

SYNTHETIC ORGANIC CHEMICALS

United States Production
and Sales, 1990

(Investigation No. 332-135)



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United States International Trade Commission
Washington, DC 20436

UNITED STATES INTERNATIONAL TRADE COMMISSION

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UNITED STATES INTERNATIONAL TRADE COMMISSION

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Introduction

This is the 74th annual report of the U.S. International Trade Commission on domestic production and sales of synthetic organic chemicals and the raw materials from which they are made. The report, along with the quarterly report titled *Preliminary Report on U.S. Production of Selected Synthetic Organic Chemicals (Including Synthetic Plastics and Resin Materials)*, is prepared under investigation No. 332-135, Synthetic Organic Chemicals Reports. This investigation is conducted under the authority of section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1322(g)), for the purpose of collecting data and preparing public reports on synthetic organic chemicals, plastics materials, medicinal chemicals, pesticides, and other organic chemical products. The annual report consists of 15 sections, each covering a specified group (based principally on use) of organic chemicals as follows: Coal tar, tar crudes and pitches; primary products from petroleum and natural gas for chemical conversion; cyclic intermediates; dyes; organic pigments; medicinal chemicals; flavor and perfume materials; plastics and resin materials; rubber-processing chemicals; elastomers; plasticizers; surface-active agents; pesticides and related products; miscellaneous end-use chemicals and chemical products; and miscellaneous cyclic and acyclic chemicals. Data have been supplied by approximately 670 producers.

Each of the 15 sections is headed by a summary of the statistical data. The first table in each section gives statistics on products and groups of products in as great detail as is possible without revealing the operations of individual producers. Statistics for an individual chemical or group of chemicals are given only when there are three or more producers, no one or two of which may be predominant. Moreover, even when there are three or more producers, statistics are not given if there is any possibility that their publication would violate the statutory provisions relating to unlawful disclosure of information accepted in confidence by the Commission.¹

Data are reported by producers for only those items where the volume of production or sales or value of sales exceeds certain minimums. Those minimums are 450 kilograms of production or sales or \$1,000 of value of sales for organic pigments, medicinal chemicals, flavor and perfume materials, rubber-processing chemicals, elastomers, and those chemicals whose end-use is not readily determinable; 2,250 kilograms or \$5,000 for coal tar, tar crudes and pitches, primary products from petroleum and natural gas for chemical conversion, dyes, plasticizers, surface-active agents, and pesticides; 4,500 kilograms or \$10,000 for cyclic intermediates and miscellaneous cyclic and acyclic chemicals; 9,000 kilograms or \$20,000 for miscellaneous end-use chemicals and products; and 22,500 kilograms for \$50,000 for plastics materials. Data are usually supplied in terms of undiluted materials; however, for reporting purposes, products of 95 percent or greater purity are considered to be

100 percent pure. Commercial concentrations are applicable for dyes, certain plastics and resins, and a few solvents; such concentrations are specifically noted.

The statistics given in this report include data from all known domestic producers of the items covered and include the total output of each company's plants, i.e., the quantities produced for consumption within the producing plant, as well as the quantities produced for domestic and foreign sale. The quantities reported as produced, therefore, generally exceed the quantities reported as sold. Some of these differences, however, are attributable to changes in inventory.

The second table in each section lists all items for which data on production or sales have been reported, by primary manufacturers, identified by manufacturers' codes. Each code consists of not more than three capital letters and is assigned on a permanent basis.

The third table in each section is a directory, alphabetized by the codes of the manufacturers reporting in that section.

Appendix A is a directory, alphabetized by the names of the manufacturers reporting in all sections and which includes their general corporate phone numbers and office addresses.

Appendix B lists synonymous names for cyclic intermediates. Information on synonymous names of the organic chemicals included in this report may be found in the *SOCMA Handbook: Commercial Organic Chemical Names*, published by the Chemical Abstracts Service of the American Chemical Society, or the *Colour Index (Revised Third Edition)*, published jointly by the Society of Dyes and Colourists and the American Association of Textile Chemists and Colorists.

Appendix C presents the data in this report aggregated in the format of the Harmonized System (HS) nomenclature on a 6-digit HS basis.

Appendix D is an alphabetical index of all the products in this edition of the report.

Data contained in this report are compiled primarily from Commissions questionnaires sent to domestic producers and represent the best data available to the Commission. While the data supplied in the questionnaires are checked against data previously supplied by the submitting firm and with data supplied by other domestic producers, data are not independently verified by direct Commission examination of the books of companies furnishing information. Data contained in this report should not be used for investment and other purposes without independent verification.

As specified in the reporting instructions sent to manufacturers, production and sales (unless otherwise specified) are defined as follows:

Production is the total quantity of a commodity made available by **Original Manufacturers Only** within the customs territory of the United States (includes the 50 states, the District of Columbia, and Puerto Rico). It covers synthetic organic chemicals, specified crudes from petroleum and coal tar, and certain chemically described natural products, such as, alkaloids, enzymes, and perfume isolates. It is the sum—expressed in terms of 100 percent active ingredient unless otherwise specified in the reporting instructions—of the quantities:

¹ 18 U.S.C. w 1905 and 44 U.S.C. w 3508.

Introduction

Produced, separated, and consumed in the same plant or establishment. A Commodity is considered separated either when it is isolated from the reactive system or when it is not isolated, but weighed, analyzed, or otherwise measured. This includes by-products and co-products that are not classifiable as waste materials;

Produced and not isolated, but directly converted to a finished or semifinished item not included in this report (e.g., polyester film, polyurethane tires, nylon fiber, bar soap, etc.). (See specific instructions in individual sections);

Produced and transferred to other plants or establishments of the same firm or 100 percent owned subsidiaries or affiliates;

Produced and sold to, or bartered with, other firms (including less than 100 percent owned subsidiaries);

Produced *for others* under toll agreements (see general instructions);

Produced and held in stock.

PRODUCTION EXCLUDES:

Purification of a commodity, which is purchased by, or transferred from within, the company, unless inclusion of such processing is specifically requested in the reporting instructions for individual sections;

Intermediate products which are formed in the manufacturing process, but are not isolated from the reaction system—that is, not weighed, analyzed, or otherwise measured; except such products as described above as

being produced and not isolated, but directly converted to a finished or semifinished item.

Materials that are used in the process but which are recovered for re-use or sale;

Waste products having no economic significance.

SALES are actual quantities of commodities sold by **Original Manufacturers Only**. Sales include the quantity and value of:

Shipments of a commodity for domestic use or for export, or segregation in a warehouse when title has passed to the purchaser in a bona fide sale;

Shipments of a commodity produced for you *by others* under toll agreement;

Shipments to subsidiary or affiliated companies, provided the ownership is less than 100 percent.

