	*Palatine fast marine blue REN	232, 380, 421, 502.
324	Palatine fast orange GN	232, 498.
325	Palatine fast orange RN	481.
326	*Palatine fast pink BN	232, 374, 380, 481, 498, 502.
327	Palatine fast red BN	481.
328	Palatine fast violet 3RN	232, 481.
329	Palatine fast violet 5RN	481.
330	*Palatine fast yellow RLN	232, 380, 445, 481.
332	Pluto black G	498.
333	Pyrasol fast orange GL	445.
334	Rapid fast orange RH	481, 498.
335	Rapid fast red FGM	481.
336	Rapid fast red RH	481.
338	Rapid fast yellow GGM	481.
339	Rapidogen black MD	481.
340	Rapidogen black brown IT	481.
341	Rapidogen blue N	481, 498.
342	Rapidogen blue R	374, 481.
344	Rapidogen brown IPT	481.
345	Rapidogen golden yellow R	481, 498.
347	Rapidogen green B	481.
348	Rapidogen orange G	374, 481.
349	Rapidogen orange R	481, 502.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye 1	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	
350	Rapidogen red violet BR	481.
351	*Rapidogen violet B	380, 481, 502.
352	Rapidogen yellow G	481.
353	Rapidogen yellow 2G	374, 380, 481, 498.
356	Solamine blue FFG	481.
357	*Variamine blue BD salt	416, 481, 498, 554.
358	Variamine blue RT salt	481.
360	Acid chrome red B	481.
361	Alizarin rubinol 3G	481.
364	Benzochrome brown B	481.
365	Benzochrome brown G	481.
366	Benzo fast heliotrope 4BL	481.
367	Brilliant benzo fast violet BL	481.
368	Brilliant benzo green B	421, 481.
369	Celliton brilliant yellow FF	421.
370	Celliton fast pink RF	481.
371	Chrome leather fast black S	481.
372	Cotonarol	481.
375	Diamond black PZB	481.
376	Diazo brilliant orange GR	481.
377	Diazo brilliant scarlet 3BLN	481.
378	Fast red ITR base	380, 481, 554.
378	Fast red ITR salt	481, 554.
379	Sirius supra grey LWBL	421, 481.
381	Indanthrene orange 4R	481.
383	Janus black G	481.
385	Naphthol AS-BO	462, 481.
386	Naphthol AS-GR	481.
387	Naphthol AS-LB	481.
388	Naphthol AS-SG	481.
389	Neolan pink B	374, 445, 481.
391	Neolan red GRE	232, 445.
392	Neolan violet brown B	445.
393	Oxamine brilliant red B	481.
394	Palatine fast claret BH	481.
395	Para brown GK	481.
397	Para brown V	481.
400	Rapid fast brown IRR	481.
401	Rapid fast scarlet BH	481.
402	Rapidogen red ITR	481.
403	Rapidogen scarlet EL	421, 481.
404	Rosanthrene Bordeaux B	374, 481.
406	Rollo fast rubine 4BL	363, 481.
408	Acid chrome blue 3G	481.
409	Algol scarlet B	481.
411	Anthracene navy blue BR	481.
413	Ascosol fast blue BL	481.
415	Benzo fast copper blue FBL	481.
416	Benzo fast grey BL	421, 495.
417	Brilliant congo blue BFL	481.
418	Brilliant wool blue G	421.
420	Celliton fast yellow 7G	481.
421	Chlorantine fast Bordeaux 2B	421, 445.
422	Chlorantine fast Bordeaux BLL	421, 495.
423	Chlorantine fast brown 5RLL	374, 421, 495.
424	Chlorantine fast gray RLN	421.
425	Chlorantine fast green BLL	374, 445, 481.
426	Chlorantine fast orange T4RLL	421, 445.
427	Chlorantine fast orange T5RLL	421.
428	Chlorantine fast red 6RLL	374, 421, 445, 495.
429	Chlorantine fast violet 5BL	421, 445.
430	Chlorantine fast violet RLL	421.
432	Chlorazol blue 5GWS	374, 421.
434	Derma brown R	445.
437	Diazo brilliant scarlet 3G	481.
438	Diazo fast Bordeaux FBL	481.
439	Diphenyl fast yellow RL	445.
442	Fast scarlet TR base	481.
443	Sirius light blue FBGL	481, 495.
444	Indanthrene blue green FFB	421.
447	Indanthrene red brown R	421, 462.
448	Indanthrene red brown 5RF	421, 481.
449	Indanthrene scarlet R	481.
450	Indanthrene yellow FFRK	421.
451	Indanthrene yellow GF	421.
452	Indanthrene yellow 3R	374.
453	Kiton fast red 4BLW	445.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	DYES GROUPED BY FOREIGN PROTOTYPE NUMBER--Continued	
456	Metanaga chrome brown 3GL	445.
457	Metanaga chrome orange ML	421, 445.
458	Metanaga chrome red GM	445.
460	Naphthol AS-LC	481.
461	Naphthochrome violet R	481.
462	Neolan blue 2R	445.
463	Neolan orange GRE	374, 445.
464	Rapid fast blue B	481.
465	Rapid fast Bordeaux 1B	481.
466	Rapidogen brown 1R	481.
467	Rapidogen golden yellow 3RG	481.
468	Rapidogen red 1GG	481.
469	Rapidogen yellow 1G	481.
471	Sudan red GG	481.
472	Sudan yellow GRN	481.
474	Supramine yellow 3GL	481.
484	Chromoxane brilliant violet 5B	481.
485	Alizarin light blue 4GL	421, 445.
488	Ascosol fast red BE	481.
491	Chlorantine fast violet 2RL	445.
494	Diazo brilliant scarlet RCL	481.
495	Diazo fast yellow 3GLL	445.
497	Erganil gray BC	481.
498	Fast blue RR base	374, 481.
498	Fast blue RR salt	481.
499	Fast corinth LB salt	481.
500	Fast red FR base	481.
500	Fast red FR salt	481.
501	Fast red PDC base	481, 554.
501	Fast red PDC salt	481, 554.
503	Indanthrene red violet RRH	481.
504	Leather brown ET	481.
505	Naphthol AS-LG	481.
506	Naphthol AS-LT	481.
507	Neolan Bordeaux BE	445.
509	Neolan red RRE	445.
511	Rapidogen corinth 1B	481.
512	Sirius supra rubine BB	481.
513	Xylene fast orange PO	421.
	UNGROUPED DYES	
	*Acetate rayon dyes:[3]	
	*Black, IV ex., B, BGD, BMF, DB, HC, G, 3G, GS, GY, J, LWB, MS, PL, R, RB, SDF, SW, SS.[4]	368, 374, 380, 408, 421, 445, 462, 481, 495.
	*Blue, #15, A-40, AS-7, AS-45, AGF, B, B ex., BGF, BN, BNN, BNX, BP, BR, BXN, C, EC, FFR, FFRN, G, GLF, GLT, GP, GR, JL, KL, LB, LD, M, MC, NR, NVG, NVY, PV, P-20, P-23, P-34, P-37, RDA, RLF-40, 2R, SL.[5]	368, 374, 380, 421, 445, 462, 481.
	*Brown #8, B, 3G, R, RGD, 2R, 3R.[6]	368, 380, 444, 495.
	*Orange, III, FSI, GR, GRN, R, RB, 2R, 2RP, 3R, 4R.[7]	368, 374, 380, 408, 421, 444, 462.
	*Red, III, VI-X, B, 2B, BG, BFS, BX, C, FSI, G, GLF, HS, LRB, MBS, NB, P-30, R, RF, 3RN, W, Y, YP, 2Y.[8]	368, 374, 380, 408, 421, 444, 445, 462, 495.
	*Violet, 3B, BGF, 2R, 3BGLF, 4R, 5RLF.[9]	368, 374, 421, 440, 445.
	*Yellow GLF	368, 380, 462.
	*Yellow 4RLF	368, 380, 462.
	*Yellow CW, G, GBP, 5G, 8GLF, GL, GL ex., 6GM ex., GM, GOO, GR, GRLT, M, R, RL, RN, 2RGLF, 4RL.[10]	3, 368, 374, 380, 421, 445, 462, 495.
	Acid alizarin Bordeaux BLT	481.
	Acid alizarin brown RLL	481.
	Acid anthracene brown TBL	481.
	Acid black AR, 3G, GRF, N, RB	374, 421.
	Acid blue G	374, 502.
	Acid brilliant red 3B	502.
	Acid brown R, RD	374, 502.
	Acid carmine B	438.
	Acid chrome blue GW	481.
	Acid chrome red F	36.
	Acid dark green B	445.
	Acid fast black FTG	462.
	Acid fast blue GSS	374.

See footnotes at end of table.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	UNGROUPED DYES--Continued	
	Acid fast brown CGS	374.
	Acid fast orange LW	462.
	Acid fast red BL	380.
	Acid fast red 2GLL	438.
	Acid green #1854, P-45	374.
	Acid leather brown EBR	481.
	Acid milling orange 4R	498.
	Acid milling yellow GW	374.
	Acid navy B, FW	408.
	Acid navy blue, MAB	374, 398.
	Acid neutral red 3G ex	462.
	Acid orange P-40, R, 2R	374, 502.
	Acid pink BS, O	445, 502.
	Acid rayon black JG	462.
*Acid red B, BB, 3B, BR, G, GR, GL, GA, RB		374, 445, 495, 502.
	Acid red violet P-46	374.
	Acid sapphire G	444.
	Acid scarlet GW, Y, YR	502.
	Acid violet ABLA, R, RWL	374, 408, 481.
	Acid yellow G, 3G, 6G, GR, N, 3RD	374, 502.
	Alizarin blue GS, WSA	421, 481.
	Alizarin brilliant blue R	462.
	Alizarin levelling blue 2R	462.
	Alizarin sapphire BWA	421.
	Alizarin violet NRR	421.
	Alphasurine B	421.
	Anthracene chrome brown RL	177.
	Anthraquinone blue BGA, 3G, 4GL, SWB, WSA	374.
	Anthraquinone milling blue BL	374.
	Anthraquinone vat black J	421.
	Anthraquinone vat black brown VA	481.
	Anthraquinone vat blue BCL, GR	421, 481.
	Anthraquinone vat blue green FFB, Y	374, 481.
	Anthraquinone vat brilliant red B	374.
	Anthraquinone vat brilliant violet 3R	374.
	Anthraquinone vat brilliant yellow 3G, 4G	374, 481.
	Anthraquinone vat brown NR, RBTD, YR	374, 421.
	Anthraquinone vat chloro olive GB	481.
	Anthraquinone vat direct black 3G, 3GA	374, 481.
	Anthraquinone vat golden orange 4G, YL	374.
	Anthraquinone vat gray BR, N, R	374, 462, 481.
	Anthraquinone vat khaki AS, GAM	374.
*Anthraquinone vat navy blue, BW, BR		374, 462, 481.
*Anthraquinone vat olive G, GGL, GFN, T, TA		374, 416, 423, 462, 481.
	Anthraquinone vat printing black FG	462.
	Anthraquinone vat printing violet 6R	481.
	Anthraquinone vat red GLL, RL, RRB	374.
	Anthraquinone vat red brown RB	374.
	Anthraquinone vat scarlet 3GA	481.
	Anthraquinone vat yellow, GDC, 8G, 3GLL, L, TLK.	374, 481.
	Anthraquinone violet A	374.
	Aviation blue	498.
	Anthanthrene dyes:	
	Black HV	444.
	Brilliant blue G, RS	444.
	Brilliant violet O	444.
	Brown RRK	444.
	Dark brown DV	444.
	Fast yellow DV	444.
	Green G	444.
	Navy BR, GW, LW	444.
	Red Y	444.
	Royal blue L, S	444.
	Rubine S	444.
	Turquoise B	444.
	Yellow 5, G	444.
	Azo black CB	502.
	Azo brilliant blue B	481.
	Azo brilliant green BA	481.
	Azo brilliant yellow 6GF	481.
	Azo brown BY, DB	502.
	Azo carmine	498.
	Azo eosine ZB	374.
	Azo fast brilliant red BN	481.
	Azo fast orange RA	481.
	Azo fast yellow CGR, RCA	481.
	Azo green FB	502.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	UNGROUPED DYES--Continued	
	Azo oil black	421.
	Azo oil blue black B	421.
	Azo olive green BLN ex	502.
	Azo orange BRS, 6G, GRN, RNC#90	502.
	Azo rubinole 3GP	445.
	Azo violet B	502.
	Azo yellow 2G	502.
*Azoic dyes and their components:[11]		
	Dyes, rapidogen:	
	Black BR, BRN, DN, MR	374, 502.
	Blue GB, MSG, P, PBN, PBR	374, 380, 481, 502.
	Bordeaux 3B, MR	374, 502.
	Brown BIP, 2G, IN, INR, R, seal	481, 502.
	Dark brown AR, RE	374, 481.
	Golden yellow MRS, M	374, 502.
	Navy blue F ex., FFR	481, 502.
	Orange FFR, RM	481, 502.
	Red, AFR, BB, 2BN, FFBB, FFG, FFR, GNN, YM	374, 380, 481, 502.
	Red violet RR	502.
	Scarlet FFG, FFR, RR	481, 502.
	Violet	380.
	Components:	
	Fast color bases:	
	Blue BE	374.
	Garnet GBCP, GC	183, 416, 481.
	Ponceau L	462.
	Red FB	438.
	Fast color salts:	
	Blue B, 2B, VB	183, 374, 416, 502.
	Orange HD	183.
	Ponceau L	462.
	Red B, GNBS, KB, RC, TR	183, 374, 502.
	Scarlet 2G, RC	502.
	Spectrolene KBS	183.
	Violet B	502.
	Fur dyes:	
	Nyansol NZA, NZDA, NZP	232.
	Nyansol brown #2, #4	232.
	Nyansol fusion W357	232.
	Nyansol gray BCA	232.
	Naphthols:	
	Naphthol AS-BH	481.
	Naphthol AS-D	183.
	Naphthol AS-G	183.
	Naphthol AS-GY	481.
	Naphthol AS-KB	183, 426, 481.
	Naphthol AS-KR	183.
	Naphthol AS-LBO	481.
	Naphthol AS-LG	462.
	Naphthol AS-PH	183, 462, 481.
	Naphthol AS-OL	183.
	Naphthol AS-OP	502.
	Naphthol AS-PH	183, 380, 426, 481.
	Naphthol AS-PN	183, 498.
	Naphthol AS-RC	481.
	Naphthol AS-RO	421.
	Naphthol AS-SW	183.
Sensoform violet BB		481.
Brilliant alizarin blue GA		481.
Brilliant Bordeaux B		263.
Brilliant lake blue BG		481.
Brilliant oil blue BMA		421.
Brilliant rayon blue J		444.
Brilliant violet BN		495.
Brown FC#1		374.
Canary lake yellow FL		421.
Carbanthrene gray GFL		421.
Carbanthrene olive T		421.
Carbanthrene yellow K		421.
Celliton yellow 6D		481.
Chloramine brilliant orange RL		445.
Chlorantine fast green 3GLL		445.
Chromanthrene yellow LL		444.
Chromate brown R, RL		177, 232.
Chrome black JG		421.
Chrome blue black G		445.
Chrome Bordeaux B		380.

See footnotes at end of table.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	UNGROUPED DYES--Continued	
	Chrome brilliant pink 3B	374.
	Chrome brilliant violet MR	421.
	Chrome brown B, O	421, 445.
	Chrome fast red 2RL	374.
	Chrome green B, CB, G	374, 421, 445.
	Chrome olive FBBL	481.
	*Chrome orange 2G, LG, RL, 3R	374, 421, 498.
	Chrome soga yellow A	481.
	Chrome yellow FR, 2GR, R, SSN, SW	374, 421, 481, 502.
	Chromolan blue 3R	421.
	Chromolan gray G	421.
	Chromolan red 3RB	421.
	Chromolan violet 2R	421.
	Ciba blue 2B	350.
	Ciba red 2B	350.
	Developed blue 3G, 6G, 3GL, NA, VB	374, 421.
	Developed Bordeaux RLB	374.
	Developed brilliant scarlet 2GA	481.
	Developed brown R, RA	374, 481.
	Developed fast green GFT	481.
	Developed fast violet BL	374.
	Developed green BL, 2GL	374.
	Developed indigo blue BBRA	481.
	Developed orange DD, G, 3G, GR, LGA, N, RFW, RO, RR, VD.	374, 421, 481, 495.
	Developed red BFW	374, 421.
	Developed scarlet FW, GFW, HN, P	374, 421.
	Developed violet BL, RR	374, 421.
	Developed yellow 2GL, SSGP	374, 421.
	Diamine catechine HR	481.
	Diasophen red BTB	498.
	Diasophen yellow BTF	498.
	Dibromfluorescein	330.
	Diphenyl fast blue green BL	445.
	Diphenyl fast yellow RL	445.
	*Direct black AMG, CW, 3G, 5G, HB, HW, ULR	374, 408, 421, 444, 445, X.
	*Direct blue B, CF, 2GFL, GL, 8GLN, 8GUF, HF, HR, R, RSW, RL, 2RCF, 2RFL, 3RCF, VRS.	421, 444, 445, 498, 502.
	Direct blue green CW	421.
	Direct Bordeaux B	421, 445.
	Direct brilliant blue 12BLL, 10BLL, BFL	421, 444.
	Direct brilliant cerise	380, 498.
	*Direct brilliant violet B, 4B, R	421, 445, 462, 498.
	Direct brilliant yellow 8G	421.
	*Direct brown CMR, GB, 3GS, GXR, HRS, HZ, RB, 2R, 3RLL.	380, 408, 421, 444, 445, 462, 498.
	Direct catechine 2BAC	421.
	Direct copper blue RRR	374.
	Direct developed blue BB	462.
	Direct developed garnet BD	462.
	Direct developed violet BBD	462.
	Direct diano blue GRM	380.
	Direct diano Bordeaux M	380.
	Direct fast black FG	374.
	*Direct fast blue BLL, CFL, 8G, 8GL, 4GLN, LFGL, L5GA, L7GA, L5R, RL, 3RL, 5FGL, 5FRL, 5RL.	232, 374, 421, 481.
	Direct fast blue green FWL	421.
	Direct fast Bordeaux 2BL	438.
	Direct fast brown 4GL, R, 2RL, 3RL, 4RL, 4R, 5RRL, 7TL.	232, 374, 421, 481.
	Direct fast copper blue BD	421.
	Direct fast copper brown BRL	481.
	Direct fast copper yellow 2GL	481.
	Direct fast gray 3RL, BL, 3GL, 2GL, GL	232, 374, 421.
	Direct fast heliotrope, B	374, 380.
	*Direct fast orange 4B, G, 2G, 4G, GL, 2GL, L4GL, L8RL, R, RGL.	232, 374, 421, 438, 445, 481.
	*Direct fast red 3BL, 6BLN, 6BLSW, 7BWL, E, RL, VL.	232, 374, 408, 421, 438, 445, 462, 481, 498.
	*Direct fast rubine B, BB, BL, LB, VL	374, 408, 421, 438, 444.
	Direct fast scarlet G, 4GS	421, 502.
	Direct fast violet B, 4BL	232, 374.
	Direct fast yellow 2G, 5G, RA	445, 481, 502.
	Direct garnet BB	421.
	Direct golden yellow R	502.
	Direct gray BBC, GL, 3LUFF, LVL, 5FLL	444.
	Direct green B, GB, 3GGC, 2T	374, 421, 462, 498.

TABLE 88.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	UNGROUPED DYES--Continued	
	Direct green black	445.
	Direct indigo blue	462.
	Direct lumisol blue	445.
	Direct lumisol gray B	445.
	Direct maroon LFS	444.
	*Direct navy DSU, G, R	438, 462, 498, X.
	*Direct navy blue B, BW, DB, RY	374, 408, 421, 445.
	Direct olive brown RL	462.
	*Direct orange DB, 5G, 5GFL, GRA, LLLWF, LR, RT-	374, 444, 481, 498, 502.
	*Direct red 2B, 9B, 3BL, 6BLN, BLWN	444, 445, 502.
	Direct rubine G, 3B	462, 502.
	Direct scarlet B, G, GL	232, 444, 462.
	Direct silk blue MR	481.
	Direct sky blue B	445.
	Direct speck dye red SW	421.
	*Direct violet, BCW, BOF, 2B	374, 380, 421, 502.
	Direct violet black	445.
	Direct viscose blue CGS, RS	481.
	*Direct white, ACC, B, 4B, 5B, BV, ODC, OG, WR, 3B, BN, BV, 3C, 5FS, 5F, WSN, VT.	183, 374, 421, 481, 498, 502, 549.
	Direct yellow G, RL	444, 445.
	Ruehrysine 2GA	481.
	Fast acid brown RG	421.
	Fast acid light red B	445.
	Fast acid orange RW	445.
	Fast acid red B	498.
	Fast acid yellow GS	421.
	Fast black G, GRWG	495, 498.
	Fast blue AGLL, BLU, 8GLL, 6GLL, 4GLL, 4GU, 3GLL, LBLL, LGLL, 7RLL.	263, 495, 547.
	Fast Bordeaux BN, RB	498.
	Fast brilliant blue 6BLL	547.
	Fast brilliant crimson RB	421.
	Fast brown BGL, FN, MF, 3RL	495, 498, 547.
	Fast crimson R	421.
	Fast gray LRT, LVBL, LVLL	547.
	Fast light red 4BA	481.
	Fast light yellow 3GX	481.
	Fast neutral gray GL	547.
	Fast olive brown O	498.
	Fast orange 4GLL, 2GU, WF	263, 498, 547.
	Fast red 9BL, 8BLN	495.
	Fast rubine 3BLL, BBLL, LU	263, 495, 547.
	Fast spirit black RB	498.
	Fast spirit brown GN	498.
	Fast spirit orange RN	498.
	Fast spirit yellow G, 2RN	498.
	Fast wool red BL	421.
	Fast wool yellow GL	421.
	*Fast yellow 2G, 3GLN, 3GU, N	263, 495, 498.
	Fluorescent green NW	265.
	Fluorescent purple 2G, RB	421.
	Fluorescent yellow RRN	498.
	Fluorol 5G, 7GA, GRN	481.
	Formaldehyde black B	445.
	Formaldehyde blue 3B	380.
	Formaldehyde red B	445.
	Formaldehyde scarlet Y	445.
	Formalide brown RD	408.
	Formalide deep blue R	408.
	Formanthrene black GN	444.
	Gasoline yellow	498.
	Gutnea brown RD	481.
	Hastings light fast violet 3RL	177.
	Hudson chrome gray BL	177.
	Igenal brown CRTA, ITGA, M-13G, PGMA	481.
	Indian brown 3G	481.
	Ink blue ASB, PP	421, 481.
	Isosol black	421.
	Isosol blue, 6G	421.
	Isosol green	421.
	Isosol orange	421.
	Isosol red	421.
	Isosol violet	421.
	Isosol yellow	421.
	Jet black APX	374.
	Leather brown 5RT ex., 5RTD, 5RTX	421, 481.

TABLE 8B.--*Synthetic organic chemicals: Coal-tar dyes for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Colour Index or Prototype No.	Dye	Manufacturers' identification numbers (according to list in table 27)
	UNGROUPED DYES--Continued	
	Methyl violet base oleate	498.
	Milling yellow 5GA, XH	374, 421.
	Neutral black BSS	421.
	Neutral blue G	502.
	Neutral brown GH, R, RD, BRS	374, 421, 445.
	Neutral silk brown G, RD, RWA	232, 444.
	Neutral silk yellow GGA, 5R	232, 444.
	Nyaform blue 2B	232.
	Nyaform yellow G	232.
	Nydye blue GR	444.
	Nydye brilliant red 3B	444.
	Nydye orange R	444.
	Nydye scarlet G	444.
	Nydye violet BX	444.
	Oil blue A, HE	374, 498.
	Oil brown #79, #102, D, M, Y	3, 421.
	Oil fast blue R	462.
	Oil orange, #30, MT	3, 363, 498.
	Oil pink B	421.
	*Oil red, #322, #430, #6434, BOH, H-1700, O, OB, RO.	3, 269, 363, 421, 462, 498.
	Oil yellow, PBW	363, 498.
	Olive PC-#1	374.
	Orange PC-#1	374.
	Palatine fast blue 5BNA	481.
	Palatine fast yellow 3GH	481.
	Pigment blue VNE	481.
	Plasto brown 2RS	421.
	Plasto orange M, RS	421.
	Plasto red MS	421.
	Plasto red brown MR	421.
	Plasto scarlet MC	421.
	Plasto violet MR	421.
	Plasto yellow GR, MGR	421.
	Polyfora dyes:	
	Orange RF	374.
	Yellow GF	374.
	Quinoline yellow P	374.
	Quinoline yellow ex	421.
	Resin brilliant red R	421.
	Resin brown Z	421.
	Resin dark red 2	421.
	Resin violet B	421.
	Resorcine brown RA	481.
	Rhodamine B stearate	498.
	Rosanthrene R	374.
	Rosanthrene orange	374.
	Silk brown G	444.
	Silk red 4B	445.
	Sol-aqua fast red	444.
	Spirit-soluble blue	177.
	Spirit-soluble fast black	421.
	Spirit-soluble fast blue B	421.
	Spirit-soluble fast green B	421.
	Spirit-soluble fast orange A	421.
	Spirit-soluble fast red M, Y	421.
	Spirit-soluble fast yellow 3G	421.
	Spirit-soluble green	177.
	Stilbene orange E3G	498.
	Sudan corinth 3B	481.
	Sudan dark brown BG	481.
	Sudan yellow GRA	481.
	Sulfur fast brown CLAR	421.
	Superchrome yellow 2G	421.
	Syntan black G	445.
	Vat black, 2G, R	390, 498.
	Vat copper brown	498.
	Vat fast yellow	498.
	Vat gray 2G, R	498.
	Vat maroon 3H	481.
	Vat olive T	498.
	Vat printing black G	421.
	Vat printing violet 6R	421.
	Visco blue RS	445.
	Water black SR	498.
	Yellow PC-#1, PC-#2	374.
	Zambesi black BG	445.
	All other	374, 502.

[1] Included in Foreign Prototype No. 9.
[2] Includes Colour Index No. 1095.
[3] Does not include acetate rayon dyes that appear under "Dyes Grouped by Foreign Prototype Number."
[4] Includes developed black, diamo black, and fast black.
[5] Includes brilliant blue, developed blue, direct blue, navy blue, royal blue, and special blue.
[6] Includes supramine brown and fast brown.

Lakes and Toners

TABLE 15A.--*Synthetic organic chemicals: Lakes and toners for which United States production or sales were reported, identified by manufacturer, 1951*

[Lakes and toners for which separate statistics are given in table 15A are marked below with an asterisk (*); those not so marked do not appear in table 15A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27]

Product	Manufacturers' identification numbers (according to list in table 27)
LAKES OR LAKE COLORS	
*Black lakes:	
Basic black	180, 464.
Logwood black (C.I. 1253)	87, 166, 330, 493, 503.
Nigrosine (C.I. 864)	96, 166.
True black	177.
*Blue lakes:	
Alkali blue Lake	464.
Brilliant wool blue FFR (Pr. 40)	94, 503.
*Indanthrene blue GCD (C.I. 1113)	477, 494.
*Indanthrene blue RS (C.I. 1106)	374.
Indigo blue lake	464.
*Methylene blue (C.I. 922)	180, 463, 464, 489, 493, 504.
*Peacock blue, fugitive (Patent blue)(C.I. 671)	69, 87, 155, 180, 181, 182, 183, 215, 307, 379, 463, 464, 477, 489, 493, 497, 498, 503, 504, 548.
*Phthalocyanine blue, sulfonated	94, 379, 464, 493.
Setoglaucine (C.I. 638)	463.
Turquoise blue (C.I. 661)	96, 166.
*Victoria blue B (C.I. 729)	87, 180, 374, 463, 498, 504.
*Victoria pure blue B (Pr. 198)	166, 180, 379, 493, 504.
All other	177, 463, 477, 504.
*Brown lakes:	
Bismarck brown G (C.I. 331)	379.
Bismarck brown R (C.I. 332)	87, 215, 463, 464.
Indanthrene brown R lake	464.
All other	166.
*Green lakes:	
*Acid green B (C.I. 669)	379, 463, 493, 503, 504.
Acid green G (C.I. 666)	493.
Benzidine yellow and cupric carbonate	464.
Benzidine yellow and iron blue	477.
Benzidine yellow and phthalocyanine blue	451.
*Brilliant green (C.I. 662)	87, 180, 215, 463.
Brilliant green (C.I. 662) and thioflavine (C.I. 815).	180.
Benzo yellow and phthalocyanine blue	118.
Light green SF (C.I. 670)	166.
*Malachite green (C.I. 657)	180, 463, 477, 498.
Malachite green (C.I. 657) and auramine (C.I. 655)	464.
Malachite green (C.I. 657) and fast light yellow (C.I. 636).	180.
Naphthol yellow (C.I. 10) and peacock blue (C.I. 671).	374.
Phthalocyanine green	94.
*Pigment green B (Pr. 149)	94, 96, 374, 451, 473, 481, 493.
All other	145, 269, 463, 477, 503.
Maroon lakes:	
Alizarin maroon (C.I. 1041)	177, 379, 493.
Amaranth (C.I. 184)	87, 93, 118, 182, 382, 451.
*Azo Bordeaux (C.I. 88)	93, 118, 181, 374, 382, 450, 451, 463, 477, 493, 497, 498.
*Helio fast rubine 4BL (Pr. 406)	118, 181, 215, 374, 379, 398, 450, 451, 463, 477, 489, 494.
Hyperuic (C.I. 1243)	477, 493.
Naphthol AS-OL	94.
All other	94, 118, 166, 503.
*Orange lakes:	
Acid orange R (C.I. 161)	182, 477, 504.
Lithomol orange OTP	374.
Naphthol AS-OL (Pr. 311)	182.
*Persian orange (Acid orange T) (Orange II) (C.I. 151).	87, 155, 166, 180, 183, 215, 307, 379, 464, 477, 489, 493, 497, 498, 503, 504, 548.
All other	145, 463.
Red lakes:	
*Alizarin red B (C.I. 1027)	87, 177, 180, 215, 374, 379, 382, 450, 451, 477, 494, 548.
*Carmine (C.I. 1239)	87, 131, 493.
Crocein scarlet 3BX (Cochineal lake) (C.I. 183)	87.
*Eosine (Bromo acid lake) (C.I. 766)	155, 379, 477, 493, 498, 503.
Fuchsine (Magenta) (C.I. 677)	463.
*Naphthol AS (Pr. 308)	94, 379, 398, 493.
Naphthol AS-D (Pr. 306)	94, 451, 493.
*Permanent red 2B	181, 269, 374, 379, 382, 398, 463, 477, 493, 504.
Phloxine (C.I. 774)	87, 183.
*Pigment scarlet 3B (C.I. 216)	87, 177, 180, 181, 215, 374, 379, 398, 463, 497.
Polar red (C.I. 430)	464.
*Rhodamine B (C.I. 749)	87, 180, 463, 473, 493, 504, 548.
*Rhodamine 6G (Rhodamine Y) (C.I. 752)	94, 379, 463, 464, 493.
Rose lake	87, 145, 182.

TABLE 15B.--*Synthetic organic chemicals: Lakes and toners for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Product	Manufacturers' identification numbers (according to list in table 27)
LAKES OR LAKE COLORS--Continued	
Red lakes--Continued	
*Scarlet 2R (C.I. 79)	87, 118, 166, 181, 215, 374, 379, 382, 450, 451, 463, 477, 483, 498, 504.
Vat pink (C.I. 1211)	87, 379, 464, 493.
All other	94, 463, 498, 503.
*Violet lakes:	
*Acid violet (C.I. 698)	166, 398, 463, 464.
Crystal violet (C.I. 681)	463.
Ethyl violet (C.I. 682)	463.
Indanthrene red violet RH (C.I. 1212)	94.
*Methyl violet B (C.I. 680)	87, 146, 177, 180, 215, 269, 330, 374, 379, 463, 464, 477, 489, 493, 497, 498, 503, 504.
All other	149, 177, 463.
*Yellow lakes:	
Auramine (C.I. 655)	180, 464.
*Fast light yellow (C.I. 636)	87, 96, 180, 215, 379, 489, 498, 504.
Naphthol yellow S (C.I. 10)	269, 379, 504.
Permanent yellow lake	177.
Quercitron (Flavine) (C.I. 1251)	477.
*Quinoline yellow (C.I. 801)	87, 155, 307, 477, 489, 504, 548.
*Tartrazine (C.I. 640)	87, 155, 180, 182, 183, 215, 307, 379, 398, 473, 477, 489, 493, 494, 497, 498, 504, 548.
TONERS OR FULL-STRENGTH COLORS	
*Black toners:	
Aniline black	215.
PMA black	382, 463, 464.
PTA black	382, 463, 464.
*Blue toners:	
*Alkali blue (C.I. 706)	87, 155, 195, 330, 398, 451, 498.
Diamisidine blue	374, 494.
Halopont blues	374.
Indanthrene blue GCD toner (C.I. 1113)	374, 494.
PTA Peacock blue CD	477.
PMA Peacock blue G (C.I. 644)	180.
PTA Peacock blue G (C.I. 644)	398, 477.
PTMA Peacock blue R (C.I. 644)	180, 463, 504, 548.
*Phthalocyanine blue B (Pr. 481)	87, 183, 215, 301, 374, 398, 451, 473, 477, 481, 489, 494, 497, 498.
*Phthalocyanine blue B, resinated (Pr. 481)	181.
Phthalocyanine blue R	195, 374.
Phthalocyanine blue SBL (Pr. 278)	481.
Phthalocyanine, other	481.
Pigment blue VNL	481.
PMA Setoglaucine (Peacock blue G) (C.I. 656)	87, 180, 182, 379, 463, 477.
PTA Setoglaucine (Peacock blue G) (C.I. 656)	463.
PTMA Setoglaucine (Peacock blue G) (C.I. 656)	180, 183, 269, 379, 463, 464, 477, 498, 504, 548.
PMA Victoria blue B (C.I. 729)	182, 463.
PTA Victoria blue B (C.I. 729)	451, 463, 504.
PTMA Victoria blue B (C.I. 729)	181, 215, 374, 382, 451, 463, 464, 498.
PMA Victoria blue R (C.I. 728)	382.
PTA Victoria blue R (C.I. 728)	183.
PTMA Victoria blue R (C.I. 728)	69.
*PMA Victoria pure blue B (Pr. 198)	155, 177, 180, 195, 330, 379, 398, 463, 464, 477, 489, 493.
*PTA Victoria pure blue B (Pr. 198)	404, 463, 477, 504.
*PTMA Victoria pure blue B (Pr. 198)	87, 180, 183, 269, 398, 463, 464, 477, 489, 548.
All other	87, 463, 498.
Brown toners:	
PMA Brown	94.
Havana brown	182.
Para brown	183, 498.
All other	177, 464.
*Green toners:	
PMA Brilliant green (C.I. 662)	143, 182, 330, 477.
PTA Brilliant green (C.I. 662)	181, 382, 451, 504.
PTMA Brilliant green (C.I. 662)	87, 180, 269, 330, 374, 379, 398, 451, 463, 464, 477, 498, 548.
*PMA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	87, 155, 215, 269, 382, 464, 477, 489.
*PTA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	87, 181, 183, 382, 504.
*PTMA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	69, 87, 155, 180, 183, 215, 269, 374, 379, 382, 398, 463, 464, 477, 489, 493, 548.
PMA Malachite green (C.I. 657)	87, 155, 398.
PTA Malachite green (C.I. 657)	504.
PTMA Malachite green (C.I. 657)	69, 87, 180, 215, 269, 379, 398, 463, 464, 477, 548.
PTA Malachite green (C.I. 657) and thioflavine (C.I. 815).	183.
PTMA Malachite green (C.I. 657) and thioflavine (C.I. 815).	180, 464, 493.

TABLE 15B.--*Synthetic organic chemicals: Lakes and toners for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Product	Manufacturers' identification numbers (according to list in table 27)
TONERS OR FULL-STRENGTH COLORS--Continued	
*Green toners--Continued	
PMA Peacock blue CD and thioflavine	477.
Phthalocyanine green (Pr. 483)	87, 374, 398, 477, 481, 494, 497.
*Pigment green B toner (Pr. 149)	374, 451, 477, 481.
All other	463.
*Maroon toners:	
Helio Bordeaux (C.I. 84)	177, 477.
Helio Bordeaux BL (Pr. 110)	180, 379, 481.
*β-Hydroxynaphthoic maroon (B.O.N. maroon) (Lithol maroon).	87, 118, 195, 215, 374, 450, 451, 477, 493, 494, 497.
Indanthrene maroon	87, 118, 494.
Lithol red 30, manganese toner	374, 493.
*Naphthol AS-D (Pr. 306)	87, 451, 477.
C. I. 82, α-Naphthylamine maroon	181, 450, 477.
*Toluidine maroon	87, 118, 374, 451, 477, 493, 494, 497.
All other	118.
*Orange toners:	
*Benzidine orange	87, 374, 379, 451, 477, 489, 494, 498, 548.
Dianisidine orange	374, 451, 477, 494.
*2,4-Dinitroaniline orange	87, 177, 195, 215, 379, 451, 477, 493, 497, 498.
Lithosol fast orange R	87.
*o-Nitroaniline orange	87, 118, 183, 195, 269, 451, 477.
Toluidine orange	464.
Vulcan fast orange GRN	481.
All other	87, 269.
*Red toners:	
Benz arylamine	374, 398, 477.
Brilliant red N toner (Red lake R)	177.
*o-Chloronitroaniline red (Chlorinated para red)	87, 177, 181, 183, 195, 215, 269, 379, 398, 451, 477, 493, 497, 498, 548.
p-Chloronitroaniline red	195, 374, 451.
*Eosine (Bromo acid toner) (C.I. 768)	155, 269, 307, 330, 379, 489, 498, 548.
Halopont reds	374.
Helio fast pink BLA	481.
Helio fast rubine 4BLA	463, 481.
Lithol red 2G (C.I. 166)	451.
*Lithol red R toners (C.I. 189):	
*Barium toner	87, 155, 182, 183, 195, 215, 269, 374, 379, 398, 450, 451, 477, 489, 493, 497, 498, 548.
*Calcium toner	87, 155, 182, 183, 195, 215, 269, 374, 379, 398, 450, 451, 464, 477, 489, 493, 497, 498, 548.
*Sodium toner	87, 182, 183, 195, 269, 398, 451, 464, 489, 497, 498, 548.
*Lithol rubine B (C.I. 163)	87, 118, 155, 182, 183, 215, 269, 374, 398, 451, 463, 464, 477, 489, 494, 497, 504, 548.
Lithosol red CSF	374.
*Naphthol AS (Pr. 302)	87, 269, 379, 398, 451, 464, 493, 498.
*Naphthol AS-BS (Pr. 305)	215, 269, 398, 451, 477, 489, 497, 498.
*Naphthol AS-D (Pr. 306)	379, 451, 489, 498.
*C. I. 44, Para red, light	87, 118, 143, 155, 181, 182, 183, 199, 215, 269, 398, 450, 463, 477, 493, 494, 497, 498, 548.
*Para red, dark	87, 118, 143, 155, 182, 183, 195, 215, 269, 374, 398, 450, 463, 477, 493, 494, 497, 498, 548.
*Permanent red 2B	87, 118, 183, 215, 269, 374, 398, 451, 463, 477, 494, 497, 548.
Permanent red FKR	379, 481.
Permanent red FKR ex	481.
*Pigment rubine 3B	118, 379, 451, 463, 464, 481.
PMOT red	477.
*Red lake C (C.I. 165)	87, 155, 182, 183, 195, 215, 269, 307, 379, 398, 451, 464, 477, 489, 494, 497, 498, 548.
*Red lake D (C.I. 214)	155, 177, 182, 494, 548.
*PMA Rhodamine B (C.I. 749)	87, 155, 180, 330, 464, 477, 493.
*PTA Rhodamine B (C.I. 749)	451, 463, 504.
*PTMA Rhodamine B (C.I. 749)	87, 180, 182, 215, 269, 374, 379, 398, 463, 464, 477, 489, 498, 548.
*PMA Rhodamine 6G (C.I. 752)	87, 180, 330, 464, 477, 489, 493, 548.
*PTA Rhodamine 6G (C.I. 752)	451, 463, 477, 504.
*PTMA Rhodamine 6G (C.I. 752)	85, 180, 183, 215, 269, 374, 379, 398, 463, 464, 477, 489, 548.
PTMA Rhodamine 6GDN	498.
Rubine 3G	477.
*C. I. 69, Toluidine red	87, 118, 143, 155, 181, 182, 183, 195, 215, 269, 374, 379, 398, 450, 451, 477, 493, 494, 497, 498, 548.
p-Toluidine-m-sulfonic acid aso-β-naphthol	374.
Vulcan fast red B (C.I. 476)	481, 494.
Vulcan fast red BBZ	481, 494.
All other	269, 379, 451, 463, 464, 481.
Violet toners:	
PMA Crystal violet (C.I. 681)	330.
PTMA Crystal violet (C.I. 681)	374.

TABLE 158.--*Synthetic organic chemicals: Lakes and toners for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Product	Manufacturers' identification numbers (according to list in table 27)
TONERS OR FULL-STRENGTH COLORS--Continued	
Violet toners--Continued	
Bulgaput violets	374.
Indanthrene brilliant violet RR	374.
*PMA Methyl violet B (C.I. 680)	69, 87, 133, 180, 181, 182, 215, 330, 382, 398, 450, 451, 463, 464, 477, 489, 493, 497, 498, 504, 548.
*PTA Methyl violet B (C.I. 680)	451, 463, 477, 489, 497, 504.
*PTMA Methyl violet B (C.I. 680)	87, 180, 183, 215, 269, 374, 379, 398, 463, 464, 477, 489, 494, 498, 548.
*Ethyl violet B (C.I. 680), fugitive	69, 87, 133, 183, 269, 379, 398, 463, 477, 489, 498, 548.
*Yellow toners:	
PMA Acetoacetanilid yellow	215.
Acetoacetotoluidide and DCB yellow	215.
*Benzidine yellow	87, 133, 177, 180, 182, 183, 195, 215, 269, 330, 374, 379, 398, 451, 477, 489, 494, 497, 498, 548.
*Pr. 103, Hansa yellow G	87, 133, 177, 182, 183, 215, 374, 379, 398, 451, 477, 489, 493, 494, 497, 498, 548.
Hansa yellow 2G	451.
Hansa yellow 3G	493.
*Pr. 104, Hansa yellow 5G	87, 177, 398, 477, 493.
*Pr. 105, Hansa yellow 10G	87, 177, 398, 451, 477, 494.
Hansa yellow 13G	493.
Hansa yellow M	451.
Pr. 280, Hansa yellow 3R	398, 481, 494.
Hansa yellow 4R	177.
Lithol yellow G	481.
Lithosol fast yellow 3GD	374.
Lithosol yellow G	374.
All other	87, 177, 195, 481.
REDUCED OR EXTENDED TONERS	
*Blue toners, reduced:	
Indanthrene blue	118.
Indanthrene brilliant violet RR	374.
PMA Peacock blue R (C.I. 664)	180, 464.
PTA Peacock blue R (C.I. 664)	168, 504.
PTMA Peacock blue R (C.I. 664)	379, 464, 477, 548.
Phthalocyanine blue B (Pr. 481)	87, 118, 181, 215, 374, 382, 398, 451, 464, 473, 477, 493, 494, 497.
Phthalocyanine blue B	195, 374.
Phthalocyanine blue 3RK (Pr. 278)	477.
Phthalocyanine blue and zinc yellow	87.
Phthalocyanine blue, other	96.
PMA Setoglaucine (Peacock blue G) (C.I. 658)	180, 464.
PTA Setoglaucine (Peacock blue G) (C.I. 658)	504.
PTMA Setoglaucine (Peacock blue G) (C.I. 658)	215, 463, 464, 477, 548.
PMA Victoria blue B (C.I. 729)	330, 463, 464, 477, 493.
PTA Victoria blue B (C.I. 729)	463, 477.
PTMA Victoria blue B (C.I. 729)	215, 463.
Victoria blue B toners	382.
PTA Victoria blue R (C.I. 728)	477.
PMA Victoria pure blue B (Pr. 198)	180, 398, 464.
PTA Victoria pure blue B (Pr. 198)	166.
PTMA Victoria pure blue B (Pr. 198)	463, 464.
All other	463.
Brown toners, reduced: Para brown	180, 451.
Green toners, reduced:	
PMA Brilliant green (C.I. 662)	330, 374, 464.
PTA Brilliant green (C.I. 662)	464.
PTMA Brilliant green (C.I. 662)	87, 463, 477, 493.
PMA Brilliant green (C.I. 662) and benzidine yellow.	489.
PMA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	215, 464, 493.
PTA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	181.
PTMA Brilliant green (C.I. 662) and thioflavine (C.I. 815).	180, 215, 374, 464.
PMA Malachite green (C.I. 657)	166.
PTA Malachite green (C.I. 657)	463, 504.
PTMA Malachite green (C.I. 657)	87, 463, 493.
PMA Malachite green (C.I. 657) and thioflavine (C.I. 815).	477.
PTA Malachite green (C.I. 657) and thioflavine (C.I. 815).	166.
Phthalocyanine green (Pr. 483)	118, 374, 382, 493, 494, 497.
Shamrock green	451, 493.
All other	180, 463.
Maroon toners, reduced:	
Bona arylamine	374.

TABLE 158.--*Synthetic organic chemicals: Lakes and toners for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Product	Manufacturers' identification numbers (according to list in table 27)
REDUCED OR EXTENDED TONERS--Continued	
Maroon toners, reduced--Continued	
β-Hydroxynaphthole maroon (B.O.N. maroon) (Lithol maroon).	374.
Lithol red 3G, manganese	374.
Naphthol AS-BS	498.
C. I. 82, α-Naphthylamine maroon	181, 215.
Phenetidin maroon	181.
Orange toners, reduced:	
2,4-Dinitroaniline orange	464.
Hansa orange I	464.
*o-Nitroaniline orange	181, 451, 464, 477.
All other	269.
*Red toners, reduced:	
*o-Chloronitroaniline red (Chlorinated red)	493.
*p-Chloronitroaniline red	374.
Eosine (Bromo acid toner) (C.I. 768)	379, 548.
Indanthrene red	451.
*Lithol red R toners (C.I. 189):	
*Barium toner	87, 215, 269, 374, 379, 382, 398, 464, 489, 548.
Calcium toner	87, 269, 464, 489, 548.
Sodium toner	181, 269, 398.
*Lithol rubine B (C.I. 163)	215, 374, 451, 463, 464, 473, 477, 497, 504, 548.
Naphthol AS-BS (Pr. 305)	215, 493.
*C. I. 44, Para red, light	87, 181, 382, 463, 464, 477.
*Para red, dark	87, 135, 181, 182, 215, 269, 382, 463, 477, 493.
Red lake C (C.I. 169)	269, 379.
*PMA Rhodamine B (C.I. 749)	330, 464.
*PTMA Rhodamine B (C.I. 749)	87, 215, 374, 463, 477.
PMA Rhodamine B (C.I. 749) and 6G (C.I. 752)	489.
Rhodamine B, tannic	382.
PMA Rhodamine 6G (C.I. 752)	330, 464.
PTA Rhodamine 6G (C.I. 752)	166.
PTMA Rhodamine 6G (C.I. 752)	87, 215, 374, 463, 464, 493.
Rubine 3B	215.
*C. I. 69, Toluidine red	87, 166, 181, 374, 382, 451, 464, 477, 493.
All other	215, 269, 463.
Violet toners, reduced:	
PMA Ethyl violet (C.I. 682)	17, 330, 464, 477.
PTA Ethyl violet (C.I. 682)	17, 477.
PTMA Ethyl violet (C.I. 682)	17, 379, 464.
*PMA Methyl violet B (C.I. 680)	166, 180, 195, 330, 447, 463, 464, 477.
*PTA Methyl violet B (C.I. 680)	463, 504.
*PTMA Methyl violet B (C.I. 680)	181, 215, 374, 463, 464, 493, 548.
*Methyl violet B (C.I. 680), fugitive	195, 382, 447, 489.
PTMA Victoria blue B (C.I. 729) and PTA ethyl violet (C.I. 682).	477.
Yellow toners, reduced:	
*Benzidine yellow	180, 451, 464, 477, 489, 493, 504.
*Pr. 103, Hansa yellow G	215, 374, 451, 464, 477, 494.
*Pr. 104, Hansa yellow 5G	464, 477, 493.
Pr. 105, Hansa yellow 10G	87, 374, 464.
Hansa yellow M	451.
Hansa yellow, other	94.
Lithol fast yellow 3GD	374.

Medicinals

TABLE 17B.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*

(Medicinals for which separate statistics are given in table 17A are marked below with an asterisk (*); medicinals not so marked do not appear in table 17A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product)

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC	
Benzenoid	
4-Acetamidobenzaldehyde thiosemicarbazone	459.
p-Acetamidophenol (Acetyl p-aminophenol)	511, 523.
1,4-Acetamidophenyl salicylate (Phenoteal)	279.
Acetanilide	168, 284, 350.
Acetarsone (N-Acetyl-4-hydroxy-m-arsanilic acid) (Stovarsol).	183, 320, 321.
4-Acetoxy-m-arsanilic acid (Hemural)	320.
Acetylglycol salicylate	292.
*Acetylsalicylic acid (Aspirin)	135, 144, 168, 183, 191, 350.
Acetyltannic acid (Tannigen) (Tannyl acetate)	162, 320, 511, 555.
*Adrenaline (Epinephrine)	84, 297, 308, 320, 336, X.
Adrenalone	320.
Amino acids:	
3,5-Diiodotyrosine	164, 295.
d-Phenylalanine	320.
dl-Phenylalanine	350, 531.
dl-Tyrosine	350.
l-Tyrosine	531.
2-Amino-4-arsenosophenol (Mapharsen) hydrochloride	308.
*p-Aminobenzoic acid	84, 162, 202, 279, 313, 361, 401, 421, 501.
*p-Aminobenzoic acid derivatives:	
2-Amylaminoethyl p-aminobenzoate (Amylaine)	311.
*Benzocaine (Ethyl p-aminobenzoate)	208, 292, 501, 521.
Butacaine (3-Di-n-butylaminopropyl p-aminobenzoate) base and hydrochloride.	521.
Butacaine sulfate	81, 521.
Butesin (n-Butyl p-aminobenzoate)	292, 521.
Butesin picrate (Di(n-butyl p-aminobenzoate) trinitrophenol).	92, 521.
Isobutyl p-aminobenzoate (Cycloform)	292.
Nhanocaine (2-Isobutylaminoethyl p-aminobenzoate)	311.
Pontocaine (2-Dimethylaminoethyl p-butylamino-benzoate).	292, 295, 320.
Procaine base (2-Diethylaminoethyl p-amino-benzoate) (Novocaine base).	18, 84, 320, 361, 501, 521.
*Procaine hydrochloride	18, 84, 320, 361, 521.
Propyl p-aminobenzoate	292.
*p-Aminobenzoic acid salts:	
Calcium p-aminobenzoate	361.
Potassium p-aminobenzoate	84, 361.
Sodium p-aminobenzoate	84, 162, 202, 313, 361, 421, 501.
p-Aminohippuric acid	421.
4-Amino-2-methyl-1-naphthol hydrochloride (Synkamin)	308.
*4-Aminosalicylic acid	279, 295, 308, 368, 459, 498.
*4-Aminosalicylic acid, sodium salt	295, 308, 368, 459, 498.
Anisic acid, sodium salt	292.
1,8,9-Anthratriol (Anthralin)	501.
*Antihistamines:	
2-(Benzhydryloxy)-N,N-dimethylethylamine (Benadryl).	X.
2-(Benzhydryloxy)-N,N-dimethylethylamine hydro-chloride.	308.
N,N-Dimethyl-2-(α-phenyl-o-tolory)ethylamine dihydrogen citrate.	187.
1-(o-Methoxyphenyl)-2-methylaminopropane hydro-chloride.	X.
Atoxyl (Sodium p-aminophenylarsonate)	162, 555.
Benzaldehyde	449.
Benzoic acid	16, 168.
*Benzoic acid salts:	
Lithium benzoate	162, 284.
Magnesium benzoate	401.
All other	449.
Benzyl alcohol.[1]	
*Benzyl benzoate	41, 168, 292, 336, 397, 424.
p-Benzylphenyl carbamate (Diphanan)	101.
Benzyl succinate	162, 361, 401.
Bismuth iodosubgallate	555.

[1] All benzyl alcohol is included with flavor and perfume materials, table 18B.

TABLE 17B.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Benzenoid--Continued	
*Bismuth subgallate	222, 254, 392, 441, 550.
*Bismuth subsalicylate	139, 222, 441, 550.
Bismuth tetrabromopyrocatechol	162, 295.
Bismuth tribromophenate	X.
Bis(4-nitrophenyl) disulfide	498.
Bis(phenylpropyl)ethylamine and citrate	292.
tert-Butylcresol	292.
Calcium benzyl phthalate	511.
Calcium cresolsulfonate	162, 320.
Calcium iodoxybenzoate	208.
p-Carbamidophenyl di(carboxymethylthio)arsenite	386.
Carbasone (p-Carbamidobenzenearsonic acid)	295, 313, 386, 555.
Chloramine T (Sodium p-toluenesulfonchloramide)	168.
Chlorothymol	222.
Citryl-p-phenetidine	162.
m-Cresyl acetate (Cresatin)	162, 331, 511.
p,p'-Diaminodiphenylsulfone-N,N'-di(dextrose sodium sulfonate).	308.
2,5-Diaminotoluene sulfate	448.
1-Diethylamino-2,2-dimethylpropylhydratropate, phosphate salt.	456.
p,p'-(1,2-Diethylethylene)diphenol (Hexestrol)	22.
p,p'-(Diethylidene-ethylene)diphenol (Dienestrol)	22, 243.
*α,α-Diethyl-4,4'-stilbenediol (Diethylstilbestrol)	22, 162, 386, 482, X.
α,α-Diethyl-4,4'-stilbenediol dipropionate	22.
Di-sec-hexylresorcinol (Dihexylin)	308.
3,4-Dihydroxynorephedrine (3,4-Dihydroxyphenyl-propanolamine) hydrochloride.	320.
β-(3,5-Diiodo-4-hydroxyphenyl)-α-hydrotropic acid	275, 526.
Dimethylaminocatechol	228.
6-Dimethylamino-4,4-diphenyl-3-heptanone	222.
6-Dimethylamino-4,4-diphenyl-3-heptanone hydro-chloride.	386.
γ-Dimethylamino-α,α-diphenylvaleronitrile	386.
Dimethyl-3-hydroxyphenylammonium chloride	456.
N,α-Dimethylphenethylamine (Desoxyephedrine) base	279, 292, 372.
*N,α-Dimethylphenethylamine hydrochloride	101, 292, 324, 372, 480.
Diphenylacetic acid	292, 361.
Diphenylacetyldiethylaminoethanol hydrochloride	175, 292.
p-(Di-N-propylsulfamyl)benzoic acid	168, 439.
*Dyes, medicinal:	
Acriflavine (3,6-Diamino-10-methylacridine chloride).	421, 521.
Diacetylaminoazotoluene (Diseaon)	162.
2,4-Diamino-4'-ethoxyazobenzene hydrochloride (Serenium).	87.
Gentian violet	421.
Mercurochrome (Dibromohydroxymercurifluorescein, sodium salt).	11, 92, 162.
Methylene blue	421, 498.
Methyl violet	421.
Proflavine (3,6-Diaminoacridine sulfate)	421, 521.
Scarlet red (Phenol red)	208, 421.
Sulfobromophthalein, sodium	523.
Tetraiodophenolphthalein and sodium salt	421, 441.
Trypan blue	421.
All other	421.
Ephedrine, racemic	222.
l-Ephedrine β-(l-Methylaminoethyl)benzyl alcohol)	222.
Ephedrine ethylenediamine	523.
N-Ethyl-3,3'-diphenyldipropylamine and salts	X.
N-Ethylephedrine hydrochloride	433.
Ethyl (iodophenyl)undecanoate (Pantopaque)	448.
Gallic acid	441.
Gentisic acid (2,5-Dihydroxybenzoic acid) and derivatives:	
Gentisic acid	162, 292, 372, 459.
*Gentisic acid, sodium salt	162, 292, 372, 459.
N-2-Hydroxyethylgentisamide	292.
Germanin	320.
Guaiacol, liquid and crystalline	168, 449.
Hexyl-m-cresol	331.
Hexylresorcinol	331, 459.
Hydroquinone n-amyl ether (Amol)	331.
p-Hydroxyacetanilide	279.
*p-Hydroxybenzoic acid esters:	
Benzyl p-hydroxybenzoate	162, 292, 449.
n-Butyl p-hydroxybenzoate (Butoben)	162, 292, 449.

TABLE 17B.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Benzenoid--Continued	
•p-Hydroxybenzoic acid esters--Continued	
Ethyl p-hydroxybenzoate	162, 292, 449.
Methyl p-hydroxybenzoate	162, 292, 313, 449.
Propyl p-hydroxybenzoate	162, 292, 449.
β-Hydroxy-β-(2,5-dimethoxyphenyl)isopropylamine hydrochloride (Methoxamine).	101.
Hydroxymercuri-4-nitro-o-cresol anhydride (Metaphen).	521.
β-(4-Hydroxyphenyl)-α-phenylpropionic acid	292.
p-Hydroxypropiophenone (Hyprophen)	279.
3,3-Iminobistropylamine	268.
α-[Isopropylaminoethyl]protocatechuyl sulfate	521.
α-[Isopropylaminomethyl]protocatechuyl alcohol (Isoudrine).	386, X.
Lithium hippurate	308.
Mandelic acid (Phenylglycolic acid)	441.
•Mandelic acid derivatives:	
Ammonium mandelate	162, 482.
Calcium mandelate	222, 441.
N-2-Hydroxyethylmandelamide	386.
Sodium mandelate	441.
N-Methylacetanilide (Exalgin)	162, 555.
5,5'-Methylenedisalicylic acid	449.
•α-Methylphenethylamine (β-Phenylisopropylamine) (Amphetamine)(Benzedrine) base.	208, 279, 497.
•α-Methylphenethylamine sulfate	497, 555.
2-Naphthol (β-Naphthol)	183, 511.
β-Naphthoquinoline	295.
•2-Naphthyl benzoate	162, 173, 222, 492.
N-1-Naphthylethylenediamine dihydrochloride	295.
Neoarsphenamine	320.
Neosynephrine (Phenylephrine) hydrochloride	92, 511.
Norephedrine (Propadrine) hydrochloride	292, 331.
Octylresorcinol	511.
Orthoform (Methyl m-amino-p-hydroxybenzoate)	320.
Paredrine (p-Hydroxy-α-methylphenethylamine) hydrobromide.	497.
Phenacaine [(Di-p-ethoxyphenyl)acetamidine] hydrochloride.	81, 320, 501.
Phenacetin (Acetophenetidin)	168, 183, 292, 350, 361.
Pheneserine hydrochloride	521.
Phenolphthalein	168.
•Phenolsulfonic acid salts:	
Ammonium phenolsulfonate	222, 350.
Calcium phenolsulfonate	222, 441.
Copper phenolsulfonate	222, 441.
•Sodium phenolsulfonate	222, 295, 350, 441.
Zinc phenolsulfonate	222, 295, 350, 441.
Phenyl mercuric derivatives:	
2-Acetoxymercuri-4-diisobutylphenol	559.
Chloromercuri-4-nitro-o-cresol	521.
o-Chloromercuriphenol [o-Hydroxyphenylmercuric chloride).	101, 523, X.
p-Chloromercuriphenol	523.
Mercurophen	97.
Phenylmercuric acetate	97, 523.
Phenylmercuric benzoate	97, 523, 562.
Phenylmercuric borate	97, 523, 562.
Phenylmercuric chloride	97, 523.
Phenylmercuric hydroxide	97.
Phenylmercuric nitrate	97, 523, 562.
Phenylmercuric salicylate	97, 523.
Phenylsemicarbazide	361.
Propenyl methyl guaethol	292.
Propyl gallate	511.
Prostigmine (Neostigmine) bromide	263, 295, 456.
Prostigmine (Neostigmine) methyl sulfate	263, 295.
Resorcinol monoacetate	401, 448, 511.
Salicylamide	162, 168, 295, 350, 443.
•Salicylic acid	168, 183, 350, 386, 449.
•Salicylic acid salts:	
Ammonium salicylate	162, 350, 441.
•Calcium salicylate	162, 350, 441, 449.
Lithium salicylate	284.
Magnesium salicylate	162, 350, 441.
Manganese salicylate	162, 449.
•Sodium salicylate	168, 350, 386, 449.
Strontium salicylate	350, 441, 449.

TABLE 17B.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC—Continued	
Benzenoid--Continued	
Salicyl salicylate (Salysal)	162, 229.
Saligenin (Salicyl alcohol)	295.
Salol (Phenyl salicylate)	350.
Silver picrate	171, 295.
Sodium antimony III biscatechol-2,4-disulfonate (Fouadin).	320.
Sodium benzyl succinate	361, 401.
Sodium ethylmercurithiosalicylate	386.
Sodium o-iodohippurate dihydrate (Hippuran)	441.
Sodium methylenesulfonaminohydroxyphenyl arsonate (Aldarsone).	101, 521.
Stilbamine glucoside (Neostam)	101.
•Sulfa drugs:	
Benzylsulfanilamide	498.
Benzylsulfanilamide, sodium salt	498.
p-Benzylaminobenzenesulfonamide	320.
N^1-(3,4-Dimethyl-5-isoxazolyl)sulfanilamide	456.
Neo-Prontosil "S"	320.
Nisulfazole	320.
N^4-Phthalylsulfacetamide	275, 526.
Phthalylsulfathiazole	168, 275.
Prontosil soluble (Disodium 4-sulfaminophenyl-2-azo-7-acetylamino-1-hydroxynaphthalene-3,6-disulfonate).	320.
Sulfadiazine	498.
Sulfadiazine, sodium salt	498.
Sulfaguanidine	498.
Sulfallantoin	315.
Sulfamerazine (2-Sulfanilamide-4-methylpyrimidine).	498.
Sulfamerazine, sodium salt	498.
Sulfamethazine (Sulfadimethyldiazine)	498.
Sulfamethazine, sodium salt	498.
Sulfanilamide (p-Aminobenzenesulfonamide)	168, 222, 498.
N-Sulfanilylacetamide (Sulfacetamide)	168, 526.
N-Sulfanilylacetamide, sodium salt	526.
Sulfapyridine	222, 498.
Sulfapyridine, sodium salt	222, 498.
Sulfaquinoxaline	222.
Sulfasuxidine (Succinylsulfathiazole)	168, 275.
•Sulfathiazole	222, 386, 482, 498.
Sulfathiazole, sodium salt	222, 320, 498.
[Sulfonylbis(p-phenylenazimino)] dimethanesulfonic acid, disodium salt (Diasone).	521.
Tannin albuminate (Tannalbin)	162, 511.
Tannin-formaldehyde (Tannoform)	162, 511, 555.
Tannin-yeast	320.
Thiosalicylic acid	243, 386.
Thiosalicylic acid esters	243.
Thymol	240, 397.
•Thymol Iodide	222, 392, 441, 550.
•)-o-Tolomy-1,2-propanediol (o-Cresyl e-glyceryl ether).	162, 279, 292, 492.
Tomophosphan (Sodium p-dimethylamino-o-tolylphosphate).	295.
Tri-p-anisylchloroethylene	433.
Trimethoxybenzoic acid	295.
•Vitamins:	
K(Menadione) (2-Methyl-1,4-naphthoquinone)	67, 459, 511, 521.
K(Menadione sodium bisulfite)	511.
K(2-Methyl-1,4-naphthoquinone-diphosphoric ester tetrasodium salt).	456.
K_1 (2-Methyl-3-phytyl-1,4-naphthoquinone)	222.
Alicyclic and Heterocyclic	
Adenine, base and hydrochloride	257.
Adenine sulfate	257, 448.
Adenosine	257.
Adenosinephosphoric acids	257.
Adenylic acid	257.
Allantoin (5-Ureidohydantoin)	313, 315, 511.
Amino acids:	
Histamine, base	59.
Histamine phosphate	59.
Histidine monohydrochloride	531.
dl-Tryptophane	140, 350, 531.
l-Tryptophane	59, 531.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Alicyclic and Heterocyclic--Continued	
9-Aminoacridine hydrochloride	292.
2-Amino-5-nitrothiazole (Enheptin)	498.
*Antibiotics for human or veterinary use:	
Aureomycin hydrochloride	529.
Bacitracin	254, 446, 496.
Chloramphenicol (Chloromycetin)	168, 308.
*Dihydrostreptomycin	222, 254, 365, 386, 449, 482, X.
Neomycin	449, X.
*Penicillin salts:	
Penicillin aluminum	254.
Penicillin calcium	X.
Penicillin dibenzylethylenediamine	171.
Penicillin l-ephenamine	446.
*Penicillin potassium	137, 171, 187, 222, 254, 365, 386, 392, 446, 449, 482, 521, X.
Penicillin "O" potassium (Allylmercaptomethyl derivative).	X.
*Penicillin procaine	137, 171, 187, 222, 254, 365, 386, 392, 446, 449, 482, 521, X.
*Penicillin sodium	187, 222, 254, 386, 392, 446, 449, 482, X.
Polymyxin	254.
*Streptomycin	222, 254, 365, 386, 449, 482, X.
Terramycin	254.
Tyrothricin (Gramicidin)	496.
Viomycin	254.
*Antibiotics, for animal feed:	
Aureomycin hydrochloride	529.
Bacitracin	446.
Penicillin salts:	
Penicillin dibenzylethylenediamine	254.
Penicillin procaine	222.
Terramycin	254.
*Antihistamines:	
2-(Benzhydryloxy)-N,N-dimethylethylamine 8-chlorotheophyllinate.	X.
2-[Benzyl(2-dimethylaminoethyl)amino]pyridine (N,N-Dimethyl-N'-benzyl-N'-pyridylethylene-diamine).	175.
N-(p-Chlorobenzhydryl)-N'-methylpiperazine hydrochloride.	521.
2-[1-(p-Chlorophenyl)-3-dimethylaminopropyl] pyridine maleate.	526.
2-[(5-Chloro-2-thenyl)(2-dimethylaminoethyl) amino]pyridine citrate (N,N-Dimethyl-N'2-pyridyl-N'2-(5-chlorothenyl)ethylenediamine citrate).	168.
2-[o-(2-Dimethylaminoethoxy)-o-methylbenzyl] pyridine succinate (2-(Methyl-2'-dimethylamino-ethoxybenzyl)pyridine succinate).	433.
2-[(2-Dimethylaminoethyl)(p-methoxybenzyl)amino] pyridine maleate.	222.
[(2-Dimethylaminoethyl)thenylamino]pyridine fumarate (N,N-Dimethyl-N'2-pyridyl-N'2-thenyl-ethylenediamine fumarate).	168, 521.
[(2-Dimethylaminoethyl)thenylamino]pyridine hydrochloride (N,N-Dimethyl-N'2-pyridyl-N'2-thenylethylenediamine hydrochloride).	168, 320, 521.
2-[3-(Dimethylamino)-1-phenylpropyl]pyridine (1-Phenyl-1-(2-pyridyl)-3-dimethylaminopropane).	526.
2-[3-(Dimethylamino)-1-phenylpropyl]pyridine maleate.	526.
Pheniramine fumarate	135.
2-Methyl-9-phenyl-2,3,4,9-tetrahydro-1-pyridine-dene hydrogen tartrate.	456.
Antipyrine (1,5-Dimethyl-2-phenyl-3-pyrazolone)	330.
Antipyrine salicylate	162, 313, 511.
Arecoline (Methyl 1,2,5,6-tetrahydromethylnico-tinate) hydrobromide.	222, 229.
Atropine salicylic acid hydrochloride	375.
Atropine methyl bromide	75.
Atropine methyl nitrate	75, 336, 555.
Barbituric acid	521.
*Barbituric acid derivatives:	
5-Allyl-5-(2-cyclopenten-1-yl)barbituric acid and salt (Cyclopal).	501.
5-Allyl-5-isobutylbarbituric acid (Sandoptal)	279.
5-Allyl-5-isopropylbarbituric acid (Alurate)	456, 555.
5-Allyl-5-(1-methylbutyl)barbituric acid and salt (Secobarbital).	92.
5-Allyl-5-phenylbarbituric acid and salt (Alphenal).	501.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Alicyclic and Heterocyclic--Continued	
*Barbituric acid derivatives--Continued	
Aminopyrine diethylbarbiturate (Veramon)(Peralga)	555.
5-sec-Butyl-5-ethylbarbituric acid	208, 279, 521.
5-(1-Cyclohexen-1-yl)-1,5-dimethylbarbituric acid (Evipal).	320.
5-(1-Cyclohexen-1-yl)-1,5-dimethylbarbituric acid, sodium salt.	320.
5,5-Diallylbarbituric acid (Dial)	175, 501, 555.
*5,5-Diethylbarbituric acid (Barbital)	386, 456, 501, 521.
5,5-Diethylbarbituric acid, sodium salt	501, 521.
5-Ethyl-5-isoamylbarbituric acid and salt (Amytal).	92, 386, 501.
5-Ethyl-5-isobutylbarbituric acid, sodium salt	92.
5-Ethyl-5-isopropylbarbituric acid and salt	X.
5-Ethyl-5-(1-methyl-1-buteryl)barbituric acid (Delvinal).	279.
5-Ethyl-5-(1-methyl-n-butyl)barbituric acid (Pentobarbital).	92, 208, 279, 501, 521.
5-Ethyl-5-(1-methyl-n-butyl)barbituric acid, sodium salt.	92, 208, 501, 521.
5-Ethyl-5-(1-methyl-n-butyl)-2-thiobarbituric acid and salt (Pentothal).	521.
5-Ethyl-1-methyl-5-phenylbarbituric acid (Mephobarbital).	162, 320.
*5-Ethyl-5-phenylbarbituric acid (Phenobarbital) (Luminal).	208, 320, 441, 501.
*5-Ethyl-5-phenylbarbituric acid, calcium salt	208, 501.
*5-Ethyl-5-phenylbarbituric acid, sodium salt	208, 320, 441, 501.
Barium inosinate	297.
Berberine hydrochloride	336, 496.
*Bile acids and salts:	
Bilron	386.
Carbamimol choline chloride	222.
Cholic acid	320, 323, 336, 535, X.
*Dehydrocholic acid	320, 323, 336, 387, 535.
Dehydrocholic acid, sodium salt	535.
*Desoxycholic acid	320, 323, 336, 387, 535.
Ketocholanic acids	320, 387, 480.
Mixed bile acids, extracted	320, 480.
Mixed oxidized bile acids	323, 535.
Bromocamphor, mono	162, 350, 441.
a-Butyloxycinchoninic acid diethylethylenediamides and hydrochloride.	175.
*Caffeine, natural and synthetic	168, 253, 254, 284, 413.
*Caffeine derivatives:	
Caffeine citrate	162, 168, 222, 254, 441, 550.
Caffeine sodium benzoate	162, 222, 441, 550.
Caffeine sodium salicylate	441, 550.
Ethyl caffeate	523.
Camphor, synthetic, U.S.P.	211, 374.
Camphoric acid	162, 511, 555.
Camphoric anhydride	511.
Camphosulfonic acid	511.
Camphosulfonic acid salts:	
Calcium camphosulfonate	162, 511, 555.
Sodium camphosulfonate	162, 313, 511, 555.
All other	162, 313.
Carboxymethylcellulose, sodium salt	175.
Cellulose, oxidized	368.
7-Chloro-4-(4-diethylamino-1-methylbutylamino) quinoline (Aralen).	320.
*5-Chloro-7-iodo-8-quinolinol (Iodochlorohydroxy-quinoline).	162, 175, 295, 361, 562.
7-Chlorokynurenic acid (7-Chloro-4-hydroxyquinoline-2-carboxylic acid).	183.
Cinchophen (2-Phenylquinoline-4-carboxylic acid)	438.
Cinchophen (2-Phenylquinoline-4-carboxylic acid) hydriodide.	386.
Cinchophen, methyl ester	498.
Cinchophen, sodium salt	208, 498.
Curarine (Mikethamide)	67, 175, 555.
Cuzymase	257.
1,4-Cyclohexanedione	421.
1-Cyclohexylamino-2-propyl benzoate (Cycleine) hydrochloride.	331.
1-Cyclohexyl-2-methylaminopropane	457.
1-Cyclopentyl-2-methylpropylamine	168.
Cytidine sulfate	237.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Alicyclic and Heterocyclic--Continued	
Cytidylic acid	237.
Cytosine	237.
Diethanolamine salt of p, a-dimethylbenzyl alcohol camphoric acid, monoester (Synthobilin).	X.
1-Diethylcarbamyl-4-methylpiperazine dihydrogen citrate (Hetrazan).	498.
3,3-Diethyl-2,4-dioxopiperidine	456.
Dihydrocodeinone bitartrate	441, 480, 550.
Diiodochelidamic acid	222.
2-(3,5-Diiodo-4-hydroxybenzyl)cyclohexanecarboxylic acid.	292.
3,5-Diiodo-N-methyl-4-pyridine-2,6-dicarboxylic acid	526.
3,5-Diiodo-4-pyridone-N-acetic acid, diethanolamine	320.
*3,7-Diiodo-8-quinolinol	162, 295, 313, 361, 555, 562, X.
6,7-Dimethoxy-1-(4'-ethoxy-3'-methoxybenzyl)-3-methylisoquinoline phosphate.	386.
4-Dimethylaminoantipyrine (Aminopyrine)	421.
2-Dimethylamino-6-(β-diethylaminoethoxy)benzothiazole hydrochloride.	456.
3,5-Dimethyl-3-ethyl-2,4-oxazolidinedione	521.
1,3-Dimethyl-4-phenyl-4-propionoxypiperidine hydrochloride.	456.
Dimethylpiperidone	295.
N,N-Dimethyl-4-piperidylidene-1,1-diphenylmethane methyl sulfate.	526.
Diothane (Piperidinepropanediol diphenylurethane) base and hydrochloride.	433.
5,5-Diphenylhydantoin	92.
5,5-Diphenylhydantoin, sodium salt	92, 222, 313, 361, 511, 555.
Eserine salicylate	75.
N-Ethyl-3,3'-diphenyldipropylamine salt of p,a-dimethylbenzyl alcohol camphoric acid, monoester.	X.
3-Ethyl-3-methyl-5-phenylhydantoin	525.
Ethyl 1-methyl-4-phenylisonipecotate (Demerol)	320.
Eucatropine hydrochloride	81.
Fructose-6-phosphate, barium salt	237.
Glucose-1-phosphate, potassium salt	237.
Glucose-6-phosphate, barium salt	237.
Glucuronolactone	189.
Guanine	237.
Guanine hydrochloride	237, 448.
Guanine sulfate	237.
Guanosine	237.
Guanylic acid and sodium salt	237.
Hexamethylenetetramine	449.
Hexamethylenetetramine acetaminosalicylic acid (Salihexin).	521.
Hexamethylenetetramine anhydromethylene citrate (Helmitol).	320, 511.
Hexamethylenetetramine camphorate	511.
Hexamethylenetetramine mandelate	201.
Hexamethylenetetramine methylene citrate	511.
Hexamethylenetetramine methyl iodide	511, 555.
Hexamethylenetetramine tetraiodide	362.
Hexosediphosphoric acid salts:	
Barium hexosediphosphate	237.
Calcium hexosediphosphate	237.
Magnesium hexosediphosphate	237.
Homatropine and salts	75, 222.
*Homatropine methyl bromide	75, 222, 480.
*Hormones (steroid):	
21-Acetoxypregnenolone	526, X.
Adrenocorticotropic hormone (ACTH)	308.
Desoxycorticosterone acetate	526, X.
Estradiol	377, 526.
Estradiol 3-benzoate	526.
Estradiol 3,17-dipropionate	175.
Estradiol trimethylacetate	229.
Estrogenic substance (95% estrone)	377.
Estrone	308, 377, 526, X.
Estrone sulfate, sodium salt	171, 377.
Ethinylestradiol	526.
Ethylestosterone	526.
17-Hydroxy-11-dehydrocorticosterone (Cortisone)	222, 526, X.
Methylandrostenediol	526.
Methyltestosterone	175, 229, 526.
Piperazine estrone sulfate	521.
Pregnenolone	526, X.
Pregnenolone acetate	526, X.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Alicyclic and Heterocyclic--Continued	
*Hormones (steroid)--Continued	
Progesterone	526.
Reichstein's substance S acetate	X.
Reichstein's substance S alcohol	X.
Testosterone	175, 229, 526.
Testosterone cyclopentylpropionate	X.
Testosterone propionate	175, 229, 526.
8-Hydroxy-7-iodo-5-quinolinesulfonic acid (Yatren acid) and salt.	320, 361, 562.
dl-3-Hydroxy-N-methylmorphinan hydrobromide	456.
8-Hydroxy-5-quinolinesulfonic acid	562.
Hyoscyamine hydrobromide	75.
Hyoscyamine sulfate	75, 336.
Hypoxanthine	237.
Isonicotinic acid hydrazide	456.
Lysidine bitartrate	292.
Menthyl salicylate	292.
Iso-Menthyl salicylate	292.
2-Mercapto-1-methylimidazole	386.
α-Methoxy-γ-hydroxymercuric propylamide of camphoric acid (Marcurial acid).	92, 511.
β-Methoxy-γ-hydroxymercuric propylamide of camphoric acid (Marcurial acid), sodium salt.	511.
β-Methoxy-γ-hydroxymercuric propylamide of camphoric acid, sodium salt with theophylline (Mercupurin).	92, 511.
3,4-(2'-Methoxy-2'-methyl-4'-phenyl)dihydropyrano-coumarin.	521.
2-Methoxy-5-nitrofuran (5-Nitro-2-furfuryl methyl ether).	135.
Methylcholanthrene	448.
3,3'-Methylenebis-4-hydroxycoumarin (Dicumarol)	498, 521.
Methyl isovalerate	164.
3-(2-Methyl-1-piperidyl)propyl alcohol	386.
3-(2-Methyl-1-piperidyl)propyl benzoate (Metycaine)	386.
3-(2-Methyl-1-piperidyl)propyl p-cyclohexyloxy-benzoate.	386.
5-Methylthiouracil	237.
6-Methyl-2-thiouracil	162, 237.
5-Methyluracil (Thymine)	237.
6-Methyluracil	237.
Metrazole (Pentylenetetrazole)	459.
Neocinchophen (Ethyl 6-methyl-2-phenylcinchominate)	498.
5-Nitro-2-furaldehyde semicarbazone (Furacin)	135.
Novalgin (1-Phenyl-2,3-dimethyl-4-methylamino-5-pyrazolone formaldehyde bisulfite).	162, 320.
Nucleic acid and salts	237.
Orotic acid	237.
Pamaquine (Plasmochin) (N-Diethylaminoisopentyl-8-amino-6-methoxyquinoline).	320.
*Papaverine base, synthetic	222, 386, 441.
*Papaverine hydrochloride, synthetic	222, 441, 550.
*Phenothiazine	8, 206, 244, 350, 374.
5-Phenyl-5-thienylhydantoin, sodium salt	168, 386.
Phthalosone	164.
Phytic acid, calcium salt	252, 295.
Pilocarpine hydrochloride	75, 336.
Pilocarpine nitrate	75, 336.
Piperazine	162, 313.
Piperazine derivatives:	
Piperazine citrate	313.
Piperazine salicylate	313.
sym-N-Tetramethylpiperazine diiodide	295.
6-Propyl-2-thiouracil	498.
2-Pyridinemethanol (β-Pyridylcarbinol)	456.
Pyridium (2,6-Diamino-3-phenylazopyridine)	201.
8-Quinolinol (8-Hydroxyquinoline) salts and esters:	
8-Quinolinol base	202, 222, 562.
8-Quinolinol benzoate	202, 222, 361, 562.
8-Quinolinol citrate	202, 562.
8-Quinolinol phosphate	562.
8-Quinolinol sulfate (Quinosol)	202, 222, 562.
All other	320, 562.
d-Ribose	237.
*Rutin	75, 308, 336, 361, 392, 496.
Scopolamine (Hyoscine) aminoxide hydrobromide	75, 375.
Sodium 5-iodo-2-thiouracil	175.
l-Sorbose	229, 254.
*Terpinol hydrate	102, 361, 401.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, CYCLIC--Continued	
Alicyclic and Heterocyclic--Continued	
*Theobromine and derivatives:	
Theobromine, natural	168, 284.
Theobromine calcium gluconate	387.
Theobromine calcium salicylate	92, 162.
Theobromine salicylate	222, 441.
*Theobromine sodium acetate	222, 441, 550.
*Theobromine sodium salicylate	162, 222, 284, 441, 550.
*Theophylline (1,3-Dimethylxanthine) (Aminophylline) base and derivatives:	
8-Chlorotheophylline	499.
*Theophylline base	208, 254, 441, 501.
Theophylline ethylenediamine	208, 222, 254, 361, 386, 501, X.
Theophylline methoxymercuripropylsuccinylurea	228.
Theophylline monoethanolamine	361, 386.
Theophylline sodium acetate	441, 501.
Theophylline sodium salicylate	441.
2-Thiouracil	498.
3,5,5-Trimethyl-2,4-oxazolidinedione (Tridione)	521.
Uracil	227, 448.
Uric acid	315, 531.
Uridine	257.
Uridylic acid	257.
*Vitamins:	
*A, from all sources:	
A, acetate	222, 229, 254, 316, 448, 456, 536.
A, alcohol	229, 316, 536.
A, palmitate	222, 254, 448, 456.
*B_1 (Thiamin hydrochloride)	222, 456.
B_1 (Thiamin nitrate)	222, 456.
B_2:	
*Riboflavin for human consumption, 100%	222, 456.
*Riboflavin for animal and poultry consumption, 100%	303, 446, 498.
Riboflavin-5'-phosphate, diethanolamine	456.
Riboflavin-5'-phosphate, monosodium salt	456.
*B_6 (Pyridoxine)	222, 456.
*B_{12}, all grades	222, 254, 303, 404, 446, 482, X.
*D_2 (Irradiated ergosterol) (Calciferol)	110, 127, 194, 229, 237, 303, 308, 320, 341, 482, 536, 539.
*D_3 (Irradiated animal sterol) (Delsterol)	229, 303, 320, 374, 536, 539.
D_3, 3,5-Dinitrobenzoate	374.
E (α-Tocopherol)	222, 456.
E esters: α-Tocopherol acetate	222, 456.
Folic acid	X, X.
Inositol	189, 252.
*Nicotinamide (Niacinamide)	194, 201, 498.
*Nicotinamide hydrochloride	201.
*Nicotinic acid (Niacin)	201, 222, 498, 513.
Xanthine	257, 295, 533.
Xanthine, monosodium salt	257.
Yrimbine hydrochloride	336.
MEDICINALS, ACYCLIC	
Acetylcarbromal	492.
*Acetylcholine bromide	162, 295, 313, 448, 555.
*Acetylcholine chloride	162, 222, 295, 313, 555.
Acetylmethiomine	162, 404.
Acetyl-β-methylcholine bromide	295, 313.
*Acetyl-β-methylcholine chloride	222, 295, 313.
*Amino acids:	
dl-α-Alanine	350, 531.
β-Alanine	194, 222, 229, 455, 521, 531.
d-Alanine	257.
l-Alanine	257.
l(+)-Arginine and hydrochloride	531.
l(+)-Asparagine	531.
dl-Aspartic acid	423, 531.
l(+)-Aspartic acid	531.
l(+)-Cysteine hydrochloride	59, 275, 511, 531.
l(+)-Cystine	59, 511, 531.
l(+)-Glutamic acid	100, 237, 468, 531.
l(+)-Glutamic acid, calcium salt	100.
l(+)-Glutamic acid hydrochloride	237, 468, 531.
Glycine (Aminoacetic acid)	208, 350, 531.
dl-Isoleucine	222, 320, 531.

TABLE 178.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, ACYCLIC--Continued	
*Amino acids--Continued	
l-Isoleucine	350.
dl-Leucine	320, 350, 531.
l-Leucine	252, 531.
dl-Lysine hydrochloride	350.
l(+)-Lysine hydrochloride	531.
l-Lysine monohydrochloride	222.
dl-Methionine	350, 361, 404, 531.
dl-Methionine, calcium salt	162, 222, 295.
Methionine, feed grade	404.
dl-Norleucine	222, 531.
l-Ornithine monohydrochloride	257.
dl-Serine	222, 295, 531.
dl-Threonine	295, 531.
dl-Valine	320, 350, 531.
Amyl nitrite (Isoamyl nitrite)	441, 448.
Auro-thioglucose	526.
α,α'-Azobis(chloroformamidine) (Azochloramide)	458.
Betaine base	162.
Betaine hydrate	468.
Betaine hydrochloride	162, 361, 468.
Bismuth diallylacetate	X.
Bismuth dipropylacetate	X.
Bismuth octyloxyacetate (Lipo bismol)	308.
Bromocholine bromide	162, 295.
Bromoform (Tribromomethane)	350.
Bromural (α-Bromoisovalerylurea)	279.
Cacodylic acid	555.
Cacodylic acid derivatives:	
Bismuth cacodylate	555.
Guaiacol cacodylate	555.
Iron cacodylate	308, 555.
Sodium cacodylate	308, 555.
Calcium glycerate	511.
Calcium iodobehenate	320, 511.
Calcium lactophosphate	162, 441.
Calcium levulinate	162, 361, 511, 555.
Calcium salts of sugar acids	386.
*Calcium succinate	22, 162, 324, 361, 401, 421, 501.
Carbamyl choline bromide	295.
Carbamyl choline chloride	295.
Carbamyl-2-hydroxypropyltrimethylammonium chloride	222.
Carbromal (Bromodiethylacetylcarbamide)	279, 320, 492.
Chloral hydrate	162, 222.
*Chlorstone (tert-Trichlorobutyl alcohol)	208, 292, 308.
Choline bicarbonate	446.
*Choline bitartrate	162, 222, 313, 372, 498, X.
*Choline chloride, for animal and poultry feed and for use as an intermediate.	222, 229, 303, 372, 446, X.
*Choline chloride, medicinal grade only	162, 222, 313, 372, 498, X.
*Choline dihydrogen citrate	162, 313, 372, 498, X.
Choline gluconate	372, 446.
Choline triiodide	372.
Diallylacetic acid	X.
N,N-Dimethylpropanediamine	248.
Disodium methanearsonate (Arrhenal)	320.
Divinyl ether	222.
Ethyl acetamidomalate	295.
Ethyl carbamate (Urethane)	404.
Ethyl chaulmoograte	162.
Ethylenediamine dihydrochloride	392.
Ethylenediamine dilodide	342.
Ethylene disulfonate	68.
Ethylmercuric chloride	386.
Ethyl morrhuate	511.
Ethyl nitrite	441, 446.
Gluconic acid salts:	
Aluminum gluconate	162.
Ammonium gluconate	256.
Calcium acetogluconate	511.
Calcium glucoheptanoate	531.
Calcium gluconate	256, 441, 531.
Copper gluconate	256.
Iron (ferrous) gluconate	162, 256.
Magnesium gluconate	162, 256.
Potassium gluconate	256.
Sodium gluconate	256.
Glucono-delta-lactone	256.
Glutathione	511.

TABLE 17B.--*Synthetic organic chemicals: Medicinals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MEDICINALS, ACYCLIC--Continued	
Glutathione, oxidized	257.
Glutathione, reduced, monosodium salt	257.
Glycerophosphoric acid	168, 257, 449.
Glycerophosphoric acid derivatives:	
*Calcium glycerophosphate	168, 392, 449, 550.
Iron glycerophosphate	168, 449.
Magnesium glycerophosphate	168, 449.
*Manganese glycerophosphate	168, 392, 449.
Potassium glycerophosphate	168, 449.
Sodium glycerophosphate	168, 449.
Strychnine glycerophosphate	550.
Hexamethonium bromide and iodide	295.
Hexamethyldiaminoisopropanol diiodide	293, 320.
Hendecenoic acid (Undecylenic acid) salts:	
Aluminum hendecenoate	162.
Copper hendecenoate	162.
Sodium hendecenoate	162.
Zinc hendecenoate	162.
Iodized castor oil	292.
Iodoform	441, 550.
Iodomethanesulfonic acid, sodium salt	162, 320.
Iron (ferrous) oxalate	162, 222.
Isovaleryl diethylamide (N,N'-Diethylisovaleramide)	164.
Lactic acid salts (medicinal grades only):	
Aluminum lactate	162.
Iron (ferrous) lactate	162, 441.
Lead lactate	222.
Magnesium lactate	162.
Malononitrile	257.
Methylaminodimethylacetal	386.
Methylenecitric acid and salts	320.
Methylene iodide	222, 320, 448.
*Methyl iodide, all grades	222, 295, 441, 448, 479, 523.
3-Methyl-1-pentyne-3-ol	526.
Morrhuic acid salts:	
Copper morrhuate	511.
Sodium morrhuate	162, 308, 511, X.
Silver protein, mild	295, 308, 449.
Silver protein, strong	449.
Sodium bismuth triglycollamate	X.
Sodium iodopropanol sulfonate	292.
Sodium succinate	222, 441.
Succinyl peroxide	292.
Tartaric acid salts, medicinal grades only:	
Antimony potassium tartrate	256.
Bismuth potassium tartrate	295, 550.
Calcium tartrate	392, 555.
Potassium sodium tartrate (Rochelle)	254, 295, 392.
Sodium tartrate	392.
Tetraethylammonium bromide	295.
Tetraethylammonium formate	295.
Thiosemicarbazide	164.
Thiosinamine (Allylthiourea)	292, 441, 523.
2,2,2-Tribromoethanol	320.
Tricholine citrate	498, X.
*Vitamins:	
*B_4 and derivatives:	
d-Calcium pantothenate	222, 229.
dl-Calcium pantothenate	194, 229, 361, 521, 529.
d-Sodium pantothenate	308.
d-Pantothenyl alcohol (α,γ-Dihydroxy-N-(3-hydroxypropyl)-α,β-dimethylbutyramide).	456.
*C and derivatives:	
Ascorbic acid	256, 456.
Ascorbic acid, sodium salt	222, 254, 456.
Ascorbyl palmitate	254.

Flavor and Perfume Materials

TABLE 18B.--*Synthetic organic chemicals: Flavor and perfume materials for which United States production or sales were reported, identified by manufacturer, 1951*

[Flavor and perfume materials for which separate statistics are given in table 18A are marked below with an asterisk (*); those not so marked do not appear in table 18A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Material	Manufacturers' identification numbers (according to list in table 27)
FLAVOR AND PERFUME MATERIALS, CYCLIC	
Benzenoid and Naphthalenoid	
Acetophenone	X.
Amyl benzoate	292, 305, 397, 432, 500, X.
*α-Amylcinnamaldehyde	102, 325, 397, 419, 424, 432, 461, 522, X.
α-Amylcinnamaldehyde dimethyl acetal	X.
Amyl cinnamate	305, 432, X.
α-Amylcinnamyl acetate	461.
α-Amylcinnamyl alcohol	522, X.
Amyl phenylacetate (Amyl α-toluate)	297, 397, 432, 500, X.
*Amyl salicylate	256, 284, 397, X.
Anethole	200, 211, 397, 543.
*Anisaldehyde	292, 325, 397, X.
Anisole (Methyl phenyl ether)	102, 397.
Anisyl acetate	305, 397, 432, X.
Anisyl alcohol	397, X.
Anisyl formate	432, X.
Anisyl propionate	432, X.
Benzophenone	292, 397, 424, X.
*Benzyl acetate	292, 297, 336, 397, 424, 522, X.
*Benzyl alcohol, all grades	41, 208, 292, 325, 336, 397, 424, 522, X.
Benzyl benzoate.[1]	
*Benzyl butyrate	292, 297, 305, 336, 397, 432, 500, X.
*Benzyl cinnamate	41, 292, 397, 432, X.
Benzyl ether	X.
Benzyl formate	284, 336, 500, X.
Benzylidine acetone	284, X.
Benzyl isoamyl ether	397, 432.
Benzyl isobutyrate	305, 397, 432, X.
Benzyl isoeugenyl ether	461, X.
Benzyl isovalerate	305, 397, 432, X.
Benzyl methyl ketone (Phenylacetone)	437, X.
Benzyl phenylacetate (Benzyl α-toluate)	284, 397, 432, X.
*Benzyl propionate	297, 305, 336, 374, 397, 432, 500, X.
*Benzyl salicylate	41, 305, 336, 522, X.
α-Bromostyrene	432, X.
4-tert-Butyl-2,6-dimethyl-3,5-dinitroacetophenone (Musk ketone).	336, 397.
3-tert-Butyl-2,6-dinitro-p-cymene	397.
6-tert-Butyl-3-methyl-2,4-dinitroanisole (Musk ambrette).	336, 397.
5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)	336, 374, 397.
Carvacrol (Isopropyl-o-cresol)	397.
Cineole (Eucalyptol)	325, 563.
Cinnamaldehyde	292, 325, 397, 461, X.
Cinnamaldehyde, hydrogenated	248.
Cinnamic acid	208, 292.
Cinnamyl acetate	432, X.
Cinnamyl alcohol	397, X.
Cinnamyl anthranilate	305, 432, 500.
Cinnamyl butyrate	297, 305, 432, X.
Cinnamyl cinnamate	397, 432, X.
Cinnamyl formate	297, 432, 500, X.
Cinnamyl isobutyrate	432, X.
Cinnamyl isovalerate	41, 305, 397, 432, X.
Cinnamyl propionate	305, 397, 432, X.
Cinnamyl valerate	305, 432, 500.
*p-Cresyl acetate	297, 397, X.
Cresyl caprylate	461.
p-Cresyl methyl ether	292, 374, 397, 500.
p-Cresyl phenylacetate (p-Cresyl α-toluate)	297, 397, 432, X.
Cumaldehyde (p-Isopropylbenzaldehyde)	374, 397.
Diethyl anthranilate	461.
p-Dimethoxybenzene (Hydroquinone dimethyl ether)	292, 374.
α,α-Dimethylphenethyl acetate	522.
α,α-Dimethylphenethyl alcohol	522.
α,α-Dimethylphenylpropanol	522.
Diphenylmethane	350, X.
Ethyl anisate	292.
Ethyl anthranilate	164, 33[illegible], 432, 500.

See footnotes at end of table.

TABLE 168.--*Synthetic organic chemicals: Flavor and perfume materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Benzenoid and Naphthalenoid--Continued	
*Ethyl benzoate	79, 397, 404, 432, 449, 522, X.
Ethyl cinnamate	292, 432, X.
2-Ethylhexyl salicylate	500.
Ethyl hydrocinnamate	292.
*Ethyl methylphenylglycidate (Ethyl α,β-epoxy-β-methylhydrocinnamate).	292, 397, 432, 500, X.
Ethyl β-naphthyl ether	424, X.
Ethyl phenylacetate (Ethyl α-toluate).[3]	
Ethyl β-phenylglycidate	292, 432, 500, X.
Ethyl salicylate	297, X.
Ethylvanillin	168.
*Eugenol	102, 216, 292, 325, 397, 432, 461, 522, X.
Eugenyl formate	461.
Eugenyl methyl ether	292, X.
Hexylcinnamaldehyde	374, X.
Hydratropaldehyde (α-Phenylpropionaldehyde)	397, X.
Hydratropaldehyde, dimethyl acetal	522, X.
Hydrocinnamaldehyde (β-Phenylpropionaldehyde)	397.
Isobutyl anthranilate	164.
Isobutyl benzoate	305, 397, 432, X.
Isobutyl cinnamate	305, 397, 432, 500, X.
*Isobutyl phenylacetate (Isobutyl α-toluate)	397, 500, 522, X.
Isobutyl salicylate	397, 432, X.
*Isoeugenol	102, 325, 397, X.
Isoeugenyl acetate	432.
Isoeugenyl methyl ether	292, X.
Isopropyl-α-methylhydrocinnamaldehyde (Cyclamen aldehyde).	397, 419.
p-Methoxyacetophenone	292.
p-Methylacetophenone (Methyl p-tolyl ketone)	X.
Methyl anisate	292, 432.
Methyl anthranilate	336, 350, 374, 397.
Methyl benzoate	248, 305, 336, 432, 449.
α-Methylbenzyl acetate	297, 397, 432, X.
α-Methylbenzyl alcohol (Methylphenylcarbinol)	X.
α-Methylbenzyl propionate	432.
*Methyl cinnamate	208, 292, 397, 432, X.
Methyl N-methylanthranilate (Dimethyl anthranilate)	374, 397, 500.
Methyl β-naphthyl ether	397, 424, X.
Methyl naphthyl ketone (α- and β-)	292, X.
Methyl β-naphthyl ketone	X.
*Methyl phenylacetate (Methyl α-toluate)	102, 168, 208, 336, 397, 432, X.
*Methyl salicylate (Synthetic wintergreen oil)	168, 297, 350, 449.
Naphthyl anthranilate	500.
n-Octyl salicylate	374, 432.
*Phenethyl acetate	102, 397, 432, 522.
*Phenethyl alcohol	102, 350, 397, 522.
Phenethyl anthranilate	164, 397, 432, 461, 500.
Phenethyl butyrate	164, 284, 432, 500, 522, X.
Phenethyl cinnamate	432, 500, 522, X.
Phenethyl formate	284, 397, 522, X.
*Phenethyl isovalerate	284, 297, 397, X.
*Phenethyl phenylacetate (Phenethyl α-toluate)	284, 397, 500, 522, X.
Phenethyl salicylate	522, X.
Phenethyl valerate	432, 500.
p-Phenetylurea (Dulcin)	292, 295.
p-Phenoxyethyl isobutyrate	397, X.
Phenylacetaldehyde (α-Tolualdehyde)	397, X.
Phenylacetaldehyde, dimethylacetal	500, X.
3-Phenyl-1-propyl acetate	397, X.
2-Phenyl-1-propyl alcohol (Hydratropyl alcohol)	X.
3-Phenyl-1-propyl alcohol (Hydrocinnamic alcohol)	397, X.
Propyl cinnamate	432, 500.
Salicylaldehyde	350.
p-Tolualdehyde (p-Methylbenzaldehyde)	292, 397.
Trichloromethylbenzyl acetate (Rosatone)	292.
p,α,α-Trimethylphenethyl alcohol	522.
Vanillidine acetone	432.
*Vanillin	159, 168, 284, 325, 397.
All other	432.
Terpenoid, Heterocyclic, and Alicyclic	
Bornyl acetate	397, 432, 500.
Carvacrol (Isotrymol), hydrogenated	248.
Carvone (Carvol)	297, 325.
Cedrenal	461, X.
Cedrol	461, 522, X.

See footnotes at end of table.