SALES EXCLUDE:

All intra-company transfers within a corporate entity;

All shipments to 100 percent owned subsidiary or affiliated companies;

All resales of imported or purchased material, including materials obtained by barter;

All shipments of commodity produced *for others* under toll agreements.

VALUE OF SALES is the net dollar receipts of sales f.o.b. plant or warehouse, or delivered. F.o.b. values are preferred, but if they are not readily available from your records, delivered values are acceptable.

Summary

Combined production of all synthetic organic chemicals and primary products from petroleum and natural gas in 1990 was 179,546 million kilograms—an increase of 3.7 percent from the output in 1989 (which also included data on tars) (table 1). Sales of these materials in 1990, which totaled 101,624 million kilograms, valued at \$93,092 million, were 3.2 percent larger than in 1989 in terms of quantity and 3.2 percent less in terms of value. These figures include data on production and sales of chemicals measured at several successive steps in the manufacturing process, and, therefore, they necessarily reflect some duplication. During 1986-90, the total output of these products rose each year since 1986 (figure 1). During that period the output of these products generally followed the trend of the Federal Reserve Board Index of U.S. Production, except for 1989.

In 1990, production of all synthetic organic chemicals, including cyclic intermediates and finished products totaled 126,981 million kilograms, or 4.6

percent more than the output in 1989. Eight sections showed an increase in production in 1990 over 1989. Surface-active agents (3,795 million kilograms) increased by 23.0 percent; plastics and resin materials (30,053 million kilograms) increased by 11.3 percent; miscellaneous end-use chemicals and chemical products (14,992 million kilograms) increased by 11.0 percent; medicinal chemicals (144 million kilograms) increased by 10.8 percent; elastomers (synthetic rubber) (2,233 million kilograms) increased by 6.8 percent; organic pigments (53 million kilograms) increased by 4.4 percent; miscellaneous cyclic and acyclic chemicals (49,912 million kilograms) increased by 2.1 percent; rubber-processing chemicals (179 million kilograms) increased by 1.6 percent; of the remaining sections, dyes (117 million kilograms) showed a decreased of 32.8 percent; plasticizers (891 million kilograms) decreased 8.8 percent; flavor and perfumes materials (60 million kilograms) decreased 6.8 percent; cyclic intermediates (23,996 million kilograms) decreased 3.1 percent; pesticides and related products (557 million kilograms) decreased 2.7 percent in 1990 from that in 1989.

Table 1
Synthetic organic chemicals and their raw materials: U.S. production and sales, 1989 and 1990

Chemical	Production		Sales						
			Quantity			Value			
	1989	1990	Increase or Decrease (-), 1990 over 1989 ¹	1989	1990	Increase or decrease (-), 1990 over 1989 ¹	1989	1990	Increase or decrease (-), 1990 over 1989 ¹
	Million kilograms	Million kilograms	Percent	Million kilograms	Million kilograms	Percent	Million dollars	Million dollars	Percent
Grand total	172,977	179,546	3.7	98,382	101,624	3.2	96,071	93,092	-3.2
Tar	857	843	-1.6	(²)	(²)	(²)	(²)	(²)	(²)
Primary products from petroleum and natural gas	50,742	51,722	1.9	27,834	26,914	-3.3	11,369	11,206	-1.4
Synthetic organic chemicals, total ³	121,378	126,981	4.6	70,548	74,710	5.8	84,702	81,886	-3.4
Cyclic intermediates	24,756	23,996	-3.1	12,371	11,866	-4.1	10,284	10,981	6.8
Dyes	174	117	-32.8	146	104	-28.7	858	775	-9.6
Organic pigments	50	53	4.4	43	45	3.6	702	717	2.2
Medicinal chemicals	130	144	10.8	204	107	-47.3	1,988	2,169	9.1
Flavor and perfume materials	64	60	-6.8	38	37	-5.0	1,005	992	-1.4
Plastics and resin materials	26,995	30,053	11.3	23,819	25,729	8.0	32,180	30,529	-5.1
Rubber-processing chemicals	176	179	1.6	129	136	5.9	473	458	-3.2
Elastomer (synthetic rubber)	2,091	2,233	6.8	1,395	1,555	11.5	2,872	3,128	8.9
Plasticizers	976	891	-8.8	837	827	-1.2	1,046	967	-7.6
Surface-active agents	3,085	3,795	23.0	1,724	1,930	12.0	2,086	2,193	5.1
Pesticides and related products	572	557	-2.7	461	442	-4.3	5,203	4,774	-8.2
Miscellaneous end-use chemicals and chemical products	13,503	14,992	11.0	9,278	10,737	15.7	9,759	9,711	-0.5
Miscellaneous cyclic and acyclic chemicals	48,871	49,912	2.1	20,167	21,197	5.1	16,270	14,492	-11.0

¹ Percentage calculated from figures rounded to thousands.

² Not available

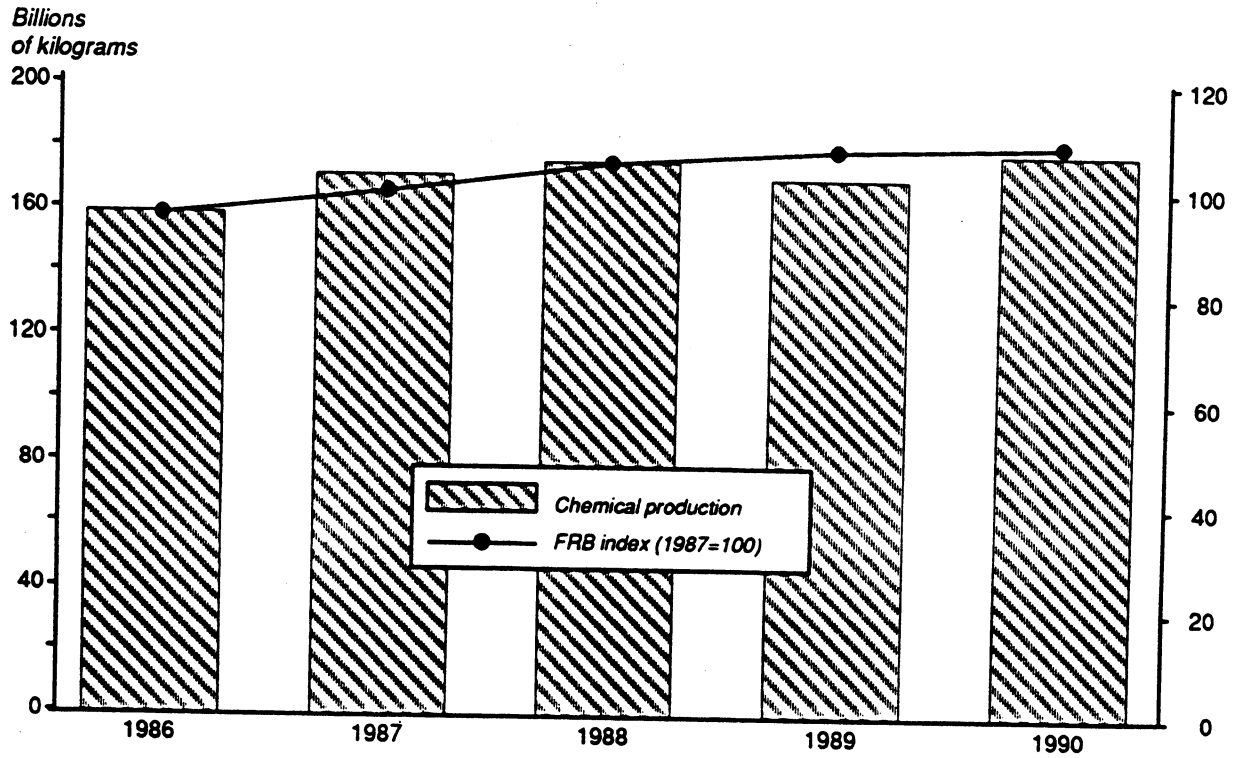
³ Because of rounding, figures may not add to the totals shown.