TABLE 168.--*Synthetic organic chemicals: Flavor and perfume materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*Cedryl acetate	102, 397, 522, X.
β-Chlorocoumarin	461.
*Citral	102, 216, 297, 325, 397, 432, 461, 500, 522, X.
Citronellal	297, 397, 461, X.
*Citronellol	41, 216, 336, 397, 461, 522, X.
*Citronellyl acetate	397, 461, 522, X.
Citronellyl butyrate	397, X.
Citronellyl formate	397, X.
Citronellyl propionate	397, X.
*Coumarin	168, 284, 350, 374.
Cyclohexaneacetic acid	350, 457.
Cyclohexaneacetic acid, sodium salt	248.
Cyclohexanesulfamic acid, sodium salt	521.
Cyclohexyl acetate	164, 461.
Cyclohexyl butyrate	164.
Cyclohexyl-2-propenone	457.
Cyclopentanol	149.
Cyclopentanone	149, 461.
Ethyl cyclohexaneacetate	248.
*Geraniol	41, 102, 216, 297, 336, 397, 461, 522, X.
*Geranyl acetate	102, 297, 336, 397, 432, 461, 500, 522, X.
Geranyl benzoate	397.
*Geranyl butyrate	305, 336, 397, 522, X.
*Geranyl formate	305, 397, 432, 500, X.
Geranyl isovalerate	164, 432, 500, X.
Geranyl phenylacetate (Geranyl α-toluate)	284, 397, X.
Geranyl propionate	305, 397, 432, 522, X.
Homomenthyl acetate	102, 292.
*Hydroxycitronellal	41, 102, 325, 397, 461, X.
Hydroxycitronellal dimethyl acetal (8,8-Dimethoxy-2,6-dimethyloctanol-2).	397, X.
Indole	350, 374, 397, 461.
*α-Ionone	284, 374, 397, 522, X.
*β-Ionone	284, 374, X.
*Ionone (α- and β-)	102, 284, 336, 374, 397, 419, 461, X.
Isobornyl acetate	374, X.
Isobornyl alcohol (Isoborneol)	374.
Isobornyl propionate	374.
Isobutylquinoline	164, 461, 522.
Isopropylquinoline	164.
Isopulegol	397, 461, X.
Isopulegyl acetate	397.
Isosafrol	397, X.
*Linalool	102, 216, 297, 325, 397, 432, 461, 500, 522, 563, X.
*Linalyl acetate	102, 216, 297, 325, 397, 432, 461, 522, X.
Linalyl anthranilate	164, 453.
Linalyl benzoate	164, 397.
Linalyl butyrate	305, 432, X.
Linalyl cinnamate	164, 461, X.
Linalyl formate	297, 461.
Linalyl isobutyrate	164, X.
Linalyl isovalerate	164, X.
Linalyl propionate	305, 397, 522, X.
Melilotin (Dihydrocoumarin)	222.
*Menthol, synthetic, tech	102, 292, 336, 397.
*Menthol, synthetic, U.S.P	102, 336, 397.
Menthone	292, 305, 397, 461.
Menthyl anthranilate	397, 432.
Metahomomenthol (Cyclonol)	292.
3-Methylcoumarin	284.
6-Methylcoumarin	397.
*Methyl-α-ionone	284, 522, X.
*Methyl-β-ionone	102, 284, 522.
*Methylionone (α- and β-)	284, 374, 397, 419, 461.
Methyl-γ-ionone	461.
*Nerol	297, 461, 522, X.
Neryl acetate	522, X.
*Piperonal (Heliotropin)	325, 397, X.
*Rhodinol	41, 102, 216, 292, 325, 336, 397, 461, 500, 522, X.
Rhodinyl acetate	41, 297, 325, 397, 461, 500, 522, X.
Rhodinyl formate	397, 500, 522.
Saccharin	168, 538.
Saccharin, sodium salt	168, 538.
*Safrole	292, 325, 397, 503, 563, X.
Santalol	397, 522.
Santalyl acetate	397, 432.
Skatole	164.
*Terpineols:	
α-Terpineol	211.

TABLE 18B.--*Synthetic organic chemicals: Flavor and perfume materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
FLAVOR AND PERFUME MATERIALS, CYCLIC--Continued	
Terpenoid, Heterocyclic, and Alicyclic--Continued	
*Terpineols--Continued	
β-Terpineol	211.
Terpineols (α- and β-)	200, 374, 397.
Terpin hydrate (Terpineol hydrate), tech	200.
*Terpinyl acetate	102, 325, 374, 397, 461, 522, X.
Terpinyl anthranilate	461.
*Terpinyl propionate	374, 397, 461, X.
Tetrahydrofurfuryl acetate	461.
Tetrahydrofurfuryl stearate	461.
Tetrahydrolinalool	X.
Trimethyl-4-cyclohexene-1-carboxyaldehyde	374.
Vetivenol	297, 325, 397, 461, X.
*Vetiveryl acetate	41, 102, 297, 325, 397, 461, 522, X.
All other	432.
FLAVOR AND PERFUME MATERIALS, ACYCLIC	
*Allyl caproate	164, 292, 297, 305, 397, 432, 500, 522, X.
Allyl caprylate	164, 305, 432.
Allyl enanthate (Allyl heptanoate)	164, 292, 432, X.
Allyl isothiocyanate (Synthetic mustard oil)	292, 523.
Allyl mercaptan	243, 523.
*Amyl butyrate	292, 432, 500.
Amyl caproate	432, X.
Amyl caprylate	432, X.
Amyl formate	79, 297, 432, 500.
Amyl propionate	397, 432, 500.
*2,3-Butanedione (Biacetyl)	164, 208, 292.
*n-Butyl butyrate	305, 432, 500, X.
Capraldehyde (Decyl aldehyde) (C_{10})	397, 432, X.
Caproaldehyde (Hexyl aldehyde) (C_6)	432.
Caprylaldehyde (Octyl aldehyde) (C_8)	397, 432, X.
Decyl acetate	432, 500, X.
n-Decyl alcohol	X.
Diallyl sulfide	523.
Diethyl succinate	X.
Di-n-propyl ketone	X.
Enanthaldehyde (n-Heptaldehyde) (C_7)	198, 458.
*Ethyl butyrate	79, 297, 432, 500, X.
Ethyl caprate (Ethyl decylate)	256, 297, 432.
Ethyl caproate (Ethyl hexoate)	79, 297, 432, 500, X.
*Ethyl caprylate (Ethyl octoate)	297, 432, 500, X.
Ethyl enanthate (Ethyl heptylate)	79, 432, 500, X.
Ethyl isobutyrate	164, X.
Ethyl isovalerate	297, X.
*Ethyl laurate	256, 297, X.
Ethyl levulinate	164, 500, 522.
Ethyl myristate	256, 432.
Ethyl pelargonate	292, 397, 432, 500, X.
Ethyl sebacate	164, 500, X.
*Glutamic acid, monosodium salt (Monosodium glutamate).	100, 237, 252, 288, 468.
2,3-Heptanedione (Acetylvaleryl)	164, X.
Heptanol	458.
2,3-Hexanedione (Acetylbutyryl)	164.
*Isoamyl butyrate	79, 297, X.
Isoamyl caproate	297, 500, 522.
Isoamyl caprylate	297, 500.
Isoamyl isovalerate	79, 297, X.
Isoamyl propionate	297, 305, X.
Isoamyl undecylenate	461.
Isobutyl acetate	297, 305, X.
Isobutyl butyrate	79, 305, X.
Isobutyl caproate	305, X.
Isobutyl isovalerate	X.
Isopropyl pelargonate	500.
Lauraldehyde (Dodecyl aldehyde) (C_{12})	397, 432, X.
Lauryl acetate	X.
2-Methylundecanaldehyde (Methylnonylacetaldehyde)	397, X.
6-Methyl-5-hepten-2-one	397, X.
Methyl nonylenate	500.
Methyl nonyl ketone	397, X.
Methyl octynate (Methyl heptine carbonate)	336, 397.
Methyl pelargonate (Methyl nonoate)	432.
Methyl undecylenate (Methyl hendecenoate)	397.
γ-Nonalactone (γ-Hydroxypelargonic acid, lactone)	397, 432, X.
Nonyl alcohol (C_9)	X.
n-Octyl acetate	397, 432, X.
n-Octyl alcohol (Capryl alcohol)	X.

TABLE 18B.--*Synthetic organic chemicals: Flavor and perfume materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
FLAVOR AND PERFUME MATERIALS, ACYCLIC--Continued	
n-Octyl formate	292, X.
n-Octyl isobutyrate	X.
Pelargonaldehyde (Nonyl aldehyde) (C_9)	397, X.
2,3-Pentanedione	164.
n-Propyl mercaptan	243.
Propyl propionate	432, X.
Tributyrin	461.
Tricaproin	461.
*γ-Undecalactone (4-Hydroxyhendecanoic acid, γ-lactone).	292, 297, 397, 432, 461, 500, X.
Undecyl aldehyde (Hendecanaldehyde) (C_{11})	500, X.
Undecylenic acid (Hendecenoic acid)	198, 432, 458, X.
Undecylenic alcohol (Hendecyl alcohol)	X.
Undecylenic aldehyde (Hendecenaldehyde)	397, 432, X.
All other	432.
CHEMICALLY MODIFIED ESSENTIAL OILS	
Citronella, acetylated	432.
Dihydrosafrol	292, 305.
Ethyl oxyhydrate	216, 432.
Guaiacwood oil, acetylated	461.
Lavandin, acetylated	432, 461.
Petitgrain, acetylated	461.
Sassafras oil, hydrogenated	397.

[1] All benzyl benzoate is included with medicinals, table 17B.
[2] All ethyl phenylacetate is included with intermediates, table 7B.

Plastics and Resin Materials

TABLE 19B.--*Synthetic organic chemicals: Plastics and resin materials for which United States production or sales were reported, identified by manufacturer, 1951*

[Plastics and resin materials for which separate statistics are given in table 19A are marked below with an asterisk (*); chemicals not so marked do not appear in table 19A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Material	Manufacturers' identification numbers (according to list in table 27)
PLASTICS AND RESIN MATERIALS, BENZENOID	
Aniline-formaldehyde resins	445.
*Coumarone-indene resins	122, 244, 513.
Epichlorohydrin resins:	
Epichlorohydrin-acetone-phenol	264.
Epichlorohydrin-bisphenol	374, 452.
Epichlorohydrin-bisphenol-fatty acid	117, 374, 384, 429, 451.
Epichlorohydrin-phenol	134.
Epichlorohydrin-phenol-fatty acid	134, 366, 530.
Epichlorohydrin-phenol-fatty acid-rosin	117, 134, 366.
Phenoxyethanol-formaldehyde condensate	429.
*Petroleum polymer and condensation resins	122, 244, 271, 337, 407, 420.
*Phenolic and other tar-acid resins:	
*Unmodified:	
*p-tert-Amylphenol-formaldehyde	154, 277, 452, X.
p-tert-Amylphenol-phenylphenol-formaldehyde	452.
Bisphenol-formaldehyde	429, X.
p-tert-Butylphenol-bisphenol-formaldehyde	61, 108, 109, 296, 404, 452, X.
*p-tert-Butylphenol-formaldehyde	43, 65, 76, 178, 245, 364, 381, 404, 452, 497, X.
Cashew nut shell oil type	133, 209, 381, X.
*Cresols-formaldehyde	133, 245, 296, 343, 429, 452, 476, 497, X.
*Cresols-xylenols-formaldehyde	2, 352, 476, 513, X.
*Cresylic acid-formaldehyde	4, 296, 410, 417, X.
*Phenol-p-tert-butylphenol-formaldehyde	154, 168, 451, 452.
*Phenol-cresols-formaldehyde	56, 168, 230, 235, 429, 452, 476, 513, X.
*Phenol-cresols-xylenols-formaldehyde	123, 235, 245, 352, 452, 513.
*Phenol-cresylic acid-formaldehyde	48, 147, 296, 410, 452, X.
*Phenol-formaldehyde	4, 10, 12, 48, 56, 57, 64, 71, 90, 111, 133, 142, 150, 154, 168, 178, 209, 225, 235, 241, 277, 296, 328, 338, 343, 352, 364, 381, 384, 404, 410, 417, 429, 451, 452, 476, 497, 509, 513, 514, 515, X.
*Phenol-furfural	123, 133, 209, 296, 381.
*Phenol-resorcinol-formaldehyde	56, 90, 111, 133, 240, 321, 381, 410, 452, 497.
Phenol-xylenols-formaldehyde	451.
Phenylphenol-formaldehyde	2, 452, 497.
*Resorcinol-formaldehyde	133, 168, 240, 364, 410, 452, 497.
Xylenols-p-tert-amylphenol-formaldehyde	4, X.
*Xylenols-formaldehyde	97, 76, 235, 452, 497, X.
All other	123, 161, 452.
*Modified:	
*Except rosin and rosin ester modified:	
Cresol-formaldehyde-dibutyl phthalate	452.
Cresol-formaldehyde-tung oil	452.
Cresylic acid-formaldehyde-aniline	513.
Cresylic acid-formaldehyde-dibutyl phthalate	410, 452.
Phenol-formaldehyde, ammoniated	364.
*Phenol-formaldehyde-aniline	168, 296, 452, 476.
Phenol-formaldehyde-oil	381, 410, 452, 513.
Phenol-formaldehyde-styrene	381.
*Phenol-formaldehyde, sulfonated	168, 294, 364.
Phenylphenol-formaldehyde-oil	452, 530.
Xylenols-formaldehyde-oil	452.
All other	296, 374, 452, 476, 513, X.
*Rosin and rosin ester modified:	
Bisphenol-formaldehyde-glycerol-pentaerythritol-rosin	404.
*Bisphenol-formaldehyde-rosin and rosin ester	65, 154, 157, 200, 271, 394, 404, 497.
*p-tert-Butylphenol-formaldehyde-rosin and rosin ester	245, 277, 404, 451, 497, 517.
p-tert-Butylphenol-formaldehyde-glycerol-rosin and rosin ester	452, 497.
p-tert-Butylphenol-formaldehyde-maleic anhydride-rosin and rosin ester	76, 404.
p-tert-Butylphenol-glycerol-rosin	65, 394.
Cresylic acid-formaldehyde-rosin ester	364.
*Phenol-formaldehyde-rosin and rosin ester	43, 200, 362, 384, 452, 497.
Phenol-formaldehyde-fumaric acid-glycerol-rosin	404.
*Phenol-formaldehyde-glycerol-rosin and rosin ester	134, 154, 277, 364, 404, 429, 497.
Phenol-formaldehyde-pentaerythritol-rosin	116.
All other	240, 374, 404, 452, 466, 497.

TABLE 19B.--*Synthetic organic chemicals: Plastics and resin materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
PLASTICS AND RESIN MATERIALS, BENZENOID--Continued	
*Phthalic alkyd resins:	
*Unmodified:	
*Phthalic anhydride-glycerol	7, 25, 37, 43, 46, 47, 49, 61, 63, 78, 82, 91, 114, 116, 117, 130, 134, 143, 151, 153, 157, 169, 182, 184, 203, 218, 262, 272, 274, 277, 285, 296, 326, 333, 362, 364, 366, 374, 384, 396, 404, 405, 410, 425, 429, 450, 451, 452, 466, 476, 497, 509, 517, 530.
*Phthalic anhydride-glycerol-glycol	34, 49, 82, 108, 117, 130, 143, 157, 277, 366, 384, 404, 429, 450, 451, 466, 476, 497, 509.
Phthalic anhydride-glycerol-glycol-pentaerythritol	366, 429, 509.
*Phthalic anhydride-glycerol-pentaerythritol	7, 25, 37, 47, 49, 61, 78, 82, 91, 130, 143, 151, 157, 174, 243, 277, 285, 353, 362, 366, 374, 384, 404, 425, 429, 450, 451, 466, 476, 497, 509, 517, 530.
*Phthalic anhydride-glycerol-sorbitol	63, 78, 153, 374, 466.
Phthalic anhydride-glycol	364, 384, 429.
*Phthalic anhydride-glycol-pentaerythritol	25, 37, 82, 108, 114, 130, 134, 151, 157, 242, 322, 362, 364, 374, 384, 404, 429, 451, 466, 476, 497, 509, 517, 530.
*Phthalic anhydride-pentaerythritol	7, 25, 37, 47, 56, 61, 91, 108, 114, 116, 117, 130, 134, 153, 157, 169, 182, 242, 277, 285, 300, 362, 364, 374, 384, 404, 425, 429, 450, 451, 466, 476, 497, 509, 517, 530.
All other	63, 137, 200, 476, 530.
*Modified:	
*Except rosin and rosin ester and styrene modified:	
*Phthalic anhydride-adipic acid-glycol	374, 404, 476.
Phthalic anhydride-benzoic acid-glycerol	366, 450, 476, 509.
Phthalic anhydride-cresylic acid-glycol	452.
*Phthalic anhydride-fumaric acid-glycerol	25, 184, 374, 404, 450.
Phthalic anhydride-fumaric acid-glycol-diallyl phthalate	509.
Phthalic anhydride-fumaric acid-glycol-pentaerythritol	404.
Phthalic anhydride-glycerol-pentaerythritol-phenol-formaldehyde	43, 49.
*Phthalic anhydride-glycerol-phenol-formaldehyde	47, 49, 134, 362, 366, 374, 384, 429, 451, 452, 466, 476.
Phthalic anhydride-glycerol-phenol-formaldehyde-congo ester	404, 450, 509.
*Phthalic anhydride-maleic anhydride-glycerol	25, 28, 46, 47, 134, 143, 151, 184, 334, 362, 366, 374, 404, 425, 429, 450, 451, 497.
Phthalic anhydride-maleic anhydride-glycerol-glycol	362.
*Phthalic anhydride-maleic anhydride-glycerol-pentaerythritol	28, 143, 151, 334, 362, 366, 384, 404, 429, 451, 497, 530.
Phthalic anhydride-maleic anhydride-glycerol-phenol-formaldehyde	108, 404.
Phthalic anhydride-maleic anhydride-glycol-pentaerythritol	362, 404, 497.
Phthalic anhydride-maleic anhydride-glycol-pentaerythritol-sorbitol	362.
*Phthalic anhydride-maleic anhydride-pentaerythritol	28, 109, 143, 151, 334, 362, 364, 366, 404, 450, 451, 476.
Phthalic anhydride-sebacic acid-glycerol	157, 364, 429.
Phthalic anhydride-succinic acid-glycol	509.
All other	25, 108, 147, 362, 366, 374, 384, 404, 429, 450, 451, 452, 476, 509.
*Rosin and rosin ester modified:	
Phthalic anhydride-fumaric acid-glycerol-rosin and rosin ester and -tall oil.	7, 425, 429, 450.
Phthalic anhydride-fumaric acid-pentaerythritol-rosin ester and -tall oil.	25, 404.
*Phthalic anhydride-glycerol-rosin and rosin ester.	7, 47, 49, 61, 65, 91, 117, 130, 134, 151, 157, 184, 274, 277, 285, 364, 366, 374, 384, 404, 429, 450, 451, 466, 476, 497, 509, 517.
Phthalic anhydride-glycerol-glycol-rosin and rosin ester.	114, 476.
*Phthalic anhydride-glycerol-pentaerythritol-phenol-formaldehyde-rosin ester.	25, 49, 108, 169, 384, 404.
*Phthalic anhydride-glycerol-pentaerythritol-rosin and rosin ester.	47, 49, 82, 91, 117, 151, 184, 296, 353, 366, 384, 450.
Phthalic anhydride-glycerol-pentaerythritol-tall oil.	25, 61, 384.
*Phthalic anhydride-glycerol-phenol-formaldehyde-rosin and rosin ester.	25, 130, 134, 143, 353, 384, 404, 429, 450, 451, 466, 476, 497, 509.
Phthalic anhydride-glycerol-tall oil	25, 134, 362.
Phthalic anhydride-glycol-pentaerythritol-rosin and -tall oil.	134, 366, 497.

TABLE 198.--*Synthetic organic chemicals: Plastics and resin materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
PLASTICS AND RESIN MATERIALS, NONBENZENOID--Continued	
*Phthalic alkyd resins--Continued	
*Modified--Continued	
*Rosin and rosin ester modified--Continued	
*Phthalic anhydride-maleic anhydride-glycerol-rosin and rosin ester.	25, 63, 134, 143, 184, 277, 362, 366, 384, 419, 450, 451, 469, 497, 509, 530.
Phthalic anhydride-maleic anhydride-glycerol-pentaerythritol-rosin ester.	63, 362, 384.
*Phthalic anhydride-maleic anhydride-glycerol-phenol-formaldehyde-rosin and rosin ester.	277, 366, 384, 404, 429, 451.
Phthalic anhydride-maleic anhydride-glycol	143, 509.
*Phthalic anhydride-maleic anhydride-pentaerythritol-rosin ester.	28, 109, 404, 450, 451.
Phthalic anhydride-maleic anhydride-pentaerythritol-phenol-formaldehyde-rosin.	334.
*Phthalic anhydride-maleic anhydride-pentaerythritol-tall oil.	47, 108, 277, 300, 450.
Phthalic anhydride-pentaerythritol-phenol-formaldehyde-rosin and rosin ester.	130, 384, 451.
*Phthalic anhydride-pentaerythritol-rosin and rosin ester.	47, 82, 109, 134, 157, 182, 200, 285, 326, 384, 405, 450, 451, 466.
*Phthalic anhydride-pentaerythritol-tall oil	25, 109, 116, 134, 151, 353, 384, 451, 517.
All other	25, 134, 143, 157, 184, 334, 366, 374, 451, 476.
*Styrene and styrene derivative polymer and copolymer resins:	
Polymethyl styrene	350.
*Polystyrene	89, 168, 170, 221, 240, 346, 350, 384, 452, 517.
Styrene-acrylonitrile copolymer	221, 364, 452.
*Styrene-alkyd polyesters:	
*Phthalic anhydride-glycerol-styrene	47, 117, 364, 374, 429, 450, 451, 497, 509.
All other	47, 89, 134, 157, 168, 221, 296, 349, 366, 429, 450, 452, 476, 509, 524.
*Styrene-butadiene copolymer	89, 109, 152, 221, 238, 350, 422, 455, 517.
Styrene-divinylbenzene	294, 350, 364, 404.
All other	122, 161, 168, 374, 422, 452.
Toluenesulfonamide resins	168, 509.
PLASTICS AND RESIN MATERIALS, NONBENZENOID	
*Acetone-formaldehyde resins	294, 452, 509.
Acrylic resins	9, 89, 262, 364, 374, 429, 509.
*Alkyd resins (except phthalic):	
*Unmodified:	
Adipic acid-glycerol and adipic acid-glycol	47, 364, 366, 476, 509.
Fumaric acid-glycerol and fumaric acid-glycol	349, 450, 509.
Fumaric acid-pentaerythritol	242.
Maleic anhydride-adipic acid-glycerol and glycol.	366, 476.
Maleic anhydride-glycerol and glycol	197, 182, 300, 425, 451, 476.
*Maleic anhydride-pentaerythritol	296, 334, 451, 497.
Sebacic acid-glycerol and glycol	25, 47, 49, 134, 274, 364, 384, 404, 466, 497, 509.
All other	49, 296, 362, 414, 451, 509.
*Modified:	
*Fumaric acid polyesters:	
*Fumaric acid-glycerol-rosin and rosin ester	184, 364, 404, 425, 451, 497, 509, 517.
Fumaric acid-glycerol-pentaerythritol-tall oil.	277, 362, 451.
Fumaric acid-pentaerythritol-rosin and rosin ester.	28, 157, 242, 364, 404.
All other	404, 425, 509, 517.
*Maleic anhydride polyesters:	
*Maleic anhydride-glycerol-rosin and rosin ester.	7, 33, 46, 65, 114, 116, 134, 151, 156, 157, 200, 274, 277, 364, 384, 394, 404, 429, 450, 451, 466, 476, 497, 509, 517.
*Maleic anhydride-glycerol-pentaerythritol-rosin and rosin ester.	65, 174, 245, 364, 366, 404, 405, 466, 517.
Maleic anhydride-glycol-rosin and rosin ester	108, 200.
*Maleic anhydride-pentaerythritol-rosin and rosin ester.	33, 54, 61, 63, 91, 108, 134, 143, 184, 200, 237, 277, 285, 322, 334, 404, 429, 450, 451, 497, 509, 517.
*Maleic anhydride-pentaerythritol-tall oil	130, 134, 151, 157, 169, 266, 384, 451, 530.
All other	143, 157, 169, 184, 300, 404, 429, 466, 509.
Sebacic acid-pentaerythritol-tall oil	384.
All other	63, 109, 296, 366, 384, 451, 452, 466, 476.
Butadiene- and isobutylene-acrylonitrile copolymer resins.	89, 178, 221.
Furfuryl resins	209.
Polyamide (nylon) resins	237, 374.
Polyethylene resins	374, 490.
Polyterpene resins	122, 200, 497.
Polytetrafluoroethylene resins	374.
*Rosin adduct resins	7, 43, 182, 184, 225, 296, 364, 366, 404, 425, 429, 450, 451, 509, 517.

TABLE 198.--*Synthetic organic chemicals: Plastics and resin materials for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Material	Manufacturers' identification numbers (according to list in table 27)
PLASTICS AND RESIN MATERIALS, NONBENZENOID--Continued	
*Rosin esters, unmodified:	
*Rosin-glycerol	7, 33, 43, 116, 134, 154, 157, 182, 184, 200, 237, 242, 277, 384, 404, 429, 450, 497, 517.
*Rosin-glycerol-pentaerythritol	33, 78, 200, 277, 362, 404, 497.
Rosin-glycol	200, 366, 404, 497.
Rosin-pentaerythritol	7, 28, 33, 134, 157, 200, 266, 277, 285, 384, 404, 466, 497, 517.
Tall oil-glycerol	109, 114, 134, 157, 277, 362, 404, 517.
Tall oil-pentaerythritol	109, 114, 134, 242, 285, 300, 353, 362, 384, 425, 451, 517, 530.
All other	108, 200, 384, 404, 452.
*Silicone resins	163, 225, 277, 384, 476.
*Urea and melamine resins:	
*Urea-formaldehyde type:	
*Butylurea-formaldehyde	157, 168, 277, 364, 374, 381, 450, 497, 509.
Isobutylurea-formaldehyde	277, 374.
*Urea-formaldehyde	90, 117, 128, 133, 142, 160, 168, 200, 203, 262, 277, 310, 327, 332, 339, 364, 370, 374, 381, 384, 410, 429, 452, 491, 497, 509, 518, 519.
All other	90, 157, 364, 374, 404, 509.
*Melamine-formaldehyde type:	
Butylmelamine-formaldehyde	168, 277, 364, 509.
Butylmelamine-urea-formaldehyde	230, 364.
Melamine-formaldehyde	168, 277, 410, 476, 509.
Melamine-urea-formaldehyde	410, 476, 509.
All other	364, 509.
*Vinyl and vinyl copolymer resins:	
*Polyvinyl acetate	89, 150, 156, 203, 262, 364, 374, 422, 434, 490, 517.
Polyvinyl alcohol	89, 150, 262, 374, 434.
*Polyvinyl butyral	374, 434, 490.
*Polyvinyl chloride and copolymers:	
*Polyvinyl chloride	35, 168, 204, 455.
Polyvinyl chloride-acetate copolymer	221, 490.
Polyvinyl chloride-vinylidene chloride copolymer.	204, 350, 422, 455.
All other	204.
All other nonbenzenoid plastics and resin materials	204, 277, 294, 450, 455, 481, 509.

Rubber-Processing Chemicals

TABLE 21B.--*Synthetic organic chemicals: Rubber-processing chemicals for which United States production or sales were reported, identified by manufacturer, 1951*

[Rubber-processing chemicals for which separate statistics are given in table 21A are marked below with an asterisk (*); chemicals not so marked do not appear in table 21A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27]

Chemical	Manufacturers' identification numbers (according to list in table 27)
RUBBER-PROCESSING CHEMICALS, CYCLIC	
*Accelerators:	
Aldehyde-amines:	
Acetaldehyde-aniline	221, 374.
*Butyraldehyde-aniline	168, 221, 374, 455.
α-Ethyl-β-propylacrylanilide	112.
Formaldehyde-aniline (Methylene aniline)	374.
Formaldehyde-p-toluidine (Methylene-p-toluidine)	374.
Heptaldehyde-aniline	221.
Triethyltrimethylenetriamine	221.
Dithiocarbamic acid derivatives:	
Carbon disulfide-methylenedipiperidine	168.
Dibenzyldithiocarbamic acid, zinc salt	221.
Dimethyldithiocarbamic acid, diphenylguanidine salt.	112.
Dimethylethylene diphenyldithiocarbamic acid, lead salt.	112.
2,4-Dinitrophenyl dimethyldithiocarbamate	221.
Piperidinium pentamethylenedithiocarbamate	168.
Piperidinium pentamethylenedithiocarbamic acid, potassium salt.	374.
*Guanidines:	
Dicatechol borate, di-o-tolylguanidine salt	374.
Di(o-ethylphenyl)guanidine	168.
Diphenylguanidine	168, 374, 509.
Diphenylguanidine phthalate	168, 221.
Di-o-tolylguanidine	374.
Triphenylguanidine	421.
*Thiazole derivatives:	
Alkyl mercaptothiazole	455.
2-Benzothiazyl-N,N-diethylthiocarbamyl sulfide	520.
2-(Benzoylthio)benzothiazole	168.
Bis[N,N'-2(2-benzothiazylthiomethyl)urea]	168.
N-Cyclohexyl-2-benzothiazole sulfenamide	168.
N-Diethylenoxy-2-benzothiazyl sulfenamide	238.
2-(2',4'-Dinitrophenylthio)benzothiazole	168.
*2,2'-Dithiobis[benzothiazole] (2,2'-Benzothiazyl disulfide).	168, 221, 238, 498.
*2-Mercaptobenzothiazole	168, 221, 238, 498, 520.
2-Mercaptobenzothiazole-anthylene-aniline	221.
Mercaptobenzothiazole phenylbiguanide	509.
2-Mercaptobenzothiazole, sodium salt	238, 498.
2-Mercaptobenzothiazole, zinc salt	238, 498.
2-Mercaptobenzothiazole disulfide, alkylated	455.
2-Mercaptobenzothiazoline	498.
Miscellaneous compounds:	
Butylamine phthalamate	168.
Dibenzylamine	221.
Di-N-pentamethylenethiuram tetrasulfide	374.
2-Imidazoline-2-thiol	374.
Poly-p-dinitrosobenzene	374.
p-Quinonedioxime	374.
p-Quinonedioxime dibenzoate	221.
*Antioxidants:	
Aldehyde- and acetone-amines:	
Acetaldehyde-aniline hydrochloride	168, 221.
p-Aminodiphenyl-acetone	168.
Aniline-acetone, acid derivatives	168.
Crotonilidine-1-naphthylamine	455.
Diphenylamine-acetone	221.
p-Phenetidine-acetone	168.
Phenyl-2-naphthylamine-acetone	221.
*Amino or hydroxy compounds:	
p,p'-Diaminophenylmethane	221.
2,5-Di-tert-amylhydroquinone	168.
2,5-Di-tert-butylhydroquinone	168.
p,p'-Dimethoxydiphenylamine	374.
N,N'-Di-2-naphthol-p-phenylenediamine	455.
N,N'-Diphenylethylenediamine	112, 512.
Diphenylnitrosamine	221.
N,N'-Diphenyl-p-phenylenediamine	168, 221, 374, 455.
N,N'-Diphenylpropylenediamine	112.
Di-o-tolylethylenediamine	112.

TABLE 21B.--*Synthetic organic chemicals: Rubber-processing chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
RUBBER-PROCESSING CHEMICALS, CYCLIC--Continued	
*Antioxidants--Continued	
*Amino or hydroxy compounds--Continued	
Hydroquinone monobenzyl ether	455.
p-Hydroxydiphenylamine	455.
p-Hydroxy-N-phenylmorpholine	374.
p-Isopropoxydiphenylamine	455.
p,p'-Isopropylidenediphenol (β-Di-p-hydroxyphenylpropane).	238.
Octyldiphenylamine, arylalkylated	455.
N-Phenyl-1-naphthylamine	374.
N-Phenyl-2-naphthylamine	374, 455.
Tetramethyl diphenylethylenediamine	512.
Thiobis[di-sec-amylphenol]	168.
4,4'-Thiobis[6-tert-butyl-m-cresol]	168.
p-(p-Toluenesulfonamido)diphenylamine	221.
N-o-Tolyl-2-naphthylamine	238.
Miscellaneous compounds:	
Dicresyl monosulfide	221.
Dicresyl disulfide	221.
2,2'-Methylenebis[4-methyl-6-tert-butylphenol]	498, 509.
Phenol, alkylated	112, 238.
Phenol, styrenated	455.
2,2,4-Trimethyldihydroquinoline	455.
2,2,4-Trimethyl-6-ethoxydihydroquinoline	221.
Triphenyl phosphite	168, 221.
Inhibitors: N-Nitrosodiphenylamine	455.
Peptizers:	
Phenylhydrazine zinc chloride salt	374.
2-Naphthyl mercaptan	374.
Xylyl mercaptans	374.
Tackifiers:	
p-tert-Amylphenol sulfide	520.
Bis-iso-octylhydroxyphenylmethylene	327.
o,o'-Dibenzamidophenyl disulfide	498.
RUBBER-PROCESSING CHEMICALS, ACYCLIC	
*Accelerators:	
Dithiocarbamic acid derivatives:	
Dibutyldithiocarbamic acid, dimethylcyclohexylamine salt.	168.
Dibutyldithiocarbamic acid, nickel salt	374.
Dibutyldithiocarbamic acid, potassium salt	374.
Dibutyldithiocarbamic acid, sodium salt	5, 221, 374.
Dibutyldithiocarbamic acid, zinc salt	168, 221, 238, 333, 520.
Diethyldithiocarbamic acid, diethylammonium salt	520.
Diethyldithiocarbamic acid, selenium salt	333, 520.
Diethyldithiocarbamic acid, tellurium salt	333.
*Diethyldithiocarbamic acid, zinc salt	5, 168, 221, 238, 333, 374, 520.
Dimethyldithiocarbamic acid, ammonium salt	221.
Dimethyldithiocarbamic acid, bismuth salt	333.
Dimethyldithiocarbamic acid, copper salt	371.
Dimethyldithiocarbamic acid, potassium salt	221.
All other	455.
Thiurams:	
Methylethylthiuram disulfide, mixed	520.
Tetrabutylthiuram monosulfide	221.
Tetraethylthiuram disulfide	221, 238, 374, 520.
*Tetramethylthiuram disulfide	168, 221, 238, 374, 455, 520.
*Tetramethylthiuram monosulfide	168, 221, 238, 374.
*Tetramethylthiuram tetrasulfide	374.
Xanthates:	
Di-N-butylxanthodisulfide	221.
Di-isopropyl xanthodisulfide	455.
Potassium butyl xanthate	221.
Sodium isopropyl xanthate	455.
Zinc dibutyl xanthate	221, 238.
Miscellaneous compounds:	
n-Butyraldehyde-butylamine	374.
Di-n-butyl ammonium oleate	374.
*Peptizers:	
Alkyl mercaptans, mixed	354.
Cadmium lauryl mercaptide	204.
*Dodecyl mercaptans	214, 248, 354, 520.
tert-Hexadecyl mercaptan	354.
Zinc laurate	221.
All other	374.

Elastomers (Synthetic Rubbers)

TABLE 22B.--*Synthetic organic chemicals: Elastomers (synthetic rubbers) for which United States production or sales were reported, identified by manufacturer, 1951*

[Elastomers (synthetic rubbers) for which separate statistics are given in table 22A are marked below with an asterisk (*); products not so marked do not appear in table 22A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Product	Manufacturers' identification numbers (according to list in table 27)
ELASTOMERS, CYCLIC	
*Polybutadiene-styrene type (Buna S, GR-S)	99, 163, 165, 172, 214, 226, 238, 350, 354, 374, 414, 597, 598.
ELASTOMERS, ACYCLIC	
Polyacrylate ester type	455.
Polyalkalene-sulfide type (Thiokol)	499.
Polybutadiene type	238.
*Polybutadiene-acrylonitrile type (N-type)	165, 178, 204, 221, 238, 455.
Polybutadiene-methylmethacrylate type	221.
*Polychloroprene type (Neoprene)	374.
Polyisobutylene type (Vistanex)	X.
*Polyisobutylene-isoprene type (Butyl, GR-I)	83, 351.
*Polyvinyl type	168, 455, 490.
Reaction products of natural rubber:	
Cyclorubbers	238.
Polymerized chlorinated rubber (Parlon)	200.
Silicone elastomers	163, 476.

Plasticizers

TABLE 23B.--*Synthetic organic chemicals: Plasticizers for which United States production or sales were reported, identified by manufacturer, 1951*

[Plasticizers for which separate statistics are given in table 23A are marked below with an asterisk (*); products not so marked do not appear in table 23A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Chemical	Manufacturers' identification numbers (according to list in table 27)
PLASTICIZERS, CYCLIC	
Bis(dimethylbenzyl) carbonate	197.
Camphor, synthetic	374.
Coumarone-indene plasticizer	364.
N-Cyclohexyl-p-toluenesulfonamide	168.
Dibenzyl sebacate	467.
Di-tert-octyldiphenyl oxide	350.
Diphenyl cyclohexyl, o-, m-, p-	168.
Ethylene glycol dibenzenesulfonate	516.
N-Ethyltoluenesulfonamide, o-, p- mixture	168.
Isopropylidenedi(phenoxypropanol	350.
Naphthalene, alkylated	337.
Phenyl propionate polyglycol ether	349.
Phosphoric acid esters:	
Cresyl diphenyl phosphate	168.
Diphenyl mono-o-xenyl phosphate	350.
Diphenyl octyl phosphate	168.
Tri(p-tert-butylphenyl) phosphate	350.
*Tricresyl phosphate	168, 197, 267, 287.
*Triphenyl phosphate	168, 350, 448.
*Phthalic anhydride esters:	
Butyl benzyl phthalate	168.
Butyl cyclohexyl phthalate	513.
Butyl phthalyl butyl glycolate	168.
Castor oil phthalate	374.
Castor oil phthalate, hydrogenated	374.
Diallyl phthalate	197, 264.
Diamyl phthalate	404.
Di(2-butoxyethyl) phthalate (Di(butyl cellosolve) phthalate).	197, 374.
*Dibutyl phthalate	85, 168, 197, 213, 366, 368, 374, 404, 446, 507, 513.
Dicapryl phthalate	364, 366, 467.
Dicyclohexyl phthalate	197, 374, 513.

TABLE 23B.--*Synthetic organic chemicals: Plasticizers for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
PLASTICIZERS, CYCLIC--Continued	
*Phthalic anhydride esters--Continued	
Di(2-(2-ethoxyethoxy)ethyl) phthalate (Dicarbitol phthalate).	197.
Di(2-ethoxyethyl) phthalate (Dicellosolve phthalate).	197.
Di-2-ethylbutyl phthalate	368.
*Di-2-ethylhexyl phthalate	168, 197, 213, 368, 374, 428, 467, 490, 507, 509, 513.
*Diethyl phthalate	168, 200, 368, 404, 424, 509.
Dihexyl phthalate	467, 553.
*Di-iso-octyl phthalate	85, 168, 197, 200, 213, 227, 366, 428, 467, 513.
*Di(2-methoxyethyl) phthalate (Di(methyl cellosolve) phthalate).	197, 368, 374.
Di(methylcyclohexyl) phthalate	428.
*Dimethyl phthalate	168, 368, 374, 404, 424, 509, 513.
Dinonyl phthalate	366.
*Di-n-octyl phthalate	168, 200, 455.
Diphenyl phthalate	168.
Ethyl phthalyl ethyl glycolate	168.
Isobutyl castor oil phthalate	374.
Iso-octylcapryl phthalate	366.
Methyl phthalyl ethyl glycolate	168.
Nonylcapryl phthalate	366.
Octyl decyl phthalate	197, 200, 467.
Polyglycol phthalate	256.
Polyoxyalkalene compounds	369.
Tetrahydrofurfuryl oleate	213, 423, 437.
Toluenesulfonamide, o-, p- mixture	168, 538.
PLASTICIZERS, ACYCLIC	
*Adipic acid esters:	
Di(2-butoxyethyl) adipate (Di(butyl cellosolve) adipate).	197, 374, 499.
Dibutyl adipate	256.
Dicapryl adipate	467.
*Di(2-ethylhexyl) adipate	197, 213, 227, 256, 428, 490.
Di(2-ethyl propylene glycol) adipate	368.
Di-n-hexyl adipate	467.
Di-isoamyl adipate	364.
Di-isobutyl adipate	197, 200, 227, 428.
*Di-iso-octyl adipate	85, 197, 213, 227, 256, 364, 368, 428.
Dinonyl adipate	213.
Dioctyl adipate	455.
Ethylene glycol monobutyl adipate	553.
n-Octyldecyl adipate	197.
All other	437.
Azelaic acid esters:	
Di-n-butyl azelate	X.
Di(2-ethylbutyl) azelate	437.
Di(2-ethylhexyl) azelate	437.
Di-isobutyl azelate	256, X.
Monomethyl azelate	437.
2-Butoxyethyl diglycol carbonate (Butyl cellosolve diglycol carbonate).	490.
Butyl myristate	256, 423.
N-n-Butylurea	520.
Castor oil maleate	364.
Di(butoxyethoxy-ethoxy)methane	499.
Di(2-butoxyethyl) tartrate (Di(butyl cellosolve) tartrate).	374.
Dibutyl tartrate	256, 507.
Diethylene glycol dipelargonate	437.
Diethylene glycol ester of coconut oil fatty acid	42, X.
Diethyl maleate	368.
Di-iso-octyl diglycolate	368.
Glyceryl monoester of tallow	369.
Glyceryl tributyrate (Tributyrin)	368.
Glyceryl tripropionate	368.
Isopropyl myristate	423.
*Lauric acid esters:	
2-Butoxyethyl laurate (Butyl cellosolve laurate)	74, 256.
Butyl laurate	256.
Diethylene glycol monolaurate	74, 256, 317.
Glyceryl monolaurate	74, 229, 256, 317.
Methyl laurate	256, 359.
Polyethylene glycol dilaurate	229, 256, 262, 317.
Polyethylene glycol monolaurate	256.
*1,2-Propylene glycol monolaurate	42, 74, 256, 317, 349, 485, X.
Triethylene glycol monolaurate	41.

TABLE 238.--*Synthetic organic chemicals: Plasticizers for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
PLASTICIZERS, ACYCLIC—Continued	
Methoxyethyl palmitate	368.
Octadecene nitrile	310.
*Oleic acid esters:	
2-Butoxyethyl oleate (Butyl cellosolve oleate)	74, 197, 256.
Butyl oleate	229, 256, 423.
Cetyl oleate	292.
*Diethylene glycol mono-oleate	42, 74, 229, 256, 317, 437, X.
Ethyl oleate	256.
Glyceryl diacetyltartrate mono-oleate	485.
Glyceryl dioleate	256.
Glyceryl maleate mono-oleate	X.
*Glyceryl mono-oleate	74, 229, 256, 317, 349, 437, 485, X.
Glyceryl trioleate (Triolein)	42, 437.
Hexyl oleate	364.
2-Methoxyethyl oleate (Methyl cellosolve oleate)	197, 256.
Methyl oleate	229, 256, 349, 437.
*Polyethylene glycol dioleate	256, 437, 512.
*Polyethylene glycol mono-oleate	74, 229, 256, 262, 317, 437, 512.
Polyglyceryl oleate	485.
Propylene glycol mono-oleate	74, 256, 485.
n-Propyl oleate	373, 437.
Triethanolamine oleate	364.
Triethylene glycol mono-oleate	41.
*Phosphoric acid esters:	
Tri(2-butoxyethyl) phosphate (Tri(butyl cellosolve) phosphate).	197.
Tributyl phosphate	197, 446.
Triethyl phosphate	168, 368.
Trioctyl phosphate	490.
Polyethylene glycol di-2-ethylhexoate	490.
Polyethylene glycol ester of castor oil fatty acid	229, X.
*Polyethylene glycol ester of coconut oil fatty acid	41, 74, 229.
Polyethylene glycol ester of soybean oil fatty acid	262, 428.
*Ricinoleic acid and acetylricinoleic acid esters:	
n-Butyl acetylricinoleate	198.
Butyl ricinoleate	198, 428.
Cyclohexyl ricinoleate	428.
Diethylene glycol monoricinoleate	256, 317.
2-Ethoxyethyl ricinoleate (Cellosolve ricinoleate)	317, 428.
Ethyl ricinoleate	256.
Glyceryl monoricinoleate	42, 74, 229, 256, 317.
Glyceryl triacetylricinoleate	198.
2-Methoxyethyl acetylricinoleate (Methyl cellosolve acetylricinoleate).	198, 428.
Methyl acetylricinoleate	198.
Methyl ricinoleate	198, 229.
Propylene glycol monoricinoleate	256.
*Sebacic acid esters:	
Dimyl sebacate	364.
Di(2-butoxyethyl) sebacate (Di(butyl cellosolve) sebacate).	428.
*Dibutyl sebacate	213, 364, 368, 446, 467, X.
Di(2-ethylhexyl) sebacate	364, 467.
Dicapryl sebacate	467.
Diheryl sebacate	467.
Di-iso-octyl sebacate	364, 428, 467.
Dimethyl sebacate	467.
Dinonyl sebacate	428.
Dioctyl sebacate	428.
*Stearic acid esters:	
2-Butoxyethyl stearate (Butyl cellosolve stearate)	197, 256, 423.
*Butyl stearate	197, 229, 256, 368, 373, 423, 428, 446, 467, 507.
Diethylene glycol distearate	256, 262.
*Diethylene glycol monostearate	41, 42, 229, 256, 317, X, X.
Dimethylammonium stearate	364.
Ethylene glycol distearate	256, 376.
Ethylene glycol monostearate	41, 74, 256, X.
2-Ethylbutyl stearate	428.
2-Ethylhexyl stearate	197.
Ethyl stearate	256.
Glyceryl monohydroxystearate	229.
*Glyceryl monostearate	41, 42, 79, 229, 256, 292, 317, 485, X.
Glyceryl tristearate (Tristearin)	256.
2-Methoxyethyl stearate (Methyl cellosolve stearate).	256, 423.
Methyl dichlorostearate	248.
Methyl pentachlorostearate	248.
Methyl stearate	256.
Polyethylene glycol monostearate	41, 229, 256, 317, X.
Polyglyceryl stearate	485.

TABLE 238.--*Synthetic organic chemicals: Plasticizers for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
PLASTICIZERS, ACYCLIC--Continued	
*Stearic acid esters--Continued	
*1,2-Propylene glycol monostearate	42, 256, 485, X.
All other	499.
Tributyl acetylcitrate	404.
Tri-n-butyl citrate	404.
Triethyl acetylcitrate	404.
Triethylene glycol di(caprylate-caprate)	359.
Triethylene glycol di-2-ethylbutyrate	490.
Triethylene glycol di-2-ethylhexoate	490.
All other	X.

Surface-Active Agents

TABLE 24B.--*Synthetic organic chemicals: Surface-active agents for which United States production or sales were reported, identified by manufacturer, 1951*

[Surface-active agents for which separate statistics are given in table 24A are marked below with an asterisk (*); products not so marked do not appear in table 24A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Chemical	Manufacturers' identification numbers (according to list in table 27)
SURFACE-ACTIVE AGENTS, CYCLIC	
*Esters and ethers, nonsulfonated:	
Anhydrohexitol castor oil polyoxyalkylene ether	349.
Anhydrohexitol dilaurate polyoxyalkylene ether	349.
Anhydrohexitol dioleate	349.
Anhydrohexitol glycerol monolaurate	349.
Anhydrohexitol monolaurate	349.
Anhydrohexitol monolaurate polyoxyalkylene ether	349.
Anhydrohexitol mono-oleate	349.
Anhydrohexitol mono-oleate polyoxyalkylene ether	349.
Anhydrohexitol monopalmitate	349.
Anhydrohexitol monopalmitate polyoxyalkylene ether	349.
Anhydrohexitol monostearate	349.
Anhydrohexitol monostearate polyoxyalkylene ether	349.
Anhydrohexitol tall oil polyoxyalkylene ether	349.
Anhydrohexitol trioleate	349.
Anhydrohexitol trioleate polyoxyalkylene ether	349.
Anhydrohexitol triricinoleate	349.
Anhydrohexitol triricinoleate polyoxyalkylene ether	349.
Anhydrohexitol tristearate	349.
Anhydrohexitol tristearate polyoxyalkylene ether	349.
Glucose polyoxyalkylene ether polyoxyalkylene distearate.	349.
Glucose polyoxyalkylene ether polyoxyalkylene oleate.	349, 481.
Iso-octylphenoxy polyethoxyethanol	364, 481.
Nonylphenoxy polyethoxyethanol	349, 481.
*Nitrogen-containing surface-active agents, nonsulfonated:	
Benzylcetyldimethylammonium chloride	262, 320, 364, 511.
Benzyldimethyloctylammonium chloride	262.
Benzyldimethylphenylammonium chloride	481, 512.
Benzyllauryldimethylammonium chloride	183, 262, 511.
Benzyltrimethylammonium chloride	364.
Benzyltrimethylammonium hydroxide	364.
Cetylpyridinium chloride	292.
2,4-Dichlorobenzyllauryldimethylammonium chloride	203, 262.
3,4-Dichlorobenzyllauryldimethylammonium chloride	320, 511.
Dodecylmethylbenzyltrimethylammonium chloride	364.
Ethoxybenzyldimethyloctylphenoxyammonium chloride	364.
2-Lauroyloxyethylcarbamylmethylpyridinium chloride (Lauryl ester of ocinamoformylmethylpyridinium chloride).	485.
Laurylpyridinium chloride	268, 556.
Rosin amidopolyethoxyethanol	481.
Rosin soap of polyamidoimidazoline	422.
All other	556, 560.
*Sulfated and sulfonated cyclic surface-active agents:	
*Alkyl benzenoid compounds, sulfated and sulfonated:	
Alkyl benzenesulfonic acid (above dodecyl)	402.
Decylbenzenesulfonic acid type	168, 512.
*Dodecylbenzenesulfonic acid type	26, 99, 132, 168, 186, 203, 278, 286, 319, 349, 370, 402, 421, 436, 474, 478, 491, 509, 516, 538, 560, X.
Dodecylbenzenesulfonic acid, butylammonium salt	168.
Dodecyltoluenesulfonic acid	306, 423.
Alkyl naphthalenoid compounds, sulfated and sulfonated:	
*Amylnaphthalenesulfonic acid, mono	491, 509.
Benzylnaphthalenesulfonic acid, mono	481.
1,1'-Binaphthyl-2,2'-disulfonic acid	374.
1,1'-Binaphthyl-5,5'-disulfonic acid	374.
*Butylnaphthalenesulfonic acid, mono	232, 373, 445, 491.
*Diamylnaphthalenesulfonic acid	203, 339.
*Dibutylnaphthalenesulfonic acid	339, 481.
*Diisopropylnaphthalenesulfonic acid	229, 262, 374, 422, 474, 481.
Dilaurylnaphthalenesulfonic acid	229.
Ethylnaphthalenesulfonic acid	445.
*Isopropylnaphthalenesulfonic acid	367, 373, 374, 421.