Note.—Data for 1988 - 1990 do not include ethane, propane, and butane production.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Summary

Figure 1-1
Synthetic organic chemicals and their raw materials, total production, vs FRB industrial production index



Source: Production, U.S. International Trade Commission, *Synthetic Organic Chemicals: United States Production and Sales*; FRB Industrial Production index, The Board of Governors of the Federal Reserve System.

General

In this report, synthetic organic chemicals are classified on the basis of their principal use as follows: Cyclic intermediates, dyes, organic pigments, medicinal chemicals, flavor and perfume materials, plastics and resin materials, rubber-processing chemicals, elastomers (synthetic rubber), plasticizers, surface-active agents, pesticides and related products, miscellaneous end-use chemicals and chemical products, and miscellaneous cyclic and acyclic chemicals. Most of these groups are further subdivided either by use or by chemical composition. As intermediates, chemicals are used in the manufacture of finished products, aggregate figures that cover both intermediates and finished products necessarily include considerable duplication.

Total production of synthetic organic chemicals (intermediates and finished products combined) in 1990 was 126,981 million kilograms, or 4.6 percent more than the output of 121,378 million kilograms reported for 1989, and 60.4 percent more than the output of 79,144 million kilograms reported in 1977 (see table 2). Sales of synthetic organic chemicals in

1990 amounted to 74,710 million kilograms, valued at \$81,886 million, compared with 70,548 million kilograms, valued at \$84,702 million, in 1989, and 44,378 million kilograms, valued at \$32,434 million, in 1977. Production of all cyclic (ring chemical structure) products (intermediates and finished products combined) in 1990 totaled 38,823 million kilograms, or 0.2 percent less than the 38,895 million kilograms reported for 1989, and 122.4 percent more than the 17,451 million kilograms reported for 1977; however, the transfer of eight items, in 1979, from the primary products from petroleum and natural gas section to the section on cyclic intermediates has caused the output of cyclic products to appear much higher in relation to 1977 than would otherwise have resulted. Production of all acyclic (linear or branch chemical structure) products in 1990 totaled 85,925 million kilograms, or 6.8 percent more than the 80,392 million kilograms reported for 1989, and 45.4 percent more than the 59,057 million kilograms reported for 1977. Differences in trends between cyclic and acyclic products reflect the aggregation of changes in usage of individual chemicals rather than preferences for cyclic versus acyclic chemicals.

Table 2
Synthetic organic chemicals: Summary U.S. production and sales of intermediates and finished products, 1977, 1989, and 1990

(Production and sales in thousands of kilograms; sales value in thousands of dollars)

Chemicals	1977 ¹	1989	1990	Increase or decrease (-)	
				1990 over 1977	1990 over 1989
Organic chemicals, cyclic and acyclic, total:					
Production	79,144,460	121,378,075	126,980,989	60.4	4.6
Sales	44,378,105	70,548,189	74,710,337	68.3	5.8
Sales value	32,434,301	84,702,188	81,885,632	152.4	-3.4
Cyclic, total:²					
Production	17,451,083	38,895,104	38,823,382	122.4	-0.2
Sales	10,833,542	23,577,601	23,567,459	117.5	-0.1
Sales value	13,410,029	38,189,601	37,221,177	177.5	-2.6
Acyclic, total:²					
Production	59,056,510	80,391,891	85,924,531	45.4	6.8
Sales	31,849,694	45,575,686	49,587,756	56.6	8.8
Sales value	17,084,012	43,640,346	41,536,592	143.1	-4.9
1. Cyclic Intermediates					
Production	8,493,888	24,755,837	23,995,795	182.5	-3.1
Sales	3,622,331	12,370,861	11,865,617	227.6	-4.1
Sales value	2,596,627	10,283,993	10,980,553	322.9	6.8
2. Dyes					
Production	119,917	174,358	117,135	-2.3	-32.8
Sales	115,448	145,757	103,897	-10.0	-28.7
Sales value	689,992	857,554	775,352	12.4	-9.6
3. Organic Pigments					
Production	31,165	50,360	52,551	68.6	4.4
Sales	26,052	43,236	44,773	71.9	3.6
Sales value	267,747	701,552	717,194	167.9	2.2
4. Medicinal Chemicals					
Cyclic:					
Production	69,819	95,672	119,726	71.4	25.1
Sales	37,914	153,166	65,847	73.6	-57.1
Sales value	718,392	1,782,033	1,867,993	160.0	4.8
Acyclic:					
Production	39,377	34,654	24,615	-37.5	-29.0
Sales	35,743	50,447	41,400	15.8	-17.9
Sales value	75,626	205,486	301,351	298.5	46.7

See footnotes at end of table.