TABLE 24B.--*Synthetic organic chemicals: Surface-active agents for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
SURFACE-ACTIVE AGENTS, CYCLIC--Continued	
*Sulfated and sulfonated cyclic surface-active agents--Continued	
Alkyl naphthalenoid compounds, sulfated and sulfonated--Continued	
Nonylnaphthalenesulfonic acid	139.
Octylnaphthalenesulfonic acid	52.
Oleylnaphthalenesulfonic acid	278.
Tetrahydronaphthalenesulfonic acid	374.
*Petroleum aromatic compounds, sulfonated:	
Acid-layer-type petroleum sulfonate, ammonium salt.	509.
Acid-layer-type petroleum sulfonate, sodium salt	389, 478, 508.
Oil-layer-type petroleum sulfonate	508.
Oil-layer-type petroleum sulfonate, ammonium salt.	505.
Oil-layer-type petroleum sulfonate, barium salt	186, 505, 509.
Oil-layer-type petroleum sulfonate, calcium salt	258, 505.
*Oil-layer-type petroleum sulfonate, sodium salt	38, 186, 258, 273, 364, 389, 403, 491, 505, X.
All other sulfated and sulfonated cyclic surface-active agents:	
N-Alkylethylmorpholine ethosulfates	349.
Butylbiphenylsulfonic acid	168.
Butylhydroxybiphenylsulfonic acid	168.
Cresol-formaldehyde resin, sulfonated	481.
N-Cyclohexylpalmitoyltaurine	481.
Dibutylhydroxybiphenyldisulfonic acid	168.
N-Diethylcyclohexylamine salt of lauryl sulfate	374.
Lignin derivatives, sulfonated:	
Calcium lignosulfonate	44.
Sodium lignosulfonate	44.
Nonylphenoxypolyethoxyethyl sulfate	481.
Octylphenoxypolyethoxyethyl sulfate	364.
Octylphenoxypolyethoxyethyl sulfonate	364.
Trichlorophenylethanolamine sulfate	481.
SURFACE-ACTIVE AGENTS, ACYCLIC	
*Esters and ethers, nonsulfonated:	
Dendro sorbitol hexalaurate	349.
Diethylene glycol ester of tall oil fatty acid	X.
Dipolyethoxyethyl ether of polyoxypropylene glycol	516.
Glyceryl monococoate	X.
Hexitol polyoxyalkylene beeswax ester	349.
Hexitol polyoxyalkylene dilaurate	349.
Hexitol polyoxyalkylene hexaoleate	349.
Hexitol polyoxyalkylene hexastearate	349.
Hexitol polyoxyalkylene hexa(tall oil) ester	349.
Hexitol polyoxyalkylene lanolin ether	349.
Hexitol polyoxyalkylene mono(tall oil) ester	349.
Hexitol polyoxyalkylene pentalaurate	349.
Hexitol polyoxyalkylene penta(tall oil) ester	349.
Hexitol polyoxyalkylene septaoleate	349.
Hexitol polyoxyalkylene tetra(oleate, laurate) ester.	349.
Hexitol polyoxyalkylene tetra(tall oil) ester	349.
Hexitol polyoxypropylene dioleate	349.
Methoxypolyethoxyethyl coconut oil ester	X.
Methoxypolyethoxyethyl monostearate	X.
Polyethoxyethyl castor oil ester	481.
Polyethoxyethyl coconut oil ester	26, 203, 139, 560.
Polyethoxyethyl decyl ether	449.
Polyethoxyethyl distearate	X.
Polyethoxyethyl lauryl ether	203, 349.
*Polyethoxyethyl monolaurate	31, 140, 203, 255, 481.
*Polyethoxyethyl mono-oleate	255, 339, 481, 553, 560.
Polyethoxyethyl monopalmitate	349.
Polyethoxyethyl monostearate	26, 339, 349, 437, 442, 481.
Polyethoxyethyl oleyl ether	349, 481.
Polyethoxyethyl soya oil ester	26.
Polyethoxyethyl tall oil ester	26, 52, 203, 349, 481, 564, 560, X.
Polyethoxyethyl tallow ester	188.
Polyoxyalkylene lanolin ether	349.
Polyoxyalkylene resin ester	349.
Propylene glycol-cottonseed oil ester	349.
Propylene glycol monococoate	X.
Propylene glycol polyoxyalkylene stearate	349.
Triethylene glycol laurate	367.
All other	349, 560, X.

TABLE 248.--*Synthetic organic chemicals: Surface-active agents for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
SURFACE-ACTIVE AGENTS, ACYCLIC--Continued	
*Nitrogen-containing surface-active agents, nonsulfonated:	
Alkyltrimethylammonium chlorides	510.
*N-(Aminoethyl)-N-(hydroxyethyl)oleamide (Oleamide of aminoethylethanolamine).	286, 378, 474, 560.
*N-(Aminoethyl)-N-(hydroxyethyl)stearamide (Stearamide of aminoethylethanolamine).	26, 262, 286, 373, 378, 423, 436, 474, 491, 512, 519.
Caproylethyl-5-hydroxycycloimidine sodium ethylate, sodium ethionate.	415.
Cetylbetaine	374.
Cetyldimethylammonium bromide	511.
Cetyl, lauryl trimethylammonium bromide, mixed	374.
Cetyltrimethylammonium bromide	511.
Coconut oil amide of aminoethylethanolamine	26, 436.
*Coconut oil amide of mono(diethanolamine) (Diethanol lauramide).	31, 183, 262, 286, 339, 378, 436, 474, 512, X.
*Coconut oil amide of bis(diethanolamine)	26, 52, 139, 203, 376, 474, 491, 519.
Coconut oil amide of diethanolamine (neither bis nor mono).	518.
Coconut oil amide of diethylenetriamine	52.
Coconut oil amide of ethylenediamine	203.
*Coconut oil amide of isopropanolamine	203, 339, 376.
Coconut oil amide of monoethanolamine (Ethanol lauramide).	26, 52, 262, 278, 286, 367, 491, X.
Coconut oil dimethylammonium chloride	510.
Coconut oil ester of ethanolamine hydrochloride	X.
Decylbetaine	374.
*N,N-Di(2-hydroxyethyl)oleamide (Diethanol oleamide) (Diethanolamine oleate).	255, 339, 373, 376, 436, 519, X.
*N,N-Di(2-hydroxyethyl)stearamide (Diethanol stearamide).	339, 376, 474, 491, 560.
Dilaurylammonium bromide	262.
Dodecyltrimethylammonium bromide	374.
Ethylenebisstearamide	339.
Fatty amides and amines-ethylene oxide condensates	510.
Fish oil amide of diethanolamine	518.
N-(2-Hydroxyethyl)myristamide (Ethanol myristamide).	X.
N-(2-Hydroxyethyl)oleamide (Ethanol oleamide)	519.
N-(2-Hydroxypropyl)oleamide (Isopropanol oleamide)	X.
Lauroylethyl-5-hydroxycycloimidine sodium ethylate, sodium ethionate.	415.
N-Lauroylpolypeptide	29, 284.
Octadecylguanidine carbonate and octadecylamine ethylene oxide addition product.	509.
Oleylaminopolyethoxyethanol	481.
Oleylbiguanide hydrochloride	481.
Oleylglyoxilidine	339, 560.
Oleylglyoxilidinium chloride	339.
Oleylpolypeptide	284.
Oleylsarcosin (N-Methyloleoylglycine), sodium salt.	481.
Polyglycol aliphatic amide	349.
Soybean oil acyl chloride salt of sodium lysalbinate.	29.
*Stearamide of diethylenetriamine	52, 262, 378, 423, 512, 519.
*Stearamide of tetraethylenepentaamine	262, 415, 423, 436.
Stearamide of triethylenetetramine	262.
Stearamide of triethylenetriamine	52.
Stearamidopropyl dimethyl β-hydroxyethylammonium chloride.	509, X.
Stearic acid ester of N-(2-hydroxyethyl)stearamide	X.
Stearoylsarcosin (N-Methylstearoylglycine), sodium salt.	481.
Stearylbiguanide hydrochloride	481.
Tall oil amide of diethanolamine	560.
Tall oil amide of ethanolamine ethylene oxide condensation.	509.
Tall oil diethylenetriamine epichlorohydrin reaction product.	509.
Tallow, hydrogenated, dimethylammonium chloride	510.
Triethanolamine coconut oil ester	376.
*Triethanolamine oleate	373, 453, 512.
Triethanolamine stearate	140.
Tributylammonium sulfotricarballylate	481.
Trimethylstearylammonium bromide	374.
All other	284, 349, 481, 509, 511.
*Phosphorus-containing surface-active agents:	
Alkyl phosphates, mixed	347.
Alkyl sodium polyphosphates	347.
Ethyl hexyl sodium phosphate	490.

TABLE 248.--*Synthetic organic chemicals: Surface-active agents for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
SURFACE-ACTIVE AGENTS, ACYCLIC--Continued	
*Phosphorus-containing surface-active agents--Continued	
Octyl polyphosphate	518.
Phosphorus derivatives of capryl and octyl alcohol	436.
*Salts of fatty acids:	
Potassium laurate	229.
*Potassium oleate	1, 26, 229, 348, 373, 400, 423, 474, 560.
Potassium resinate	491, 560.
Potassium ricinoleate	373.
*Potassium salt of tall oil (Potassium tallate)	26, 31, 140, 318, 518, 519.
Potassium stearate	1.
*Sodium oleate	26, 140, 183, 229, 348, 373, 436, 474, 519.
Sodium resinate	436.
*Sodium stearate	1, 222, 229, 460, 507, 512.
Sodium tallate	31, 52, 229.
All other	26, 140, 506, 518, 519, 560.
*Sulfated and sulfonated acyclic surface-active agents:	
*Acids, sulfated and sulfonated:	
Acetyloleic acid, sulfonated	374.
Acetylricinoleic acid, sulfonated	373.
Coconut oil fatty acids, sulfonated	77, 348.
Fish oil fatty acids, sulfonated	139, 229, 506.
*Oleic acid, sulfonated (Sulfonated red oil)	1, 38, 77, 138, 139, 158, 189, 203, 229, 261, 262, 299, 318, 348, 370, 402, 436, 442, 445, 481, 487, 491, 506, 509, 512, 551, 560, 562, 563.
Ricinoleic acid, sulfonated	229, 445.
Soybean fatty acids, sulfonated	229.
Tallow fatty acids, sulfonated	229.
Alcohols, sulfated and sulfonated:	
Decyl sulfate	262.
n-Decyloxyethyl sulfate	X.
Dicapryl sulfate	518.
3,9-Diethyl-6-tridecyl sulfate	490.
2-Ethylhexyl sulfate	490.
7-Ethyl-2-methyl-4-undecyl sulfate	490.
Hexadecyl sulfate	339, 374.
Lauryl, oleyl sulfate, mixed	374.
Lauryl sulfate, ammonium salt	99, 278.
Lauryl sulfate, monoethanolamine salt	278.
Lauryl sulfate, sodium salt (Sodium dodecyl sulfate).	99, 203, 262, 278, 374, 402, 491, 512.
Lauryl sulfate, triethanolamine salt	99, 262, 278, 374, 402.
Octadecyl sulfate (Stearyl sulfate)	278.
All other	26, 436.
Esters, sulfated and sulfonated:	
Butyl acetylsulforicinoleate	512.
n-Butyl sulfo-oleate	26, 229, 262, 423.
n-Butyl sulforicinoleate, sodium salt	428.
Diamyl sulfosuccinate, sodium salt	509.
Dibutyl sulfosuccinate, sodium salt	509.
Di(2-ethylhexyl) sulfosuccinate, barium salt	509.
Di(2-ethylhexyl) sulfosuccinate, sodium salt	509, 518.
Dihexyl sulfosuccinate, sodium salt	509.
Ethyl butyl sulfoconitate, sodium salt	X.
Ethyl sulfo-oleate	481.
Glycerol mono(coconut oil) ester, sulfated, ammonium salt.	X.
Glycerol mono(coconut oil) ester, sulfated, sodium salt.	X.
Glycerol monostearate sulfoacetate, sodium salt	485.
Glycerol tri(sulfo-oleate)	373.
*Isopropyl sulfo-oleate	203, 286, 436.
Lauryl sulfoacetate	421.
Methyl, ethyl, propyl sulfo-oleate	229.
n-Propyl sulfo-oleate	31, 373, 437, 491, 509, 560.
*Nitrogen-containing surface-active agents, sulfated and sulfonated:	
Coconut oil amide of isopropanolamine, sulfated, sodium salt.	203, 519.
*Coconut oil amide of monoethanolamine, sulfated, potassium salt.	436.
*Coconut oil amide of monoethanolamine, sulfated, sodium salt.	26, 52, 203, 229, 262, 286, 339, 378, 474, 491, 519.
Coconut oil amide of monoethanolamine, sulfosuccinate, sodium salt.	X.

TABLE 28B.--*Synthetic organic chemicals: Surface-active agents for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
SURFACE-ACTIVE AGENTS, ACYCLIC--Continued	
*Sulfated and sulfonated acyclic surface-active agents--Continued	
*Nitrogen-containing surface-active agents, sulfated and sulfonated--Continued	
N-(2-Hydroxyethyl)oleamide, sulfated (Oleic acid ethanolamide sulfate), sodium salt.	229, 373.
N-(2-Hydroxyethyl)stearamide, sulfated (Stearic acid ethanolamide sulfate), sodium salt.	374, 512.
N-(2-Hydroxypropyl)oleamide, sulfated, ethanolamine salt.	X.
Lauramide ethylamine ethanol, sulfated, sodium salt.	415.
Lauric acid ester of potassium sulfoacetoethanolamide.	X.
Lauric acid ester of sodium sulfoacetoethanolamide	132.
N-Methyloleoyltaurine, sodium salt	286, 481, 491, 518, 519.
N-Methylpalmitoyltaurine, sodium salt	481.
N-(Myristoylethyl)sulfosuccinamide, sodium salt	X.
Neat's-foot oil amide of ethanolamine, sulfated, ammonium salt.	52.
N-Octadecylsulfosuccinamide, disodium salt	509.
N-(Oleoylisopropyl)sulfosuccinamide, sodium salt	X.
Tallow amide of ethanolamine sulfosuccinate	373.
*Oils, fats, and waxes, sulfated and sulfonated:	
Animal fats and oils, sulfated and sulfonated:	
Lard oil, sulfonated	51, 388, 474, 560, 563.
*Neat's-foot oil, sulfonated	15, 32, 52, 138, 158, 185, 207, 229, 261, 262, 348, 400, 506, 512, 562.
Oleostearine, sulfonated	185.
*Tallow, sulfonated	15, 19, 26, 38, 53, 138, 185, 203, 207, 229, 262, 270, 286, 299, 306, 310, 345, 388, 391, 423, 436, 487, 491, 506, 509, 512, 551, 560, 562.
Wool grease, sulfonated	506.
All other	506.
Fish and marine-animal oils, sulfated and sulfonated:	
*Cod oil, sulfonated	15, 51, 185, 207, 229, 262, 348, 400, 506, 512, 551, 562, 563.
*Herring oil, sulfonated	15, 185, 207, 229, 506, 563.
Menhaden oil, sulfonated	207, 506, 563.
Red fish oil, sulfonated	207, 229.
Salmon oil, sulfonated	207.
Shark liver oil, sulfonated	158, 207.
*Sperm oil, sulfonated	15, 38, 51, 158, 185, 203, 207, 229, 261, 262, 286, 348, 400, 481, 506, 509, 512, 551, 562, 563.
Tuna oil, sulfonated	207.
Whale oil, sulfonated	207.
All other	207, 560.
*Tall oil, sulfonated	52, 185, 203, 261, 370, 442, 509, 562.
Vegetable oils, fats, and waxes, sulfated and sulfonated:	
*Castor oil, sulfonated	1, 21, 26, 31, 38, 52, 124, 138, 139, 158, 185, 203, 207, 229, 261, 262, 270, 286, 299, 306, 310, 318, 345, 348, 373, 374, 390, 391, 400, 402, 423, 436, 442, 476, 481, 487, 491, 506, 509, 512, 551, 560, 562, 563.
*Coconut oil, sulfonated	15, 53, 138, 158, 229, 261, 563.
*Corn oil, sulfonated	77, 229, 318, 402, 491, 509, 560.
Cottonseed oil, sulfonated	158, 207, 229.
Linseed oil, sulfonated	562.
Mustard seed oil, sulfonated	229, 402, 562.
Olive oil, sulfonated	512.
*Peanut oil, sulfonated	38, 124, 158, 229, 306, 318, 373, 388, 487, 509, 562.
Rapeseed oil, sulfonated	562.
*Rice-bran oil, sulfonated	138, 203, 229, 232, 286, 306, 402, 512, 560, 562.
*Soybean oil, sulfonated	26, 261, 262, 284, 310, 402, 506, 562, 563.
All other	26, 512.
All other oils, fats, and waxes, sulfonated:	
Recovered grease, sulfonated	185, 348, 506.
Petroleum aliphatic compounds, sulfated and sulfonated: Petroleum sulfonate, sodium salt	142, 255, 289, 374.

Pesticides and Other Organic Agricultural Chemicals

TABLE 29B.--*Synthetic organic chemicals: Pesticides and other organic agricultural chemicals for which United States production or sales were reported, identified by manufacturer, 1951*

[Pesticides and other organic agricultural chemicals for which separate statistics are given in table 29A are marked below with an asterisk (*); products not so marked do not appear in table 29A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Product	Manufacturers' identification numbers (according to list in table 27)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC	
*Fungicides and seed disinfectants:	
o-Benzylphenol	168.
p-Benzylphenol	292.
2-Chloro-4-(hydroxymercuri)phenol	374.
2,3-Dichloro-1,4-naphthoquinone	221.
n-(Ethylmercuri)-p-toluenesulfanamilide	374.
Hydroxymercurinitrophenol	374.
Hydroxyquinoline benzoate	441.
*Naphthenic acid, copper salt	119, 119, 190, 193, 250, 425, 478, 486, 507, 553.
Pentachlorophenol	168, 350.
Pentachlorophenol, sodium salt	168, 350.
Phenyl amino cadmium dilactate	556.
Phenyl mercuric lactate	556.
Phenyl mercuric monoethanolammonium acetate	556.
Phenyl mercuric oleate	374.
Phenyl mercuric triethanolammonium lactate	556.
8-Quinolinol (8-Hydroxyquinoline), copper salt	168, 193.
Tetrachloro-p-benzoquinone	221.
2,3,4,6-Tetrachlorophenol	350.
2,3,4,6-Tetrachlorophenol, sodium salt	350.
N-Trichloromethylthiotetrahydrophthalimide	369.
2,4,5-Trichlorophenol	168, 350.
2,4,6-Trichlorophenol	350.
2,4,5-Trichlorophenol, ethanolamine salt	481.
2,4,5-Trichlorophenol, sodium salt	168, 350.
*Herbicides and plant hormones:	
3-(p-Chlorophenyl)-1,1-dimethylurea	374.
Chlorotoloxyacetic acid	X.
1,2-Dihydro-3,6-pyradazinedione	221.
3,6-Endoxyhexahydrophthalic acid, disodium salt	520.
2-Indolebutyric acid (a-Indole-3-n-butyric acid)	222.
Isopropyl N-(3-chlorophenyl)carbamate	450.
Isopropyl N-phenylcarbamate (Isopropyl carbanilate) (IPC).	450.
*Naphthalene- and naphthoxyacetic acid derivatives:	
1-Naphthaleneacetamide	360.
1-Naphthaleneacetic acid	360, 390, 435, 441.
1-Naphthaleneacetic acid, methyl ester	360, 390, 566.
1-Naphthaleneacetic acid, sodium salt	360, 390, 492.
2-Naphthoxyacetic acid	511.
2-Naphthoxyacetic acid, sodium salt	492.
*Phenoxyacetic acid derivatives:	
*2,4-Dichlorophenoxyacetic acid (2,4-D)	168, 213, 287, 350, 366, 443, 450.
*2,4-Dichlorophenoxyacetic acid esters:	
n-Butyl 2,4-dichlorophenoxyacetate	168, 360, 364, 566.
sec-Butyl 2,4-dichlorophenoxyacetate	213, 269.
Ethyl 2,4-dichlorophenoxyacetate	360.
*Isopropyl 2,4-dichlorophenoxyacetate	168, 213, 269, 360, 390, 566, 576, 627.
Polypropylene glycol butyl ether 2,4-dichlorophenoxyacetate.	350.
Tetrahydrofurfuryl 2,4-dichlorophenoxyacetate	213.
*2,4-Dichlorophenoxyacetic acid salts:	
*2,4-Dichlorophenoxyacetic acid, diethanolamine salt.	360, 366, 627.
2,4-Dichlorophenoxyacetic acid, dimethylamine salt.	213, 576, 566.
2,4-Dichlorophenoxyacetic acid, isopropyl triethylamine, mixed salt.	269.
2,4-Dichlorophenoxyacetic acid, sodium salt	168.
2,4-Dichlorophenoxyacetic acid, triethanolamine salt.	213, 376, 627.
All other	213, 627, 566.
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	268, 350.
2,4,5-Trichlorophenoxyacetic acid, butyl ester	269.
*2,4,5-Trichlorophenoxyacetic acid, isopropyl ester.	168, 213, 268, 269, 627.
2,4,5-Trichlorophenoxyacetic acid, secondary butyl ester.	213.
2,4,5-Trichlorophenoxypropionic acid	168, 360.
All other	213, 269, 350, 627.
Phenyl mercuric acetate	231, 439, 556, 562.

TABLE 25B.--*Synthetic organic chemicals: Pesticides and other organic agricultural chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Product	Manufacturers' identification numbers (according to list in table 27)
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, CYCLIC--Continued	
*Insecticides:	
Aldrin (Hexachlorohexahydrodimethanonaphthalene)--	X.
Allethrin (Allyl homolog of Cinerin I)----------	208, 490.
Benzyl thiocyanate----------	248.
2-(p-tert-Butylphenoxy)isopropyl-2-chloroethyl sulfite.	221.
Chlordane (1,2,4,5,7,8,8-Octachloro-4,7-methano-3a,4,7,7a-tetrahydroindane).	407.
4-Chlorophenoxyacetic acid----------	350.
p-Chlorophenyl p-chlorobenzenesulfonate----------	350.
2-Cyclohexyl-4,6-dinitrophenol----------	350.
3,4-Dichlorobenzyl triphenyl phosphonium chloride-	248.
1,1-Dichloro-2,2-bis(p-chlorophenyl)ethane (DDD)--	364.
2,4-Dichlorophenyl benzenesulfonate----------	443.
Dieldrin (Hexachloroepoxyoctahydrodimethano-naphthalene).	X.
*O,O-Diethyl O,p-nitrophenyl thiophosphate (Parathion).	168, 213, 509.
Dinitro-o-sec-amylphenol----------	30.
Dinitro-o-sec-butylphenol----------	350.
Dinitro-o-sec-butylphenol, triethanolamine salt---	30.
4,6-Dinitro-o-cresol (DNOC)----------	30.
4,6-Dinitro-o-cresol, sodium salt----------	30.
Ethyl p-nitrophenyl thionobenzenephosphate (EPN)--	374.
*Hexachlorocyclohexane (Benzene hexachloride)------	141, 212, 213, 248, 249, 287, 358, 369, 374, 392, 396, 412, 443, 446, 450, 527.
Isobornyl thiocyanoacetate----------	200, 392.
*Lindane----------	248.
Phenothiazine.[1]	
Styrene dibromide----------	350.
Toxaphene (Chlorinated camphene)----------	200.
*1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane (DDT)	13, 80, 168, 212, 249, 329, 358, 364, 374, 443, 445, 528.
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor) (Methoxy DDT).	339, 374.
N-Trichloromethylthiotetrahydrophthalamide-------	248.
Xanthone (Benzophenone oxide)----------	443.
All other----------	213, 248, 292, 339.
Rodenticides:	
3-(Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)---	521.
α-Naphthylthiourea----------	443.
PESTICIDES AND OTHER ORGANIC AGRICULTURAL CHEMICALS, ACYCLIC	
*Fumigants:	
Chloropicrin----------	468.
1,2-Dichloropropane----------	350, 490, 516.
Dichloropropene dichloropropane (D-D mixture)-----	264.
*Methyl bromide----------	268, 329, 350.
*Fungicides and seed disinfectants:	
Cadmium succinate----------	441.
Copper undecylenate----------	492.
Dimethyldithiocarbamic acid, ferric salt (Ferbam)-	374.
Dimethyldithiocarbamic acid, sodium salt----------	238, 455, 520.
*Dimethyldithiocarbamic acid, zinc salt (Ziram)----	5, 168, 221, 238, 374, 455, 520.
Ethyl mercuric acetate----------	374.
Ethyl mercuric chloride----------	374.
Ethyl mercuric phosphate----------	374.
Ethylenebis(dithiocarbamic acid), manganese salt--	374.
Ethylenebis(dithiocarbamic acid), sodium salt (Nabam).	364, 374.
Ethylenebis(dithiocarbamic acid), zinc salt (Zineb)	364, 374.
Sodium undecylenate----------	198, 492.
Thiram.[2]	
Zinc undecylenate----------	458, 492.
All other----------	392, 458.
Herbicides:	
Diethyl dithiobis(thionoformate)----------	168.
*Trichloroacetic acid and derivatives:	
Trichloroacetic acid----------	248, 350, 443.
Trichloroacetic acid, sodium salt----------	168, 248, 350.
Trichloroacetic acid, isopropyl ester----------	168.
*Insecticides:	
Aliphatic thiocyanates----------	364.
Metaldehyde----------	446.
Octamethyl pyrophosphoramide (OMPA)----------	168.
Tetraethyl dithionopyrophosphate----------	168.
*Tetraethyl pyrophosphate (TEPP)----------	168, 248, 347, 396, 396, 427.
Rodenticides:	
Sodium fluoroacetate----------	168.
All other----------	248.

Miscellaneous Synthetic Organic Chemicals

TABLE 26B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*

[Miscellaneous chemicals for which separate statistics are given in table 26A are marked below with an asterisk (*); chemicals not so marked do not appear in table 26A because the reported data are confidential and may not be published. Manufacturers' identification numbers shown below are taken from table 27. An X signifies that the manufacturer did not consent to the publication of his identification number with the designated product]

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, CYCLIC	
Alloxan monohydrate----------	243.
2-Aminobenzothiazole----------	164.
4-Amino-5-(ethoxymethyl)-2-methylpyrimidine----------	222.
2-Aminothiophenol----------	509.
Benzoic acid salts:	
Ammonium benzoate----------	148.
*Sodium benzoate, tech----------	449.
*Sodium benzoate, U.S.P----------	16, 168, 248, 369, 401, 449.
Benzoin oxime----------	164, 448.
Benzothiazole----------	148, 498.
*Benzoyl peroxide----------	16, 183, 272, 276, 304.
Biological stains:	
Giemsa's stain----------	421.
N,N',N''-Hexamethyltriaminotriphenylmethane---	421.
2,3,5-Triphenyltetrazolium chloride----------	149.
Wright's stain----------	421.
All other----------	6, 421.
4,4'-Bis(phenylureido)-2,2'-stilbenedisulfonic acid	481.
Bis(trifluoromethylbenzene)----------	248.
Boron fluoride phenol complex----------	443.
2(and 3)-tert-Butyl-4-methoxyphenol----------	368.
tert-Butyl peroxybenzoate----------	272.
4-tert-Butylpyrocatechol (p-tert-Butylcatechol)----	350.
Camphene----------	374, 384.
*Centralite (N,N'-Diethyl-N,N'-diphenylurea)------	183, 445, 520.
Chemical indicators:	
m-Cresolsulfonphthalein (m-Cresol purple)----------	421, 448.
o-Cresolsulfonphthalein (Cresol red)----------	421, 448.
Dibromo-o-cresolsulfonphthalein (Bromocresol purple).	279, 421, 448.
Dibromodichlorophenolsulfonphthalein----------	421.
Dibromothymolsulfonphthalein (Bromothymol blue)---	279, 421, 448.
Dichlorophenolsulfonphthalein (Chlorophenol red)--	421, 448.
Methyl red----------	448.
Phenolsulfonphthalein (Phenol red)----------	421, 448, 511.
Tetrabromo-m-cresolsulfonphthalein (Bromcresol green).	421, 448.
Tetrabromophenolsulfonphthalein (Bromophenol blue).	421, 448.
Thymolphthalein----------	448, 511.
Thymolsulfonphthalein (Thymol blue)----------	421, 448.
All other----------	6, 379, 421.
*Chemical reagents:	
Aurintricarboxylic acid----------	448.
Barium diphenylamine sulfonate----------	448.
Digitonin----------	511.
Diphenyl carbazone----------	448, 511.
Diphenyl carbonate----------	443.
Diphenylthiocarbazone (Dithizone)----------	448, 511.
α,α-Dipyridyl----------	164, 448.
Girard P reagent----------	149, 243.
Naphthoresorcinol----------	292.
N-(1-Naphthyl)ethylenediamine dihydrochloride----	448.
Nitrosophenylhydroxylamine (Cupferron)----------	448.
Phthalic acid, potassium and sodium salts----------	443.
Quinhydrone----------	222, 448.
Sodium-2,6-dichlorobenzenone-indophenol----------	448.
Sulfosalicylic acid, reagent----------	222.
All other----------	[illegible], 164, 243, 257, 421, 448, 458, 488, 511, 521.
5-Chloro-bis(3,5-dichloro-2-hydroxyphenyl)-- toluenesulfonic acid, sodium salt.	481.
o-Chloro-α,α,α'-trifluorotoluene----------	248.
Cholesterol----------	511.
Cumene hydroperoxide----------	200.
Cyclohexenone peroxide----------	272.
Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid), disubstituted, polyester salts:	
Barium salt----------	428.
Cadmium salt----------	428.
Cyclohexyl phosphite----------	513.
*Cyclopropane----------	20, 223, 441, 482.
Decahydronaphthalene (Decalin)----------	374.
Dinoseb (Dinitrophenol)----------	200.
[illegible]	[illegible]

TABLE 26B.--Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, CYCLIC—Continued	
Dichloro-α,α,α-trifluorotoluene	248.
2,5-Diethoxyaniline (Amino diethyl ether of hydroquinone).	368.
p-Diethoxybenzene (Diethyl ether of hydroquinone)	368.
Diisopropylphenyl hydroperoxide	200.
2,5-Dimethoxyaniline (Amino dimethyl ether of hydroquinone).	368.
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	368.
Dioxane (1,4-Diethylene oxide)	490.
Diphenylaminechlorarsine	240.
Ergosterol	127.
Ethyl benzoylacetate	404, 481.
Ethylene carbonate	298.
Ethylene glycol monophenyl ether	350, 490.
Ethylene glycol terpinyl ether	200.
Ethylenethiourea	520.
Ethyl hydrocaffeate (Ethyl 3,4-dihydroxyhydrocinnamate).	292.
o-Ethylphenylguanidine	168.
Fenchone	211.
*Flotation reagents:	
Dicresyldithiophosphoric acid	509.
Dicresyldithiophosphoric acid, ammonium salt	509.
Dicresyldithiophosphoric acid, sodium salt	9.
3,4-Dihydro-2-mercapto-4,4,6-trimethylpyrimidine	240.
Di-o-tolylthiourea	168, 374, X.
p-Formylacetanilide	481.
Rosin amine	200.
Rosin amine ethylene oxide condensate	200.
Thiocarbanilide (Diphenylthiourea)	168, 374, 421, 509.
Furan derivatives:	
Furfural (2-Furaldehyde)	219.
Furoic acid	219.
Tetrahydrofurfuryl alcohol	219, 248.
Gallic acid, tech	177, 441.
Gasoline antioxidants and inhibitors:	
p-Amino-n-butylphenol	374.
p-Aminoisobutylphenol	374.
Di-sec-butyl-p-phenylenediamine	374.
N,N'-Disalicylidene-1,2-propanediamine	374.
All other	368.
*Hexamethylenetetramine, tech	225, 374, 449, 452.
Hydrocinnamic acid	292.
6-Hydroxy-3-methyl-5-(1-methoethynyl)coumarane	240.
Isoborneol nonperfume grade	374.
*Lubricating oil additives:	
Alicyclic compounds, sulfurized	508.
Alkylphenols, mixed	240.
Cyclohexanol derivatives	248.
2,6-Di-tert-butyl-p-cresol	240, 264.
2,2'-Dihydroxy-5,5'-di-tert-octylphenol monosulfide, barium salt.	509.
Disulfide, liquid	248.
High-molecular-weight hydrocarbons	508.
Metal phenolates	298.
Petroleum sulfonate, calcium salt	471.
Sulfone	248.
All other	168, 248.
p-Menthane	211.
p-Menthyl hydroperoxide	200.
p-Methoxyphenol	292, 368.
Methylcyclohexanol	248.
2,2'-Methylenebis[4-chlorophenol](Dichlorophene)	397.
2,2'-Methylenebis[3,4,6-trichlorophenol](Hexachlorophene).	397.
Methyl terpinyl ether	200.
4-Methyl-5-thiazole-ethanol	222.
Morpholine	298, 350, 490.
*Naphthenic acid salts:	
Aluminum naphthenate	193, 486.
Cadmium naphthenate	553.
*Calcium naphthenate	115, 119, 190, 193, 250, 425, 478, 486, 507, 553.
*Cobalt naphthenate	115, 119, 190, 193, 250, 425, 478, 486, 507, 553.
*Iron naphthenate	193, 425, 478, 486, 507, 553.
*Lead naphthenate	115, 119, 182, 190, 193, 250, 425, 478, 486, 507, 553.
Lithium naphthenate	553.
Magnesium naphthenate	190.
*Manganese naphthenate	115, 119, 190, 193, 250, 425, 478, 486, 507, 553.
Mercury naphthenate	193.
Nickel naphthenate	193, 425, 553.
Strontium naphthenate	553.

TABLE 26B.--Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
*Naphthenic acid salts--Continued	
*Zinc naphthenate	115, 119, 190, 193, 250, 425, 478, 486, 507, 553.
All other	507.
*Organic mercury compounds:	
o-Chloromercuriphenol (o,p-Hydroxyphenylmercuric chloride), tech.	523.
Di(phenylmercuri)ammonium acetate	556.
Ethylmercurithiosalicylic acid, sodium salt (Thimerosal).	243.
Phenyl mercuric o-benzosulfimide	523, 562.
Phenyl mercuric borate	231, 523.
Phenyl mercuric carbonate	556.
Phenyl mercuric hydroxide	231, 523, 562.
Phenyl mercuric linoleate	556.
Phenyl mercuric nitrate	231.
Phenyl mercuric salicylate	562.
Phenyl mercuric stearate	562.
Phenyl mercuric triethanol ammonium lactate	556.
Phenyl mercuric urea	231.
Pyridyl mercuric acetate (Acetoxymercuripyridine)	441.
Pyridyl mercuric chloride	441.
Pyridyl mercuric stearate	441.
Phenylphosphoric acid, disodium salt	275.
*Photographic chemicals:	
*Benzotriazole	164, 448, 523.
Catechol (Pyrocatechin)	240.
Chlorobenzotriazole	164.
*p-Diazo-N,N-diethylaniline, zinc chloride salt	164, 385, 523.
p-Diazo-N-ethyl-N-hydroxyethylaniline, zinc chloride salt.	385.
p-Diazo-N-hydroxyethyl-N-methylaniline, zinc chloride salt.	164, X.
2,5-Dibutoxybenzanilide diazonium chloride, zinc chloride double salt.	523.
N,N-Diethyl-p-phenylenediamine hydrochloride	164, 368, 385, 523.
N,N-Diethyltoluene-3,4-diamine monohydrochloride	368.
2,5-Dihydroxybenzenesulfonic acid (Hydroquinonesulfonic acid), sodium salt.	448.
N,N-Dimethyl-p-phenylenediamine diazonium zinc chloride.	523.
N-Ethyl-N-hydroxyethyl-p-phenylenediamine diazonium zinc chloride.	523.
N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate	164, 523, X.
N-Ethyl-N-(β-methanesulfonamidoethyl)toluene-2,5-diamine sulfate.	368.
Hydroquinone (Hydroquinol)	173, 368, 413.
N-(Hydroxyphenyl)glycine	385, 448.
p-Methylaminophenol sulfate (Metol)	177, 419, 448.
5-Methylbenzotriazole	448.
2-Methylthiazoline	164.
6-Nitrobenzimidazole	164, 448.
N-Phenyl-p-phenylenediamine diazonium sulfate	523.
Trimethylbenzoxazole	164.
All other	164, 523, X.
Phthalic acid, lead salt, dibasic	470.
Pinene	384.
Pinene mercaptan	374.
Polyethylene glycol terephthalate	374.
Propylcyclohexanol	248.
Pyrogallol (Pyrogallic acid)	177, 441.
p-Quinone	177, 368.
*Research chemicals:	
Bilirubin	531.
Cyclohexyl bromide	477.
Diallylcatechol	240.
Phenylguanidine derivatives	509.
Thiophene derivatives	169.
2,3,5-Triphenyltetrazolium chloride	192, 257.
All other	144, 164, 192, 357, 384, 411, 448, 508, 511, 523, 531, X.
*Rosin acid salts:	
Aluminum resinate	454.
Calcium lead resinate	134.
*Calcium resinate	134, 154, 425, 454, 486.
*Cobalt resinate	119, 154, 183, 250, 425, 486.
Copper resinate	[illegible]
Iron resinate	[illegible]
Lead resinate	119, 425, 454, 486.
*Manganese resinate	119, 154, 425, 454, 486.
Zinc resinate	[illegible]
All other	[illegible]
Salicylanilide	176.

TABLE 28B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, CYCLIC--Continued	
Salicylic acid, lead salt	470.
Sulfosalicylic acid	222, 511.
*Tanning materials, synthetic:	
Bisphenol-formaldehyde, bisulfite type	509.
Lignosulfonic acid, magnesium salt	44.
Lignosulfonic acid, sodium salt	44.
*1-Naphthalenesulfonic acid, formaldehyde condensate and salt.	168, 330, 512.
*2-Naphthalenesulfonic acid, formaldehyde condensate and salt.	364, 421, 422, 509.
*2-Naphtholsulfonic acid, formaldehyde condensate and salt.	512.
Phenol-formaldehyde, sulfonated	512.
Polymethylene phenylbiguanide	509.
Styrene-maleic anhydride interpolymer, partial sodium salt.	168, 374.
Sulfonyldiphenylsulfonic acid formaldehyde condensate.	481.
1,2,3,4-Tetrahydronaphthalene (Tetralin)	374.
5,6,5',6'-Tetrahydroxy-3,3,3',3'-tetramethyl-1,1'-spiro-bisindane.	240.
Tetraphenyl tin	168, 248.
Textile chemicals, other than surface-active agents:	
Phenol, sulfurated	481.
Phenolthiosulfonic acid	481.
Protalbiaic acid mixture	232.
Pyridine and stearamide condensation product (Zelan).	374.
Thiophene	251.
Thiophenol	243, 448.
o-Tolylbiguanide	168.
Tri-tert-amylphenyl phosphite	168.
N-Trichloromelamine	458.
Trifluorotoluene (Benzotrifluoride)	248.
Trioxane	X.
Triphenyl phosphite	168.
o-Xenylbiguanide	168.
MISCELLANEOUS CHEMICALS, ACYCLIC	
*Acetaldehyde	148, 260, 267, 368, 374, 446, 490, 552.
Acetaldehyde ammonia (1-Aminoethanol)	148, 297, 490.
Acetamide	443.
*Acetic acid, synthetic, 100%	148, 267, 368, 446, 490, 552.
*Acetic acid salts:	
*Aluminum acetate	222, 443, 490, 509, 512.
Aluminum subacetate	222.
Ammonium acetate	222, 392, 443.
Barium acetate	392, 443.
Cadmium acetate	222, 392, 443.
Calcium acetate	222, 392, 443.
Chromium acetate	119, 486, 509.
Cobalt acetate	119, 250, 392, 486.
Copper acetate	119, 222, 490.
Lead acetate	392, 425, 443, 451.
*Lead subacetate	222, 392, 443.
Lead tetraacetate	149.
Magnesium acetate	119, 392, 443, 486.
Manganese acetate	486.
Mercuric acetate	392, 443.
Nickel acetate	119, 392, 486.
*Potassium acetate	222, 392, 443, 490.
Sodium acetate	369, 392, 443, 443, 451, 490.
Zinc acetate	222, 392, 443, 486, 490.
*Acetic anhydride, 100%:	
From ethylene	490.
From ketene	490.
From recovered acetic acid by the vapor-phase process.	200, 267.
From acetic acid (other than recovered) by the vapor-phase process.	200, 368.
Acetin:	
Mono	256, 295, 481.
Di	256.
Tri	256, 368.
*Acetone:	
*By fermentation	148, 312, 406, 446.
From isopropyl alcohol	264, 368, 475, 490.
All other	267, 552.
Acetonitrile	490.
Acetylacetone (2,5-Hexanedione)	490.
Acetylacetone (2,4-Pentanedione)	490.

TABLE 28B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Acetyl chloride	448, X.
Acrylic acid	364, 455.
Acrylic acid, calcium salt	364, 509.
Acrylic acid esters, above ethyl	364.
Acrylonitrile	509.
Adipic acid	374.
Adiponitrile	X.
Aldol (Acetaldol)	490.
Alkyl acid phosphate and salts	168.
Alkyl succinic anhydride	335.
Allyl alcohol	264, 490.
N-Allylglycine	498.
Allyl isothiocyanate, comm	523.
Aluminum isopropoxide (Aluminum isopropylate)	67, 368.
*Amines:	
Allylamine	523.
n-Butylamine, mono	490, 520.
Coconut oil amine	510.
Decylamine	510.
Diallylamine	523.
Di-n-butylamine	490, 520.
Diethylamine	183, 490, 520.
N',N'-Diethyl-1,4-pentanediamine (Novoldiamine)	183, 374.
N,N-Diethyl-1,3-propanediamine	509.
Diisobutylamine	520.
Diisopropylamine	520.
Dimethylamine	364, 374, 446.
β-Dimethylamine	168.
Dimethylamine sulfate	364.
N,N-Dimethyl-1,3-propanediamine	509.
Di-n-propylamine	520.
Dodecylamine	510.
Ethylamine, mono	490, 520.
Ethylenediamine	490.
Hexadecylamine	510.
Hexamethylenediamine	374.
3,3'-Iminobispropylamine	509.
Isobutylamine	520.
Isopropylamine	446, 490, 520.
Methylamine, mono	364, 446.
1-Methylhexylamine (2-Heptylamine) sulfate	386.
Octadecylamine	510.
Octylamine	364, 490, 510.
Polyethylenamines	490.
Propylenediamine	490.
Soybean oil amine	510.
Tallow amine	510.
Tallow amine, hydrogenated	510.
Tetradecylamine	510.
Tributylamine	520.
Triethylamine	490, 520.
Trimethylamine	364, 374, 446.
All other	364, 509.
2-Amino-1-butanol	446.
Aminoguanidine sulfate	481.
2-Amino-2-(hydroxymethyl)-1,3-propanediol (Tris (hydroxymethyl)aminomethane).	446.
2-Amino-2-methyl-1,3-propanediol	446.
2-Amino-2-methyl-1-propanol	446.
2-Amino-2-methyl-1-propanol hydrochloride	518.
2-Amino-2-methyl-1-propyl phosphate	518.
*Amyl acetates, 90%:	
Primary:	
Normal	148, 374.
Active	374.
Isoamyl	251, 297, 374, 406, 446.
Mixed isomers	520.
*Amyl alcohols, 100%:	
Crude fusel oil	446.
Refined fusel oil	148, 374, 406, 446.
Primary:	
Normal (n-Butylcarbinol)	520.
Active (2-Methylbutanol-1)	520.
Isoamyl (3-Methylbutanol-1)	374, 406, 446.
Mixed	520.
Secondary:	
Pentanol-2 (Methylpropylcarbinol)	520, X.
Pentanol-3 (Diethylcarbinol)	490.
Mixed	520.
Tertiary Amyl (2-Methylbutanol-2)	520, 520.
Amyl ether	520.
Amyl mercaptan (1-Pentanethiol)	520.

TABLE 26B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Amyl potassium sodium phosphate	168.
Anelaic acid	497.
Behenic acid	290.
*Bis(2-chloroethyl) ether (Dichlorodiethyl ether), all grades.	298, 350, 490, 516.
Bis(chloroisopropyl) ether (Dichloroisopropyl ether)	350, 490, 516.
Boron fluoride ethyl ether complex	443, 486.
N-Bromoacetamide	149.
N-Bromosuccinimide (Succinibromimide)	149, 421.
*Butyl acetates, 90%:	
Normal	148, 368, 374, 404, 446, 490.
Iso	368.
Secondary	X.
Butyl (mono) acid orthophosphate	347.
*Butyl alcohols, 100%:	
Primary:	
*Normal (n-Propylcarbinol)	148, 312, 368, 404, 446, 490, 552.
Iso (Isopropylcarbinol)	267, 374, 490, 552.
Mixed	267.
Secondary (Methylethylcarbinol)	264, X.
Tertiary (Trimethylcarbinol)	264.
Butylene glycol	267.
Butyl ether (Di-n-butyl ether)	490.
tert-Butyl hydroperoxide	264, 272.
Butyl lactate	446.
tert-Butyl peroxide (Di-tert-butyl peroxide)	264, 272.
Butyraldehyde	368, 490.
Butyraldehyde oxime	421.
Butyric acid	368, 490, 552.
Butyric anhydride	368, 490.
Butyryl chloride	248.
Capric acid (n-Decylic acid)	359.
Caproic acid	350, 490.
Caprolactam (2-Oxohexamethylenimine)	374.
Capryl chloride (Decanoyl chloride)	248.
Caprylic acid (Octanoic acid)	359.
Caprylic acid salts:	
Aluminum caprylate	162, 229, 491.
Calcium caprylate	425.
Cobalt caprylate	425.
Copper caprylate	162, 425.
Iron caprylate	425.
Lead caprylate	425.
Manganese caprylate	425.
Triethanolamine tricaprylate	481.
Zinc caprylate	162, 392, 425.
*Carbon disulfide	105, 129, 282, 350, 383, 396, 527.
Cellulose esters:	
*Cellulose acetate	60, 200, 267, 368, 374.
Cellulose acetate butyrate	368.
Cellulose acetate propionate	368.
Cellulose nitrate	200, 374.
Cellulose propionate	267.
Cellulose ethers:	
Ethyl cellulose	200, 350.
Methyl cellulose	350.
*Sodium carboxymethylcellulose, 100%	200, 302, 374, 516.
Chemical reagents	149.
*Chloral (Trichloroacetaldehyde)	374, 396, 445, 528.
Chloral alcoholate	287.
Chloroacetaldehyde dimethyl acetal	481.
Chloroacetamide	164.
*Chloroacetic acid, mono	168, 200, 248, 302, 350.
Chloroacetic acid, mono, derivatives:	
Butyl monochloroacetate	168.
Ethyl monochloroacetate	168, 292, 350.
Methyl monochloroacetate	350, 449.
Sodium monochloroacetate	248, 350.
Chloroacetone (1-Chloro-2-propanone)	448.
Chloroacetyl chloride	350.
2-Chloro-N,N-dimethylethylamine hydrochloride	329.
2-Chloro-N,N-dimethylpropylamine	386.
Chloromaleic anhydride, mono	421.
Chloromethyl methyl ether	248.
β-Chloropropionitrile	509.
N-Chlorosuccinimide (Succinichlorimide)	149, 421.
2-Chlorotriethylamine (Diethylaminoethyl chloride) hydrochloride.	329.
Chlorotrimethylsilane	163.
Citric acid, by fermentation, refined	254.