General

Table 2—Continued

Synthetic organic chemicals: Summary U.S. production and sales of intermediates and finished products, 1977, 1989, and 1990

(Production and sales in thousands of kilograms; sales value in thousands of dollars)

Chemicals	1977 ¹	1989	Increase or decrease (-)		
			1990	1990 over 1977	1990 over 1989
5. Flavors and Perfume Materials					
Cyclic:					
Production	26,514	38,097	39,514	49.0	3.7
Sales	21,232	27,502	27,867	31.3	1.3
Sales value	134,628	908,457	909,620	575.7	0.1
Acyclic:					
Production	41,715	26,227	20,417	-51.1	-22.2
Sales	27,559	10,918	8,647	-68.6	-20.8
Sales value	72,473	96,786	81,992	13.1	-15.3
6. Plastics and Resin Materials					
Cyclic:					
Production	4,899,932	8,017,658	8,925,713	82.1	11.3
Sales	4,284,062	6,955,265	7,512,789	75.3	8.0
Sales value	4,275,111	13,065,234	12,394,918	189.9	-5.2
Acyclic:					
Production	10,804,977	18,977,823	21,127,193	95.5	11.3
Sales	9,232,677	16,864,135	18,215,939	97.2	8.0
Sales value	6,606,712	19,115,146	18,134,437	174.4	-5.2
7. Rubber-Processing Chemicals					
Cyclic:					
Production	152,204	155,035	138,426	-9.1	-10.8
Sales	91,740	108,721	104,280	13.7	-4.1
Sales value	248,756	429,565	413,253	66.1	-3.8
Acyclic:					
Production	21,076	20,830	40,181	90.6	92.9
Sales	16,254	20,125	32,131	97.7	59.7
Sales value	29,009	43,327	44,399	53.1	2.5
8. Elastomers (Synthetic Rubber)					
Production	2,636,867	2,091,080	2,233,076	-15.4	6.7
Sales	1,894,869	1,394,902	1,555,122	-17.9	11.5
Sales value	1,940,260	2,872,241	3,127,863	61.2	8.9
9. Plasticizers					
Cyclic:					
Production	638,249	734,653	640,099	0.3	-12.9
Sales	630,645	634,202	644,104	2.1	1.6
Sales value	474,781	703,942	665,385	40.1	-5.5
Acyclic:					
Production	174,615	241,738	250,619	43.5	3.7
Sales	125,784	202,387	182,423	45.0	-9.9
Sales value	157,549	341,585	301,132	91.1	-11.8
10. Surface-Active Agents					
Cyclic: ³					
Production	448,863	1,347,168	1,263,291	(⁴)	-6.2
Sales	212,933	911,195	1,018,716	(⁴)	11.8
Sales value	200,244	743,088	813,759	(⁴)	9.5
Acyclic:					
Production	1,691,285	1,738,206	2,531,363	(⁴)	45.6
Sales	927,674	812,840	911,544	(⁴)	12.1
Sales value	674,778	1,342,759	1,379,089	(⁴)	2.7
11. Pesticides and Related Products					
Cyclic:					
Production	376,276	365,900	361,202	-4.0	-1.3
Sales	313,520	286,745	280,112	-10.7	-2.3
Sales value	1,664,008	3,639,436	3,366,910	102.3	-7.5
Acyclic:					
Production	253,099	206,486	195,673	-22.7	-5.2
Sales	259,376	174,427	161,453	-37.8	-7.4
Sales value	1,144,265	1,563,346	1,407,435	23.0	-10.0

See footnotes at end of table.

Table 2—Continued
Synthetic organic chemicals: Summary U.S. production and sales of intermediates and finished products, 1977, 1989, and 1990

(Production and sales in thousands of kilograms; sales value in thousands of dollars)

Chemicals	1977 ¹	1989	1990	Increase or decrease (-)	
				1990 over 1977	1990 over 1989
12. Miscellaneous End-Use Chemicals and Chemical Product					
Cyclic:					
Production	1,252,527	1,592,471	1,469,599	17.3	-7.7
Sales	1,004,105	1,205,851	1,126,028	12.1	-6.6
Sales value	1,479,800	3,606,757	2,831,664	91.4	-21.5
Acyclic:					
Production	7,523,638	11,910,252	13,522,424	79.7	13.5
Sales	3,919,801	8,072,193	9,610,721	145.2	19.1
Sales value	1,067,681	6,152,720	6,879,700	544.4	11.8
13. Miscellaneous Cyclic and Acyclic Chemicals					
Cyclic:					
Production	941,729	1,567,895	1,700,331	80.5	8.4
Sales	473,560	735,100	773,429	63.3	5.2
Sales value	659,943	1,467,990	1,484,576	124.9	1.1
Acyclic:					
Production	38,506,728	47,235,675	48,212,046	25.2	2.0
Sales	17,104,826	19,368,214	20,423,498	19.4	5.4
Sales value	7,255,919	14,779,191	13,007,057	79.2	-12.0

¹ Standard reference base period for Federal Government general-purpose index numbers.

² Does not include data for elastomers.

³ Includes ligninsulfonates.

⁴ The data for 1977 are not comparable with current data as a result of a change in accounting procedures.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1990 of one or more of the chemicals included in each group.

Chemical group	Number of companies	Chemical group	Number of companies
Cyclic intermediates	163	Elastomers (synthetic rubber)	28
Dyes	33	Plasticizers	45
Organic pigments	34	Surface-active agents	145
Medicinal chemicals	79	Pesticides and related products	61
Flavor and perfume materials	29	Miscellaneous end-use chemicals and chemicals products	154
Plastics and resins materials	237	Miscellaneous cyclic and acyclic chemicals	234
Rubber-processing chemicals	21		

Section 1

Coal Tar, Tar Crudes and Pitches

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

The U.S. International Trade Commission began collecting data on crude coal tar for the 1986 reporting year. In 1990, U.S. production of crude coal tar was 597 million liters. Production of crude light oil was 255 million liters in 1990.

Tar crudes are obtained from coke-oven gas and by distilling coal tar, water-gas tar, and oil-gas tar. The most important tar crudes are benzene, toluene, xylene, creosote oil, and pitch of tar. Some of these products

are identical with those obtained from petroleum. Data for materials obtained from petroleum are included, for the most part, with the statistics for like materials obtained from coke-oven gas and tars, and are shown in table 1-1.