TABLE 26B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Citric acid salts:	
Ammonium citrate	222, 254, 441.
Calcium citrate	254.
Iron citrate	254, 441.
Iron ammonium citrate	254, 441.
Magnesium citrate	222.
Potassium citrate	222, 254.
Sodium citrate	222, 254.
Coconut oil amide	510.
Crotonaldehyde	368, 490.
α-Cyanoacetamide	208, 424.
*Cyanoacetic acid	208, 350, 424, 501.
β-Cyanopropylamine	368.
Decanenitrile	510.
Diacetone alcohol (4-Hydroxy-4-methyl-2-pentanone)	264, 446, 490.
Diacetone sorbose (Diisopropylidenesorbose)	222.
2-Dibutylaminoethanol	520.
Dibutylcarbamic acid, sodium salt	374.
Dibutyl maleate	446.
Dibutyl oxalate	404.
Dibutyl phosphite	356.
1,3-Dibutyl-2-thiourea	520.
Dibutyl tin methoxide	X.
Dichloroacetic acid	424.
Dichloroacetic acid, methyl ester	424.
Dichlorodiethylsilane	163.
Dichlorodimethylsilane (Dimethyl silicon dichloride)	163.
Dichloromethyl formal (Bis(2-chloroethoxy)methane)	490.
Di(1,2-epoxypropyl)amine	374.
Di(1,2-epoxypropyl)amine hydrochloride	374.
Diethoxydimethylsilane	163.
Diethoxymethylsilane	163.
2-Diethylaminoethanol	490, 520.
5-Diethylamino-2-pentanol (Novol alcohol)	320.
Diethylaminopropionitrile	509.
Diethyl sec-butylethylmalonate	521.
Diethylcarbamic acid, sodium salt	374.
Diethylcarbamyl chloride	248.
Diethyl carbonate	404.
*Diethyl diethylmalonate (Diethyl malonic ester)	386, 501, 521.
*Diethylene glycol	298, 350, 490, 516.
Diethylene glycol chloroformate	450.
Diethylene glycol diethyl ether (Bis(2-ethoxyethyl) ether).	490.
Diethylene glycol monobutyl ether (2-(2-Butoxyethoxy)ethanol).	490.
Diethylene glycol monobutyl ether acetate (2-(2-Butoxyethoxy)ethyl acetate).	490.
Diethylene glycol monoethyl ether (Carbitol) (2-(2-Ethoxyethoxy)ethanol).	490.
Diethylene glycol monoethyl ether acetate (2-(2-Ethoxyethoxy)ethyl acetate).	490.
Diethylene glycol monomethyl ether (2-(2-Methoxyethoxy)ethanol).	490.
Diethyl ethylisoamylmalonate	386, 501.
*Diethyl ethylmalonate (Ethyl malonic ester)	168, 386, 521.
Di-2-ethylhexyl phosphite	356.
Diethyl isopropylmalonate	X.
Diethyl maleate	446, 490, 509.
*Diethyl malonate (Malonic ester)	168, 350, 386, 424, 501, 521.
Diethyl l-methylbutylmalonate	386, 501.
Diethyl oxalate (Ethyl oxalate)	404, 446.
Diethyl phosphite	356.
1,3-Diethyl-2-thiourea	520.
Diglycolic acid	374.
Diisobutyl ketone (Isovalerone)	490.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)	386.
Diisopropyl peroxydicarbonate (Isopropyl percarbonate).	490.
1,3-Diisopropyl-2-thiourea	502.
N,N-Dimethylacetamide	386.
α-Dimethylaminoethanol	490, 520.
2-Dimethylaminopropionitrile	509.
Dimethyl carbonate	490.
Dimethyl disulfide	X.
N,N-Dimethylformamide	386.
Dimethylglyoxime	18, 448.
1,1-Dimethylurea	501.
1,3-Dimethylurea	208, 520.
Dioctyl acid orthophosphate	347.
Dioleyl maleate	448.
*Dipropylene glycol	267, 350, 490, 516.

TABLE 28B.--Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Dipropylene glycol methyl ether	350.
Dithiophosphoric acid esters, not listed under specified use classifications:	
Barium di(lauryl, cetyl) dithiophosphate	509.
Sodium diethyl dithiophosphate	509.
Zinc dihexyl dithiophosphate	509.
n-Dodecene	335.
Dodecylamide	510.
Epichlorohydrin	264.
Erucic acid	290.
Ethanesulfonic acid	508.
Ethanolamines:	
Mono (2-Aminoethanol)	298, 350, 441, 490.
Di (2,2'-Aminodiethanol)	298, 350, 490.
Tri (2,2',2''-Nitrilotriethanol)	298, 350, 490.
β-Ethoxypropionitrile	509.
*Ethyl acetate, 85%	148, 326, 368, 374, 404, 434, 446, 490, 552.
Ethyl acetoacetate	404, 490.
Ethyl acid pyrophosphate	347.
Ethyl acrylate	364, 490.
*Ethyl alcohol, synthetic	200, 264, 374, 475, 490, 552.
2-Ethylaminoethanol (Ethylmonoethanolamine)	520.
Ethyl ammonium phosphate	168.
Ethyl bromoacetate (Ethyl monobromoacetate)	350.
2-Ethyl-1-butanol (sec-Hexyl alcohol)	368, 490.
α-Ethylbutyraldehyde	490.
α-Ethylbutyric acid (Diethylacetic acid)	490.
α-Ethylcaproaldehyde (2-Ethylhexaldehyde)	490.
α-Ethylcaproic acid (2-Ethyl-1-hexoic acid)	490.
*α-Ethylcaproic (2-Ethyl-1-hexoic) acid salts:	
Aluminum α-ethylcaproate	507.
Cadmium α-ethylcaproate	553.
Calcium α-ethylcaproate	553.
Cobalt α-ethylcaproate	486, 507, 553.
Lead α-ethylcaproate	470, 486, 507, 553.
Manganese α-ethylcaproate	486, 507, 553.
Strontium α-ethylcaproate	553.
Zinc α-ethylcaproate	486, 553.
α-Ethylcapryl acetate	490.
Ethyl chloroformate	404.
*Ethyl cyanoacetate	208, 350, 424, 501.
Ethyldiethanolamine (2,2'-(Ethylimino)diethanol)	520.
*Ethylene, from ethyl alcohol (medicinal grade)	66, 223, 404.
N,N'-Ethylenebis(stearamide)	42.
Ethylene chlorohydrin (2-Chloroethanol)	490, 509.
Ethylene cyanhydrin (Hydracrylonitrile)	364, 509.
*Ethylene glycol	298, 350, 374, 490, 516.
Ethylene glycol diethyl ether (1,2-Diethoxyethane)	149, 490.
Ethylene glycol diformate	490.
Ethylene glycol monobutyl ether (2-Butoxyethanol)	490.
Ethylene glycol monoethyl ether (Cellosolve) (2-Ethoxyethanol).	490.
Ethylene glycol monoethyl ether acetate (2-Ethoxyethyl acetate).	490.
Ethylene glycol monomethyl ether (2-Methoxyethanol)	490.
Ethylene glycol monomethyl ether acetate (2-Methoxyethyl acetate).	490.
*Ethylene oxide	298, 350, 490.
*Ethyl ether:	
Tech	200, 240, 475, 490.
U.S.P	404, 441, 482.
Absolute	404.
Ethyl β-ethoxypropionate	364.
*Ethyl formate	79, 297, 374, 424, 432, 441, 446, 490, X.
2-Ethyl-1,3-hexanediol	490.
2-Ethyl-1-hexanol	368, 490.
Ethyl α-hydroxyisobutyrate	364.
Ethyl α-hydroxyisovalerate	364.
Ethyl lactate	509.
Ethyl mercaptan (Ethanethiol)	441.
Ethyl (mono) orthophosphate	347.
Ethyl oxybutyrate	509.
Ethyl potassium sodium phosphate	168.
Ethyl propionate	297, 374, X.
Ethyl silicate	490.
Ethyl stearoylacetate	X.
Ethyl sulfate (Diethyl sulfate)	490.
2-Ethynyl-2-butanol	343.
Fats and oils, chemically modified:	
Castor oil, acetylated	198.
Castor oil, dehydrated	198.
Castor oil, hydrogenated	290, 374.

TABLE 28B.--Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
Fats and oils, chemically modified--Continued	
Fish oil, hydrogenated	290.
Soybean oil, hydrogenated	290.
Sperm oil, hydrogenated	290.
Tallow, hydrogenated	290.
Vegetable oils, brominated	453.
All other	42, 134.
Fatty acids, chemically modified:	
α-Bromolauric acid	374.
α-Bromostearic acid	374.
Castor oil fatty acids, dehydrated	198.
Stearic acid, dehydrated	364.
*Fatty acid esters, not included with plasticizers:	
Butyl palmitate	229, 256.
Ethylene glycol mono-oleate	74, 427.
Glyceryl tall oil esters	229.
Isopropyl myristate	256, 397, 485.
Isopropyl palmitate	256, 397.
Isopropyl stearate	256.
Methyl tallow	229.
Pentaerythritol tall oil ester	229.
Polyethylene glycol castor oil ester	349.
Polyethylene glycol stearate (wax)	229, 256, 349.
Polyoxyalkylene linseed dimer ester	349.
Polyoxyethylene hydrogenated castor oil ester	349.
Fatty and synthetic higher alcohols:	
α-Bromododecyl, hexadecyl alcohol	374.
Decyl alcohol	335, 374.
3,9-Diethyl-6-tridecanol	490.
Dodecyl alcohol (Lauryl alcohol)	335, 374.
7-Ethyl-2-methyl-4-hendecanol	490.
5-Ethyl-2-nonanol	490.
1-Heptadecanol	447.
1-Hexadecanol (Cetyl alcohol)	290, 335, 374, 397.
Nonyl alcohol	374.
1-Octadecanol (Stearyl alcohol)	290, 335, 374.
1-Octadecanol, hydrogenated	248.
cis-9-Octadecen-1-ol (Oleyl alcohol)	374.
1-Tetradecanol	335.
All other	364, 374.
*Flotation reagents:	
Dithiophosphates:	
Ammonium di-sec-butyl dithiophosphate	X.
Sodium di-sec-butyl diethyl dithiophosphate	X.
Sodium di-sec-butyl dithiophosphate	X.
Sodium diethyl dithiophosphate	509.
Sodium diisopropyl dithiophosphate	X.
Sodium and potassium dihexyl dithiophosphate	509.
Fatty amine salts:	
Butylammonium oleate	520.
Coconut oil amine acetate	510.
Hexadecylamine acetate	510.
Mixed soybean amine-nitrile	510.
Octadecylamine acetate	510.
Soybean amine acetate	510.
Tall oil amine acetate	510.
Tallow amine acetate	510.
Tallow amine acetate, hydrogenated	510.
Quaternary ammonium compounds:	
Methylene bis(diethyloctadecylammonium sulfate)	491.
All other	491.
Xanthates:	
Potassium amylxanthate	350, 509.
Potassium sec-butylxanthate	350.
Potassium ethylxanthate	350.
Potassium isopropylxanthate	350.
Potassium pentasolamylxanthate	350.
Sodium n-butylxanthate	[illegible]
Sodium sec-butylxanthate	X.
Sodium ethylxanthate	350, 509.
Sodium isopropylxanthate	350, X.
*Formaldehyde, 37% HCHO by weight	125, 133, 168, 225, 2[illegible], 2[illegible], 280, [illegible], [illegible], [illegible], 424, 446, 449, 452.
Formamide	[illegible]
*Formic acid, 90%	[illegible], 374, 441, 44[illegible].
*Formic acid salts:	
Aluminum formate	[illegible], 490, 512.
Ammonium formate	441.
Chromic formate	491.
Nickel formate	119, 486.
Potassium formate	320.
*Sodium formate, crude	200, 34[illegible], 44[illegible].

TABLE 248.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Formic acid salts--Continued	
*Sodium formate, refined	222, 392, 441, 443.
*Fumaric acid	404, 421, 509.
Gases (poisonous, tear, etc.): Phosgene (Carbonyl chloride).	248, 450.
Gluconic acid, tech	254.
Glucose polyglycol ether	349.
Glycerol, synthetic	264.
Glycerol α-chlorohydrin (3-Chloro-1,2-propanediol)	292, 368, 448.
Glycerol dichlorohydrin (1,3-Dichloro-2-propanol)	264, 448.
Glycine (Aminoacetic acid) tech	208.
Glycolic acid (Hydroxyacetic acid)	374.
Glycolonitrile	364, 509.
Glyoxal	490.
Guanidine carbonate	498, 511.
Guanidine hydrochloride	330, 498, 509, X.
Guanidine phosphate	509.
Guanidine stearate	X.
4-Guanyl-1-isonitrosoguanyl-1-tetrazene	X.
*Halogenated hydrocarbons:	
1-Bromobutane (n-Butyl bromide)	330, 479.
2-Bromobutane (sec-Butyl bromide)	479, X.
Bromochloromethane	268, 329.
1-Bromo-3-chloropropane (Trimethylenechlorobromide)	20, 330.
*Bromoethane (Ethyl bromide)	329, 350, 501, 521.
1-Bromohexadecane (Cetyl bromide)	350, 479.
1-Bromo-3-methylbutane (Isoamyl bromide)	501.
1-Bromo-2-methylpropane (Isobutyl bromide)	350.
1-Bromo-octadecane	374, 481.
1-Bromopentane (n-Amyl bromide)	350, 448, 479.
2-Bromopentane (1-Methylbutyl bromide)	168, 386, 448, 479, 521.
1-Bromopropane (n-Propyl bromide)	350, 479.
2-Bromopropane (Isopropyl bromide)	350, X.
3-Bromopropene (Allyl bromide)	350, 479, 523.
Bromotrifluoromethane	374.
*Carbon tetrachloride	236, 350, 396, 527.
*Chlorinated paraffins:	
Less than 35% chlorine	248, X.
35%-64% chlorine	200, 236, 248, 418.
65% or more chlorine	236.
Chlorinated propane	248.
1-Chlorobutane (n-Butyl chloride)	490.
1-Chloro-1,1-difluoroethane	443.
2-Chloro-1,1-difluoroethane	443.
Chloro'fluoromethane	374.
*Chloroethane (Ethyl chloride):	
Tech	200, 350, 374, 412.
U.S.P	264, 350.
*Chloroform:	
Tech	27, 70, 350, 374.
U.S.P	27, 70, 350, 374.
*Chloromethane (Methyl chloride):	
Crude	104, 374.
Refined, refrigerant grade	70, 104, 350, 374.
1-Chloro-3-methylbutane (Isoamyl chloride)	386, 479.
2-Chloro-2-methylpropane (tert-Butyl chloride)	448, 479.
1-Chloropentane (n-Amyl chloride)	479.
Chloropentanes (Amyl chlorides), mixed	520.
1-Chloropropane (n-Propyl chloride)	479.
2-Chloropropane (Isopropyl chloride)	350.
3-Chloropropene (Allyl chloride)	264.
Chlorotrifluoroethylene	374.
Chlorotrifluoromethane	374.
Dibromodifluoromethane	374.
1,2-Dibromoethane (Ethylene dibromide)	268, 350, 396, 483.
Dibromomethane (Methylene bromide)	350.
1,3-Dibromopropane (Trimethylene dibromide)	350.
1,4-Dichlorobutane	374.
Dichlorodifluoromethane	374.
*1,2-Dichloroethane (Ethylene dichloride)	236, 268, 298, 350, 364, 412, 490, 516.
Dichlorofluoromethane	374.
*Dichloromethane (Methylene chloride):	
Crude	70, 350.
Refined, refrigerant grade	70, 350, 374.
Dichloropentanes, mixed	520.
1,2-Dichloropropane (Propylene dichloride)	516.
Dichlorotetrafluoroethane	374.
1,1-Difluoroethane	443.
Diiodomethane (Methylene iodide)	243.
Dodecyl chloride	335.
Hexachlorobutadiene	248.
Hexachloroethane	350.

TABLE 248.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951--Continued*

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC--Continued	
*Halogenated hydrocarbons--Continued	
*Iodoethane (Ethyl iodide), all grades	222, 448, 479, 523.
Octyl bromide	293.
Pentachloroethane	374.
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	350.
1,1,2,2-Tetrachloroethane (Acetylene tetrachloride)	374.
*Tetrachloroethylene (Perchloroethylene)	236, 248, 350, 374, 450.
1,1,1-Trichloroethane (Methyl chloroform)	350.
1,1,2-Trichloroethane (Vinyl trichloride)	490.
*Trichloroethylene	86, 239, 350, 374, 396.
Trichlorofluoromethane	374.
1,2,3-Trichloropropane	264.
Trichlorotrifluoroethane	374.
*Vinyl chloride, monomer	35, 221, 236, 350, 455, 490.
*Vinylidene chloride, monomer	350.
All other halogenated hydrocarbons	248, 479, 516.
2-Heptanone (Methyl amyl ketone)	490.
n-Hexadecane	335, 374.
1-Hexadecene	335.
Hexamethylene adipamide (Nylon monomer)	374.
Hexamethylene diammonium adipate	374.
Hexyl alcohol	490.
n-Hexyl ether	490.
Hydrogenated tallow amide	510.
α-Hydroxyisobutyronitrile (Acetone cyanohydrin)	364, 374, 509.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris(hydroxymethyl)nitromethane).	446.
N-Hydroxymethylstearamide (N-Methylolstearamide)	374.
β,β'-Iminodipropionitrile	509.
Inositol hexanitrate	349.
Isethionic acid (2-Hydroxyethanesulfonic acid)	481.
Isoamyl (mono) orthophosphate	347.
Isoamyl octyl orthophosphate	347.
Isobutyraldehyde	374.
Isobutyric acid	492.
Isobutyronitrile	509.
Iso-octyl alcohol (6-Methyl-1-heptanol)	475.
Isopropanolamines:	
Monoisopropanolamine	350, 490.
Diisopropanolamine	490.
Triisopropanolamine	490.
Mixed	490.
*Isopropyl acetate	368, 446, 490, X.
*Isopropyl alcohol (Isopropanol):	
90%	552.
91%	475, 490, X.
95%-99%	X.
100%	264.
Isopropyl chloroformate	450.
Isopropyl ether	264, 479, 490, X.
Isovaleric acid	297, 492.
*Lactic acid, 100%:	
*Edible	113, 355, 374, 409.
*Medicinal	113, 374.
*Tech	113, 355, 374, 409.
*Lactic acid salts:	
Calcium lactate	355, 409.
Ferrous lactate	162, 355, 441.
*Sodium lactate	183, 222, 355, 491.
Strontium lactate	162, 222, 441.
Lauric acid	359.
Lauroyl peroxide	272.
Lauryl chloride:	
Crude	374, 481, 485.
Refined	248, 374, 481.
Lead soaps from oxidized hydrocarbons	259.
Levulinic acid	252.
*Linoleic acid salts:	
Ammonium linoleate	250, 425.
*Calcium linoleate	119, 134, 250, 425, 460, 486.
*Cobalt linoleate	119, 183, 250, 425, 486.
Copper linoleate	907.
Iron linoleate	486.
*Lead linoleate	134, 183, 250, 425, 486, 907.
Lead manganese linoleate	183, 250, 425, 486.
*Manganese linoleate	119, 134, 250, 425, 486.
Lubricating oil additives:	
Chloronaphthe xanthate	168.
Octyl formaldehyde	264.
Oxidized hydrocarbons	259.
Phosphorous derivatives of high-molecular-weight hydrocarbons.	508.
Sulfurized thiolhane	199.

TABLE 26B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Maleic acid	421, 513, 531.
Maleic acid salts:	
Lead maleate, normal	470.
Lead maleate, tribasic	470.
*Maleic anhydride	168, 421, 490, 497, 509.
Malic acid	421, 531.
Malonic acid	295, 350.
Mannitol	349.
Mannitol benzoacetate	349.
Mannitol hexanitrate	295, 349.
Mesityl oxide	264, 490.
Methacrylates, above methyl	364, 374.
Methacrylic acid	364, 374.
*Methanol, synthetic	123, 260, 267, 289, 374, 446, 490, 552.
2-(Methoxymethoxy)ethanol	374.
Methoxytriglycol acetate	490.
Methyl acetate	150, 490, X.
Methyl acetone acetal	260.
Methyl acid pyrophosphate	347.
Methyl acrylate, monomer	364.
Methylal (Dimethoxymethane)	267.
Methylaminodimethyl acetal	168.
β-Methylaminopropionitrile	509.
Methyl cellosolve	399.
Methyl cyanoacetate	350, 434.
Methylenebis(iminopropionic acid)	502.
Methylenecitric acid	320.
Methyl ether (Dimethyl ether)	374.
Methyl ethyl ketone (2-Butanone)	264, 368, 490, 552, X.
Methyl ethyl ketone peroxide	272.
Methyl ethyl ketoxime (2-Butanone oxime)	423.
Methyl formate	374.
N-Methylglucosamine	374.
Methyl glycolate (Methyl hydroxyacetate)	374.
Methyl α-hydroxyisobutyrate	364.
1-Methylisobutylcarbinol (4-Methyl-2-pentanol)	264, 490.
1-Methylisobutylcarbinyl acetate (4-Methyl-2-amyl acetate).	374, 490.
Methyl lactate	113.
*Methyl magnesium bromide	149.
Methyl methacrylate, monomer	364, 374.
2-Methyl-2-nitro-1,3-propanediol	446.
2-Methyl-2-nitro-1-propanol	446.
Methylolurea, mono (Hydroxymethylurea)	374.
2-Methyl-2,4-pentanediol (Hexylene glycol)	264, 490.
4-Methyl-2-pentanone (Methyl isobutyl ketone)	264, 490.
Methyl polyethanolamine	481.
Methyl succinate	297.
Methyl sulfate (Dimethyl sulfate)	374.
N-Methylthiourea	183, 481.
Methyl vinyl ether	481.
Myristic acid	359.
Myristoyl chloride	481.
2-Nitro-1-butanol	446.
Nitroethane	446.
Nitromethane	446.
1-Nitropropane	446.
2-Nitropropane	446.
Nylon (Polyhexamethylene adipamide)	374.
1-Octadecene	335.
n-Octane	335.
Octanenitrile	510.
*1-Octanol	335, 374.
*2-Octanol	364, 467.
1-Octene	335.
2-Octene	335.
Octylamide	510.
Octyl (mono) acid orthophosphate	347.
Octyl oleyl malate	168.
Oleamide (Octadecene amide)	510.
*Oleic acid salts:	
Aluminum oleate	250, 425.
Barium zinc oleate	486.
Chromium oleate	486.
Chromium tin oleate	486.
Copper oleate	250.
*Lead oleate	250, 486, 507.
Oleoyl chloride	481.
*Oxalic acid	121, 254, 347, 443.
Oxalic acid salts:	
Ammonium oxalate	254, 392, 441, 443.
Calcium oxalate	347.

TABLE 26B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Oxalic acid salts--Continued	
Ferric ammonium oxalate	254.
Ferric oxalate	254.
Ferrous oxalate	162, 523.
Potassium binoxalate	222, 392.
Potassium oxalate	254, 392, 443.
Sodium oxalate	222, 347, 392, 441, 443.
Oxidized hydrocarbons, other than lubricating oil additives.	259.
β,β'-Oxydipropionitrile	509.
*Palmitic acid salts:	
Aluminum palmitate	229, 460, 507.
Zinc palmitate	229, 460, 507, 509.
*Palmityl chloride	136, 481, X.
*Paraformaldehyde	260, 267, 374, 449.
Paraldehyde (Paracetaldehyde)	490.
Pelargonic acid (Nonanoic acid)	397, 437.
*Pentaerythritol	200, 280, 446, 449, 465.
*Pentaerythritol tetranitrate	200, 280, 374.
2-Pentanone (Methyl propyl ketone)	X.
Pine oil, synthetic	200.
Polyacrylonitrile	374.
Polyethylene glycol	298, 350, 490.
*Polyglycerol	168, 238, 485, X.
Polyglycol dissetate	256.
Polymethacrylic acid	374.
Polypropylene glycol	350, 490.
Propionaldehyde	374, 552.
Propionic acid	368, 374, 552.
Propionic acid salts:	
Calcium propionate	374.
Sodium propionate	374.
Zinc propionate	392.
Propionic anhydride	267, 490.
Propionyl chloride	248, 292.
n-Propyl acetate	404, X.
n-Propyl alcohol (Propanol)	267, 374, 552.
Propylene, from coke-oven gas	374.
α-Propylene chlorohydrin (1-Chloro-2-propanol)	490.
*Propylene glycol (1,2-Propanediol)	267, 350, 374, 490, 516.
Propylene glycol dipropionate	256.
Propylene glycol glycolate	553.
Propylene glycol methyl ether	350.
Propylene glycols, methyl ethers, mixtures	350.
*Propylene oxide	267, 350, 490.
Propyl isobutyl acetate	446.
Propyl mercaptan (1-Propanethiol)	448.
Pyruvic acid	498.
Rare sugars	531.
*Research chemicals:	
Creatine and creatinine	531.
Grignard reagents	149.
Hydrocarbons, aliphatic	335.
Inulin	531.
Mercaptans	479, 523.
Nitriles	479, 509.
Phosphoglyceric acid, barium salt	257.
All other	149, 192, 257, 411, 479, 492, 509, 511, 523, 531, 534.
Ricinoleic acid salts:	
Ammonium ricinoleate	198.
Barium ricinoleate	198, 470.
Zinc ricinoleate	198.
All other	198.
*Sarcosin (N-Methylaminoacetic acid)	183, 374, 481.
Sebacic acid	364, 467.
Semicarbazide hydrochloride	164, 523.
Sequestering agents:	
(Diethylenetrinitrilo)pentaacetic acid	339.
(Ethylenedinitrilo)tetraacetic acid (Ethylenediaminetetraacetic acid).	339.
(Ethylenedinitrilo)tetraacetic acid, disodium salt.	339.
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt.	339, 393, 481.
(Ethylenedinitrilo)tetraacetic acid, trisodium salt.	339.
Silicones, fluids and greases	163.
Sodium ethoxide	168, 404, 501.
Sodium ethyl oxalacetate	404.
Sodium formaldehydebisulfite	523.
*Sodium formaldehydesulfoxylate	309, 364, 374, 512.
Sodium methoxide (Sodium methylate)	141, 335, 501, X.
Sodium sorbitol borate	349.

TABLE 28B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Sorbitol	349.
Soya nitrile	510.
Stearamide (Octadecanamide)	374, 510.
*Stearic acid salts:	
Aluminum hydroxystearate	229.
*Aluminum monostearate	30, 106, 229, 441, 460, 507.
*Aluminum distearate	30, 106, 118, 229, 441, 460, 491, 507, 509.
*Aluminum tristearate	30, 106, 134, 229, 441, 460, 491, 507, 509.
Ammonium stearate	53, 229, 441, 460, 491, 507.
*Barium stearate	30, 106, 229, 349, 441, 460, 491, 507.
Cadmium stearate	30, 507.
*Calcium stearate	30, 106, 229, 440, 441, 460, 491, 507, 509.
Ferrous stearate	491.
*Lead stearate	229, 460, 470, 486, 507.
Lead stearate, dibasic	470, 491, 507.
Lithium hydroxystearate	229, 507.
Lithium stearate	106, 229, 507.
*Magnesium stearate	30, 106, 229, 441, 460, 491, 507, 509.
Manganese stearate	507.
*Zinc stearate	30, 106, 222, 229, 440, 441, 460, 491, 507, 509.
Stearonitrile (Octadecanenitrile)	510.
Stearoyl chloride	481.
Succinic acid	421.
Succinic anhydride	168, 292, 421.
Succinimide	149, 421, 448.
Succinonitrile	509.
Sucrose octaacetate	490.
Tall oil fatty acid, chloride	481.
*Tall oil (Linoleic-rosin acid) salts:	
Ammonium tallate	486.
Barium zinc tallate	486.
*Calcium tallate	119, 193, 486, 553.
*Cobalt tallate	119, 119, 193, 250, 425, 486, 507, 553.
Copper tallate	250, 486.
Glycerol zinc tallate	553.
*Iron tallate	250, 486, 507.
*Lead tallate	119, 119, 193, 250, 425, 486, 507, 553.
Lead manganese tallate	119, 486.
*Manganese tallate	119, 119, 193, 250, 425, 486, 507, 553.
Zinc tallate	119, 486.
Tallow fatty acid chloride	481.
Tartaric acid salts, Nonmedicinal:	
Ammonium tartrate	222.
Potassium tartrate	222, 527.
Sodium tartrate	222.
Tetraethoxysilane	163.
Tetramethylene glycol	350.
Tetramethyl lead	374, 412.
Tetraglycine hydroperiodide	458, 521.
Tetramethylsilane	163.
Textile chemicals other than surface-active agents:	
Anhydrohexitol adipate	349.
Ethanolamine-formaldehyde	364.
Sorbitol polyglycol ether polyethylene glycol	349.
Thiamine hydrobromide	X.
Thioacetic acid (Sulfoacetic acid)	448.
β,β-Thiodipropionitrile	509.
Thioglycerol	304.
Thioglycolic acid (Mercaptoacetic acid)	304.
Thioglycolic acid salts:	
*Ammonium thioglycolate	39, 73, 304, 523.
Calcium thioglycolate	304.
Sodium bismuth thioglycolate	295.
Sodium thioglycolate	243, 304.
Thiourea	168.
Triallyl cyanurate	509.
Tributyl phosphite	356, 374.
Trichloroethylsilane (Ethyl silicon trichloride)	163, 168.
Trichlorohexadecylsilane (Hexadecyltrichlorosilane)	163.
Trichloromethylsilane (Methyltrichlorosilane)	163.
Trichloro-octadecylsilane (Octadecyltrichlorosilane)	163.
Triethanolamine phosphate	453.
Triethoxymethylsilane	163.
Triethylene glycol	350, 490.
Triethylene glycol dichloride (2-(2-Chloroethoxy)-ethyl 2-chloroethyl ether).	490.
Tri-2-ethylhexyl phosphite	356.
Triethyl orthoformate	168, 424.
Triethyl phosphite	356.
Tri-iso-butylene succinic anhydride	168.
Trimethylene chlorohydrin (3-Chloro-1-propanol)	479.
Trimethyl orthoformate	424.

TABLE 28B.--*Synthetic organic chemicals: Miscellaneous chemicals for which United States production or sales were reported, identified by manufacturer, 1951*--Continued

Chemical	Manufacturers' identification numbers (according to list in table 27)
MISCELLANEOUS CHEMICALS, ACYCLIC—Continued	
Tripropylene glycol	350.
Tripropylene glycol, methyl ether	350.
Urea, solid	289, 374.
Urea in feed compounds	289, 374.
Urea in solid fertilizer	374.
Urea in urea-ammonia solution	289, 374.
Urea o-phosphate	168.
γ-Valerolactone (γ-Hydroxyvaleric acid, lactone)	168.
Vinyl acetate, monomer	374, 490.
*Zinc formaldehydesulfoxylate	309, 364, 370, 374, 512.

Directory of Manufacturers

The Directory of Manufacturers lists the companies that report their production of synthetic organic chemicals to the United States Tariff Commission. The name of each manufacturer is preceded by an identification number.

For 1951 the Directory of Manufacturers lists 564 companies (see table 27). This is 6 less than the number that reported in 1950. Some of the companies that report production of synthetic organic chemicals consume their entire output in further manufacturing.

The Directory of Manufacturers lists the companies in two ways. Section 1 lists them in numerical order, the identification number for each company having been assigned in the order in which the Commission received its schedule. This system makes it unnecessary to wait until all the schedules are returned before assigning the identification numbers, and greatly speeds the preparation of the tables in part III. Section 2 lists the companies in alphabetical order.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*

SECTION 1. NUMERICAL DIRECTORY

[Names of synthetic organic chemical manufacturers who reported production or sales to the United States Tariff Commission for 1951 are listed below in order of their identification numbers as used in tables in part III. Section 2 of this table lists these manufacturers alphabetically and gives their offices and plant addresses]

No.	Name of company
1	Carolina Aniline & Extract Co.
2	Bayberton Div. of Bayberton-Manhattan, Inc.
3	Foster-Newton Co.
4	Spaulding Fibre Co., Inc.
5	Aloe Oil & Chemical Corp.
6	Hartman-Leddon Co.
7	Red Spot Paint Co.
8	Southside Chemical Co., Inc.
9	Kennecott Copper Corp. (Chino Mines Div.).
10	Knoedler Chemical Co.
11	Hyman, Westcott & Dunning, Inc.
12	M & M Wood Working Co.
13	Calabama Chemical Co.
14	Ogden Color & Chemical Works.
15	Morden-Wild Corp.
16	Cadet Chemical Corp.
17	Lever, C., Co., Inc.
18	Richmond Chemical Corp.
19	Siddall, George F., Co., Inc.
20	Edison, Thomas A., Inc. (Medical Gas Div.).
21	All-Tex Specialties Co.
22	American Bio-Synthetics Corp.
23	Elizabethtown Consolidated Gas Co.
24	Magnolia Petroleum Co.
25	American Marietta Co. (Herbert-Schorndorfer Co. Div.).
26	Amalgamated Chemical Corp.
27	Brown Co.
28	Cromwell Chemical Co., Inc.
29	Kalido Corp.
30	Standard Agricultural Chemicals, Inc.
31	Herbert-Schier Chemical Co.
32	Chaffardon, J.
33	Crosby Chemicals, Inc.
34	Hanna Industrial Finishes Co.
35	Pathfinder Chemical Corp., subsidiary of Goodyear Tire & Rubber Co.
36	Poughkeepsie Dyestuff Corp.
37	Sipe, James B., & Co.
38	Sonneborn, L., Sons, Inc.
39	Summit Chemical Products.
40	Swope Oil & Chemical Co.
41	Van Dyk & Co., Inc.
42	Carlisle Chemical Works, Inc.
43	Franco, Campbell & Darling, Inc.
44	Marathon Corp. (Chemical Div.).
45	Remington Arms Co., Inc.
46	Advance Paint Co.
47	Arco Co.
48	Harbor Plywood Corp.
49	Rinshed-Mason Co.
50	Synthetic Products Co.
51	Lehon-Bradley Co.
52	Agee Chemical Co., Inc.
53	Farrington, W. W., Estate of
54	Keystone Paint & Varnish Corp.
55	Cabot, Samuel, Inc.
56	Watertown Manufacturing Co.
57	Ironsides Co.
58	Fearless Color Co., Inc.
59	Van Camp Laboratories, Div. of Van Camp Sea Food Co., Inc.
60	American Viscose Corp.
61	Boston Varnish Co.
62	Dow Chemical Co. (Styrene Div.) (R. R.).[1]
63	Fuller, W. P., & Co.
64	General Motors Corp. (AC Spark Plug Div.).
65	Brumbaar Chemical Co., Inc.
66	Liquid Carbonic Corp.
67	Ortho Chemical Corp.
68	Spicer-Corbart Co.
69	Ad-Co Color Corp.
70	Belle Alkali Co.
71	Monty Resinoers, Inc.
72	Dakota Briquette & Tar Products, Inc.
73	Haley Products Co.
74	Hall, C. P., Co. of Illinois.
75	Inland Alkaloid Co.
76	Loste Co.
77	Marrow's, Inc.
78	Mason, R. M., & Co.
79	Northwestern Chemical Co.
80	Pine Bluff Chemical Co., subsidiary of Food Machinery & Chemical Corp.
81	Werner Drug & Chemical Co.
82	Witte, John H., & Son.
83	Humble Oil & Refining Co. (R. R.).[1]
84	Purcosine, Inc.
85	Rubber Corp. of America.
86	Niagara Alkali Co.
87	Johnstonn, H., & Co., Inc.
88	Hagging, James, & Son, Inc.
89	American Polymer Corp.
90	American Marietta Co.
91	Vita-Var Corp.
92	Blackman Brands, Inc.
93	Williams, C. K., & Co.
94	Keystone Color Works, Inc.
95	Copolymer Corp. (R. R.).[1]
96	Atlas Wall Paper Mills, Inc.
97	Hamilton Laboratories, Inc.
98	Oil & Chemical Products, Inc.
99	American Alcolac Corp.
100	Huron Milling Co.
101	Burroughs-Wellcome & Co. (U.S.A.), Inc.
102	Norda Essential Oil & Chemical Co., Inc.
103	Union Oil Co. of California.
104	Ansul Chemical Co.
105	Old Hickory Chemical Co.
106	Parsons, H. W., Imports & Plymouth Organic Laboratories, Inc.
107	Searle, G. D., & Co.
108	Washburn, T. F., Co.
109	Wetherill, George D., Varnish Co.
110	Nutrition Research Laboratories, Inc.
111	Armstrong Cork Co.
112	Chemico, Inc.
113	Clinton Foods, Inc.
114	Falk & Co.
115	Ferro Chemical Corp.
116	Gilman Paint & Varnish Co.
117	Devoe & Raynolds Co. (Jones-Dabney Div.).
118	Kentucky Color & Chemical Co.
119	McGean Chemical Co.
120	Hoches Butane Products Co. (R. R.).[1]
121	Oldbury Electro-Chemical Co.
122	Pennsylvania Industrial Chemical Corp.
123	Richardson Co.
124	Soluol Chemical Co., Inc.
125	Spencer Chemical Co.
126	Springfield Gas Light Co.
127	Standard Brands, Inc.
128	W. S. Oil Co.
129	Wheeler, Reynolds & Stauffer.
130	Baltimore Paint & Color Works.
131	General Color Co., Inc.
132	Lever Bros. Co.
133	Borden Co. (Chemical Div.).
134	Devoe & Raynolds Co., Inc.
135	Eaton Laboratories, Inc. (Norwich Pharmacal Co.).
136	Genesee Research Corp.
137	Cutter Laboratories.
138	Laurel Soap Manufacturing Co., Inc.
139	Scholler Bros., Inc.
140	Commonwealth Color & Chemical Co.
141	Mathieson Chemical Corp.
142	Snyder Chemical Corp.
143	Standard-Toch-Chemicals, Inc.
144	Sterling Drug, Inc. (Bayer Co. Div.).
145	Appleton Coated Paper Co.
146	Bates Chemical Co.
147	George, F. D., Co.
148	Publishers Industries, Inc.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*.--Continued

No.	Name of company
149	Arapahoe Chemicals, Inc.
150	Colton Chemical Co.
151	Long, Charles H., Jr., Co.
152	Marbon Corp.
153	Pratt & Lambert, Inc.
154	California Flaxseed Products Co.
155	Lovey, Fred'k. H., Co., Inc.
156	National Starch Products, Inc.
157	Reliance Varnish Co., Inc.
158	Ritter Chemical Co., Inc.
159	Salvo Chemical Corp.
160	American Viscose Corp. (Sylvania Div.).
161	Chemical Process Co.
162	Chemo-Puro Manufacturing Corp.
163	Dow Corning Corp.
164	Fairmont Chemical Co., Inc.
165	Firestone Tire & Rubber Co. (R. R.).[1]
166	Hampden Color & Chemical Co.
167	Solvent Chemical Co., Inc.
168	Monsanto Chemical Co.
169	Faboo Products, Inc.
170	Seattle Gas Co.
171	Wyeth, Inc.
172	Goodrich, B. F., Chemical Co. (Div. of B. F. Goodrich Co.) (R. R.).[1]
173	Carus Chemical Co., Inc.
174	Bowne, Frank, Co.
175	Ciba Pharmaceutical Products, Inc.
176	Warner-Jenkinson Manufacturing Co.
177	Zinsser & Co., Inc.
178	Neresite & Chemical Corp.
179	Specific Pharmaceuticals, Inc.
180	Marx, Max, Color & Chemical Co.
181	Western Dry Color Co.
182	California Ink Co., Inc.
183	Sterling Drug, Inc. (Hilton-Davis Chemical Co. Div.).
184	Osborn, C. J., Co.
185	Whittemore-Wright Co., Inc.
186	Atlantic Refining Co.
187	Bristol Laboratories, Inc.
188	Coopers Creek Chemical Corp.
189	Corn Products Refining Co.
190	General Petroleum Corp.
191	Miles Laboratories, Inc.
192	Montclair Research Corp.
193	Muodex Products Co., Inc.
194	Scherer, R. P., Corp.
195	Standard Ultramarine Co.
196	Gulf Oil Corp.
197	Ohio-Apex, Inc., subsidiary of Food Machinery & Chemical Corp.
198	Baker Castor Oil Co.
199	Continental Oil Co.
200	Hercules Powder Co.
201	Hopera Chemical Co., Inc.
202	Gamma Chemical Corp.
203	Quaker Chemical Products Corp.
204	Firestone Tire & Rubber Co. (Firestone Plastics Div.).
205	Indoil Chemical Co.
206	Atomic Basic Chemicals Corp.
207	Atlas Refinery, Inc.
208	Benzol Products Co.
209	Irvington Varnish & Insulator Co.
210	Eastern Tar Products Corp.
211	Newport Industries, Inc.
212	Pennsylvania Salt Manufacturing Co.
213	Pittsburgh Coke & Chemical Co.
214	U. S. Rubber Co. (R. R.).[1]
215	Ansbacher-Siegle Corp.
216	Lueders, George, & Co.
217	Merichem Co.
218	Nonweiler, A. F., Co.
219	Quaker Oats Co.
220	Standard Chlorine Chemical Co.
221	U. S. Rubber Co. (Naugatuck Chemical Div.).
222	Merck & Co., Inc.
223	Ohio Chemical & Surgical Equipment Co., Div. of Air Reduction Co., Inc.
224	Standard Naphthalene Products Co., Inc.
225	Durez Plastics & Chemicals, Inc.
226	General Tire & Rubber Co. (R. R.).[1]
227	Cabot, Godfrey L., Inc.
228	Lakeside Laboratories, Inc.
229	Napco Chemical Co., Inc.
230	Taylor Fibre Co.
231	Berk, F. W., & Co., Inc.
232	Chemical Manufacturing Co., Inc.
233	Carwin Co.
234	Cities Service Refining Co. (R. R.).[1]
235	Continental-Diamond Fibre Co.
236	Diamond Alkali Co.
237	General Mills, Inc.
238	Goodyear Tire & Rubber Co.
239	Hooker-Detrex, Inc.
240	Koppers Co., Inc.
241	Marblette Corp.
242	McCloskey Varnish Co.
243	Medical Chemicals Corp.
244	Neville Co.
245	Schenectady Varnish Co., Inc.
246	Southern Dyestuff Corp.
247	Stange, Wm. J., Co.
248	Hooker Electrochemical Co.
249	Kolker Chemical Works, Inc.
250	Shepherd Chemical Co.
251	Socony-Vacuum Oil Co., Inc.
252	Staley, A. E., Manufacturing Co.
253	Citro Chemical Co. of America.
254	Pfizer, Charles, & Co., Inc.
255	Griffin Chemical Co.
256	Kessler Chemical Co., Inc.
257	Schwarz Laboratories, Inc.
258	Shell Oil Co., Inc.
259	Alox Corp.
260	Cities Service Oil Co.
261	Kali Manufacturing Co.
262	Richards Chemical Works, Div. of Onyx Oil & Chemical Co.
263	Roseville Dyestuff Corp.
264	Shell Chemical Corp.
265	Wilmot & Cassidy, Inc.
266	Bird & Son, Inc.
267	Celanese Corp. of America.
268	Eaton Chemicals, Inc.
269	Federal Color Laboratories, Inc.
270	Greenwood Textile Supply Co.
271	Kendall Refining Co.
272	Novadel-Agene Corp. (Lucidol Div.).
273	Oil States Petroleum Co., Inc.
274	Oxford Corp.
275	Paul-Lewis Laboratories, Inc.
276	Peters Chemical Co.
277	Libby-Owens-Ford Glass Co. (Plaskon Div.).
278	Procter & Gamble Co.
279	Sumner Chemical Co., Inc.
280	Trojan Powder Co.
281	Upjohn Co.
282	Barium Reduction Corp.
283	Colgate-Palmolive-Peet Co.
284	Maywood Chemical Works.
285	Carpenter-Morton Co.
286	Mart Products Corp.
287	Montrose Chemical Co.
288	Trenton Chemical Co.
289	Allied Chemical & Dye Corp. (Solvay Process Div.).
290	Archer-Daniels-Midland Co.
291	Dykes Co.
292	Fries Bros., Inc.
293	Hyman, Julius, & Co.
294	Permutit Co.
295	R. S. A. Corp.
296	Westinghouse Electric Corp.
297	Fritzsche Bros., Inc.
298	Jefferson Chemical Co., Inc.
299	Marlowe-Van Loan Corp.
300	Marwear Paint Co.
301	Wilson Organic Chemicals, Inc.
302	Buckeye Cotton Oil Co.
303	Dawe's Vitamins, Inc.
304	Evans Chemetics, Inc.
305	Florasynth Laboratories, Inc.
306	Forster Chemical Co., Inc.
307	Johnson, Chas. Eneu, Co.
308	Parke, Davis & Co.
309	Royce Chemical Co.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company
310	United States Finishing Co.[1]
311	United States Procaine Co., Inc.
312	Vestern Condensing Co.
313	Polychemical Co.
314	Ruberoid Co.
315	Selby-Hill Chemical Co.
316	Collett Wood Hitchcock, Inc.
317	Glyco Products Co., Inc.
318	Monarch Oil & Chemical Co.
319	Purex Corp., Ltd.
320	Winthrop-Stearns, Inc.
321	Perkins Glue Co.
322	American Alkyd Industries.
323	Bio-Process Co., Inc.
324	Cyclo Chemical Corp.
325	Dodge & Olcott, Inc.
326	Ford Motor Co.
327	Harvyd Chemicals, Inc.
328	Inland Steel Container Co.
329	Michigan Chemical Corp.
330	New York Color & Chemical Co., Inc., Div. of American Cyanamid Co.
331	Sharp & Dohme, Inc.
332	United Piece Dye Works.
333	Vanderbilt Chemical Corp.
334	Bruder, M. A., & Sons, Inc.
335	Humphrey-Wilkinson, Inc.
336	Manchmeijer, A., Jr., Inc.
337	Pan American Refining Corp.
338	Plastics Engineering Co.
339	Alrose Chemical Co.
340	American Chemical Paint Co.
341	Mead, Johnson & Co.
342	Pittman-Moore Co., Div. of Allied Laboratories, Inc.
343	Reilly Tar & Chemical Corp.
344	Republic Creosoting Co.
345	Southern Textile Chemical Corp.
346	Union Bay State Chemical Co., Inc.
347	Victor Chemical Works.
348	White & Bagley Co.
349	Atlas Powder Co.
350	Dow Chemical Co.
351	Esso Standard Oil Co.
352	Lobeo Chemical Corp.
353	Minnesota Paints, Inc.
354	Phillips Petroleum Co. (R. E.).[1]
355	Sheffield Farms Co., Inc. (Chemical Div.).
356	Virginia-Carolina Chemical Corp.
357	Bios Laboratories, Inc.
358	Central Chemical Corp.
359	El Dorado Oil Works.
360	Humble Oil & Refining Co.
361	Lewis, E. L., & Co., Inc.
362	Pacific Paint & Varnish Co.
363	Patent Chemicals, Inc.
364	Rohm & Haas Co.
365	Schwalsy Laboratories, Inc.
366	Specialty Resins Co.
367	Synthetic Chemicals, Inc.
368	Tennessee Eastman Co.
369	Tennessee Products & Chemical Corp.
370	Watson-Park Co.
371	Wolff-Alport Chemical Corp.
372	Meta Chemical Corp.
373	Standard Chemical Products, Inc.
374	duPont de Nemours, E. I., & Co., Inc.
375	Lobles-Debrulle, Inc.
376	Minol Laboratories.
377	Organics, Inc.
378	Alfrasine Corp.
379	Fine Colors Co.
380	Interchemical Corp. (Textile Colors Div.).
381	Synvar Corp.
382	Uhlich, Paul, & Co., Inc.
383	Baker, J. T., Chemical Co. (Taylor Chemical Div.).
384	Glidden Co.
385	Industrial Dyestuff Co.
386	Lilly, Eli, & Co.
387	Malbie Laboratories, Inc.
388	Southern Sizing Co.
389	Sun Oil Co.
390	American Aniline & Extract Co., Inc.
391	Arabol Manufacturing Co.
392	Baker, J. T., Chemical Co.
393	Barsworth Chemical Co.
394	Cook Paint & Varnish Co.
395	Crown Tar & Chemical Works, Inc.
396	Westvaco Chemical Div., subsidiary of Food Machinery and Chemical Corp.
397	Givaudan Corp.
398	Holland Color & Chemical Co.
399	LaMotte Chemical Products Co.
400	Ottol Oil Co.
401	Seydel Chemical Co.
402	Stepan Chemical Co.
403	Texas Co.
404	U. S. Industrial Chemicals Co., Div of National Distillers Products Corp.
405	Valentine & Co., Inc.
406	Verona Chemical Co.
407	Velsicol Corp.
408	Young Aniline Works, Inc.
409	American Maise Products Co.
410	Catalin Corp. of America.
411	Delta Chemical Works.
412	Ethyl Corp.
413	General Foods Corp. (Maxwell House Div.).
414	General Tire & Rubber Co.
415	Miramol Chemical Co., Inc.
416	May, Otto B., Inc.
417	Farley & Loetscher Manufacturing Co.
418	Union Carbide & Carbon Corp. (Haloxax Products Div.).
419	Verona Chemical Co.
420	Pure Oil Co.
421	Allied Chemical & Dye Corp. (National Aniline Div.).
422	Dewey & Almy Chemical Co.
423	Arnold-Hoffman & Co., Inc.
424	Hay-Price Chemicals, Inc.
425	Strosen-Reuter, Fred'k A., Inc.
426	Augusta Chemical Co.
427	California-Spray Chemical Co.
428	Deery Products Co.
429	Interchemical Corp. (Finishes Div.).
430	Portland Gas & Coke Co.
431	Richfield Oil Corp.
432	Ritter, F., & Co.
433	Merrell, Wm. S., Co.
434	Shawinigan Resins Corp.
435	Cookerille, F. O., Co.
436	Dexter Chemical Corp.
437	Emery Industries, Inc.
438	Belle Chemical Co., Inc.
439	Cleary, W. A., Corp.
440	Crown Div. of Joseph Turner & Co.
441	Mallinckrodt Chemical Works.
442	Burn, O. F., Co.
443	Allied Chemical & Dye Corp. (General Chemical Div.).
444	Althouse Chemical Co., Inc.
445	Cincinnati Chemical Works, Inc.
446	Commercial Solvents Corp.
447	Dye Specialties Corp., Inc.
448	Eastman Kodak Co.
449	Hayden Chemical Corp.
450	Pittsburgh Plate Glass Co.
451	Sherwin-Williams Co.
452	Union Carbide & Carbon Corp. (Bakelite Div.).
453	Dominion Products, Inc.
454	Meyer, J., & Sons.
455	Goodrich, B. F., Co. (B. F. Goodrich Chemical Co. Div.).
456	Hoffmann-LaRoche, Inc.
457	Smith, Kline & French Laboratories.
458	Wallace & Tiernan Products, Inc.
459	Hexagon Laboratories, Inc.
460	Leffingwell Chemical Co.
461	Verley Chemical Co., Inc.
462	American Aniline Products, Inc.
463	Brooklyn Color Works, Inc.
464	Collway Colors, Inc.
465	Delaware Chemicals, Inc.
466	Grand Rapids Varnish Corp.
467	Hardesty Chemical Co., Inc.
468	International Minerals & Chemical Corp.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company
469	Haas & Waldstein Co.
470	National Lead Co.
471	Ornite Chemical Co.
472	Trubek Laboratories.
473	Thomaset Colors, Inc.
474	Vitro Chemical Works, Inc.
475	Esso Standard Oil Co. (Louisiana Div.).
476	General Electric Co. (Chemical Dept.).
477	Imperial Paper & Color Corp. (Pigment Color Div.).
478	Standard Oil Co. of California.
479	Columbia Organic Chemicals Co., Inc.
480	Rado Products, Inc.
481	General Aniline & Film Corp. (General Aniline Works Div.).
482	Squibb, E. R., & Sons.
483	Ethyl-Dow Chemical Corp.
484	Altis Chemical Co.
485	Emulsol Corp.
486	Marshaw Chemical Co.
487	Industrial Products, Inc.
488	Shelly Oil Co.
489	Sun Chemical Corp. (Pigment Div.).
490	Union Carbide & Carbon Corp. (Carbide and Carbon Chemicals Div.).
491	Sun Chemical Corp. (Warwick Chemical Co. Div.).
492	Berkeley Chemical Corp.
493	Lakins, J. S. & W. R., Inc.
494	Harmon Color Works, Inc.
495	Sick & Co., Inc.
496	Penick, S. B, & Co.
497	Reichhold Chemicals, Inc.
498	American Cyanamid Co. (Calco Chemical Div.).
499	Thiokol Corp.
500	Felton Chemical Co., Inc.
501	Geme's Chemical Works, Inc.
502	Pharma Chemical Corp.
503	Childs Pulp Colors, Inc.
504	Magruder Color Co., Inc.
505	Sinclair Refining Co. (Petroleum Chemicals Div.).
506	White & Hodges, Inc.
507	Witco Chemical Co.
508	Standard Oil Co. of Indiana.
509	American Cyanamid Co.
510	Armour & Co. (Chemical Div.).
511	Fine Organics, Inc.
512	Wolf, Jacques, & Co.
513	Allied Chemical & Dye Corp. (Barrett Div.).
514	Colt's Manufacturing Co.
515	Sonoco Products Co.
516	Wyandotte Chemicals Corp.
517	Alkydol Laboratories, Inc.
518	Synthron, Inc.
519	DePaul Chemical Co., Inc.
520	Sharples Chemicals, Inc.
521	Abbott Laboratories.
522	van Ameringen-Haebler, Inc.
523	Edwal Laboratories, Inc.
524	Marco Chemicals, Inc.
525	Sanden Chemical Works, Inc.
526	Schering Corp.
527	Stauffer Chemical Co.
528	Montrose Chemical Corp. of California.
529	American Cyanamid Co. (Lederle Laboratories Div.).
530	Midland Industrial Finishes Co.
531	Pfanstiehl Chemical Co.
532	Wannamaker Chemical Co., Inc.
533	Mearl Corp.
534	Sapon Laboratories.
535	Wilson Laboratories (Div. of Wilson Co., Inc.).
536	Vitamins, Inc.
537	Jennison-Wright Corp.
538	Lapeco Chemicals, Inc.
539	DeFree Co.
540	Fisher Scientific Co. (Elmer & Amend Div.).
541	Old Colony Tar Co., Inc.
542	Tar Distilling Co., Inc.
543	Bush, W. J., & Co., Inc.
544	Thompson Chemicals Corp.
545	Lewis Tar Products Co.
546	Conetwise Petroleum Co.
547	Berkshire Color & Chemical Manufacturing Corp.
548	Sinclair & Valentine Co.
549	Geigy Co., Inc.
550	New York Quinine & Chemical Works, Inc.
551	Trask, Arthur C., Co.
552	Stanolind Oil & Gas Co.
553	Advance Solvents & Chemical Corp.
554	Alliance Color & Chemical Co.
555	Lemer Chemical Corp.
556	Calloway Chemical Co.
557	Kentucky Synthetic Rubber Corp. (R. E.).[1]
558	Midland Synthetic Rubber Co. (R. E.).[1]
559	Schieffelin & Co.
560	Houghton, E. F., & Co.
561	Leatex Chemical Co.
562	Metalsalts Corp.
563	Salem Oil & Grease Co.
564	Smith-New York Co., Inc.

[1] R. E. in parentheses following the name of a company indicates U. S. Government plant operated for the Office of Rubber Reserve.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

SECTION 2. ALPHABETICAL DIRECTORY

[Names of synthetic organic chemical manufacturers who reported production or sales to the United States Tariff Commission for 1951 are listed below alphabetically, together with their identification numbers as used in tables in part III. Section 1 of this table lists these manufacturers in order of their identification numbers]

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
521	Abbott Laboratories	14th St. and Sheridan Rd., North Chicago, Ill.
69	Ad-Co Color Corp	66 Lister Ave., Newark 5, N. J.
46	Advance Paint Co	601-35 Kentucky Ave., Indianapolis 7, Ind.
553	Advance Solvents & Chemical Corp	245 5th Ave., New York 16, N. Y. (Jersey City, N. J.).
5	Alco Oil & Chemical Corp	Trenton Ave. and William St., Philadelphia 34, Pa.
378	Alframine Corp	155 E. 44th St., New York 17, N. Y. (Los Angeles, Calif., and Paterson, N. J.).
517	Alkydol Laboratories, Inc	3242 S. 50th Ave., Cicero 50, Ill.
554	Alliance Color & Chemical Co	33 Avenue P, Newark 5, N. J.
	Allied Chemical & Dye Corp.:	
513	Barrett Div	40 Rector St., New York 6, N. Y. (Fairfield, Ala.; Chicago, Ill.; Detroit, Mich.; Edgewater, N. J.; Buffalo, N. Y.; and Bethlehem and Frankford, Pa.).
443	General Chemical Div	40 Rector St., New York 6, N. Y. (Claymont, Del.; Baton Rouge, La.; Buffalo, N. Y.; and Marcus Hook, Pa.).
421	National Aniline Div	40 Rector St., New York 6, N. Y. (Buffalo, N. Y.).
289	Solvay Process Div	Syracuse 1, N. Y. (Geddes, N. Y.; South Point, Ohio; and Hopewell, Va.).
21	All-Tex Specialties Co	65 Meadow St., Warwick, R. I.
299	Alox Corp	3943 Buffalo Ave., Niagara Falls, N. Y.
339	Alrose Chemical Co	P. O. Box 1294, Providence 6 (Cranston), R. I.
444	Althouse Chemical Co., Inc	540 Pear St., Reading, Pa.
484	Altis Chemical Co	136 Liberty St., New York 6, N. Y. (Rochelle Park, N. J.).
26	Amalgamated Chemical Corp	Ontario and Rorer St., Philadelphia 34, Pa.
99	American Alcolac Corp	3440 Fairfield Rd., Baltimore 26, Md.
322	American Alkyd Industries	Broad and 14th Sts., Carlstadt, N. J.
390	American Aniline & Extract Co., Inc	Venango and F Sts., Philadelphia 34, Pa.
462	American Aniline Products, Inc	50 Union Sq., New York 3, N. Y. (Lock Haven, Pa.).
22	American Bio-Synthetics Corp	710 W. National Ave., Milwaukee 4, Wis.
340	American Chemical Paint Co	Ambler, Pa.
509	American Cyanamid Co	30 Rockefeller Plaza, New York 20, N. Y. (Azusa, Calif.; Wallingford, Conn.; Bound Brook, Warners, and Woodbridge, N. J.; Charlotte, N. C.; and Bridgeville, Pa.).
498	Calco Chemical Div	Easton Turnpike, Bound Brook, N. J.
529	Lederle Laboratories Div	30 Rockefeller Plaza, New York 20 (Pearl River), N. Y.
409	American Maize Products Co	100 E. 42d St., New York 17, N. Y.
90	American Marietta Co	3400 13th Ave. SW., Seattle, Wash.
25	Ferbert-Schorndorfer Co. Div	12815 Elmwood Ave., Cleveland 11, Ohio.
89	American Polymer Corp	101 Foster St., Peabody, Mass. (Illiopolis, Ill.).
60	American Viscose Corp	1617 Pennsylvania Blvd., Philadelphia 3 (Meadville), Pa.
160	Sylvania Div	Fredericksburg, Va.
215	Ansbacher-Siegle Corp	92 Chestnut Ave., Rosebank, Staten Island, N. Y.
104	Ansul Chemical Co	1 Stanton St., Marinette, Wis.
52	Apex Chemical Co., Inc	225 W. 34th St., New York 1, N. Y. (Elizabethport, N. J.).
145	Appleton Coated Paper Co	1200 N. Meade St., Appleton, Wis.
391	Arabol Manufacturing Co	110 E. 42d St., New York 17, N. Y.
149	Arapahoe Chemicals, Inc	2800 Pearl St., Boulder, Colo.
290	Archer-Daniels-Midland Co	2191 W. 110th St., Cleveland, Ohio (Wyandotte, Mich.).
47	Arco Co	7301 Bessemer Ave., Cleveland, Ohio.
510	Armour & Co., Chemical Div	1355 W. 31st St., Chicago 9 (McCook), Ill.
111	Armstrong Cork Co	W. Liberty St., Lancaster (Pittsburgh), Pa.
423	Arnold, Hoffman & Co., Inc	55 Canal St., Providence 1, R. I.
186	Atlantic Refining Co	260 S. Broad St., Philadelphia 1, Pa. (Port Arthur, Tex.).
349	Atlas Powder Co	9th and Market Sts., Wilmington, Del. (Atlas Point, Del., and Reynolds, Pa.).
207	Atlas Refinery, Inc	142 Lockwood St., Newark 5, N. J.
96	Atlas Wall Paper Mills, Inc	P. O. Box D, Coal City, Ill.
206	Atomic Basic Chemicals Corp	Hays P. O. Box 373, Pittsburgh, Pa.
426	Augusta Chemical Co	Box 660, Augusta, Ga.
198	Baker Castor Oil Co	120 Broadway, New York 5, N. Y. (Los Angeles, Calif.; Bayonne and Jersey City, N. J.).
392	Baker, J. T., Chemical Co	N. Broad St., Phillipsburg, N. J.
383	Taylor Chemical Div	N. Broad St., Phillipsburg, N. J. (Penn Yan, N. Y.).
130	Baltimore Paint & Color Works	2325 Annapolis Ave., Baltimore 30, Md.
282	Barium Reduction Corp	P. O. Box 6097, S. Charleston, W. Va.
146	Bates Chemical Co	Scottdale Rd., Lansdowne, Pa.
70	Belle Alkali Co	Belle, W. Va.
438	Belle Chemical Co., Inc	534 Pearl St., Reading, Pa.
208	Benzol Products Co	237 South St., Newark (Piscataway), N. J.
231	Berk, F. W., & Co., Inc	Park Pl. E., Wood-Ridge, N. J.
492	Berkeley Chemical Corp	Berkeley Heights, N. J.
547	Berkshire Color & Chemical Manufacturing Corp.	Pine and Cherry Sts., Delawanna, N. J.
393	Bersworth Chemical Co	875 Waverly St., Framingham, Mass.
495	Bick & Co., Inc	1820-50 N. 12th St., Reading, Pa.
323	Bio-Process Co., Inc	P. O. Box 1411, Joliet, Ill.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
357	Bios Laboratories, Inc	17 W. 60th St., New York 23, N. Y.
266	Bird & Son, Inc	East Walpole (Norwood), Mass.
92	Blackman Brands, Inc	Leuning St., S. Hackensack, N. J. (Long Island City, N. Y.).
71	Booty Resineers, Inc	112 Jefferson St., Newark, Ohio.
133	Borden Co., Chemical Div	350 Madison Ave., New York 17, N. Y. (Union, Ill.; Bainbridge, N. Y.; Kernersville, N. C.; Springfield, Ore.; Philadelphia, Pa.; and Seattle, Wash.).
61	Boston Varnish Co	114 2d St., Everett, Mass.
174	Bownes, Frank, Co	305 Eastern Ave., Chelsea 50, Mass.
187	Bristol Laboratories, Inc	P. O. Box 657, Syracuse 1, N. Y.
463	Brooklyn Color Works, Inc	481 Morgan Ave., Brooklyn 22, N. Y.
27	Brown Co	650 Main St., Berlin, N. H.
334	Bruder, M. A., & Sons, Inc	52d and Grays Ave., Philadelphia 43, Pa.
302	Buckeye Cotton Oil Co	P. O. Box 599, Cincinnati 1, Ohio (Memphis, Tenn.).
31	Burkart-Schier Chemical Co	Chestnut St. at 13th, Chattanooga 2, Tenn.
101	Burroughs-Wellcome & Co. (U.S.A.), Inc	Main St., Tuckahoe 7, N. Y.
543	Bush, W. J., & Co., Inc	19 W. 44th St., New York 36, N. Y. (Linden, N. J.).
227	Cabot, Godfrey L., Inc	77 Franklin St., Boston 10, Mass.
55	Cabot, Samuel, Inc	141 Milk St., Boston 9 (Chelsea), Mass.
16	Cadet Chemical Corp	205 Chicago St., Buffalo 5, N. Y.
13	Calabama Chemical Co	P. O. Box 147, Huntsville 1 (Redstone Arsenal), Ala.
154	California Flaxseed Products Co	3135 E. 26th St., Los Angeles 23, Calif.
182	California Ink Co., Inc	545 Sansome St., San Francisco 11 (Berkeley), Calif.
427	California-Spray Chemical Co	Lucas and Ortho Way, Richmond 4, Calif.
42	Carlisle Chemical Works, Inc	West St., Reading 15, Ohio.
1	Carolina Aniline & Extract Co	301 S. Cedar St., Charlotte 1, N. C.
285	Carpenter-Morton Co	77 Sudbury St., Boston 14 (Everett), Mass.
173	Carus Chemical Co., Inc	1375 8th St., La Salle, Ill.
233	Carwin Co	Stiles Lane, North Haven, Conn.
410	Catalin Corp. of America	1 Park Ave., New York 16, N. Y. (Calumet City, Ill.; Fords, N. J.; and Thomasville, N. C.).
267	Celanese Corp. of America	180 Madison Ave., New York 16, N. Y. (Cumberland, Md; Newark, N. J.; Rock Hill, S. C.; Bishop, Tex.; and Narrows, Va.).
358	Central Chemical Corp	P. O. Box 532, Lebanon, Pa.
32	Chaffardon, J.	209 Market St., Lynn, Mass.
232	Chemical Manufacturing Co., Inc	Megonko Rd., Ashland, Mass.
161	Chemical Process Co	901 Spring St., Redwood City, Calif.
112	Chemico, Inc	2308 E. Bailey Rd., Cuyahoga Falls, Ohio.
162	Chemo-Puro Manufacturing Corp	26-32 Skillman Ave., Long Island City 1, N. Y.
503	Childs Pulp Colors, Inc	43 Summit St., Brooklyn 31, N. Y.
175	Ciba Pharmaceutical Products, Inc	556 Morris Ave., Summit, N. J.
445	Cincinnati Chemical Works, Inc	P. O. Box 20, Evanston Sta., Cincinnati 7 (Norwood and St. Bernard), Ohio.
260	Cities Service Oil Co	Masonic Empire Bldg., Bartlesville (Tallant), Okla.
234	Cities Service Refining Co. (R. R.)[1]	716 Hodges St., Lake Charles, La.
253	Citro Chemical Co. of America	Maywood Ave., Maywood, N. J.
439	Cleary, W. A., Corp	P. O. Box 749, New Brunswick, N. J.
113	Clinton Foods, Inc	Clinton, Iowa.
546	Coastwise Petroleum Co	1127 Munsey Bldg., Baltimore 2, Md. (Goodhope, La.).
435	Cockerille, F. O.	Greenwood, Va.
283	Colgate-Palmolive-Peet Co	105 Hudson St., Jersey City 2, N. J. (Berkeley, Calif.; Jeffersonville, Ind.; Kansas City, Kans.; and Jersey City, N. J.).
316	Collett Week Nibecker, Inc	Quimby St., Ossining, N. Y.
464	Collway Colors, Inc	15 Market St., Paterson 1, N. J.
150	Colton Chemical Co	1545 E. 18th St., Cleveland 14, Ohio.
514	Colt's Manufacturing Co	P. O. Drawer 1740, Hartford 15, Conn.
479	Columbia Organic Chemicals Co., Inc	600 Capitol Pl., Columbia, S. C.
446	Commercial Solvents Corp	17 E. 42d St., New York 17, N. Y. (Agnew, Calif.; Peoria, Ill.; Terre Haute, Ind.; Harvey and Sterlington, La.; and Carlstadt, N. J.).
140	Commonwealth Color & Chemical Co	3240 Grace Ave., New York 69, N. Y.
235	Continental-Diamond Fibre Co	70 S. Chapel St., Newark, Del. (Bridgeport, Pa.).
199	Continental Oil Co	Drawer 1267, Ponca City, Okla.
394	Cook Paint & Varnish Co	P. O. Box 389, Kansas City 10, Mo.
188	Coopers Creek Chemical Corp	River Rd., W. Conshohocken, Pa.
95	Copolymer Corp. (R. R.)[1]	P. O. Box 1029, Baton Rouge 1, La.
189	Corn Products Refining Co	17 Battery Pl., New York 4, N. Y. (Argo, Ill.).
33	Crosby Chemicals, Inc	Box 32, De Ridder, La. (Picayune, Miss.).
440	Crown Div. of Joseph Turner & Co	Box 88, Ridgefield, N. J.
28	Crownoil Chemical Co., Inc	2-14 49th Ave., Long Island City, N. Y.
395	Crown Tar & Chemical Works, Inc	900 Wewatta St., Denver 4, Colo.
137	Cutter Laboratories	4th and Parker Sts., Berkeley 1, Calif.
324	Cyclo Chemical Corp	45-06 Vernon Blvd., Long Island City 1, N. Y.
72	Dakota Briquets & Tar Products, Inc	Dickinson, N. Dak.
303	Dave's Vitamins, Inc	4800 S. Richmond St., Chicago 32, Ill.
428	Dewey Products Co	120 Potter St., Cambridge 42, Mass.
465	Delaware Chemicals, Inc	50 Murray St., Staten Island 9, N. Y.
411	Delta Chemical Works	23 W. 60th St., New York 23, N. Y.
519	DePaul Chemical Co., Inc	44-27 Purvis St., Long Island City 1, N. Y.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
539	DePree Co	130 Central Ave., Holland, Mich.
134	DeVoe & Raynolds Co., Inc	Rutherford and Delancy Sts., Newark 5, N. J.
117	Jones-Dabney Div	1481 S. 11th St., Louisville 8, Ky.
422	Dewey & Almy Chemical Co	62 Whittemore Ave., Cambridge 40, Mass.
438	Dexter Chemical Corp	619 Edgewater Rd., Bronx 59, N. Y.
236	Diamond Alkali Co	300 Union Commerce Bldg., Cleveland 14, Ohio (Painesville, Ohio, and Houston, Tex.).
325	Dodge & Olcott, Inc	180 Varick St., New York 14, N. Y. (Bayonne, N. J.).
453	Dominion Products, Inc	10-40 44th Dr., Long Island City 1, N. Y.
390	Dow Chemical Co	Midland, Mich. (Pittsburg, Calif., and Freeport, Tex.).
62	Dow Chemical Co., Styrene Div.(R. R.)[1]	P.O. Box 300, Gardena (Los Angeles), Calif.
163	Dow Corning Corp	Box 592, Midland, Mich.
374	duPont de Nemours, E. I., & Co., Inc	10th and Market Sts., Wilmington 98, Del. (S. San Francisco, Calif.; Newport, Seaford, and Wilmington, Del.; Chicago, Ill.; Ft. Madison, Iowa; Louisville, Ky.; Everett, Mass.; Flint and Wyandotte, Mich.; Arlington, Carney's Point, Deepwater, Gibbstown, Grasselli, Newark, Parlin, and Perth Amboy, N. J.; Niagara Falls, N. Y.; Cleveland and Toledo, Ohio; Philadelphia, Pa.; Chattanooga, Tenn.; Houston, Orange, and Victoria, Tex.; Martinsville and Waynesboro, Va.; and Belle and Parkersburg, W. Va.).
225	Durez Plastics & Chemicals, Inc	Walck Rd., N. Tonawanda, N. Y.
447	Dye Specialties Corp., Inc	26 Journal Sq., Jersey City 6, N. J.
291	Dyham Co	2307 N. 11th St., St. Louis 6, Mo.
493	Eakins, J. S. & W. H., Inc	55 Berry St., Brooklyn 11, N. Y.
210	Eastern Tar Products Corp	Standard Oil Bldg., Baltimore 2, Md.
448	Eastman Kodak Co	343 State St., Rochester 4, N. Y.
135	Eaton Laboratories, Inc. (Norwich Pharmacal Co.).	17 Eaton Ave., Norwich, N. Y.
20	Edison, Thomas A., Inc., Medical Gas Div.	P.O. Box 15, Stuyvesant Falls, N. Y.
523	Edsel Laboratories, Inc	732 Federal St., Ringwood, Ill.
398	El Dorado Oil Works	311 California St., San Francisco 4 (Oakland), Calif.
23	Elizabethtown Consolidated Gas Co	16 W. Jersey St., Elizabeth 4, N. J.
497	Emery Industries, Inc	4300 Carew Tower, Cincinnati 2, Ohio.
483	Emulsol Corp	59 E. Madison St., Chicago 3, Ill.
480	Endo Products, Inc	84-40 101st St., Richmond Hill 18, N. Y.
351	Esso Standard Oil Co	P. O. Box 23, Linden, N. J.
475	Louisiana Div	P. O. Box 551, Baton Rouge 1, La.
268	Eston Chemicals, Inc	3100 E. 26th St., Los Angeles 23, Calif.
412	Ethyl Corp	100 Park Ave., New York 17, N. Y. (Baton Rouge, La.).
483	Ethyl-Dow Chemical Co	Midland, Mich. (Freeport, Tex.).
304	Evans Chemetics, Inc	250 E. 43d St., New York 17 (Waterloo), N. Y.
164	Fairmont Chemical Co., Inc	600 Ferry St., Newark 5, N. J.
114	Falk & Co	Rosslyn Sts., Carnegie, Pa.
417	Farley & Loetscher Manufacturing Co	7th and White Sts., Dubuque, Iowa.
53	Farrington, W. U., Estate of	Box 389, E. Greenwich, R. I.
269	Federal Color Laboratories, Inc	4633 Forest Ave., Norwood 12, Ohio.
500	Felton Chemical Co., Inc	599 Johnson Ave., Brooklyn 37, N. Y.
115	Ferro Chemical Corp	Krick Rd., Bedford, Ohio.
379	Fine Colors Co	21-29 McBride Ave., Paterson 1, N. J.
511	Fine Organics, Inc	211 E. 19th St., New York 3, N. Y.
169	Firestone Tire & Rubber Co. (R. R.)[1]	381 W. Wilbeth Rd., Akron 1, Ohio.
204	Firestone Tire & Rubber Co., Firestone Plastics Div.	P. O. Box 690, Pottstown, Pa.
540	Fisher Scientific Co., Eimer & Amend Div.	635 Greenwich St., New York 14, N. Y.
305	Florasynth Laboratories, Inc	1513 Olmstead Ave., New York 61, N. Y.
	Food Machinery & Chemical Corp.:	
197	Ohio-Apex, Inc	Nitro, W. Va.
80	Pine Bluff Chemical Co	100 Niagara St., Middleport, N. Y. (Arsenal, Ark.).
396	Westvaco Chemical Div	161 E. 42d St., New York 17, N. Y. (Newark, Calif., and S. Charleston, W. Va.).
326	Ford Motor Co	300 Schaefer Rd., Dearborn (Iron Mountain), Mich.
306	Forster Chemical Co., Inc	Wichita, Kans.
3	Foster-Heaton Co	16 E. 5th St., Paterson 4, N. J.
43	France, Campbell & Darling, Inc	Michigan Ave., Kenilworth, N. J.
292	Frico Bros., Inc	271 Church St., New York 13, N. Y. (Bloomfield, N. J.).
297	Fritzsche Bros., Inc	76 9th Ave., New York 11, N. Y.
63	Fuller, W. P., & Co	301 Mission St., San Francisco 19, Calif.
556	Gallowhur Chemical Co	810 2d Ave., New York 17 (Ossining), N. Y.
202	Gamma Chemical Corp	60 E. 42d St., New York 17, N. Y. (Great Meadows, N. J.).
501	Gane's Chemical Works, Inc	677 5th Ave., New York 22, N. Y. (Carlstadt, N. J.).
549	Geigy Co., Inc	89-91 Barclay St., New York 8, N. Y.
481	General Aniline & Film Corp., General Aniline Works Div.	435 Hudson St., New York 14, N. Y.
131	General Color Co., Inc	24 Ave. B, Newark 5, N. J.
476	General Electric Co., Chemical Dept	1 Plastics Ave., Pittsfield, Mass. (Anaheim, Calif.; Pittsfield, Mass.; Schenectady and Waterford, N. Y.; and Coshocton, Ohio).
413	General Foods Corp., Maxwell House Div	1125 Hudson St., Hoboken, N. J.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
237	General Mills, Inc	400 2d Ave., S., Minneapolis, Minn. (Kaskuk, Iowa).
64	General Motors Corp., AC Spark Plug Div.	1300 N. Dort Highway, Flint 3, Mich.
190	General Petroleum Corp	P. O. Box 2122, Terminal Annex, Los Angeles 54, Calif.
226	General Tire & Rubber Co. (R. R.)[1]	P. O. Box 4021, Baytown, Tex.
414	General Tire & Rubber Co	1708 Englewood Ave., Akron 9, Ohio.
136	Genesee Research Corp	961 Lyell Ave., Rochester 6, N. Y.
147	George, P. D., Co	9200 N. 2d St., St. Louis 7, Mo.
116	Gilman Paint & Varnish Co	216 W. 8th St., Chattanooga 1, Tenn.
397	Givaudan Corp	109-201 Delawanna Ave., Delawanna, N. J.
384	Glidden Co	11001 Madison Ave., Cleveland 2, Ohio.
317	Glyco Products Co., Inc	26 Court St., Brooklyn 2, N. Y. (Metrium, W. Va.).
172	Goodrich, B. F., Co.: Goodrich, B. F., Chemical Co. Div. (R. R.)[1]	Rose Bldg., 2060 E. 9th St., Cleveland 15, Ohio (Port Neches, Tex., and Institute, W. Va.).
455	Goodrich, B. F., Chemical Co. Div	Rose Bldg., 2060 E. 9th St., Cleveland 15, Ohio (Louisville, Ky.; Niagara Falls, N. Y.; and Akron and Avon Lake Village, Ohio).
238	Goodyear Tire & Rubber Co	1144 E. Market St., Akron 16, Ohio.
466	Grand Rapids Varnish Corp	1350 Steele Ave., SW., Grand Rapids 2, Mich.
270	Greenwood Textile Supply Co	27 Meadow St., Apponaug, R. I.
255	Griffin Chemical Co	1000 16th St., San Francisco (Richmond), Calif.
196	Gulf Oil Corp	Gulf Bldg., Pittsburgh 30, Pa.
14	Guyan Color & Chemical Works	Box 1068, Huntington, W. Va.
73	Halby Products Co	P. O. Box 366, Wilmington 99, Del.
74	Hall, C. P., Co. of Illinois	5145 W. 67th St., Chicago 38, Ill.
97	Hamilton Laboratories, Inc	120 Patton Ave., Asheville, N. C.
166	Hampden Color & Chemical Co	5 Albany St., Springfield 1, Mass.
34	Hanna Industrial Finishes Co	99 W. Long St., Columbus 15, Ohio.
48	Harbor Plywood Corp	Box 940, Aberdeen, Wash.
467	Hardesty Chemical Co., Inc	41 E. 42d St., New York 22, N. Y. (Dover, Ohio).
494	Harmon Color Works, Inc	550 Belmont Ave., Haledon (Kearny), N. J.
486	Harshaw Chemical Co	1945 E. 97th St., Cleveland 6, Ohio.
327	Harvey Chemicals, Inc	397 W. 21st St., Holland, Mich.
286	Hart Products Corp	1440 Broadway, New York 18, N. Y.
6	Hartman-Leddon Co	5821 Market St., Philadelphia 39, Pa.
200	Hercules Powder Co	900 Market St., Wilmington 99, Del.
178	Hercelle & Chemical Co	822 S. 14th St., Manitowoc, Wis.
459	Hexagon Laboratories, Inc	3536 Pearlree Ave., New York 69, N. Y.
449	Heyden Chemical Corp	393 7th Ave., New York 1, N. Y. (Fords, Garfield, and Princeton, N. J.).
456	Hoffmann-LaRoche, Inc	324-424 Kingsland Rd., Nutley 10, N. J.
398	Holland Color & Chemical Co	P. O. Box 1001, Holland, Mich.
239	Hooker-Detrex, Inc	Buffalo Ave. & 47th St., Niagara Falls, N. Y. (Ashtabula, Ohio, and Tacoma, Wash.).
248	Hooker Electrochemical Co	Buffalo Ave. & 47th St., Niagara Falls, N. Y.
360	Houghton, E. F., & Co	303 W. Lehigh Ave., Philadelphia 33, Pa.
88	Huggins, James, & Son, Inc	239 Medford St., Malden 48, Mass.
360	Humble Oil & Refining Co	P. O. Box 2180, Houston 1 (Baytown), Tex.
83	Humble Oil & Refining Co. (R. R.)[1]	P. O. Box 4321, Baytown, Tex.
333	Humphrey-Wilkinson, Inc	DeVine St., North Haven, Conn.
100	Huron Milling Co	9 Park Pl., New York 7, N. Y. (Harbor Beach, Mich.).
293	Hyman, Julius, & Co	P. O. Box 2171, Denver 1, Colo.
11	Hynson, Westcott & Dunning, Inc	1030 N. Charles St., Baltimore 1, Md.
477	Imperial Paper & Color Corp., Pigment Color Div.	P. O. Box 231, Glens Falls, N. Y.
205	Indoil Chemical Co	910 S. Michigan Ave., Chicago, Ill. (Whiting, Ind.).
385	Industrial Dyestuff Co	P. O. Box 149, E. Providence 14, R. I.
487	Industrial Products, Inc	Box 1226, Greenville, S. C.
75	Inland Alkaloid Co	Tipton, Ind.
328	Inland Steel Container Co	6532 S. Menard St., Chicago 38, Ill.
429	Interchemical Corp.: Finishes Div	224 McWhorter St., Newark 1, N. J. (Los Angeles, Calif.; Elizabeth and Newark, N. J.; and Cincinnati, Ohio).
380	Textile Colors Div	150 Wagaraw Rd., Hawthorne, N. J.
468	International Minerals & Chemical Corp.	20 N. Wacker Dr., Chicago 6, Ill. (San Jose, Calif.; Niagara Falls, N. Y.; and Rossford, Ohio).
57	Ironsides Co	270 W. Mound St. (P. O. Box 1999), Columbus 16, Ohio.
209	Irvington Varnish & Insulator Co	6 Argyle Ter., Irvington 11 (Newark), N. J.
298	Jefferson Chemical Co., Inc	711 5th Ave., New York 22, N. Y. (Austin and Port Neches, Tex.).
537	Jennison-Wright Corp	2443 Broadway, Toledo 1, Ohio.
307	Johnson, Charles Enzu, Co	10th & Lombard Sts., Philadelphia 47, Pa.
261	Kali Manufacturing Co	4229-447 Moyer St., Philadelphia 25, Pa.
29	Kalida Corp	S. Canal St., Lawrence, Mass.
424	Kay-Fries Chemicals, Inc	180 Madison Ave., New York 16 (West Haverstraw), N. Y.
51	Kehew-Bradley Co	43 Purchase St., Boston 10, Mass.
271	Kendall Refining Co	77 W. Kendall Ave., Bradford, Pa.
9	Kennecott Copper Corp., Chino Mines Div.	Kearns Bldg., Salt Lake City 1, Utah (Hurley, N. Mex., and Garfield, Utah).
118	Kentucky Color & Chemical Co	600 W. 14th St., Louisville 12, Ky.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
357	Kentucky Synthetic Rubber Corp. (R. R.)[1]	Louisville, Ky.
256	Kessler Chemical Co., Inc.	State Rd. and Cottman Ave., Philadelphia 35, Pa.
94	Keystone Color Works, Inc.	151 W. Gay Ave., York, Pa.
54	Keystone Paint & Varnish Corp.	71 Otsego St., Brooklyn 31, N. Y.
10	Kheedler Chemical Co.	651 High St., Lancaster 1, Pa.
87	Kohnstamm, H., & Co., Inc.	83-93 Park Pl., New York 7 (Brooklyn), N. Y.
349	Kolker Chemical Works, Inc.	80 Lister Ave., Newark 5, N. J. (Houston, Tex.).
240	Koppers Co., Inc.:	
	Chemical Div.	Koppers Bldg., 430 7th Ave., Pittsburgh 19, Pa. (Berkeley Heights and Kearny, N. J.; Monaca, Oil City, and Petrolia, Pa.).
	Tar Products Div.	Koppers Bldg., 430 7th Ave., Pittsburgh 19, Pa. (Woodward, Ala.; New Haven, Conn.; Chicago and E. St. Louis, Ill.; Chalmette, La.; Everett and Westfield, Mass.; Portland, Maine; St. Paul, Minn.; St. Louis, Mo.; Kearny and Westfield, N. J.; Buffalo, Rochester, and Utica, N. Y.; Hamilton, Warren, and Youngstown, Ohio; Swedeland and Sriesvale, Pa.; East Providence, R. I.; Memphis, Tenn.; Houston, Tex.; Follansbee, W. Va.; and Carrollville, Wis.).
65	Krumbhaar Chemical Co., Inc.	24-30 Jacobus Ave., S. Kearny, N. J.
228	Lakeside Laboratories, Inc.	1707 N. North Ave., Milwaukee 1, Wis.
555	Lamar Chemical Corp.	25 Broadway, New York 4, N. Y. (Birmingham, Ala.).
399	LaMotte Chemical Products Co.	Towson 4, Md.
538	Lapsco Chemicals, Inc.	1800 Glenrose Ave., Lansing, Mich.
138	Laurel Soap Manufacturing Co., Inc.	Tioga & Thompson Sts., Philadelphia 34, Pa.
561	Lawter Chemical Co.	2722 N. Hancock St., Philadelphia 33, Pa.
332	Lebec Chemical Corp.	14066 S. Garfield Ave., Paramount, Calif.
460	Leffingwell Chemical Co.	10922 S. Santa Gertrudes, Whittier, Calif.
361	Lemke, H. L., & Co., Inc.	199 Main St., Lodi, N. J.
132	Lever Bros. Co.	80 Varick St., New York 13, N. Y.
17	Lever, C., Co., Inc.	Howard and Huntington Sts., Philadelphia 33, Pa.
155	Levey, Fred'k. H., Co., Inc.	41 E. 42d St., New York 17 (Brooklyn), N. Y.
345	Lewis Tar Products Co.	P. O. Box A, Lyons (McCook), Ill.
277	Libby-Owens-Ford Glass Co., Plashon Div.	2112 Sylvan Ave., Toledo 6, Ohio.
386	Lilly, Eli, & Co.	740 S. Alabama St., Indianapolis 6, Ind.
66	Liquid Carbonic Corp.	3100 S. Kedzie Ave., Chicago 23, Ill. (Cleveland, Ohio).
375	Loblaw-Debreille, Inc.	1841 Broadway, New York 23, N. Y.
76	Locte Co.	791 Hampden Ave., St. Paul 4, Minn.
191	Long, Chas. R., Jr., Co.	1630 W. Hill St., Louisville 10, Ky.
216	Lueders, George, & Co.	427 Washington St., New York 13 (Brooklyn), N. Y.
12	M & M Wood Working Co.	2301 N. Columbia Blvd., Portland 17, Oreg.
242	McCloskey Varnish Co.	7600 State Rd., Philadelphia 36, Pa.
119	McGean Chemical Co.	1060 Midland Bldg., Cleveland 15, Ohio.
469	Maas & Waldstein Co.	438 Riverside Ave., Newark 4, N. J.
24	Magnolia Petroleum Co.	P. O. Box 900, Dallas 1 (Beaumont), Tex.
504	Magruder Color Co., Inc.	2385 Richmond Ter., Staten Island 2, N. Y.
441	Mallinckrodt Chemical Works	3600 N. 2d St., St. Louis 7, Mo.
387	Malthie Laboratories, Inc.	240-250 High St., Newark 2, N. J.
44	Marathon Corp., Chemical Div.	Rothschild, Wis.
261	Marblette Corp.	37-21 13th St., Long Island City 1, N. Y.
152	Marbon Corp.	1926 W. 10th Ave., Gary, Ind.
534	Marco Chemicals, Inc.	1711 Elizabeth Ave., W., Linden, N. J.
15	Marden-Wild Corp.	500 Columbia St., Somerville 43, Mass.
299	Marlowe-Van Loan Corp.	1511 Byrum St., High Point, N. C.
77	Marrow's, Inc.	637 W. Chicago Ave., Chicago 10, Ill.
180	Marx, Max, Color & Chemical Co.	192 Colt St., Irvington 11, N. J.
336	Meschmeijer, A., Jr., Inc.	43 W. 16th St., New York 11, N. Y. (Newark, N. J.).
141	Mathieson Chemical Corp.	10 Light St., Baltimore 3, Md. (Niagara Falls, N. Y.).
416	May, Otto B., Inc.	198 Niagara St., Newark 5, N. J.
284	Maywood Chemical Works	100 W. Hunter Ave., Maywood, N. J.
341	Mead, Johnson & Co.	St. Joseph Ave. and Pennsylvania St., Evansville 21, Ind.
533	Mearl Corp.	153 Waverly Pl., New York 14, N. Y.
243	Medical Chemicals Corp.	4122 W. Grand Ave., Chicago 51, Ill.
222	Merck & Co., Inc.	Lincoln Ave., Rahway, N. J. (Danville and Philadelphia, Pa., and Elkton, Va.).
217	Merichem Co.	3101 Pannin St., Houston 4, Tex.
433	Merrell, Wm. S., Co.	Galbraith Rd. and Pennsylvania R. R., Cincinnati 1, Ohio.
372	Meta Chemical Corp.	398 South St., Newark 5, N. J.
362	Metalsalts Corp.	200 Wagaraw Rd., Hawthorne, N. J.
454	Meyer, J., & Sons	4321 N. 4th St., Philadelphia 40, Pa.
329	Michigan Chemical Corp.	500 N. Bankson St., St. Louis, Mo.
330	Midland Industrial Finishes Co.	E. Water St., Waukegan, Ill.
558	Midland Synthetic Rubber Co. (R. R.)[1]	Los Angeles, Calif.
191	Miles Laboratories, Inc.	Elkhart, Ind.
353	Minnesota Paints, Inc.	1101 S. 3d St., Minneapolis 15, Minn.
415	Miranol Chemical Co., Inc.	16 Melville Pl., Irvington 11, N. J.
318	Monarch Oil & Chemical Co.	240 N. 2d St., Philadelphia 6, Pa.

See footnote at end of table.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
168	Monsanto Chemical Co.	1700 S. 2d St., St. Louis 4, Mo. (Anniston, Ala.; Santa Clara, Calif.; Monsanto, Ill.; Everett and Springfield, Mass.; Trenton, Mich.; Texas City, Tex.; Seattle, Wash.; and Nitro, W. Va.).
192	Montclair Research Corp.	4 Cherry St., Montclair, N. J.
287	Montrose Chemical Co.	120 Lister Ave., Newark 5, N. J.
528	Montrose Chemical Corp. of California	824 Wilshire Blvd., Los Angeles 17 (Torrance), Calif.
300	Morwear Paint Co.	568 14th St., Oakland 12, Calif.
78	Mason, R. M., & Co.	151 Potrero Ave., San Francisco, Calif.
470	National Lead Co.	111 Broadway, New York 6, N. Y. (Philadelphia, Pa.).
156	National Starch Products, Inc.	270 Madison Ave., New York 16, N. Y. (Plainfield, N. J.).
120	Neches Butane Products Co. (R. R.)[1]	P. O. Box 1535, Port Neches, Tex.
201	Nepera Chemical Co., Inc.	21 Gray Oaks Ave., Yonkers (Harriman), N. Y.
244	Neville Co.	Neville Island, Pittsburgh 25, Pa. (Anaheim, Calif.).
211	Newport Industries, Inc.	P. O. Box 911, Pensacola, Fla.
330	New York Color & Chemical Co., Inc., Div. of American Dyewood Co.	Main and Joralemon Sts., Belleville 9, N. J.
550	New York Quinine & Chemical Works, Inc.	90 Church St., New York 7, N. Y.
86	Niagara Alkali Co.	60 E. 42d St., New York 17 (Niagara Falls), N. Y.
376	Ninol Laboratories	1719 S. Clinton St., Chicago 16, Ill.
218	Nonweiler, A. F., Co.	Box 1007, Oshkosh, Wis.
229	Nopco Chemical Co., Inc.	1st and Essex Sts., Harrison, N. J. (Richmond, Calif., and Cedartown, Ga.).
102	Norda Essential Oil & Chemical Co., Inc.	601 W. 26th St., New York 1, N. Y.
79	Northwestern Chemical Co.	120 N. Aurora St., West Chicago, Ill.
272	Novadel-Agene Corp., Lucidol Div.	1740 Military Rd., Buffalo 5, N. Y.
193	Nuodex Products Co., Inc.	830 Magnolia Ave., Elizabeth, N. J.
110	Nutrition Research Laboratories, Inc.	919 N. Michigan Ave., Chicago 11, Ill.
223	Ohio Chemical & Surgical Equipment Co., Div. of Air Reduction Co., Inc.	1400 E. Washington Ave., Madison 10, Wis. (Cleveland, Ohio).
98	Oil & Chemical Products, Inc.	295 Madison Ave., New York 17, N. Y. (Houston, Tex.).
273	Oil States Petroleum Co., Inc.	233 Broadway, New York 7, N. Y. (Bayonne, N. J.).
121	Oldbury Electro-Chemical Co.	5001 Buffalo Ave., Niagara Falls, N. Y.
541	Old Colony Tar Co., Inc.	500 5th Ave., New York 36, N. Y. (Cambridge, Framingham, New Bedford, and Worcester, Mass.).
105	Old Hickory Chemical Co.	P. O. Box 1480, Richmond 12, Va. (Old Hickory, Tenn.).
377	Organics, Inc.	1724 Greenleaf, Chicago 26, Ill.
471	Oronite Chemical Co.	38 Sansome St., San Francisco 4, Calif. (Oak Point, La.).
67	Ortho Chemical Corp.	44-26 Purvis St., Long Island City 1, N. Y.
186	Osborn, C. J., Co.	132 Nassau St., New York 38, N. Y. (Linden, N. J.).
400	Ottol Oil Co.	455 Cortlandt St., Belleville 9, N. J.
274	Oxford Corp.	350 Morris St., Toledo 4, Ohio.
169	Pabco Products, Inc.	475 Brannan St., San Francisco 19 (Emeryville), Calif.
362	Pacific Paint & Varnish Co.	4th and Cedar Sts., Berkeley 10, Calif.
337	Pan American Refining Corp.	P. O. Box 401, Texas City, Tex.
308	Parke, Davis & Co.	Foot of Joseph Campau, Detroit 32, Mich.
106	Parsons, H. W., Imports & Plymouth Organic Laboratories, Inc.	59 Beekman St., New York 38, N. Y.
363	Patent Chemicals, Inc.	335 McLean Blvd., Paterson 4, N. J.
35	Pathfinder Chemical Corp., subsidiary of Goodyear Tire & Rubber Co.	5408 Baker Ave., Niagara Falls, N. Y.
275	Paul-Lewis Laboratories, Inc.	4253 Port Washington Rd., Milwaukee 12, Wis.
58	Peerless Color Co., Inc.	521-535 North Ave., Plainfield, N. J.
498	Penick, S. B., & Co.	50 Church St., New York 8, N. Y. (Lyndhurst and Montville, N. J.).
122	Pennsylvania Industrial Chemical Corp.	120 State St., Clairton (Chester), Pa.
212	Pennsylvania Salt Manufacturing Co.	1000 Widener Bldg., Philadelphia 7, Pa.
321	Perkins Glue Co.	632 Cannon Ave., Lansdale, Pa.
294	Permutit Co.	330 W. 42d St., New York 36, N. Y. (Birmingham, N. J.).
276	Peters Chemical Co.	2575 Ewen Ave., New York 61, N. Y.
531	Pfanstiehl Chemical Co.	104 Lakeview Ave., Waukegan, Ill.
254	Pfizer, Charles, & Co., Inc.	11 Hartlett St., Brooklyn 6, N. Y.
502	Pharma Chemical Corp.	175 5th Ave., New York 10, N. Y. (Bayonne, N. J.).
354	Phillips Petroleum Co., (R. R.)[1]	Bartlesville, Okla. (Phillips, Tex.).
342	Pitman-Moore Co., Div. of Allied Laboratories, Inc.	120 Madison Ave., Indianapolis 2, Ind.
213	Pittsburgh Coke & Chemical Co.	Neville Island, Pittsburgh 25, Pa.
450	Pittsburgh Plate Glass Co.	2000 Grant Bldg., Pittsburgh 19, Pa. (Torrance, Calif.; Detroit, Mich.; Newark, N. J.; Barberton, Cleveland, and Dayton, Ohio; Springdale, Pa.; Houston, Tex.; Natrium, W. Va.; and Milwaukee, Wis.).
338	Plastics Engineering Co.	1607 Geele Ave., Sheboygan, Wis.
313	Polychemical Co.	494 Hunts Point Ave., New York 59, N. Y.
430	Portland Gas & Coke Co.	Public Service Bldg., Portland 4, Oreg.
36	Poughkeepsie Dyestuff Corp.	77 N. Water St., Poughkeepsie, N. Y.
153	Pratt & Lambert, Inc.	75 Tonawanda St., Buffalo 7, N. Y.
278	Procter & Gamble Co.	Gwynne Bldg., Cincinnati 2, Ohio.
148	Publicker Industries, Inc.	1429 Walnut St., Philadelphia 2, Pa.
420	Pure Oil Co.	35 E. Wacker Dr., Chicago 1, Ill. (Toledo, Ohio; Waterlard, Tex.; Cabin Creek and Dawes, W. Va.; and Worland, Wyo.).
319	Purex Corp., Ltd.	9000 Rayo Ave., South Gate, Calif.

See footnote at end of table.

TABLE 27.--Synthetic organic chemicals: Directory of manufacturers, 1951--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
84	Purocaine, Inc	Valley Rd., Hockessin, Del.
203	Quaker Chemical Products Corp	Lime, Elm, and Sandy Sts., Conshohocken, Pa.
219	Quaker Oats Co	Merchandise Mart Plaza, Chicago 54, Ill. (Cedar Rapids, Iowa, and Memphis, Tenn.).
295	R. S. A. Corp	690 Saw Mill River Rd., Ardsley, N. Y.
2	Raybestos Div. of Raybestos-Manhattan, Inc.	75 E. Main St., Stratford, Conn.
7	Red Spot Paint Co	110 Main St., Evansville, Ind.
497	Reichhold Chemicals, Inc	601 Woodward Heights Blvd., Detroit 20, Mich. (Tuscaloosa, Ala.; Azusa and San Francisco, Calif.; Argo, Ill.; Detroit, Mich.; Elizabeth, N. J.; Brooklyn, N. Y.; Charlotte, N. C.; and Seattle, Wash.).
343	Reilly Tar & Chemical Corp	1615 Merchants Bank Bldg., Indianapolis 4, Ind. (Indianapolis, Ind.; Chicago and Granite City, Ill.; Newark, N. J.; Cleveland and Dover, Ohio; Chattanooga, Tenn.; Lone Star, Tex.; and Fairmont, W. Va.).
157	Reliance Varnish Co., Inc	4730 Crittenden Dr., Louisville 9, Ky.
45	Remington Arms Co., Inc	939 Barnum Ave., Bridgeport 2, Conn.
344	Republic Creosoting Co	1615 Merchants Bank Bldg., Indianapolis 4, Ind. (Mobile and Florence, Ala.; Indianapolis, Ind.; St. Louis Park, Minn.; Lima, Ohio; Ironton, Utah; Norfolk, Va.; and Seattle, Wash.).
262	Richards Chemical Works, Div. of Onyx Oil & Chemical Co.	190 Warren St., Jersey City 2, N. J.
123	Richardson Co	27th Ave. and Lake St., Melrose Park, Ill.
431	Richfield Oil Corp	555 S. Flower St., Los Angeles 17, Calif.
18	Richmond Chemical Corp	1741 Richmond Ter., Staten Island 10, N. Y.
49	Rinshed-Mason Co	5935 Milford St., Detroit, Mich. (Anaheim, Calif.).
432	Ritter, F., & Co	4001 Goodwin Ave., Los Angeles 39, Calif.
158	Ritter Chemical Co., Inc	403 W. Main St., Amsterdam, N. Y.
364	Rohm & Haas Co	222 W. Washington Sq., Philadelphia 5, Pa. (Bridesburg and Bristol, Pa.; Knoxville, Tenn.; and Deer Park, Tex.).
263	Roseville Dyestuff Corp	Arthur Kill Rd., Staten Island 9, N. Y.
309	Royce Chemical Co	Carlton Ave., Carlton Hill, N. J.
85	Rubber Corp. of America	274 Ten Eyck St., Brooklyn 6, N. Y. (Hicksville, N. Y.).
314	Ruberoid Co	500 5th Ave., New York 18, N. Y. (Joliet, Ill.; Baltimore, Md.; and Erie, Pa.).
563	Salem Oil & Grease Co	60 Grove St., Salem, Mass.
199	Salvo Chemical Corp	Rothschild, Wis.
525	Sandoz Chemical Works, Inc	61 Van Dam St., New York 13, N. Y. (E. Hanover, N. J.).
534	Sapon Laboratories	543 Union St., Brooklyn 15, N. Y.
245	Schenectady Varnish Co., Inc	Congress & 10th Ave., Schenectady 1, N. Y.
365	Schenley Laboratories, Inc	Foot of Mary St., Lawrenceburg, Ind.
194	Scherer, R. P., Corp	9425 Grinnell Ave., Detroit 13, Mich.
526	Schering Corp	2 Broad St., Bloomfield (Union), N. J.
559	Schieffelin & Co	16 Cooper Sq., New York 3, N. Y.
139	Scholler Bros., Inc	Collins and Westmoreland Sts., Philadelphia 34, Pa.
315	Schuylkill Chemical Co	2346 Sedgley Ave., Philadelphia 32, Pa.
257	Schwarz Laboratories, Inc	202 E. 44th St., New York 17 (Mt. Vernon), N. Y.
107	Searle, G. D., & Co	P. O. Box 5110, Chicago 80 (Skokie), Ill.
170	Seattle Gas Co	1507 4th Ave., Seattle 11, Wash.
401	Seydel Chemical Co	225 Mercer St., Jersey City 2 (Clifton), N. J.
331	Sharp & Dohme, Inc	640 N. Broad St., Philadelphia 1 (West Point), Pa.
520	Sharples Chemicals, Inc	123 S. Broad St., Philadelphia 9, Pa. (Wyandotte, Mich.).
434	Shawinigan Resins Corp	644 Monsanto Ave., Springfield 2, Mass.
355	Sheffield Farms Co., Inc., Chemical Div.	P. O. Box 630, Norwich, N. Y.
264	Shell Chemical Corp	50 W. 50th St., New York 20, N. Y. (Martinez, Los Angeles, and Pittsburg, Calif.; and Deer Park, Tex.).
258	Shell Oil Co	50 W. 50th St., New York 20, N. Y. (Martinez and Wilmington, Calif.; Roxana, Ill.; Norco, La.; and Deer Park, Tex.).
250	Shepherd Chemical Co	2803 Highland Ave., Cincinnati 12, Ohio.
431	Sherwin-Williams Co	101 Prospect Ave., NW., Cleveland 1, Ohio (Oakland and Los Angeles, Calif.; Chicago, Ill.; Detroit, Mich.; Newark and Gibbsboro, N. J.; Dayton and Cleveland, Ohio; Pittsburgh, Pa.; and Dallas, Tex.).
19	Siddall, George F., Co., Inc	P. O. Box 925, Spartanburg, S. C. (Cranston and Providence, R. I.).
305	Sinclair Refining Co., Petroleum Chemicals Div.	600 5th Ave., New York 20, N. Y. (Sand Springs, Okla.; Marcus Hook, Pa.; and Houston, Tex.).
348	Sinclair & Valentine Co	611 W. 129th St., New York 27, N. Y. (Ridgway, Pa.).
37	Sipe, James B., & Co	P. O. Box 8010, S. Hills Branch, Pittsburgh 16 (Bridgeville), Pa.
488	Skelly Oil Co	Skelly Bldg., P. O. Box 436, Kansas City 10, Mo. (Eunice, N. Mex.).
457	Smith, Kline & French Laboratories	1530 Spring Garden St., Philadelphia 1, Pa.
342	Snyder Chemical Corp	Henry St., Bethel, Conn.
29[illegible]	Socony-Vacuum Oil Co., Inc	26 Broadway, New York 4, N. Y. (Paulsboro, N. J., and Beaumont, Tex.).
124	Soluol Chemical Co., Inc	Green Hill and Market Sts., Natick, R. I.
347	Solvent Chemical Co., Inc	341 Commercial St., Malden 48, Mass.