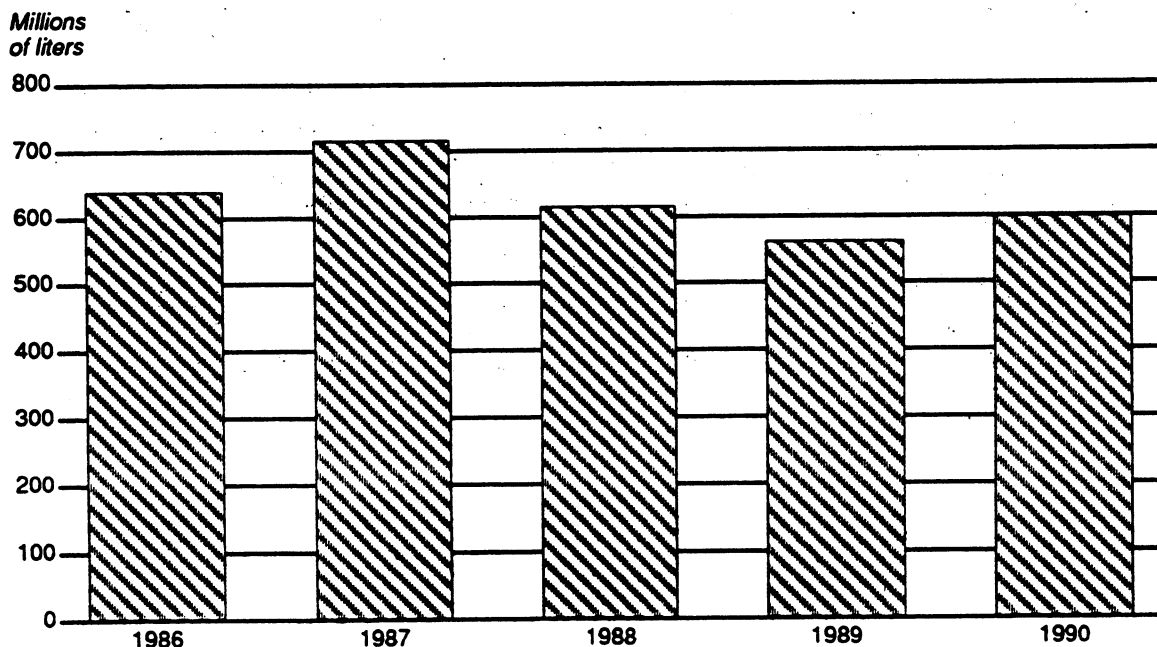
The domestic production by coke-oven operators of industrial and specification grades of benzene, toluene and xylene cannot be published since to do so would disclose the operations of individual companies. Some of the products obtained from tar and included in the statistics in table 1-1 are obtained from other products for which data are also included in the table. The statistics, therefore, involve considerable duplication, and for this reason no group totals or grand totals are given.

Table 1-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 1-3.

Data for 1990 tar crudes were supplied by 25 companies and company divisions.

Cynthia B. Foreso
202-205-3348

Figure 1-1
Crude Coal tar: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section I

Table 1-1
Coal tar, tar crudes, and pitches: U.S. production and sales, 1990

Coal tar, tar crudes and pitches	Unit of Quantity	Production	Sales		Average Unit value ¹
			Quantity	Value	
				1,000 Dollars	
Crude coal tar (coke-oven operators)	1,000 liters	596,762	481,843	49,252	\$0.10
Crude light oil: (coke-oven operators)	1,000 liters	254,902	255,494	45,440	.18
Light-oil distillates:					
Benzene, all grades, total ²	1,000 liters	(³)	(³)	(³)	(³)
Coke-oven operators	1,000 liters	(³)	(³)	(³)	(³)
Petroleum refiners	1,000 liters	6,421,078	4,072,402	1,596,254	.39
Toluene, all grades, total ²	1,000 liters	(³)	(³)	(³)	(³)
Coke-oven operator	1,000 liters	(³)	(³)	(³)	(³)
Petroleum refiners	1,000 liters	3,248,838	1,830,999	557,575	.30
Xylene, all grades, total ²	1,000 liters	(³)	(³)	(³)	(³)
Coke-oven operators	1,000 liters	(³)	(³)	(³)	(³)
Petroleum refiners	1,000 liters	3,083,285	1,440,573	429,503	.30
Other tar distillates	1,000 liters	415,598	271,768	44,356	.16
Crude naphthalene	1,000 liters	110,314	(³)	(³)	(³)
(solidifying at 76°C to less than 79°C)					
Crude tar acid oils	1,000 liters	8,726	8,047	2,145	.27
(having a tar acid content of 5% to less than 24%)					
Creosote oil (Dead oil) (100 percent creosote basis):					
Distillate as such (100 percent creosote basis)	1,000 liters	237,310	145,952	25,331	.17
Creosote in coal tar solution (100 percent solution basis)	1,000 liters	59,248	117,769	16,880	.14
Tar and tar pitches:					
Pitch of tar - Hard	1,000 metric tons	615	652	120,932	185.50

¹ Unit value per liter or metric ton as specified.

² Includes data for material produced for use in blending motor fuels. The annual production statistics for petroleum refiners on benzene, toluene, and xylene are not comparable with the combined monthly production figures because of fiscal year revisions.

³ Statistics cannot be published; to do so would disclose the operations of individual companies.

Note.—Statistics for materials produced in tar and petroleum refineries are compiled by the U.S. International Trade Commission. Data for all other tars and tar crudes are not included in the 1990 report because publication would disclose the operations of individual companies.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 1-2

Coal tar, tar crudes and pitches for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Coal tar, tar crudes and pitches	Separate statistics ¹	Manufacturers' identification codes (according to list in table 1-3)
Light oil, light oil distillates, and tar bases:		
Crude coal tar	Yes	ABP, ALS, CGU, DTR, EKO, GSS, ILI, INL, KPT, LTV, NBC, NTS, SGO, TWD, USX, WPS.
Crude light oil	Yes	ABP, ALS, BTS, CGU, EKO, GSS, ILI, INL, KPT, LTV, NBC, NTS, SGO, TWD, USX, WPS.
Light oil distillates:		
Benzene (benzol):		
Tar bases: crude bases (Dry basis)	No	KPT, USX.
Toluene (toluol):		
Toluene (Toluol) other grades	No	EEP.
All other:		
All other light-oil distillates	No	LYP, NTS.
Other tar distillates:		
Naphthalene, crude:		
Methylnaphthalene	No	KPT.
Naphthalene, crude, solidifying at less than 74° C ..	No	BTS, COP, GSS.
Naphthalene, crude, solidifying at 76° C to less than 79° C	Yes	ACS, ART, KPT.
Crude tar acid oils:		
Crude tar acid oils having a tar acid content of: 5 percent to less than 24 percent	Yes	ACS, INL, KPT, NTS.
Creosote oil (dead oil):		
Creosote oil (Dead oil): creosote content in solution (100 Percent basis)	No	(²).
Creosote oil (Dead oil): creosote in coal tar solution (100 Percent solution basis)	Yes	ACS, ART, COP, KPT, (²).
Creosote oil (Dead oil): distillate as such (100 Percent creosote basis)	Yes	ACS, ART, KPT, (²).
All other distillate products:		
Crude coal tar solvent	No	KPT.
Priming and refractory oil	No	BTS, KPT.
All other tar distillates	No	ACS, GIV.
Tar and tar pitches:		
Tar, road:		
Tar, road	No	ACS, (²).
Tar for other uses:		
Tar for other uses: crude	No	ALS, BTS.
Tar for other uses: refined	No	ACS, COP, KPT, (²).
Pitch of tar:		
Pitch of tar: hard (M.P. 161° F and Over)	Yes	ACS, COP, KPT, (²).
Pitch of tar: medium (M.P. 110° To 160° F)	No	ART, (²).
Pitch of tar: soft (M.P. 80° To 109° F)	No	ART, COP.
All other:		
All other pitch of tar	No	WPS.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 1