TABLE 27.--Synthetic organic chemicals: Directory of manufacturers, 1951--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
38	Sonneborn, L., Sons, Inc	300 4th Ave., New York 10, N. Y. (Petrolia, Pa.).
515	Sonoco Products Co	Hartsville, S. C.
246	Southern Dyestuff Corp	P. O. Box 1065, Charlotte 1 (Sodyeco), N. C.
388	Southern Sizing Co	P. O. Box 391, East Point, Ga.
345	Southern Textile Chemical Corp	Clearwater, S. C.
8	Southside Chemical Co., Inc	139 Monroe St., Petersburg 7, Va.
4	Spaulding Fibre Co., Inc	310 Wheeler St., Tonawanda, N. Y.
366	Specialty Resins Co	2801 Lynwood Rd., Lynwood, Calif.
179	Specific Pharmaceuticals, Inc	331 4th Ave., New York 10, N. Y. (Bayonne, N. J.).
125	Spencer Chemical Co	610 Dwight Bldg., Kansas City 6, Mo. (Calumet City, Ill., and Military, Kans.).
68	Spicer-Gerhart Co	8350 Foothill Blvd., Sunland, Calif.
126	Springfield Gas Light Co	35-39 State St., Springfield 2, Mass.
482	Squibb, E. R., & Sons	32-14 Northern Blvd., Long Island City 1, N. Y. (New Brunswick, N. J., and Brooklyn, N. Y.).
252	Staley, A. E., Manufacturing Co	Decatur, Ill.
30	Standard Agricultural Chemicals, Inc	1301 Jefferson St., Hoboken, N. J.
127	Standard Brands, Inc	595 Madison Ave., New York 22 (Peekskill), N. Y.
373	Standard Chemical Products, Inc	1301 Jefferson St., Hoboken, N. J.
220	Standard Chlorine Chemical Co	115 Jacobus Ave., South Kearny, N. J.
224	Standard Naphthalene Products Co., Inc	115 Jacobus Ave., South Kearny, N. J.
478	Standard Oil Co. of California	225 Bush St., San Francisco 20 (Bakersfield, El Segundo, and Richmond), Calif.
508	Standard Oil Co. of Indiana	910 S. Michigan Ave., Chicago 80, Ill. (Wood River, Ill., and Whiting, Ind.).
143	Standard-Toch-Chemicals, Inc	2600 Richmond Ter., Staten Island 3, N. Y.
195	Standard Ultramarine Co	5th Ave. and 24th St., Huntington, W. Va.
247	Stange, Wm. J., Co	342 N. Western Ave., Chicago 12, Ill.
552	Stanolind Oil & Gas Co	Stanolind Bldg., Tulsa, Okla. (Brownsville, Tex.).
527	Stauffer Chemical Co	420 Lexington Ave., New York 17, N. Y. (Henderson, Nev.; Brooklyn, N. Y.; Perry, Ohio; Chester and Monongahela, Pa.; Lowland, Tenn.; and Bentonville and Roanoke, Va.).
402	Stepan Chemical Co	1353 N. Branch St., Chicago, Ill.
	Sterling Drug, Inc.:	
144	Bayer Co. Div	1450 Broadway, New York 18, N. Y. (Trenton, N. J.).
183	Hilton-Davis Chemical Co. Div	2235 Langdon Farm Rd., Cincinnati 13, Ohio.
425	Stresen-Reuter, Fred'k. A., Inc	2113 Medill Ave., Chicago 47 (Bensenville), Ill.
39	Summit Chemical Products	11 William St., Belleville 9, N. J.
279	Sumner Chemical Co., Inc	Zeeland, Mich.
	Sun Chemical Corp.:	
489	Pigment Div	309 Sussex St., Harrison, N. J.
491	Warwick Chemical Co. Div	Wood River Junction, R. I. (Rock Hill, S. C.).
389	Sun Oil Co	1608 Walnut St., Philadelphia 3, Pa. (Toledo, Ohio).
40	Swope Oil & Chemical Co	3335 Richmond St., Philadelphia 34, Pa.
367	Synthetic Chemicals, Inc	335 McLean Blvd., Paterson 4, N. J.
50	Synthetic Products Co	1636 Wayside Rd., Cleveland 12, Ohio.
518	Synthron, Inc	Ryan Ave., Ashton, R. I.
381	Synvar Corp	415-419 E. Front St., Wilmington 99, Del. (Greensboro, N. C.).
542	Tar Distilling Co., Inc	500 5th Ave., New York 36, N. Y. (Cleveland, Ohio).
230	Taylor Fibre Co	Norristown (Betzwood), Pa.
368	Tennessee Eastman Co	Kingsport, Tenn.
369	Tennessee Products & Chemical Corp	First American National Bank Bldg., Nashville 3 (Chattanooga and Lyles-Wrigley), Tenn.
403	Tex-o Co	P. O. Box 2332, Houston 1, Tex.
499	Thiokol Corp	780 N. Clinton Ave., Trenton 7, N. J.
473	Thomasset Colors, Inc	338 Wilson Ave., Newark 5, N. J.
544	Thompson Chemicals Corp	3600 Monon St., Los Angeles 27, Calif. (St. Louis, Mo.).
551	Trask, Arthur C., Co	4103 S. LaSalle St., Chicago 9, Ill.
288	Trenton Chemical Co	6008 Harrison Ave., Trenton, Mich.
280	Trojan Powder Co	17 N. 7th St., Allentown (Seiple), Pa.
472	Trubek Laboratories	State Highway #17, East Rutherford, N. J.
382	Uhlich, Paul, & Co., Inc	90 West St., New York 11 (Brooklyn), N. Y.
474	Ultra Chemical Works, Inc	2 Wood St., Paterson 4, N. J.
346	Union Bay State Chemical Co., Inc	491 Main St., Cambridge 42, Mass.
	Union Carbide & Carbon Corp.:	
452	Bakelite Div	30 E. 42d St., New York 17, N. Y. (Bloomfield and Bound Brook, N. J., and Marietta, Ohio).
490	Carbide & Carbon Chemicals Div	30 E. 42d St., New York 17, N. Y. (Whiting, Ind.; Niagara Falls, N. Y.; Texas City, Tex.; and Institute and S. Charleston, W. Va.).
418	Halowax Products Div	30 E. 42d St., New York 17, N. Y. (Wyandotte, Mich.).
103	Union Oil Co. of California	617 W. 7th St., Los Angeles 17, Calif. (Bakersfield, Rodeo, and Wilmington, Calif.; Cut Bank, Mont.; and Edmonds, Wash.).
332	United Piece Dye Works	Lodi, N. J.
310	United States Finishing Co	Norwich, Conn.
404	U. S. Industrial Chemicals Co., Div. of National Distillers Products Corp.	60 E. 42d St., New York 17, N. Y. (Pensacola, Fla.; New Orleans, La.; Baltimore, Md.; and Newark, N. J.).
128	U. S. Oil Co	Box 1345, Providence (Phillipsdale), R. I.
311	United States Procaine Co., Inc	2923 Atlantic Ave., Brooklyn 7, N. Y.

TABLE 27.--*Synthetic organic chemicals: Directory of manufacturers, 1951*--Continued

No.	Name of company	Office address (location of plant given in parentheses if not in same city as office)
221	U. S. Rubber Co., Naugatuck Chemical Div.	1230 Ave. of the Americas, New York 20, N. Y. (Naugatuck, Conn.).
214	U. S. Rubber Co. (R. R.)[1]	1230 Ave. of the Americas, New York 20, N. Y. (Naugatuck, Conn., and Port Neches, Tex.).
281	Upjohn Co	301 Henrietta St., Kalamazoo 99, Mich.
425	Valentine & Co., Inc	11 E. 36th St., New York 16 (Brooklyn), N. Y.
522	van Ameringen-Haebler, Inc	521 W. 57th St., New York 19, N. Y. (Elizabeth, N. J.).
59	Van Camp Laboratories, Div. of Van Camp Sea Food Co., Inc.	772 Tuna St., Terminal Island, Calif.
333	Vanderbilt Chemical Corp	230 Park Ave., New York 17, N. Y. (Bethel and East Norwalk, Conn.).
41	Van Dyk & Co., Inc	11 William St., Belleville 9, N. J.
406	Vanzum Chemical Corp	P. O. Box 476, Niagara Falls, N. Y.
407	Velsicol Corp	330 E. Grand Ave., Chicago 11 (Marshall), Ill.
461	Verley Chemical Co., Inc	200 Pulaski St., Newark 5, N. J.
410	Verona Chemical Co	26 Verona Ave., Newark 4, N. J.
347	Victor Chemical Works	141 W. Jackson Blvd., Chicago 4, Ill.
356	Virginia-Carolina Chemical Corp	401 E. Main St., Richmond, Va. (Charleston, S. C.).
536	Vitamins, Inc	809 W. 58th St., Chicago 21, Ill.
91	Vita-Var Corp	1180 Raymond Blvd., Newark 2, N. J.
458	Wallace & Tiernan Products, Inc	1 Main St., Belleville 9, N. J.
532	Wannamaker Chemical Co., Inc	Cannon Bridge Rd., Orangeburg, S. C.
176	Warner-Jenkinson Manufacturing Co	2526 Baldwin St., St. Louis 6, Mo.
108	Washburn, T. F., Co	2244 Elston Ave., Chicago 14, Ill.
56	Watertown Manufacturing Co	127 Echo Lake Rd., Watertown, Conn.
370	Watson-Park Co	Box 158, Ballard Vale, Mass.
81	Werner Drug & Chemical Co	759 Beechwood Ave., Cincinnati 32, Ohio.
312	Western Condensing Co	P. O. Box 499, Appleton (Adell), Wis.
181	Western Dry Color Co	600 W. 52d St., Chicago 9, Ill.
296	Westinghouse Electric Corp	306 4th Ave., P. O. Box 1017, Pittsburgh (East Pittsburgh), Pa.
109	Wetherill, George D., Varnish Co	Haddon Ave. & White Horse Pike, Camden 3, N. J.
129	Wheeler, Reynolds & Stauffer	636 California St., San Francisco 8 (Richmond), Calif.
348	White & Bagley Co	100 Foster St., Worcester 8, Mass.
508	White & Hodges, Inc	2 Wellington Ave., Everett 49, Mass.
185	Whittemore-Wright Co., Inc	62 Alford St., Charlestown 29, Mass.
93	Williams, C. K., & Co	2001 Lynch Ave., East St. Louis, Ill.
265	Wilmot & Cassidy, Inc	108-112 Provost St., Brooklyn 22, N. Y.
535	Wilson Laboratories, Div. of Wilson Co., Inc.	4221 S. Western Ave., Chicago 9, Ill.
301	Wilson Organic Chemicals, Inc	P. O. Box 452, Sayreville, N. J.
320	Winthrop-Stearns, Inc	1450 Broadway, New York 18 (Rensselaer), N. Y.
507	Witco Chemical Co	295 Madison Ave., New York 17, N. Y. (Chicago, Ill., and Brooklyn, N. Y.).
82	Witte, John H., & Sons	206 Jefferson St., Burlington, Iowa.
512	Wolf, Jacques, & Co	354 Lexington Ave., Passaic (Carlstadt and Clifton), N. J.
371	Wolff-Alport Chemical Corp	1127 Irving Ave., Brooklyn 27, N. Y.
516	Wyandotte Chemicals Corp	1609 Biddle Ave., Wyandotte, Mich.
171	Wyeth, Inc	1401 Walnut St., Philadelphia 2, Pa.
468	Young Aniline Works, Inc	2731 Boston St., Baltimore 24, Md.
177	Zinsser & Co., Inc	Hastings-on-Hudson 6, N. Y.
442	Zurn, O. F., Co	2736 N. Broad St., Philadelphia 32, Pa.

[1] R. R. in parentheses following the name of a company indicates U. S. Government plant operated for the Office of Rubber Reserve.

APPENDIX

A. United States Imports of Coal-Tar Intermediates and Finished Coal-Tar Products

Table 28 summarizes, for the period 1949-51, United States imports of coal-tar products that are dutiable under paragraphs 27 and 28 of the Tariff Act of 1930. The data, which were obtained by analyzing invoices covering imports through all United States customs districts, are given in detail in a separate report of the Tariff Commission.[1]

Imports of coal-tar intermediates entered under paragraph 27 in 1951 totaled 8.5 million pounds, with a foreign invoice value of 2.2 million dollars. This was greater than the 5.5 million pounds (valued at 1.6 million dollars) imported in 1950, and the 3.7 million pounds (valued at $779,000) imported in 1949. Imports in 1951 came principally from Germany and the United Kingdom. Imports from Germany in 1951 were 2.9 million pounds, valued at 1.0 million dollars (foreign invoice value), compared with 1.2 million pounds, valued at $365,000, in 1950. Imports from the United Kingdom in 1951 were 2.0 million pounds, valued at $533,000, compared with 2.4 million pounds, valued at $608,000, in 1950--a decrease of 17 percent in quantity and 12 percent in value. Lesser quantities of coal-tar intermediates were imported in 1951 from Canada, Belgium, the Netherlands, Japan, Switzerland, Czechoslovakia, Australia, France, Sweden, Italy, Mexico, and Norway. In terms of quantity, the most important intermediates imported in 1951 were refined naphthalene, aniline, and o-cresol. Imports of refined naphthalene (3.4 million pounds) came principally from Germany, Japan, Belgium, and the Netherlands; imports of aniline (1 million pounds) came entirely from Canada and the United Kingdom. The United Kingdom was the chief source of o-cresol, total imports of which amounted to 778,000 pounds. Substantial quantities of quinoline, anthraquinone, 2-naphthol, phthalic anhydride, 2-amino-1,5-naphthalenedisulfonic acid, and 1-chloro-4-nitrobenzene were also imported.

Imports in 1951 of finished coal-tar products dutiable under paragraph 28 totaled 4.4 million pounds, with a foreign invoice value of 7.3 million dollars, compared with 5.0 million pounds (valued at 5.3 million dollars) in 1950, and 1.1 million pounds (valued at 2.7 million dollars) in 1949. As in previous years, dyes constituted by far the most important group of finished coal-tar products entered under paragraph 28; they accounted for 3.4 million pounds, with a foreign invoice value of 6.3 million dollars. In 1951, for the first time since before World War II, Germany was one of the principal sources of United States imports of dyes; Switzerland ranked second.

Medicinals and pharmaceuticals constituted the next largest group of finished coal-tar products imported in 1951. Imports of these products in that year totaled 88,000 pounds, valued at $733,000 (foreign invoice value), compared with 27,000 pounds,

[1] U. S. Tariff Commission, *Imports of Coal-Tar Products, 1951* [processed].

valued at $434,000, in 1950. Imports of coal-tar flavor and perfume materials in 1951 were 21,000 pounds, with a foreign invoice value of $67,000. In 1950, imports of this group totaled 34,000 pounds, valued at $63,000. Imports of all other finished coal-tar products in 1951 amounted to 920,000 pounds, valued at $266,000,

TABLE 28.--*Coal-tar intermediates and finished coal-tar products: United States imports for consumption, classified by use, 1949-51*

Product	1949		1950		1951	
	Quantity	Foreign invoice value	Quantity	Foreign invoice value	Quantity	Foreign invoice value
	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars	1,000 pounds	1,000 dollars
Intermediates	3,677	779	5,346	1,643	8,483	2,245
Finished coal-tar products, total	1,126	2,680	5,047	5,305	4,408	7,330
Dyes, total	[1] 771	2,152	[1] 1,859	4,110	[1] 3,379	6,264
Acid	229	746	447	1,218	515	1,333
Vat	18	53	271	360	1,630	2,317
Mordant and chrome	82	228	174	415	326	727
Sulfur	...	...	9	7	2	4
Direct	335	827	737	1,654	616	1,366
Acetate rayon	10	25	28	60	60	162
Azoic	...	...	40	95	60	150
Basic	3	13	24	69	32	54
Color-lake and spirit-soluble	20	95	26	85	33	94
All other	74	165	103	147	105	157
Medicinals and pharmaceuticals	31	392	27	434	88	933
Flavor and perfume materials	6	20	34	63	21	67
All other	318	116	3,127	698	920	266

[1] "Actual" weight; the "computed" weight (corrected to the standards of strength established by the Secretary of the Treasury) was 1.1 million pounds in 1949, 2.5 million pounds in 1950, and 4.2 million pounds in 1951.

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

compared with 3.1 million pounds, valued at $698,000, in 1950. This decline was caused by the complete cessation of imports of explosives in 1951.

B. Research Workers and Research Expenditures in the Synthetic Organic Chemical Industry

Because of the interest of the synthetic organic chemical industry in data on research, the Tariff Commission each year collects and publishes statistics on the number of technically trained research workers in the industry, their salaries, and the cost of research (see table 29). This information is not available elsewhere. Since many of the companies that produce synthetic organic chemicals also manufacture other products, the data are only approximate. For companies that produce other items also, it has been necessary to allocate the research costs; for some companies this allocation is somewhat arbitrary. Notwithstanding this limitation, the statistics do indicate trends in the amount of research work done in the synthetic organic chemical industry. The data here reported probably cover about 80 percent of the industry's total expenditures for research activities.

In 1951 a total of 353 companies reported data on research workers and expenditures, or 18 more than the number that reported in 1950. The number of technically trained research workers (minimum salary of $3,600 per year) reported for 1951 was 9,984, a decrease of 545 from the 10,529 reported for 1950 (see table 29). This apparent decline in the number of workers is probably due to the change--for statistical purposes--from a

to $3,600, used for 1951. The average salary paid in 1951 was $6,748, compared with $5,377 in 1950; this increase is also partly accounted for by the increase in base salary. Salaries paid in 1951 totaled 67.4 million dollars, compared with 56.6 million dollars in 1950. In 1951 the gross cost of research was 149.6 million dollars, an increase of 34.4 million dollars over that of 1950. The reported cost to the industry of research conducted for it in 1951 outside the facilities of the reporting companies, a cost not included in the figures given above, was 6.7 million dollars. This figure, however, probably does not cover

TABLE 29.--*Synthetic organic chemical industry: Number of research workers, salaries paid research workers, and cost of research, 1941-51*

Year	Companies reporting	Technically trained research workers[1]	Salaries paid research workers	Total reported cost of research		
				Within the plant		Outside the plant
				Gross	Net[2]	
	Number	Number	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
1941	153	2,959	8,946	18,425	17,137	([3])
1942	183	3,839	11,541	23,440	20,768	([3])
1943	236	5,086	20,816	28,723	28,470	([3])
1944	272	5,118	22,428	43,820	40,946	2,566
1945	274	6,219	26,964	55,046	52,186	4,043
1946	313	7,527	35,791	73,376	69,412	4,249
1947	301	8,707	41,571	90,440	87,825	4,600
1948	303	9,114	46,346	98,729	95,417	4,994
1949	338	8,916	51,521	105,333	100,580	4,998
1950	335	10,529	56,619	115,191	111,374	6,668
1951	353	9,984	67,376	149,607	144,784	6,724

[1] For the years 1941-43, a technically trained research worker was defined as a person with technical training engaged in research work and earning not less than $2,000 per year; for 1944-50, the minimum amount of earnings was fixed at $2,500, and for 1951, at $3,600.
[2] The net cost figure is obtained by deducting from gross cost the credits for salable products obtained in the course of research.
[3] Data for research outside the plant were not collected before 1944.

all research projects conducted in universities and private research laboratories or all consulting services.

C. Glossary of Synonymous Names of Cyclic Intermediates

Many cyclic intermediates are known in the chemical trade by a variety of names. Individuals in the trade frequently are not acquainted with all the synonymous names for a given product. To bring together the synonymous names for each product, the tables on intermediates in this report (table 7A in part II, and table 7B in part III) show the standard name in accordance with the system used by Chemical Abstracts; this standard name is frequently followed by the most common synonymous name in parentheses.

In previous reports in this series the Tariff Commission included a glossary of synonymous names of cyclic intermediates. This glossary, which originally was compiled at the suggestion of the Industry Advisory Committee on Government Reports, is intended to serve principally as an index to the standard names used in the tables on intermediates. For this report the glossary has been completely revised. The first column of the glossary lists alphabetically the common, or trivial, names usually encountered in the trade. The second column gives the corresponding standard (Chemical Abstracts) names, under which the data are presented in tables 7A and 7B.