Table 1-3

Coal tar, tar crudes and pitches: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABP	Drummond Co. Inc.	ILI	Acme Steel Corp.
ACS	Allied Signal, Inc., Engineered Materials Sector	INL	Inland Steel Co.
ALS	Armco, Inc.	KPT	Kopper Industries
ART	Aristech Chemical Corp.	LTV	LTV Steel Co.
BTS	Bethlehem Steel Corp.	LYP	Lyondell Petrochemical Co.
CGU	Citizen Gas And Coke Utility	NBC	New Boston Coke Corp.
COP	Coopers Creek Chemical Corp.	NTS	National Steel Corp., Great Lakes Div.
DTR	Detroit Coke Corp.	SGO	Shenango, Inc.
EEP	Furon	TWD	Tonawanda Coke Corp.
EKO	Empire Coke Co.	USX	U.S. Steel, Div. of USX Chemical Div.
GIV	Givaudan Corp.		Gary Works
GSS	Gulf States Steel	WPS	Wheeling-Pittsburg Steel Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Section 2 Primary Products from Petroleum and Natural Gas for Chemical Conversion

Primary products that are derived from petroleum and natural gas are related to the intermediates and finished products made from such primary materials in much the same way that crude products derived from the distillation of coal tar¹ are related to their intermediates and finished products. Many of the primary products derived from petroleum are identical with those derived from coal tar (e.g., benzene, toluene, and mixed xylenes). Considerable duplication exists in the statistics on the production and sales of primary petroleum products because some of these primary chemicals are converted to other primary products derived from petroleum and because data on some production and sales are reported at successive stages in the conversion process. The statistics are sufficiently accurate, however, to indicate trends in the industry. Many of the primary products for which data are included in the statistics may be used either as fuel or as basic materials from which other chemicals are derived. In this report every effort has been made to exclude data on materials that are used as fuel; however, data are included on toluene and mixed xylenes, which are used in blending aviation and motor fuel.

¹ Statistics on chemicals from coal tar are given in Section 1 (Tar and Tar Crudes) of this report.

The total production of primary products derived from petroleum and natural gas during 1986-90 is shown in figure 2-1. Beginning in 1988, production and sales data no longer are collected for ethane, propane, and butane. Total production for primary products during 1990 amounted to 51,722 million kilograms.

The output of aromatic and naphthenic products from petroleum amounted to 12,974 million kilograms in 1990, compared with 12,628 million kilograms in 1989. Sales amounted to \$2,889 million in 1990 and \$2,635 million in 1989. In 1990, production of benzene was 5,644 million kilograms; production of toluene was 2,816 million kilograms; and production of mixed xylenes was 2,816 million kilograms (table 2-1).

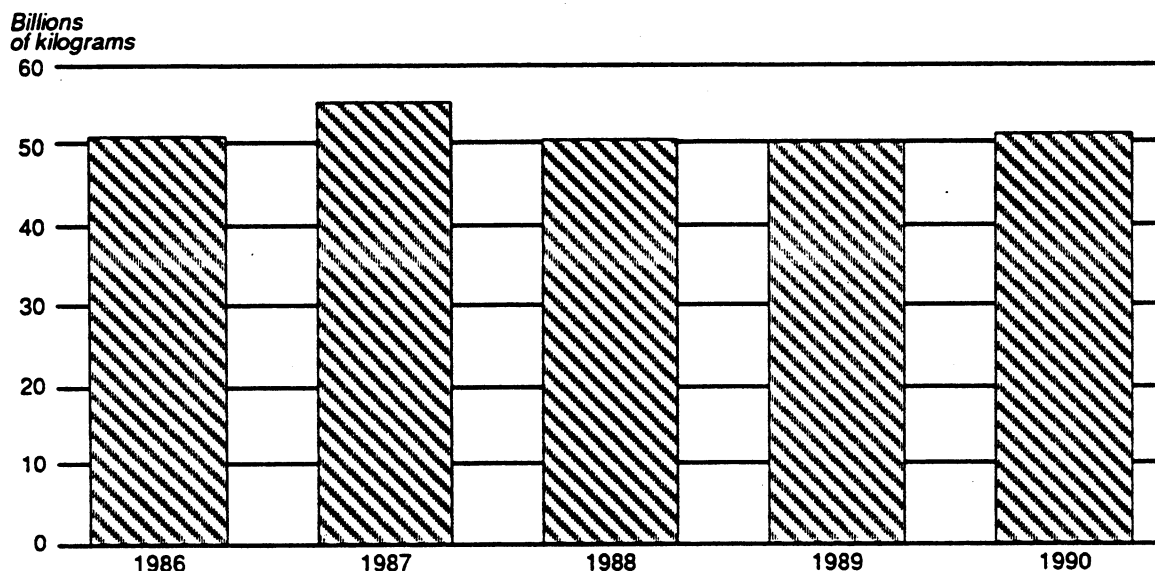
Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 38,749 million kilograms in 1990. Sales of these products were valued at \$8,317 million. Production of ethylene was 16,541 million kilograms in 1990. The output of 1,3-butadiene was 1,401 million kilograms and propylene production was 9,909 million kilograms during 1990 (table 2-1).

Table 2-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. The codes are identified by company name in table 2-3.

Data for 1990 primary products from petroleum and natural gas for chemical conversion were supplied by 64 companies or company divisions.

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202-205-3365

Figure 2-1
Primary products from petroleum and natural gas for chemical conversion U.S. production, 1986-90



Note.—Data for 1988-90 do not include ethane, propane, and butane production.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 2

Table 2-1

Primary products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1990

Primary products from petroleum and natural gas for chemical conversion	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	51,722,325	26,914,110	11,206,171	\$0.42
Aromatics and naphthenes²				
Total	12,973,769	7,750,486	2,889,296	.37
Benzene, all grades	5,644,128	3,579,641	1,596,254	.45
Toluene, all grades ^{3,4}	2,816,418	1,587,293	557,575	.35
Xylenes, mixed	2,815,656	1,315,531	429,503	.33
All other aromatics and naphthenes ⁵	1,697,567	1,268,021	305,964	.24
Aliphatic hydrocarbons				
Total	38,748,556	19,163,624	8,316,875	.43
C₂ Hydrocarbons, total⁶				
Acetylene ⁷ (For chemical use only)	127,568	59,473	49,633	.83
Ethylene	16,541,341	7,576,647	3,691,112	.49
C₃ Hydrocarbons, total⁸				
Propylene ⁹	9,909,380	5,576,191	2,037,468	.37
C₄ Hydrocarbons, total¹⁰				
Butadiene and butylene fractions	942,991	615,034	153,719	.25
1,3-Butadiene, grade for rubber (elastomers)	1,400,905	1,347,094	768,558	.57
1-Butene	297,896	162,428	69,274	.43
Isobutane	551,077	407,545	93,689	.23
Isobutylene	549,733	137,801	62,177	.45
All other C ₄ hydrocarbons ¹¹	2,261,301	785,030	179,625	.23
C₅ Hydrocarbons, total				
Isoprene (2-Methyl-1,3-butadiene)	191,856	135,815	47,914	.35
Pentenes, mixed	104,265	(¹²)	(¹²)	(¹²)
Piperylene (1,3-Pentadiene)	42,566	(¹²)	(¹²)	(¹²)
All other C ₅ hydrocarbons ^{13,14}	846,709	262,055	86,741	.33
All other aliphatic hydrocarbons, derivatives, and mixtures, total				
Alpha olefins, C ₆ -C ₁₀	470,862	217,763	185,073	.85
Alpha olefins, C ₁₁ and higher	354,794	197,251	163,249	.83
Dodecene (Tetrapropylene)	173,343	132,120	59,742	.45
Hexane	258,855	268,516	74,415	.28
n-Heptane	71,977	74,671	27,893	.37
Nonene (Tripropylene)	241,308	127,466	50,384	.40
n-Paraffins ¹⁵	801,628	575,321	190,277	.33
All other ¹⁶	2,608,201	505,403	325,932	.64

See footnotes at end of table.

Table 2-1—Continued

Primary products from petroleum and natural gas for chemical conversion: U.S. production and sales, 1990

- ¹ Calculated from rounded figures.
 - ² The chemical raw materials designated as aromatics are in some cases identical with those obtained from the distillation of coal tar; however, the statistics given in the table above relate only to such materials as are derived from petroleum and natural gas. Statistics on production and/or sales of benzene, toluene, and xylene from all sources are given in table 1-1 of the report on "Coal tar, tar crudes and pitches."
 - ³ Includes toluene, solvent grade, 90 percent.
 - ⁴ Includes toluene and xylene used as solvents; may include that which is blended in aviation and motor gasolines.
 - ⁵ Includes data for alkyl aromatics, crude cresylic acid, cyclopentane, naphthalene, naphthenic acid, carbon black feedstock, distillates, solvents and miscellaneous cyclic hydrocarbons.
 - ⁶ Ethane production and sales data are no longer collected.
 - ⁷ Production figures on acetylene from calcium carbide for chemical synthesis are collected by the U.S. Bureau of the Census.
 - ⁸ Propane production and sales data are no longer collected.
 - ⁹ Includes data for refinery propylene.
 - ¹⁰ Butane production and sales data are no longer collected.
 - ¹¹ Includes production and/or sales data for 2-butene, mixtures of 1-butene and 2-butene, and mixed C₄ streams.
 - ¹² Reported data are accepted in confidence and may not be published, or no data were reported.
 - ¹³ Includes data for mixtures of C₅ hydrocarbons; isopentane, n-pentane, 1-pentene, and 2-pentene.
 - ¹⁴ Includes sales data for mixed pentenes and piperylene.
 - ¹⁵ Includes data for the following chain lengths: C₆-C₉, C₉-C₁₅, C₁₀-C₁₄, C₁₀-C₁₆, C₁₂-C₁₈ and others.
 - ¹⁶ Includes production and/or sales data for, methane, isoheptanes, isohexane, iso-octane, neohexane, methylcyclopentadiene, mixed hexenes, mixed heptenes, mixed octenes, n-octane, di-isobutylene, eicosane, mixtures of C₂ and C₃, C₅-C₆, C₅-C₇, C₆-C₇ hydrocarbons, hydrocarbon derivatives, and other hydrocarbons.
- Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 2

Table 2-2

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Primary products from petroleum and natural gas for chemical conversion	Separate statistics ¹	Manufacturers' identification codes (according to list in table 2-3)
Production and sales of aromatics and naphthenes:		
Alkyl aromatics:		
Cyclosols	No	CXI.
All other alkyl aromatics	No	SHC.
Benzene total:		
Benzene High purity (98-100%)	No	AMO, ASH, CGO, CNE, CSD, CSP, DOW, ENJ, GRS, HES, KHI, LYP, MOC, PLC, PPR, SHC, SIO, SM, SOC, SOG, SUN, SWR, TX, UOC, USI.
Benzene Other	No	ATR, DUP, KLM, VST.
Cresylic acid (Less than 75 percent distilling over 215° C)	No	KHI, PSG.
Cyclopentane	No	PLC.
Naphthalene	No	CXI, TX.
Naphthenic acid:		
Naphthenic acid, acid number 150-199	No	CPS, HEC, MER.
Naphthenic acid, acid number 200-224	No	MER.
Naphthenic acid, acid number less than 150	No	HEC, SHC.
Toluene total:		
Toluene High purity (98-100%)	No	ASH, CNE, CSD, ENJ, GRS, HES, KHI, LYP, MOC, PLC, PPR, PPX, SC, SHC, SIO, SM, SOC, SOG, SUN, SWR, TX, UOC.
Toluene Other	No	GE, LYP.
Xylenes, mixed, total:		
Xylene High purity (98-100%)	No	AMO, ASH, CSD, CSP, ENJ, HES, PLC, PPR, SHC, SOG, SUN, SWR, UOC.
Xylene Other	No	AMO, MOC.
All other aromatics and naphthenes:		
Benzene, toluene, xylene, mixtures	No	ATR, ELP.
Carbon black feedstock	No	ENJ.
All other products from petroleum and natural gas, cyclic	No	AMO, ASH, BAS, BFG, CSD, EKX, ELP, ENJ, LYP, OMC, SHC, SOG, TX, UCC, UPM, UTP, VST.
Production and sales of aliphatic hydrocarbons:		
C ₁ hydrocarbons:		
Methane	No	SHO.
C ₂ hydrocarbons:		
Acetylene (For chemical use only)	Yes	BCP, RH, UCC.
Ethylene	Yes	AMO, BAS, BFG, CNE, DOW, EKX, ELP, ENJ, GE, KHI, LYP, OMC, PLC, SHC, SM, SOC, SUN, TX, UCC, USI, UTP, VST.
C ₃ hydrocarbons:		
Hydrocarbons, C ₂ -C ₃ mixtures	No	CGO.
Propylene	Yes	AMO, ASH, BAS, BFG, CCP, CGO, CLK, CNE, CSD, DA, DOW, DUP, EKX, ELP, ENJ, EPC, KHI, LYP, MOC, PLC, SHC, SIO, SM, SOC, SOG, SUN, TX, UCC, USI, UTP, VLR, VST.
C ₄ hydrocarbons:		
Butadiene and butylene fractions	Yes	BAS, CNE, DA, DOW, EKX, ELP, PLC, SOC, TX, UCC, USI, UTP, VST.
1,3-Butadiene, grade for rubber (Elastomers)	Yes	AMO, CNE, ENJ, LYP, SHC, SM, TPC, TX.
1-Butene	Yes	ENJ, SHC, SM, SOC, TNA, TPC.
2-Butene	No	TPC.
1-Butene and 2-butene, mixed	No	LYP, SHC.
Hydrocarbons, C ₄ fraction	No	TX.
Hydrocarbons, C ₄ mixtures	No	LYP, PPR, SOG.
Isobutane (2-Methylpropane)	Yes	AMO, CSP, DA, ENJ, MOC, PLC, SHO, SUN, TX.
Isobutylene (2-Methylpropene)	Yes	AMO, ATR, ENJ, SHC, TPC, TX.
All other hydrocarbons, C ₄ ,	No	GE, TNA, TX.