Cyclic intermediates: Glossary of synonymous names

Common name	Standard (Chemical Abstracts) name
Acedianthrone	Aceanthra[2,1-a]aceanthrylene-5,11-dione.
p-Acetamidobenzenesulfonyl chloride	N-Acetylsulfanilyl chloride.
5-Acetamido-2-hydroxybenzoic acid	5-Acetamidosalicylic acid.
5-Acetamido-orthanilic acid	5-Acetamido-2-aminobenzenesulfonic acid.
Acetanilide-p-sulfonic acid	N-Acetylsulfanilic acid.
Acetanilid sulfon chloride	N-Acetylsulfanilyl chloride.
p-Acetoacetchloranilide	p-Chloroacetoacetanilide.
Acetoacet-o-chloranilide	o-Chloroacetoacetanilide.
o-Acetoacetochloranilide	o-Chloroacetoacetanilide.
o-Acetoacetoxylidide	2,4-Acetoacetoxylidide.
Acetoacet-o-toluidide	o-Acetoacetotoluidide.
Acetoacet-o-toluidine	o-Acetoacetotoluidide.
Acetoacetyl-o-anisidine	o-Acetoacetanisidide.
Acetoacetyl benzidine	p,p'-Diacetoacetanilide.
Acetylacet-o-phenylacetoacetanilide	γ-(o-Acetoacetophenyl)acetoacetanilide.
Acetyl-p-amino-o-aminophenol hydrochloride	4-Acetamido-2-aminophenol hydrochloride.
Acetylamino Cleve's acid	8-Acetamido-5-amino-2(and 3)-naphthalenesulfonic acid.
Acetyl-o-anisidine	o-Acetanisidide.
Acetyl-p-anisidine	p-Acetanisidide.
Acetyldiaminoanthraquinone	1,5(or 1,8)-Diacetamidoanthraquinone.
Acetyl-2,4-diaminophenol hydrochloride	4-Acetamido-2-aminophenol hydrochloride.
Acetyl H acid	8-Acetamido-1-naphthol-3,6-disulfonic acid.
Acetyl-1,4-naphthalenediamine-6(and 7)-sulfonic acids	8-Acetamido-5-amino-2(and 3)-naphthalenesulfonic acid.
Acetyl-p-nitro-o-aminophenol	2-Acetamido-4-nitrophenol.
Acetyl-m-phenylenediamine	m-Aminoacetanilide.
Acetyl-p-phenylenediamine	p-Aminoacetanilide.
Acetyl-p-phenylenediamine sulfate	p-Aminoacetanilide sulfate.
N¹-Acetylsulfanilamide	N-Sulfanilylacetamide.
N⁴-Acetylsulfanilamide	p-Sulfamylacetanilide.
2-(N⁴-Acetylsulfanilamido)thiazole	p-2-Thiazolylsulfamylacetanilide.
N⁴-Acetyl-2-sulfo-p-phenylenediamine	5-Acetamido-2-aminobenzenesulfonic acid.
N-Acetyl-o-toluidine	o-Acetotoluidide.
1,2,4-Acid	1-Amino-2-naphthol-4-sulfonic acid.
Aelchin	6-Amino-6-methoxyquinoline.
p-Aminoazobenzene	p-Phenylazoaniline.
Aminoazobenzene disulfo acid	6-Amino-3,4'-azobis[benzenesulfonic acid].
Aminoazobenzene-3,4-disulfonic acid	6-Amino-3,4'-azobis[benzenesulfonic acid].
p-Aminoazobenzene hydrochloride	p-Phenylazoaniline hydrochloride.
Aminoazobenzene-m-sulfonic acid	m-(p-Aminophenylazo)benzenesulfonic acid.
Aminoazobenzene-p-sulfonic acid	p-(p-Aminophenylazo)benzenesulfonic acid.
o-Aminoazotoluene	4-(o-Tolylazo)-o-toluidine.
o-Aminoazotoluene sulfate	4-(o-Tolylazo)-o-toluidine sulfate.
o-Aminoazotoluenesulfonic acid and salt	4-(4-Amino-m-tolylazo)-m-toluenesulfonic acid and salt.
Aminoxylene	4-(2,4-Xylylazo)-2,5-xylidine.
Aminoxylenetoluidine	4-(2,4-Xylylazo)-o-toluidine.
8-Amino-1,2-benacridin-7(12)-one	8-Aminobenz[a]acridin-7(12)-one.
8-Amino-1,2-benzacridone	8-Aminobenz[a]acridin-7(12)-one.
p-Aminobenzenearsonic acid	Arsanilic acid.
m-Aminobenzenesulfonic acid	Metanilic acid.
p-Aminobenzenesulfonic acid	Sulfanilic acid.
o-Aminobenzoic acid	Anthranilic acid.
m-Aminobenzoyl H(or J) acid	6-(m-Aminobenzamido)-1-naphthol-3-sulfonic acid.
p-Aminobenzoyl H(or J) acid	6-(p-Aminobenzamido)-1-naphthol-3-sulfonic acid.
o-Aminobenzylsulfonic acid	o-Toluidinomethanesulfonic acid.
o-Aminobiphenyl	2-Biphenylamine.
2-Aminobiphenyl	2-Biphenylamine.
4-Aminobiphenyl	Xenylamine.
1-Amino-2-bromo-4-(p-toluidino)anthraquinone	1-Amino-2-bromo-4-(p-toluidino)anthraquinone.
5-Amino-2-chlorobenzenesulfonic acid	6-Chlorometanilic acid.
5-Amino-3-chlorobenzenesulfonic acid	5-Chlorometanilic acid.
5-Amino-4-chlorobenzenesulfonic acid	4-Chlorometanilic acid.
5-Amino-2-chlorobenzoic acid	3-Amino-6-chlorobenzoic acid.
2-Amino-4-chlorotoluene	5-Chloro-o-toluidine.
2-Amino-5-chlorotoluene	4-Chloro-o-toluidine.
2-Amino-6-chlorotoluene	6-Chloro-o-toluidine.
2-Amino-5-chlorotoluene hydrochloride	4-Chloro-o-toluidine hydrochloride.
m-Amino-p-cresol	2-Amino-p-cresol.
3-Amino-p-cresol methyl ether	5-Methyl-o-anisidine.
3-Amino-p-cresyl methyl ether	5-Methyl-o-anisidine.
Aminodichlorobenzenesulfonic acid	2,5-Dichlorosulfanilic acid.
2-Aminodicyclohexyl	2-Aminobicyclohexyl.
2-Amino-1,4-diethoxybenzene	2,5-Diethoxyaniline.
2-Amino-5-diethylaminotoluene hydrochloride	N³,N³-Diethyltoluene-2,5-diamine hydrochloride.
p-Aminodiethylaniline	N,N-Diethyl-p-phenylenediamine.
4-Amino-1,3-dihydroxyanthraquinone	4-Aminoxanthopurpurin.
2-Amino-1,4-dimethoxybenzene	2,5-Dimethoxyaniline.
p-Aminodimethylaniline	N,N-Dimethyl-p-phenylenediamine.
p-Aminodimethylaniline hydrochloride	N,N-Dimethyl-p-phenylenediamine hydrochloride.
p-Aminodimethylaniline sulfate	N,N-Dimethyl-p-phenylenediamine sulfate.
2-Amino-4,6-dinitrophenol and salt	Picramic acid and salt.
o-Aminodiphenyl	2-Biphenylamine.
p-Aminodiphenyl	Xenylamine.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
p-Aminodiphenylamine	N-Phenyl-p-phenylenediamine.
4-Aminodiphenylamine-2-sulfonic acid	5-Amino-2-anilinobenzenesulfonic acid.
Aminodiphenyl ether	p-Phenoxyaniline.
4-Aminoethoxyethylaniline	2-(p-Amino-N-ethylanilino)ethanol.
Amino G acid	7-Amino-1,3-naphthalenedisulfonic acid.
Amino I(or J) acid	6-Amino-1,3-naphthalenedisulfonic acid.
p-Amino-N-isobutylphenol	p-Isobutylaminophenol.
5-Amino-2-methoxybenzyl alcohol	5-Aminosaligenin-2-methyl ether.
4-Amino-3-methoxydiphenylamine-2-sulfonic acid	6-Anilino-2-methoxymetanilic acid.
4-Amino-1-naphthalenesulfonic acid	Naphthionic acid.
2-Aminonaphthalene-3,6,8-trisulfonic acid	7-Amino-1,3,6-naphthalenetrisulfonic acid.
1-Amino-7-naphthol	8-Amino-2-naphthol.
1-Amino-8-naphthol-4,6-disulfonic acid	8-Amino-1-naphthol-3,5-disulfonic acid.
4-Amino-5-naphthol-1,7-disulfonic acid	8-Amino-1-naphthol-3,5-disulfonic acid.
1-Amino-8-naphthol-2,4-disulfonic acid, monosodium salt.	8-Amino-1-naphthol-5,7-disulfonic acid, monosodium salt.
1-Amino-8-naphthol-3,6-disulfonic acid, monosodium salt.	8-Amino-1-naphthol-3,6-disulfonic acid, monosodium salt.
2-Amino-8-naphthol-3,6-disulfonic acid, monosodium salt.	7-Amino-1-naphthol-3,6-disulfonic acid, monosodium salt.
4-Amino-5-naphthol-1,3-disulfonic acid, monosodium salt.	8-Amino-1-naphthol-5,7-disulfonic acid, monosodium salt.
5-Amino-4-naphthol-2,7-disulfonic acid, monosodium salt.	8-Amino-1-naphthol-3,6-disulfonic acid, monosodium salt.
6-Amino-4-naphthol-2,7-disulfonic acid, monosodium salt.	7-Amino-1-naphthol-3,6-disulfonic acid, monosodium salt.
2-Amino-6-naphthol-8-sulfonic acid	6-Amino-2-naphthol-4-sulfonic acid.
4-Amino-3-naphthol-1-sulfonic acid	1-Amino-2-naphthol-4-sulfonic acid.
7-Amino-3-naphthol-1-sulfonic acid	6-Amino-2-naphthol-4-sulfonic acid.
1-Amino-8-naphthol-4-sulfonic acid, sodium salt	8-Amino-1-naphthol-5-sulfonic acid, sodium salt.
2-Amino-5-naphthol-7-sulfonic acid, sodium salt	6-Amino-1-naphthol-3-sulfonic acid, sodium salt.
2-Amino-8-naphthol-6-sulfonic acid, sodium salt	7-Amino-1-naphthol-3-sulfonic acid, sodium salt.
4-Amino-5-naphthol-1-sulfonic acid, sodium salt	8-Amino-1-naphthol-5-sulfonic acid, sodium salt.
6-Amino-4-naphthol-2-sulfonic acid, sodium salt	7-Amino-1-naphthol-3-sulfonic acid, sodium salt.
7-Amino-4-naphthol-2-sulfonic acid, sodium salt	6-Amino-1-naphthol-3-sulfonic acid, sodium salt.
2-Amino-4-nitroanisole	5-Nitro-o-anisidine.
2-Amino-5-nitroanisole	4-Nitro-o-anisidine.
2-Amino-6-nitroanisole	6-Nitro-o-anisidine.
4-Amino-3-nitroanisole	2-Nitro-p-anisidine.
4-Amino-4-nitrodiphenylamine-2-sulfonic acid	2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid.
2-Aminophenetole	o-Phenetidine.
Aminophenol sulfamide	2-Amino-1-phenol-4-sulfonamide.
o-Aminophenol-p-sulfonamide	2-Amino-1-phenol-4-sulfonamide.
o-Aminophenol-p-sulfonic acid	2-Amino-1-phenol-4-sulfonic acid.
Aminophenylphenyl ether	Phenoxyaniline.
o-Aminophenylpyrasolonecarboxylic acid	1-(m-Aminophenyl)-5-oxo-2-pyrasoline-3-carboxylic acid.
1-(m-Aminophenyl)-5-pyrasolone-3-carboxylic acid	1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.
p-Aminophenyl-p-tolylaminesulfonic acid	6-p-Toluidinometanilic acid.
Amino R acid	3-Amino-2,7-naphthalenedisulfonic acid.
4-Amino-3-(p-toluene sulfone)amino-4-methoxytoluene	4'-Amino-5'-methyl-p-toluenesulfon-o-anisidide.
3'-Amino-(p-toluenesulfone)ethoxytoluene	3-Methyl-N-(p-toluenesulfonyl)-p-phenetidine.
2-Aminotoluene-5-sulfonic acid	4-Amino-m-toluenesulfonic acid.
Aminoviolanthrene	16-Aminoviolanthrone.
Aniline-2,4-disulfonic acid	4-Amino-m-benzenedisulfonic acid.
Aniline-2,5-disulfonic acid	2-Amino-p-benzenedisulfonic acid.
Aniline hydrochloride	Aniline salt.
Aniline oil	Aniline.
Aniline-m-sulfonic acid	Metanilic acid.
Aniline-p-sulfonic acid	Sulfanilic acid.
Aniline-omega-sulfonic acid, sodium salt	Anilinomethanesulfonic acid, sodium salt.
6-Anilinometanilic acid	5-Amino-2-anilinobenzenesulfonic acid.
o-Anisido-4-acetylurea	o-Anisidinomenthanesulfonic acid.
2-Anisido-4-acetylurea	1-Acetyl-3-(4-amino-p-anisyl)urea.
2-Anisidine-4-sulfobutylamide	3-Amino-N-butyl-p-anisolesulfonamide.
o-Anisidine-omega-sulfonic acid	o-Anisidinomethanesulfonic acid.
1,4,9,10-Anthratetrol	Leuco quinizarin.
1,9-Anthrathiazole-2-carbonyl chloride	Anthra[1,9]isothiazole-2-carbonyl chloride.
1,1'-Azobis(2-naphthol-4-sulfonic acid)	Naphth[1,2]oxadiazole-5-sulfonic acid.
1,1'-Azobis(8-nitro-2-naphthol-4-sulfonic acid)	7(and 8)-Nitronaphth[1,2]oxadiazole-5-sulfonic acid.
9,9'-Azobis(salicylic acid)	3-Carboxy-2(and 4)-hydroxybenzenediazonium sulfate.
Azohydroxyaniline	p-(p-Aminophenylazo)phenol.
Azoxyaniline	m,m'-Azoxydianiline.
m,m'-Azoxybisaniline	m,m'-Azoxydianiline.
Benzal chloride	α,α-Dichlorotoluene.
Benzaldehydedisulfonic acid	4-Formyl-m-benzenedisulfonic acid.
Benzaldehydemonosulfonic acid	o-Formylbenzenesulfonic acid.
1-(4-Benzamido-1-anthraquinonylimino)-5-benzamido-anthraquinone.	4,4'-Dibenzamido-1,1'-iminodianthraquinone.
Benzanthrone	7-Benz[de]anthracen-7-one.
Benzanthronedianthraquinonyldiimide	1,9-Bis[1-anthraquinonylamino]-7-benz[de]anthracen-7-one.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
Benzenesuccinic acid	Succinic acid.
Benzene-1,3-dicarboxylic acid	Isophthalic acid.
p-Benzenedicarboxylic acid	Terephthalic acid.
1,3,5-Benzenetriol	Phloroglucinol.
2,2'-Benzidine disulfonic acid	4,4'-Diamino-2,2'-biphenyldisulfonic acid.
Benzidine sulfonic acid	2-Amino-5-(p-aminophenyl)benzenesulfonic acid.
Benzocaine	p-Aminobenzoic acid, ethyl ester.
Benzotrichloride	alpha,alpha,alpha-Trichlorotoluene.
Benzoylacetanilide	alpha-Benzoylacetanilide.
1-Benzoylamino-4-anilinoanthraquinone	1-Amino-4-benzamidoanthraquinone.
2-Benzoylamino-1,4-diethoxybenzene	2',5'-Diethoxybenzanilide.
2-Benzoylamino-1,4-dimethoxybenzene	2',5'-Dimethoxybenzanilide.
1-Benzoylamino-2-nitrodimethoxybenzene	2',5'-Dimethoxy-4'-nitrobenzanilide.
1-Benzoylamino-2-nitrohydroquinone diethyl ester	2',5'-Diethoxy-4'-nitrobenzanilide.
6-Benzoylamino-3-(p-toluenesulfonamido)-4-methoxytoluene.	6-Benzamido-4-methoxy-3-(p-toluenesulfonamido)toluene.
2-Benzoyl-4-chloro-3-nitrobenzoic acid	o-(4-Chloro-3-nitrobenzoyl)benzoic acid.
Benzoyl J acid	6-Benzamido-1-naphthol-3-sulfonic acid.
2-Benzoylthiophene	Phenyl 2-thienyl ketone.
alpha-Benzylacetamide	Hydrocinnamamide.
alpha-Benzyl-p-aminophenol hydrochloride	4-Amino-alpha-phenyl-m-cresol hydrochloride.
Benzyl chloride	alpha-Chlorotoluene.
Benzyl cyanide	Phenylacetonitrile.
N-Benzyl-N-ethylaniline	N-Ethyl-N-phenylbenzylamine.
N-Benzyl-N-ethyl-p-nitrosoaniline	N-Ethyl-N-(p-nitrosophenyl)benzylamine.
3-Benzyl-7-hydroxy-4-methylcoumarin	3-Benzyl-4-methylumbelliferone.
Benzylidineacetophenone	Chalcone.
Bibenzoyl	Benzil.
o-Biphenylamine	2-Biphenylamine.
4-Biphenylamine	Xenylamine.
p,p'-Bis(acetoacetanilide)	4,4'-Biacetoacetanilide.
N,N'-Bis(acetoacetyl)benzidine	4,4'-Biacetoacetanilide.
N,N-Bis(2-hydroxyethyl)aniline	2,2'-(Phenylimino)diethanol.
N,N-Bis(2-hydroxyethyl-m-toluidine)	2,2'-(m-Tolylimino)diethanol.
4,4'-Bis[2-(N-methyl-o-anisylidiazoamino)ethanesulfonic acid].	3,3'-Dimethoxy-4,4'-biphenylbis[3-methyl-3-triazene-ethanesulfonic acid].
N,N'-Bis-6-(1-naphthol-3-sulfonic acid)urea	6,6'-Ureylenebis[1-naphthol-3-sulfonic acid].
B.O.N.	3-Hydroxy-2-naphthoic acid.
Broenner's acid	6-Amino-2-naphthalenesulfonic acid.
Bromamine acid	1-Amino-4-bromo-2-anthraquinonesulfonic acid.
p-Bromoacetamidoanthraquinone	1-Acetamido-4-bromoanthraquinone.
Bromobenzanthrone	3-Bromo-7-benz[de]anthracen-7-one.
p-Bromomethylaminoanthraquinone	4-Bromo-1-methylaminoanthraquinone.
4-Bromo-N-methyl-1,9-anthrapyridone	6-Bromo-3-methyl-7-dibenz[f,ij]isoquinoline-2,7(3)-dione.
n-Butyl-p-nitrobenzoate	p-Nitrobenzoic acid, n-butyl ester.
p-Carboxybenzenesulfonamide	p-Sulfamylbenzoic acid.
3-Carboxy-4-hydroxyacetanilide	5-Acetamidosalicylic acid.
Casella acid	3-Amino-1,5-naphthalenedisulfonic acid.
Centralite	N,N'-Diethylcarbanilide.
Chicago acid	8-Amino-1-naphthol-3,7-disulfonic acid.
Chlorinated cresols	Cresols, chlorinated.
2-Chloro-3-acetamino-9,10-anthrahydroquinone disulfonic acid ester.	2-Acetamido-3-chloro-9,10-dihydro-9,10-anthradiol-9,10-disulfonic acid, diethyl ester.
2-Chloro-3-acetaminoanthraquinone	2-Acetamido-3-chloroanthraquinone.
2-Chloro-3-acetamino-9,10-dihydroxyanthracene-9,10-disulfonic acid ester.	2-Acetamido-3-chloro-9,10-dihydro-9,10-anthradiol-9,10-disulfonic acid, diethyl ester.
Chloroacetylaranilic acid	Chloroarecetin.
5-Chloro-2-aminoanisole	4-Chloro-o-anisidine.
4-Chloro-2-amino-6-benzenesulfonic acid	5-Chlorometanilic acid.
6-Chloro-3-aminobenzotrifluoride	6-Chloro-m-trifluoro-m-toluidine.
Chloroaminophenol	2-Amino-4-chlorophenol.
2-Chloro-4-aminotoluene	3-Chloro-p-toluidine.
5-Chloro-2-aminotoluene	4-Chloro-o-toluidine.
m-Chloroaniline-o-sulfonic acid	2-Amino-6-chlorobenzenesulfonic acid.
p-Chloroaniline-m-sulfonic acid	6-Chlorometanilic acid.
p-Chloroaniline-o-sulfonic acid	2-Amino-5-chlorobenzenesulfonic acid.
5-Chloroanisidine	4-Chloro-o-anisidine.
2-Chloro-3-anthracenecarboxylic acid	3-Chloro-2-anthracenecarboxylic acid.
2-Chloroanthraquinone-3-carboxylic acid	3-Chloro-2-anthraquinonecarboxylic acid.
2-Chlorobenzaldehyde-5-sulfonic acid	4-Chloro-3-formylbenzenesulfonic acid.
4-Chlorobenzaldehyde-2-sulfonic acid	5-Chloro-2-formylbenzenesulfonic acid.
1-Chloro-5-benzamidoanthraquinone	1-Benzamido-5-chloroanthraquinone.
Chlorobenzanthrone	Chloro-7-benz[de]anthracen-7-one.
p-Chlorobenzotrifluoride	4-Chloro-alpha,alpha,alpha-trifluorotoluene.
Chlorobenzyl cyanide	(p-Chlorophenyl)acetonitrile.
1-Chloro-2-carboxyanthraquinone	1-Chloro-2-anthraquinonecarboxylic acid.
p-Chloro-m-cresol	6-Chloro-m-cresol.
2-Chloro-1,4-dihydroxyanthraquinone	2-Chloroquinizarin.
Chloro H acid	8-Chloro-1-naphthol-3,6-disulfonic acid.
5-Chloro-8-hydroxyquinoline	5-Chloro-8-quinolinol.
3-Chloro-3'-methoxy-6-diphenylaminecarboxylic acid, potassium salt.	N-(p-Anisyl)-4-chloroanthranilic acid, potassium salt.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
(4-Chloro-2-methoxy-N-methylphenyldiazoamino)acetic acid.	1-(4-Chloro-o-anisyl)-3-methyl-3-triazeneacetic acid.
Chloromethylanthraquinone	1-Chloro-2-methylanthraquinone.
(5-Chloro-N-methyl-o-tolyldiazoamino)acetic acid	1-(5-Chloro-o-tolyl)-3-methyl-3-triazeneacetic acid.
o-Chloro-p-nitroaniline	2-Chloro-4-nitroaniline.
p-Chloro-o-nitroaniline	4-Chloro-2-nitroaniline.
4-Chloro-3-nitrobenzotrifluoride	4-Chloro-4,a,a,a-trifluoro-3-nitrotoluene.
2-Chlorophenol	o-Chlorophenol.
4-Chlorophenol	p-Chlorophenol.
2-(m-Chlorophenyldiazoamino)-4-sulfobenzoic acid	2-[1-(m-Chlorophenyl)triazeno]-4-sulfobenzoic acid.
Chlorophenylhydrazine-p-sulfonic acid	4-Chloro-3-hydrazinobenzenesulfonic acid.
2-Chloro-o-phenyl phenol	2-Chloro-6-phenylphenol.
1-(2-Chloro-4-sulfophenyl)-3-methyl-5-pyrazolone	1-(6-Chloro-4-sulfophenyl)-3-methyl-5-pyrazolone.
o-Chloro-p-toluene sodium sulfonate	3-Chloro-p-toluenesulfonic acid, sodium salt.
4-Chlorotoluene-2-sulfonic acid	5-Chloro-o-toluenesulfonic acid.
m-Chlorotoluenethioglycolic acid	4-Chloro-o-tolylmercaptoacetic acid.
5-Chloro-2-toluidine	5-Chloro-o-toluidine.
o-Chloro-m-toluidine-p-sulfonic acid	2-Amino-5-chloro-p-toluenesulfonic acid.
2-Chloro-p-toluidine-5-sulfonic acid	6-Amino-4-chloro-m-toluenesulfonic acid.
2-Chloro-5-toluidine-4-sulfonic acid	2-Amino-5-chloro-p-toluenesulfonic acid.
Chlorotolylthioglycolic acid	4-Chloro-o-tolylmercaptoacetic acid.
Chloro-sym-xylenol	4-Chloro-3,5-xylenol.
Chloroxylidenesulfonic acid	6-Amino-3-chloro-2,5-xylenesulfonic acid.
Chromotropic acid	4,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
1,6-Cleve's acid	5-Amino-2-naphthalenesulfonic acid.
1,7-Cleve's acid	6-Amino-2-naphthalenesulfonic acid.
Cleve's acid, mixed	5(and 8)-Amino-2-naphthalenesulfonic acid.
Cresidine	5-Methyl-o-anisidine.
m-Cresol methyl ether	m-Methylanisole.
Cresols, mixed	Cresylic acid.
m-Cresolsulfonic acid	5-Hydroxy-m-toluenesulfonic acid.
o-Cresotic acid	2,5-Cresotic acid.
o-Cresotinic acid	2,3-Cresotic acid.
m-Cresyl methyl ether	m-Methylanisole.
psi-Cumidine	Pseudocumidine.
Cuminaldehyde	Cumaldehyde.
2-Cyanopyridine	Picolinonitrile.
3-Cyanopyridine	Nicotinonitrile.
4-Cyanopyridine	Isonicotinonitrile.
Dahl's acid	6-Amino-1-naphthalenesulfonic acid.
Dehydrothio-p-toluidine	2-(p-Aminophenyl)-6-methylbenzothiazole.
Desoxyanisoin	alpha-(p-Anisyl)-p-methoxyacetophenone.
Developer Z	1-Methyl-1-phenyl-5-pyrazolone.
3,6-Diaminoacridine	Proflavine base.
m-Diaminoanisole	5-Methoxy-m-phenylenediamine.
3,3'-Diaminoazoxybenzene	m,m'-Azoxydianiline.
4,4'-Diamino-1,1'-dianthraquinonylamine	1,1'-Iminodi-4-aminoanthraquinone.
4,4'-Diamino-1,1'-dianthrimide	1,1'-Iminodi-4-aminoanthraquinone.
Diamino-4,4'-dibenzoyl-1,1'-dianthraquinoneimine	1,1'-Iminobis[4-benzamidoanthraquinone].
Diamino-4,5-dibenzoyl-1,1'-dianthraquinonylamine	4,5'-Dibenzamido-1,1'-aminodianthraquinone.
1,4-Diamino-2,3-dihydroanthraquinone	Acetate leuco violet.
3,6-Diamino-2,7-dimethylacridine hydrochloride	Acridine yellow.
4,4'-Diamino-3,3'-dimethyl-5,5'-bibenzenesulfonic acid.	2,2'-Diamino-5,5'-bi-m-toluenesulfonic acid.
4,4'-Diamino-2,2'-dimethyldiphenylmethane	4,4'-Methylenebis[m-toluidine].
p,p'-Diaminodiphenylmethane	p,p'-Methylenedianiline.
p,p'-Diaminodiphenylsulfide	p,p'-Thiodianiline.
3,3'-Diaminodiphenyl urea	3,3'-Diaminocarbanilide.
p,p'-Diaminodiphenylsulfide	p,p'-Thiodianiline.
Di(p-aminophenyl)urea	3,3'-Diaminocarbanilide.
2,6-Diaminotoluene-4-sulfonic acid	1,5-Diamino-p-toluenesulfonic acid.
Dianylphenol	2,4-Di-tert-amylphenol.
1,5-Dianilinoanthraquinone-o,o'-dicarboxylic acid	1,5-Dianilino-2,6-anthraquinonedicarboxylic acid.
o-Dianisidine	3,3'-Dimethoxybenzidine.
Di(o-anisyldiazo)methylenebis(iminoacetic acid)	3,3'-Methylenebis[1-o-anisyl-3-triazeneacetic acid].
Di(o-anisyldiazo)methylenebis(iminopropionic acid)	3,3'-Methylenebis[1-o-anisyl-3-triazeneacetic acid].
alpha,beta-Dianisylglycol	1,2-Di-p-anisyl-1,2-ethanediol.
1,1'-Dianthraquinonylimine	1,1'-Iminodianthraquinone.
1,1'-Dianthraquinonylamine	1,1'-Iminodianthraquinone.
Dianthrimide	1,1'-Iminodianthraquinone.
Diazoaminobenzene	1,3-Diphenyltriazine.
1-Diazo-2-naphthol-4-sulfonic acid	5-Naphth[1,2]oxadiazolsulfonic acid.
Dibenzanthrone	Violanthrone.
2,2-Dibenzanthronyl	[4,4'-Bi-7-benz[de]anthracen]-7,7'-dione.
11,11-Dibenzanthronyl	[1,1'-Bi-7-benz[de]anthracen]-7,7'-dione.
Dibenzoyl	Benzil.
4,5-Dibenzoylamidodianthraquinonylamine	4,5'-Dibenzamido-1,1'-aminodianthraquinone.
4,4'-Dibenzoyldiamino-1,1'-dianthrimide	1,1'-Iminobis[4-benzamidoanthraquinone].
Dibenzyl	Bibenzyl.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
Dibenzylaniline	N-Phenyldibenzylamine.
Dibenzyl disulfide	Benzyl disulfide.
Dibenzyl ether	Benzyl ether.
Dibenzyl sodium sulfamilate	N,N-Dibenzylsulfanilic acid, sodium salt.
Dibromoaminoanthraquinone	1-Amino-2,4-dibromoanthraquinone.
7,16-Dibromo-6,15-dihydro-5,9,14,18-anthrazinetetrone	7,16-Dibromoindanthrene.
p-Dibromodihydroxynaphthalene	4,5-Dibromo-1,8-naphthalenediol.
2,6-Dibromo-1,5-dihydroxynaphthalene	2,6-Dibromo-1,5-naphthalenediol.
4,5-Dibromo-1,8-dihydroxynaphthalene	4,5-Dibromo-1,8-naphthalenediol.
2,5-Dichloroaniline	2,5-Dichloroaniline.
2,5-Dichloroaniline-4-sulfonic acid	2,5-Dichloroanilinesulfonic acid.
Dichlorodiaminodiimidodisuccinic acid	3,3'-Methylenebis[1-(5-chloro-o-anisyl)-3-triazene-acetic acid].
Di(5-chloro-o-anisyldiazo)methylenebis(iminoacetic acid).	3,3'-Methylenebis[1-(5-chloro-o-anisyl)-3-triazene-acetic acid].
1,5-Dichloro-4,8-anthraquinonedisulfonic acid	4,8-Dichloro-1,5-anthraquinonedisulfonic acid.
1,8-Dichloro-4,5-anthraquinonedisulfonic acid	4,5-Dichloro-1,8-anthraquinonedisulfonic acid.
2,6-Dichlorobenzalchloride	α,α,2,6-Tetrachlorotoluene.
o,o'-Dichlorobenzidine	3,3'-Dichlorobenzidine.
m,m'-Dichlorobenzidine hydrochloride	2,2'-Dichlorobenzidine hydrochloride.
2,4-Dichlorobenzyl chloride	α,2,4-Trichlorotoluene.
2,4-Dichlorobenzylidene chloride	α,α,2,4-Tetrachlorotoluene.
2,6-Dichlorobenzylidene chloride	α,α,2,6-Tetrachlorotoluene.
Di(4-chloro-2-diazotoluol)methylenebis(iminoacetic acid).	3,3'-Methylenebis[1-(4-chloro-o-tolyl)-3-triazene-acetic acid].
2-(2,5-Dichloro-4-ethylphenyldiazoamino)-5-sulfobenzoic acid.	2-[1-(2,5-Dichlorophenyl)-3-ethyl-3-triazene]-5-sulfobenzoic acid.
Dichlorohydroxybenzoylbenzoic acid	o-(3,5-Dichloro-salicyloyl)benzoic acid.
2,5-Dichlorophenylhydrazinesulfonic acid	2,5-Dichlorohydrazinobenzenesulfonic acid.
1-(2,5-Dichlorophenyl)-5-pyrazolone-3-carboxylic acid	1-(2,5-Dichlorophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.
Di(5-chloro-o-tolyldiazo)methylenebis(iminoacetic acid).	3,3'-Methylenebis[1-(5-chloro-o-tolyl)-3-triazene-acetic acid].
Di(5-chloro-o-tolyldiazo)methylenebis(iminopropionic acid).	3,3'-Methylenebis[1-(5-chloro-o-tolyl)-3-triazene-methylacetic acid].
Dicresyldisulfide	Cresyl disulfide.
Dicyclohexyl	Bicyclohexyl.
Diethanolaniline	2,2'-(Phenylimino)diethanol.
Diethanol-m-toluidine	2,2'-(m-Tolylimino)diethanol.
1,4-Diethoxybenzene	p-Diethoxybenzene.
N-(2,5-Diethoxy-4-nitrophenyl)benzamide	2',5'-Diethoxy-4'-nitrobenzanilide.
N-(2,5-Diethoxyphenyl)benzamide	2',5'-Diethoxybenzanilide.
p-Diethylaminobenzalaniline-o-sulfonic acid	N-(p-Diethylaminobenzylidene)aniline-o-sulfonic acid.
Diethylaniline-m-sulfonic acid	N,N-Diethylmetanilic acid.
Diformyl-m-tolylenediamine	N,N'-Diformyltoluene-2,5-diamine.
1,2-Dihydronaphthalene	Acenaphthene.
1,4-Dihydro-4-oxo-2,6-pyridinedicarboxylic acid	Chelidamic acid.
1,3-Dihydroxyanthraquinone	Xanthopurpurin.
1,4-Dihydroxyanthraquinone	Quinizarin.
1,5-Dihydroxyanthraquinone	Anthrarufin.
1,8-Dihydroxyanthraquinone	Chrysazin.
2,6-Dihydroxyanthraquinone	Anthraflavic acid.
2,4-Dihydroxybenzoic acid	β-Resorcylic acid.
2,3-Dihydroxy-1,4-diaminoanthraquinone	1,4-Diaminohystazarin.
Dihydroxydibenzanthrone	16,17-Dihydroxyviolanthrone.
3,4-Dihydroxy-ω-dimethylaminoacetophenone	Adrenalone.
5,5'-Dihydroxydi-2-naphthylamine-7,7'-disulfonic acid	6,6'-Iminobis[1-naphthol-3-sulfonic acid].
1,3-Dihydroxy-4,8-dinitroanthraquinone	4,8-Dinitrochrysarufin.
p,p'-Dihydroxydiphenyldimethylmethane	p,p'-Isopropylidenediphenol.
4,4'-Dihydroxydiphenylsulfone	p,p'-Sulfonyldiphenol.
5,5'-Dihydroxy-7,7'-disulfonic-2,2'-diamphthylamine	6,6'-Iminobis[1-naphthol-3-sulfonic acid].
Dihydroxyethylaniline	2,2'-(Phenylimino)diethanol.
Dihydroxyethyl-3-toluidine	2,2'-(m-Tolylimino)diethanol.
1,5-Dihydroxynaphthalene	1,5-Naphthalenediol.
2,3-Dihydroxynaphthalene	2,3-Naphthalenediol.
2,8-Dihydroxynaphthalene-3,6-disulfonic acid	4,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
3,8-Dihydroxynaphthalene-4-sulfonic acid	4,5-Dihydroxy-1-naphthalenesulfonic acid.
2,3-Dihydroxynaphthalene-6-sulfonic acid	6,7-Dihydroxy-2-naphthalenesulfonic acid.
Diisothanil-4-sodium sulfonate	Isopropylidenedeaminobenzenesulfonic acid, sodium salt.
2,3-Dimethoxybenzaldehyde	o-Veratraldehyde.
3,4-Dimethoxybenzaldehyde	Veratraldehyde.
o-Dimethoxybenzene	Veratrole.
1,2-Dimethoxybenzene	Veratrole.
4,4'-Dimethoxybenzoin	Anisoin.
3,4-Dimethoxybenzyl alcohol	Veratryl alcohol.
Di(methoxy-2-diazo-4-chlorobenzyl)methylenebis(iminoacetic acid).	3,3'-Methylenebis[1-(5-chloro-o-anisyl)-3-triazeneacetic acid].
Dimethoxydiazodiphenylmethylenebis(iminoacetic acid).	3,3'-Methylenebis[1-o-anisyl-3-triazeneacetic acid].
Dimethoxydiazodiphenylmethylenebis(iminopropionic acid).	3,3'-Methylenebis[1-o-anisyl-3-triazenemethylacetic acid].
3,3'-Dimethoxy-N,N'-dimethyl-4,4'-biphenylbis-diazoaminodiethanesulfonic acid.	3,3'-Dimethoxy-4,4'-biphenylbis[3-methyl-3-triazene-ethanesulfonic acid].
Di-p-methoxyethylchalcone	p-Ethyl-4,4'-dimethoxychalcone.
N-(2,5-Dimethoxy-4-nitrophenyl)benzamide	2',5'-Dimethoxy-4'-nitrobenzanilide.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
(3,4-Dimethoxyphenyl)acetic acid	Homoveratric acid.
N-(2,5-Dimethoxyphenyl)benzamide	2',5'-Dimethoxybenzanilide.
2,4-Di(p-methoxyphenyl)-3-ethylhexane	2,4-Di(p-anisyl)-3-ethylhexane.
2,4-Di(p-methoxyphenyl)-3-ethylhexene	2,4-Di(p-anisyl)-3-ethylhexene.
3,4-Di(p-methoxyphenyl)hexane	3,4-Di(p-anisyl)hexane.
Dimethylacetanilide	Acetoxylidide.
Dimethylaminoacetylcatechol	Adrenalone.
N,N-Dimethyl-3-aminophenol	m-Dimethylaminophenol.
Dimethylaniline	Xylidine.
Dimethylbenzene	Xylene.
2,4-Dimethylbenzenesulfonanilide	p-Toluenesulfono-o-toluidide.
2,4-Dimethyl-6-tert-butylacetophenone	6-tert-Butyl-2,4-dimethylacetophenone.
1,3-Dimethyl-5-tert-butylbenzene	5-tert-Butyl-m-xylene.
2,7-Dimethylcarbazanol	2,8-Dimethyl-3β-hydroxy-9(1'β)-carbazenone.
Dimethyldianthraquinonyl	2,2'-Dimethyl-1,1'-bianthraquinone.
2,2'-Dimethyl-1,1-dianthraquinonylamine	1,1'-Iminobis[2-methylanthraquinone].
2,7-Dimethylfluorane	2',7'-Dimethylfluoran.
Dimethylhydroresorcinol	Dimethyl-1,3-cyclohexanedione.
Dimethyl-α-naphthylamine	N,N-Dimethyl-1-naphthylamine.
2,7-Dimethylquinoline	m-Toluquinaldine.
Dinaphtho[1,2,3-cd,3',2',1'-lm]perylene	Violanthrene.
Dinaphtho[1,2,3-cd,3',2',1'-lm]perylene-5,10-dione.	Violanthrone.
1,4-Dinitrobenzene	p-Dinitrobenzene.
2,4-Dinitrobenzene	m-Dinitrobenzene.
Dinitrochlorobenzene	1-Chloro-2,4-dinitrobenzene.
Dinitrochlorobenzenesulfonic acid	4-Chloro-3,5-dinitrobenzenesulfonic acid.
3,5-Dinitro-4-chlorobenzoic acid	4-Chloro-3,5-dinitrobenzoic acid.
2,6-Dinitro-4-chlorophenol	4-Chloro-2,6-dinitrophenol.
Dinitro-o-cyclohexylphenol	2-Cyclohexyl-4,6-dinitrophenol.
4,4'-Dinitro-1,1'-dianthraquinonylamine	1,1'-Iminodi-4-nitroanthraquinone.
Dinitrodibenzanthronyl	Dinitro(3,3'-bi-7-benz[de]anthracen)-7,7'-dione.
Dinitrohydroxydiphenylamine	p-(2,4-Dinitroanilino)phenol.
Dinitrotetramethyldiaminodiphenylmethane	p,p'-Methylenebis[N,N-dimethyl-2-nitroaniline].
2,4-Dinitrotoluenesulfonic acid	3,5-Dinitro-o-toluenesulfonic acid.
1,5-Dioxaidoanthraquinone	N,N'-(1,5-Anthraquinone)dioxamic acid.
Dioxy S acid	4,5-Dihydroxy-1-naphthalenesulfonic acid.
Diphenyl	Biphenyl.
2,4-Diphenylamine-1-hydroxyanthraquinone	2,4-Dianilino-1-hydroxyanthraquinone.
2,4-Diphenylamine-1-oxyanthraquinone	2,4-Dianilino-1-hydroxyanthraquinone.
Diphenylcarbazide	1,5-Diphenylcarbohydrazide.
Diphenylene oxide	Dibenzofuran.
Diphenyl epsilon acid	8-Diphenylamino-1,6-naphthalenedisulfonic acid.
Diphenyl ether	Phenyl ether.
Diphenyl ketone	Benzophenone.
Diphenylmethanol	Benzhydrol.
Diphenyl oxide	Phenyl ether.
Diphenyl silicon dichloride	Dichlorophenylsilane.
Dipyrazoledianthrone	Pyrazole anthrone yellow.
1,3-Di-p-toluidineanthraquinone	1,3-Di-p-(toluidino)anthraquinone.
1,4-Di-p-toluidineanthraquinone	1,4-Di-p-(toluidino)anthraquinone.
1,3-Di(p-tolylamino)anthraquinone	1,3-Di-p-(toluidino)anthraquinone.
1,4-Di-p-tolylaminoanthraquinone	1,4-Di-p-(toluidino)anthraquinone.
N-Ethanol-N-ethyl-4-nitrosoaniline	2-(N-Ethyl-4-nitrosoanilino)ethanol.
2-Ethanolpyridine	2-Pyridineethanol.
2-Ethoxyaniline	o-Phenetidine.
4-Ethoxyaniline	p-Phenetidine.
2-Ethoxy-6-sulfonaphthalene	6-Ethoxy-2-naphthalenesulfonic acid.
Ethyl-p-aminobenzoate	p-Aminobenzoic acid, ethyl ester.
Ethyl-o-amino-p-cresol	3-Ethylamino-p-cresol.
Ethylaniline (mono)	N-Ethylaniline.
N,N-Ethylbenzylaniline	N-Ethyl-N-phenylbenzylamine.
Ethylbenzylanilinesulfonic acid	α-(N-Ethylanilino)-p-toluenesulfonic acid.
Ethylbenzyl-m-toluidine	N-Benzyl-N-ethyl-m-toluidine.
Ethylbenzyl-m-toluidine-o-sulfonic acid	4-(N-Benzyl-N-ethylamino)-o-toluenesulfonic acid.
Ethylene lycol monophenylether	2-Phenoxyethanol.
Ethyl hydrol	4,4'-Bis(diethylamino)benzhydrol.
Ethyl ketone base	4,4'-Bis(diethylamino)benzophenone.
2-(N-Ethyl-2-methoxy-5-nitrophenyldiazoamino)-5-sulfon.	2-[1-Ethyl-1-(5-nitro-o-anisyl)-3-triazene]-5-sulfobenzoic acid.
5-Ethyl-2-methylpyridine	5-Ethyl-2-picoline.
2-(N-Ethyl)-5-nitro-o-anisyldiazoamino-5-sulfobenzoic acid.	2-[1-Ethyl-1-(5-nitro-o-anisyl)-3-triazene]-5-sulfobenzoic acid.
p-Ethylnitrobenzene	1-Ethyl-4-nitrobenzene.
Ethyl p-nitrobenzoate	p-Nitrobenzoic acid, ethyl ester.
Ethyl-p-nitrobenzoylacetate	p-Nitrobenzoylacetic acid, ethyl ester.
Ethyl phenyl ether	Phenetole.
Ethyl salicyl carbonate	o,o'-Carbonyldioxydibenzoic acid, diethyl ester.
Ethylsulfobenzylaniline	α-(N-Ethylanilino)-p-toluenesulfonic acid.
N-Ethyl-o-toluidine-p-sulfonic acid	3-Ethylamino-p-toluenesulfonic acid.
Fast red TR base	5-Chloro-o-toluidine.
p-Formylaniline	p-Aminobenzaldehyde.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
p-Formyl-N,N-diethylaniline	p-Diethylaminobenzaldehyde.
G acid	2-Naphthol-6,8-disulfonic acid.
Gamma acid	7-Amino-1-naphthol-3-sulfonic acid.
Gamma disulfo acid	7-Amino-1-naphthol-3,6-disulfonic acid.
Glycerolmonoethylaniline	3-(N-Ethylanilino)-1,2-propanediol.
H acid	8-Amino-1-naphthol-3,6-disulfonic acid.
Haloeria	6,9-Dichloro-2-methoxyeridine.
Hexahydrobenzoic acid	Cyclohexanecarboxylic acid.
Hexahydropyridine	Piperidine.
Homoveratrylamine	3,4-Dimethoxyphenethylamine.
1,2-1,2-Hydrazinedibromoanthraquinone	7,16-Dibromoindanthrene.
Hydrol	p,p'-Bis(dimethylamino)benzhydrol.
Hydroquinone dimethyl ether	p-Dimethoxybenzene.
o-Hydroxybenzyl benzoate, calcium salt	Saligenin benzoate, calcium salt.
7-Hydroxycoumarin	Umbelliferone.
4-Hydroxydiphenyl	p-Phenylphenol.
β-Hydroxyethyl-o-chloroaniline	2-(Chloroanilino)ethanol.
Hydroxyethylethylaniline	2-(N-Ethylanilino)ethanol.
Hydroxyethylmethylaniline	2-(N-Methylanilino)ethanol.
Hydroxyethyl-3-toluidine	2-(m-Toluidino)ethanol.
2-Hydroxy-3-methoxybenzaldehyde	o-Vanillin.
2-Hydroxy-3-methylbenzoic acid	2,3-Cresotic acid.
2-Hydroxy-4-methylbenzoic acid	2,4-Cresotic acid.
7-Hydroxy-4-methylcoumarin	4-Methylumbelliferone.
2-Hydroxy-5-nitroacetanilide	2-Acetamido-4-nitrophenol.
p-Hydroxyphenylarsonic acid	p-Hydroxybenzenearsonic acid.
p-Hydroxyphenyl-n-butylamine	p-Amino-N-(n-butyl)-phenol.
8-Hydroxyquinoline	8-Quinolinol.
I acid	6-Amino-1-naphthol-3-sulfonic acid.
I acid imide	6,6'-Iminobis[1-naphthol-3-sulfonic acid].
Isobutyl p-nitrobenzoate	p-Nitrobenzoic acid, isobutyl ester.
Isodibenzanthrone	Isoviolanthrone.
p-Isopropylaniline	Cumidine.
p-Isopropylbenzaldehyde	Cumaldehyde.
Isopropylbenzene	Cumene.
Isopropyl p-toluenesulfonate	p-Toluenesulfonic acid, isopropyl ester.
J acid	6-Amino-1-naphthol-3-sulfonic acid.
J acid imide	6,6'-Iminobis[1-naphthol-3-sulfonic acid].
J acid urea	6,6'-Ureylenebis[1-naphthol-3-sulfonic acid].
K acid	6-Amino-1-naphthol-3,5-disulfonic acid.
Koch's acid	8-Amino-1,3,6-naphthalenetrisulfonic acid.
Lake red C amine	2-Amino-5-chloro-p-toluenesulfonic acid.
Laurent's acid	5-Amino-1-naphthalenesulfonic acid.
Lead styphnate	Styphnic acid, lead salt.
Lead trinitroresorcinate	Styphnic acid, lead salt.
Leuco-1,4-di(methylamino)anthraquinone	1,4-Dimethylamino-9,10-anthradiol.
Leucoindophenol BCPN	4-(p-Dimethylaminoanilino)-1-naphthol.
Limonene	Dipentene.
Methane base	p,p'-Methylenebis[N,N-diethylaniline].
Methane salt	4,4'-Methylenebis(3-hydroxy-2-naphthoic acid].
o-Methoxyacetanilide	o-Acetanisidide.
p-Methoxyacetanilide	p-Acetanisidide.
4-Methoxy-4'-aminodiphenylamine	N-(p-Anisyl)-p-phenylenediamine.
2-Methoxy-4-aminodiphenylamine-2-sulfonic acid	o-(4-Amino-2-anisidino)benzenesulfonic acid.
Methoxyaniline	Anisidine.
Methoxybenzene	Anisole.
p-Methoxybenzoic acid	Anisic acid.
4-Methoxy-3'-chloro-6'-carboxydiphenylamine, potassium salt	N-(p-Anisyl)-4-chloroanthranilic acid, potassium salt.
2-Methoxy-6,9-dichloroacridine	6,9-Dichloro-2-methoxyacridine.
4'-Methoxy-4-nitrodiphenylamine-2'-sulfonic acid	2-p-Anisidino-5-nitrobenzenesulfonic acid.
Methoxy-meta-sulfonic acid	o-Anisidinomethanesulfonic acid.
6-Methoxy-m-toluidine	5-Methyl-o-anisidine[NH2=1].
4-Methyl-4-aminodiphenylamine-2-sulfonic acid	6-p-Toluidinemetanilic acid.
Methylaminosulfobenzoic acid	N-Methyl-5-sulfoanthranilic acid.
o-Methylaniline	o-Toluidine.
Methylaniline(mono)	N-Methylaniline.
2-Methylbenzanthrone	2-Methyl-7-benz[de]anthracen-7-one.
2'-Methyl-3-benzidinesulfonic acid	5-Amino-2-(4-amino-m-toluidino)benzenesulfonic acid.
Methylenebis[N-p-(5-chloro-o-anisylazophenyl]imino-acetic acid], disodium salt.	N,N'-Methylenebis[N-p-(5-chloro-o-anisylazo)phenyl-glycine], disodium salt.
Methylenebis(methylaminoantipyrine)	N,N'-Methylenebis[4-methylaminoantipyrine].
Methylenebis(tolylenediamine)	5,5'-Methylenebis [toluene-2,4-diamine].
2-Methyl-5-ethylpyridine	5-Ethyl-2-picoline.
4-Methyl-7-hydroxycoumarin	4-Methylumbelliferone.
Methyl-p-hydroxy-m-nitrobenzoate	p-Hydroxy-m-nitrobenzoic acid, methyl ester.
Methylphenylpyrasolone-4-sulfonic acid	1-Methyl-1-(m-sulfophenyl)-5-pyrazolone.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
Methylphenylpyrasolone-4-sulfonic acid	1-Methyl-1-(p-sulfophenyl)-5-pyrazolone.
2-Methylpiperidine	2-Pipecoline.
Methylpyridine	Picoline.
2-Methylquinoline	Quinaldine.
Methyl-p-toluenesulfonate	p-Toluenesulfonic acid, methyl ester.
4-Methylumbelliferone	4-Methylumbelliferone.
Michler's hydrol	4,4'-Bis[dimethylamino]benzhydrol.
Michler's ketone	4,4'-Bis[dimethylamino]benzophenone.
Mixed cresols, refined	Cresylic acid, refined.
Monobromobenzene	Bromobenzene.
Monochlorobenzene	Chlorobenzene (mono).
Naphthalene β-ium sulfonates	Naphthalenesulfonic acids, sodium salt (mixed).
Naphthalene-β-thioglycolic acid	2-Naphthylmercaptoacetic acid.
α-Naphthionic acid	1-Amino-2-naphthalenesulfonic acid.
α-Naphthol	1-Naphthol.
β-Naphthol	2-Naphthol.
1-Naphthol-8-chloro-3,6-disulfonic acid	8-Chloro-1-naphthol-3,6-disulfonic acid.
2-Naphthol ethyl ether	2-Ethoxynaphthalene.
2-Naphtholthioindoxyl	β-[2-Hydroxynaphthyl)-3-thianaphthenol.
Naphthosulfochloride	1-Naphthol-sulfon,1 chloride.
Naphthylacetonitrile	Naphthaleneacetonitrile.
α-Naphthylamine	1-Naphthylamine.
β-Naphthylamine	2-Naphthylamine.
1-Naphthylamine-3,6-disulfonic acid	5-Amino-2,7-naphthalenedisulfonic acid.
1-Naphthylamine-3,8-disulfonic acid	8-Amino-1,6-naphthalenedisulfonic acid.
1-Naphthylamine-4,7-disulfonic acid	4-Amino-1,6-naphthalenedisulfonic acid.
1-Naphthylamine-4,8-disulfonic acid	4-Amino-1,5-naphthalenedisulfonic acid.
2-Naphthylamine-1,5-disulfonic acid	2-Amino-1,5-naphthalenedisulfonic acid.
2-Naphthylamine-3,6-disulfonic acid	1-Amino-2,7-naphthalenedisulfonic acid.
2-Naphthylamine-4,8-disulfonic acid	1-Amino-1,5-naphthalenedisulfonic acid.
2-Naphthylamine-5,7-disulfonic acid	6-Amino-1,3-naphthalenedisulfonic acid.
2-Naphthylamine-6,8-disulfonic acid	7-Amino-1,3-naphthalenedisulfonic acid.
1-Naphthylamine-2-sulfonic acid	1-Amino-2-naphthalenesulfonic acid.
1-Naphthylamine-3-sulfonic acid	4-Amino-2-naphthalenesulfonic acid.
1-Naphthylamine-4-sulfonic acid	Naphthionic acid.
1-Naphthylamine-5-sulfonic acid	5-Amino-1-naphthalenesulfonic acid.
1-Naphthylamine-6-sulfonic acid	5-Amino-2-naphthalenesulfonic acid.
1-Naphthylamine-6(and 7)-sulfonic acid	5(and 8)-Amino-2-naphthalenesulfonic acid.
1-Naphthylamine-7-sulfonic acid	8-Amino-2-naphthalenesulfonic acid.
1-Naphthylamine-8-sulfonic acid	8-Amino-1-naphthalenesulfonic acid.
2-Naphthylamine-1-sulfonic acid	2-Amino-1-naphthalenesulfonic acid.
2-Naphthylamine-5-sulfonic acid	6-Amino-1-naphthalenesulfonic acid.
2-Naphthylamine-6-sulfonic acid	6-Amino-2-naphthalenesulfonic acid.
2-Naphthylamine-8-sulfonic acid	7-Amino-1-naphthalenesulfonic acid.
1-Naphthylamine-3,6,8-trisulfonic acid	8-Amino-1,3,6-naphthalenetrisulfonic acid.
2-Naphthylamine-3,6,8-trisulfonic acid	7-Amino-1,3,6-naphthalenetrisulfonic acid.
1-Naphthylamino-2-carboxylic acid anthraquinone	1-(1-Naphthylamino)-2-anthraquinonecarboxylic acid.
α-Naphthyl isocyanate	1-Naphthyl isocyanate.
Naphthylmethanesulfonic acid	Naphthalenemethanesulfonic acid.
β-Naphthylthioglycolic acid	2-Naphthylmercaptoacetic acid.
Neville and Winther's acid	1-Naphthol-4-sulfonic acid.
3-Nitro-4-aminoanisole	2-Nitro-p-anisidine.
4-Nitro-2-aminoanisole	5-Nitro-o-anisidine.
5-Nitro-2-aminoanisole	4-Nitro-o-anisidine.
6-Nitro-2-aminoanisole	3-Nitro-o-anisidine.
o-Nitro-p-aminophenol	4-Amino-2-nitrophenol.
p-Nitro-o-aminophenol	2-Amino-4-nitrophenol.
5-Nitro-o-aminophenol	2-Amino-5-nitrophenol.
4-Nitro-2-aminophenol-6-sulfonic acid	2-Amino-4-nitro-1-phenol-6-sulfonic acid.
6-Nitro-2-aminophenol-4-sulfonic acid	2-Amino-6-nitro-1-phenol-4-sulfonic acid.
4-Nitro-4'-amino-2-sulfodiphenylamine	2-(p-Aminoanilino)-5-nitrobenzenesulfonic acid.
5-Nitro-2-aminotoluene	4-Nitro-o-toluidine.
p-Nitroaniline-o-sulfonic acid	2-Amino-5-nitrobenzenesulfonic acid.
m-Nitro-p-anisidine	2-Nitro-p-anisidine.
3-Nitro-p-anisidine	2-Nitro-p-anisidine.
4-Nitro-2-anisidine	5-Nitro-o-anisidine.
5-Nitro-2-anisidine	4-Nitro-o-anisidine.
2-Nitroanisole-4-sulfodiethylamide	N,N-Diethyl-3-nitro-p-anisolesulfonamide.
9-Nitroanthra(1,9,4,10)bis(1,2,3)oxathiazine-2,7-bis-dioxide	9-Nitroanthra[1,9-de,4,10-d'e']bis[1,2,3]oxathiazine-2,7-bisdioxide.
1-Nitroanthraquinone-2-carboxylic acid	1-Nitro-2-anthraquinonecarboxylic acid.
Nitrobenzene-2,5-disulfonic acid	2-Nitro-p-benzenedisulfonic acid.
1-Nitrobenzene-4-sulfonic acid	p-Nitrobenzenesulfonic acid.
2-Nitrobenzenesulfonic acid	o-Nitrobenzenesulfonic acid.
3-Nitrobenzenesulfonic acid	m-Nitrobenzenesulfonic acid.
3-Nitrobenzenesulfonyl chloride	m-Nitrobenzenesulfonyl chloride.
m-Nitrobenzoyl J acid	6-(m-Nitrobenzamido)-1-naphthol-3-sulfonic acid.
p-Nitrobenzoyl J acid	6-(p-Nitrobenzamido)-1-naphthol-3-sulfonic acid.
m-Nitrochlorobenzene	1-Chloro-3-nitrobenzene.
o-Nitrochlorobenzene	1-Chloro-2-nitrobenzene.
p-Nitrochlorobenzene	1-Chloro-4-nitrobenzene.
2-Nitro-1-chlorobenzene-4-sulfobutylamide	N-Butyl-4-chloro-3-nitrobenzenesulfonamide.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
2-Nitro-1-chlorobenzene-4-sulfodiethylamide	4-Chloro-N,N-diethyl-3-nitrobenzenesulfonamide.
o-Nitrochlorobenzene-p-sulfonic acid	4-Chloro-3-nitrobenzenesulfonic acid.
p-Nitrochlorobenzene-o-sulfonic acid	2-Chloro-5-nitrobenzenesulfonic acid.
3-Nitro-4-chlorobenzoylbenzoic acid	o-(4-Chloro-3-nitrobenzoyl)benzoic acid.
4-Nitro-6-chloro-1,3-dimethoxybenzene	4-Chloro-1,3-dimethoxy-5-nitrobenzene.
2-Nitro-4-chlorophenol	4-Chloro-2-nitrophenol.
2-Nitro-4-chlorophenol-6-sulfonic acid	4-Chloro-2-nitro-1-phenol-6-sulfonic acid.
m-Nitro-p-chlorotoluene	4-Chloro-3-nitrotoluene.
o-Nitro-p-chlorotoluene	4-Chloro-2-nitrotoluene.
p-Nitro-o-chlorotoluene	2-Chloro-5-nitrotoluene.
2-Nitro-4-chlorotoluene	4-Chloro-2-nitrotoluene.
m-Nitro-p-cresol	2-Nitro-p-cresol.
Nitrocresyl methyl ether	4-Methyl-o-nitroanisole.
Nitro-p-dichlorobenzene	1,4-Dichloro-2-nitrobenzene.
o-Nitrodiphenyl	2-Nitrobiphenyl.
p-Nitrodiphenyl	4-Nitrobiphenyl.
4-Nitro-2-diphenylamine-sulfonic acid	2-Anilino-5-nitrobenzenesulfonic acid.
4-Nitrodiphenylamine-2-sulfonic acid	2-Anilino-5-nitrobenzenesulfonic acid.
2-Nitrohydroquinone, diethyl ether	1,4-Diethoxy-2-nitrobenzene.
2-Nitrohydroquinone, dimethyl ether	1,4-Dimethoxy-2-nitrobenzene.
3-Nitro-4-hydroxy-1-phenylarsonic acid	4-Hydroxy-3-nitro-1-benzenearsonic acid.
6-Nitro-4-methoxy-3-aminotoluene	4-Methyl-5-nitro-o-anisidine.
2-Nitro-4-methoxy-5-(p-toluenesulfonamido)toluene	N-(5-Methyl-4-nitro-o-anisyl)-p-toluenesulfonamide.
4-Nitro-1-methylaniline	5-Nitro-o-toluidine.
1-Nitro-2-methylanthraquinone	2-Methyl-1-nitroanthraquinone.
2-Nitronaphthalene-4,8-disulfonic acid	3-Nitro-1,5-naphthalenedisulfonic acid.
7-Nitro-1,5-naphthalenedisulfonic acid	3-Nitro-1,5-naphthalenedisulfonic acid.
4-Nitronaphthalic acid tolylimide	4-Nitro-N-tolylnaphthalimide.
3-Nitrophenylhydrazine	m-Nitrophenylhydrazine.
1-(m-Nitrophenyl)-5-pyrazolone-3-carboxylic acid	1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.
Nitropyrazolonecarboxylic acid	1-(m-Nitrophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid.
p-Nitrosodiethylaniline	N,N-Diethyl-p-nitrosoaniline.
p-Nitrosodimethylaniline	N,N-Dimethyl-p-nitrosoaniline.
Nitroso-β-naphthol	1-Nitroso-2-naphthol.
3-Nitro-5-stearoylamino-p-toluenesulfonic acid	3-Nitro-5-stearoylamido-p-toluenesulfonic acid.
4-Nitrotoluenesanilide	2-Methyl-5-nitrodiphenylamine.
6-Nitro-3-(p-toluenesulfone)amino-4-methoxytoluene	N-(5-Methyl-4-nitro-o-anisyl)-p-toluenesulfonamide.
4'-Nitro-p-toluenesulfone-o-toluide	N-(4-Nitro-o-tolyl)-p-toluenesulfonamide.
o-Nitrotoluenesulfonic acid	3-Nitro-p-toluenesulfonic acid.
p-Nitrotoluene-o-sulfonic acid	5-Nitro-o-toluenesulfonic acid.
m-Nitro-o-toluidine	4-Nitro-o-toluidine.
m-Nitro-p-toluidine	2-Nitro-p-toluidine.
p-Nitro-o-toluidine	5-Nitro-o-toluidine.
3-Nitro-4-toluidine	2-Nitro-p-toluidine.
4-Nitro-2-toluidine	5-Nitro-o-toluidine.
5-Nitro-2-toluidine	4-Nitro-o-toluidine.
Nitrotoluidine sulfone	4'-Nitro-p-toluenesulfono-o-toluide.
4-Nitro-o-toluidine-4-sulfonic acid	3-Amino-5-nitro-p-toluenesulfonic acid.
5-Nitro-1,2,4-trichlorobenzene	1,2,4-Trichloro-5-nitrobenzene.
Nitrovioluanthrone	16-Nitroviolanthrone.
p-Nitro-o-xylene	4-Nitro-o-xylene.
4-Nitro-1,3-xylene	4-Nitro-m-xylene.
2-Nitro-1,4-xylol	2-Nitro-p-xylene.
4-Nitro-1,3-xylol	4-Nitro-m-xylene.
Orthanilic acid	o-Aminobenzenesulfonic acid.
Oxalyl-p-nitroaniline	N,N'-Di(p-nitrophenyl)oxamide.
Oxalyl-m-phenylenediamine	N,N'-Di(m-aminophenyl)oxamide.
Oxalyl-p-phenylenediamine	N,N'-Di(p-aminophenyl)oxamide.
Oxo-1,4-pyran-2,6-dicarboxylic acid	Chelidonic acid.
2-Oxycarbazole	2-Hydroxycarbazole.
α-Oxynaphthoic acid	1-Hydroxy-2-naphthoic acid.
β-Oxynaphthoic acid	3-Hydroxy-2-naphthoic acid.
Pentanthrimide	1,4,5,8-Tetrakis(1',1'',1''',1''''-anthraquinonyl-amino)anthraquinone.
Peri acid	8-Amino-1-naphthalenesulfonic acid.
Phenethylmalonic acid, diethyl ether	Ethylphenylmalonic acid, diethyl ester.
1-Phenylacetylcarbinol	1-Hydroxy-1-phenyl-2-propanone.
β-Phenylacrylophenone	Chalcone.
2-Phenylamino-5-naphthol-7-sulfonic acid	6-Anilino-1-naphthol-3-sulfonic acid.
2-Phenylamino-8-naphthol-6-sulfonic acid	7-Anilino-1-naphthol-3-sulfonic acid.
N-Phenylaniline	Diphenylamine.
Phenylarsonic acid	Benzenearsonic acid.
Phenylbiphenyl	Terphenyl.
Phenyl bromide	Bromobenzene.
1-Phenyl-3-carboxy-5-pyrazolone-4-sulfonic acid	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Phenyldiethanolamine	2,2'-(Phenylimino)diethanol.
m-Phenylenediaminedisulfonic acid	4,6-Diamino-m-benzenedisulfonic acid.
m-Phenylenediaminesulfonic acid	2,4-Diaminobenzenesulfonic acid.
p-Phenylenediaminesulfonic acid	2,5-Diaminobenzenesulfonic acid.

Cyclic intermediates: Glossary of synonymous names—Continued

Common name	Standard (Chemical Abstracts) name
Phenylene acrol acid	6-(p-Aminoanilino)metanilic acid.
Phenylethanolamine	2-Anilinoethanol.
Phenylethylmalonic ester	Ethylphenylmalonic acid, diethyl ester.
Phenyl gamma acid	7-Anilino-1-naphthol-3-sulfonic acid.
Phenylhydrazine-p-sulfonic acid	p-Hydrazinobenzenesulfonic acid.
Phenylhydrazine-2-sulfonic acid	o-Hydrazinobenzenesulfonic acid.
Phenylhydrazine-3-sulfonic acid	m-Hydrazinobenzenesulfonic acid.
N-Phenyl-N'-(β-hydroxyethyl)thiourea	1-(2-Hydroxyethyl)-3-phenyl-2-thiourea.
Phenyl isocyanate	Isocyanic acid, phenyl ester.
Phenyl J acid	6-Anilino-1-naphthol-3-sulfonic acid.
Phenylmalonic ester	Phenylmalonic acid, diethyl ester.
Phenylmethanesulfonic acid	α-Toluenesulfonic acid.
N-Phenyl-1-naphthylamine-8-sulfonic acid	8-Anilino-1-naphthalenesulfonic acid.
α-Phenyl-β-(4-oxophenyl)propionic acid	β'-(p-Hydroxyphenyl)-α-phenylpropionic acid.
Phenyl peri acid	8-Anilino-1-naphthalenesulfonic acid.
N-Phenyl-p-phenylenediaminesulfonic acid	5-Amino-2-anilinobenzenesulfonic acid.
1-Phenyl-3-pyrazolone-3-carboxylic acid, ethyl ester	5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester.
Phenyl silicon chloride	Trichlorophenylsilane.
1-Phenyl-4-sulfo-5-pyrazolone-3-carboxylic acid	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Phthalyl chloride	Phthaloyl chloride.
Piperidinopropyl alcohol	1-Piperidinepropanol.
Polychlorodiphenyl	Polychlorobiphenyl.
Potassium-3-chloro-6-carboxy-3-methoxydiphenylamine	2-(m-Anisyl)-4-chloroanthranilic acid, potassium salt.
n-Propyl p-nitrobenzoate	p-Nitrobenzoic acid, n-propyl ester.
Pyrasolanthrone	Anthra[1,9]pyrazol-6(2)-one.
Pyrasolone C	3-Methyl-1-(p-sulfophenyl)-5-pyrazolone.
Pyrasolone I	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Quinophthalone	2,2'-(1,3-Indenedione)quinoline.
R acid	2-Naphthol-3,6-disulfonic acid.
RR acid	7-Amino-1-naphthol-3,6-disulfonic acid.
Red KB base	4-Chloro-o-toluidine.
Rhoduline acid	6,6'-Iminobis(1-naphthol-3-sulfonic acid).
S acid	8-Amino-1-naphthol-5-sulfonic acid.
SS(SS) acid	8-Amino-1-naphthol-5,7-disulfonic acid.
Schaeffer's acid	2-Naphthol-6-sulfonic acid.
Silver salt	2-Anthraquinonesulfonic acid, sodium salt.
Sodium carbolate	Phenol, sodium salt.
Sodium naphthionate	Naphthionic acid, sodium salt.
Sodium phenate	Phenol, sodium salt.
Sodium-o-phenylphenolate	o-Phenylphenol, sodium salt.
Sodium tetrachlorophenolate	2,3,4,6-Tetrachlorophenol, sodium salt.
Sodium trichlorophenolate	2,4,5-Trichlorophenol, sodium salt.
Sulfo BB acid	4-Sulfo-o-benzoylbenzoic acid.
o-Sulfobenzaldehyde	o-Formylbenzenesulfonic acid.
1-Sulfo-5-nitroanthraquinone	5-Nitro-1-anthraquinonesulfonic acid.
Sulfophenylmethylpyrasolone	3-Methyl-1-p-sulfophenyl-5-pyrazolone.
1-(p-Sulfophenyl)-5-pyrazolone-3-carboxylic acid	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Tetraaminoditolylmethane	3,3'-Methylenebis[toluene-2,4-diamine].
Tetrachloroquinone	Chloranil.
Tetraethyldiaminobenzhydrol	4,4'-Bis[diethylamino]benzhydrol.
Tetraethyldiaminobenzophenone	4,4'-Bis[diethylamino]benzophenone.
Tetraethyldiaminodiphenylmethane	p,p'-Methylenebis[N,N-diethylaniline].
Tetraethyldiaminotriphenylmethane	p,p'-Benzylidenebis[N,N-diethylaniline].
Tetramethyldiaminoacridine hydrochloride	2,7-Bis[dimethylamino]acridine hydrochloride.
Tetramethyldiaminobenzophenone	4,4'-Bis[dimethylamino]benzophenone.
Tetramethyldiaminobenzoylhydrol	4,4'-Bis[dimethylamino]benzhydrol.
Tetramethyldiaminodiphenylmethane	p,p'-Methylenebis[N,N-dimethylaniline].
Tetramethyldiaminodiphenylmethanesulfonic acid and salt	Bis[p-dimethylaminophenyl]methanesulfonic acid and salt.
Tetramethyldiaminotriphenylmethane	p,p'-Benzylidenebis[N,N-dimethylaniline].
Thioaniline	p,p'-Thiodianiline.
Thioanilinedisulfonic acid	4,6'-Thiodimetanilic acid.
6,p'-Thiobis(4-amino-o-benzenesulfonic acid)	6,6'-Thiodimetanilic acid.
Thiosalicylic acid	o-Mercaptobenzoic acid.
Tobias acid	2-Amino-1-naphthalenesulfonic acid.
Tolusine base	1-Amino-6-hydroxy-2-methylphenazine.
o-Tolidinedisulfonic acid	2,2'-Diamino-5,5'-bi-m-toluenesulfonic acid.
α-Toluamide	o-Phenylacetamide.
p-Toluenesulfochloride	p-Toluenesulfonyl chloride.
4-Toluenesulfonamido-1-aminoanthraquinonesulfonic acid	1-Amino-4-(p-toluenesulfonamido)-2-anthraquinonesulfonic acid.
4-Toluic acid	p-Toluic acid.
α-Toluic acid	Phenylacetic acid.
4-Toluidine-2-sulfanilide	o-Aminobenzenesulfon-p-toluide.
m-Toluidine-o-sulfonic acid	4-Amino-o-toluenesulfonic acid.

Cyclic intermediates: Glossary of synonymous names--Continued

Common name	Standard (Chemical Abstracts) name
m-Toluidine-p-sulfonic acid	2-Amino-p-toluenesulfonic acid.
o-Toluidine-m-sulfonic acid	4-Amino-m-toluenesulfonic acid.
o-Toluidine-omega-sulfonic acid	o-Toluidinomethanesulfonic acid.
p-Toluidine-m-sulfonic acid	6-Amino-m-toluenesulfonic acid.
m-Toluidine-o-sulfonic acid	5-Amino-o-toluenesulfonic acid.
p-Toluidine-o-sulfonic acid, isopropyl ester	5-Amino-o-toluenesulfonic acid, isopropyl ester.
3-Toluidine-6-sulfonic acid	4-Amino-o-toluenesulfonic acid.
o-Tolunitrile	Phenylacetonitrile.
4-Tolunitrile	p-Tolunitrile.
p-Tolyl-o-benzoic acid	o-(p-Tolyl)benzoic acid.
o-Tolylcarbinol	2-Methylbenzyl alcohol.
p-m-Tolylenediamine	Toluene-2,5-diamine.
4-m-Tolylenediamine	Toluene-2,4-diamine.
5-m-Tolylenediamine	Toluene-3,5-diamine.
m-Tolylenediaminesulfonic acid	2,4-Diamino-m-toluenesulfonic acid.
Tolyl peri acid	8-(p-Toluidino)-1-naphthalenesulfonic acid.
2,4,6-Triaminobenzene trihydrochloride	1,3,5-Benzenetriamine trihydrochloride.
2,4,6-Triaminotoluene trihydrochloride	2,4,6-Toluenetriamine trihydrochloride.
Trianthraquinonyldi-imide	1,4-Bis[1-anthraquinonylamino]anthraquinone.
1,4-Trianthrimide	1,4-Bis[1-anthraquinonylamino]anthraquinone.
1,2,4-Trihydroxyanthraquinone	Purpurin.
1,2,6-Trihydroxyanthraquinone	Flavopurpurin.
1,3,5-Trimethylbenzene	Mesitylene.
2,4,6-Trimethylpyridine	s-Collidine.
Trinitrophenol	Picric acid.
2,4,6-Trinitroresorcin	Styphnic acid.
1,2,4-Trioxyanthraquinone	1,2,4-Trihydroxyanthraquinone.
Triphenyl silicon chloride	Chlorotriphenylsilane.
3,3'-Ureylenedianiline	1,3-Di(m-aminophenyl)urea.
Vinylbenzene	Styrene.
2,4-Xylenesulfonanilide	p-Toluenesulfono-o-toluidide.
m-Xylidine acetate	2,4-Xylidine acetate.
m-Xylidinesulfonic acid	2-Amino-3,5-xylenesulfonic acid.
Xylyl chloride	4-Chloro-m-xylene.

D. Production and Sales of Cellulose Plastics

Cellulose plastics are derived from cellulose acetate, cellulose butyrate, cellulose propionate, and mixtures of cellulose esters, and from cellulose nitrate and ethyl cellulose. The most important uses of cellulose plastics are in the manufacture of molded and extruded articles such as decorative accessories, umbrella handles, toys, and fittings for household and automobile equipment, and in packaging. The statistics given in table 30 were compiled from the Tariff Commission's monthly reports on the production and sales of synthetic plastics and resin materials.

Production of cellulose plastics as a group in 1951 amounted to 117 million pounds, compared with 130 million pounds in 1950--a decline of 10 percent. Sales in 1951 were 110 million pounds, compared with 128 million pounds in 1950. In volume of production, cellulose acetate and mixed ester plastics continued in 1951 to be the most important group of cellulose plastics. Production of these resins in 1951 was 97 million pounds, compared with 110 million pounds in 1950. The output of nitrocellulose plastics was slightly smaller in 1951 (7.6 million pounds) than in 1950 (7.7 million pounds).

TABLE 30.--*Cellulose plastics: United States production and sales, 1951*

[In thousands of pounds]

Material	Production	Sales
Cellulose plastics, total[1]	116,979	110,431
Cellulose acetate and mixed ester plastics, total	97,416	92,929
Sheets, continuous:		
Under 0.003 gage	16,372	15,149
0.003 gage and over	10,713	10,395
All other sheets, rods, and tubes	5,778	5,175
Molding and extrusion materials	64,553	62,210
Nitrocellulose plastics, total	7,611	6,788
Sheets	6,509	5,563
Rods and tubes	1,102	1,225
All other cellulose plastics[2]	11,952	10,714

[1] Includes weight of fillers, plasticizers, and extenders.
[2] Includes data for sheets, rods, tubes, and molding and extrusion materials derived from ethyl cellulose and other cellulosic materials.

U. S. GOVERNMENT PRINTING OFFICE : O—1952