See footnotes at end of table.

Table 2-2—Continued

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Primary products from petroleum and natural gas for chemical conversion	Separate statistics ¹	Manufacturers' identification codes (according to list in table 2-3)
Production and sales of aliphatic hydrocarbons—Continued		
C₅ hydrocarbons:		
Amylenes	No	ENJ.
Hydrocarbons, C ₅ mixtures	No	CNE, LYP.
Isopentane (2-Methylbutane)	No	PLC, SHO.
Isoprene (2-Methyl-1,3-butadiene)	Yes	DOW, ENJ, GYR, LYP, SHC, SOC.
n-Pentane	No	PLC, SHO.
1-Pentene	No	DOW.
2-Pentene	No	BFG.
Pentenes, mixed	Yes	CSP, CXI, PLC, SHO, TX.
Piperylene (1,3-Pentadiene)	Yes	CXI, ENJ, LYP.
All other C ₅ hydrocarbons,	No	DOW, ENJ, SHC.
All other aliphatic hydrocarbons, derivatives, and mixtures, total:		
C₆ hydrocarbons:		
Hexane	Yes	ATR, ENJ, PLC, SOG, TX, UOC.
1-Hexene	No	PLC, (2).
Hexenes, mixed	No	ENJ.
Hydrocarbons, C ₅ -C ₆ mixtures	No	PLC.
Isohexane	No	PLC.
Methylcyclopentadiene	No	ENJ.
Neohexane (2,2-Dimethylbutane)	No	PLC.
All other hydrocarbons, C ₆	No	DA, PLC, SHC, SM, TNA.
C₇ hydrocarbons:		
n-Heptane	Yes	ENJ, PLC, SOG, TX, UOC.
Heptenes, mixed	No	ENJ, TX.
Isoheptanes	No	PLC.
All other hydrocarbons, C ₇ ,	No	EKX, SHC.
C₈ hydrocarbons:		
Di-isobutylene (Di-isobutene)	No	EKT, TPC, (2).
n-Octane	No	SOG.
Octenes, mixed	No	ENJ.
2,2,4-Trimethylpentane (Iso-octane)	No	LYP, PLC.
All other hydrocarbons, C ₈	No	SHC, TX.
C₉ and above hydrocarbons (except alpha olefins):		
Dodecene	Yes	ATR, CSP, ENJ, SOC, SUN.
Nonene (Tripropylene)	Yes	ATR, CSP, ENJ, SOC, TX.
Alpha olefins:		
Alpha olefins, C ₆ -C ₁₀	Yes	SHC, SOC, TNA.
Alpha olefins, C ₁₁ and higher	Yes	SHC, SOC, TNA.
N-paraffins - carbon chain length:		
n-Paraffins, C ₁₀ -C ₁₄	No	SHC, UOC.
n-Paraffins, C ₁₀ -C ₁₆	No	VST.
n-Paraffins, C ₁₂ -C ₁₈	No	VST.
n-Paraffins, C ₆ -C ₁₆	No	ENJ.
n-Paraffins, C ₆ -C ₉	No	SOG, UOC.
n-Paraffins, C ₉ -C ₁₅	No	ENJ, SOG, TX, UOC.
n-Paraffins, other	No	ENJ, SOG, UOC.
Polybutene	No	AMO, BUC.
Hydrocarbon derivatives:		
n-Butyl mercaptan (1-Butanethiol)	No	PAS, PLC.
sec-Butyl mercaptan (2-Butanethiol)	No	HAP, PLC.
tert-Butyl mercaptan (2-Methyl-2-propanethiol)	No	HAP, PAS, PLC.
Decyl mercaptans	No	PAS.
Di-tert-butyl disulfide	No	PLC.
Diethyl sulfide (Ethyl sulfide)	No	HAP, PAS.
Dimethyl sulfide	No	GAY, PAS.
Ethyl mercaptan (Ethanethiol)	No	HAP, PAS, PLC.
Isopropyl mercaptan (2-Propanethiol)	No	HAP, PAS, PLC.

See footnotes at end of table.

Section 2

Table 2-2—Continued

Primary products from petroleum and natural gas for chemical conversion for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Primary products from petroleum and natural gas for chemical conversion</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 2-3)</i>
All other aliphatic hydrocarbons, derivatives, and mixtures, total-Continued		
Hydrocarbon derivatives-Continued		
Methyl ethyl sulfide	No	CED, HAP, PAS.
Methyl mercaptan (Methanethiol)	No	PAS.
n-Propyl mercaptan (1-Propanethiol)	No	PAS, PLC.
Thiophane (Tetrahydrothiophene)	No	HAP.
All other hydrocarbon derivatives: hydrocarbon derivatives	No	EKX, PAS, PLC, SHC, TNA.
All other hydrocarbons, C ₉ and above, including mixtures	No	ENJ, PLC, SOC, TNA.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 2-3

Primary products from petroleum and natural gas for chemical conversion: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
AMO	Amoco Corp.	HEC	Hewchem
ASH	Ashland Oil, Inc., Ashland Petroleum Co.	HES	Amerada Hess Corp. (Hess Oil Virgin Islands Corp.)
ATR	Atlantic Richfield Co., Arco Chemical Co.	KHI	Koch Refining Co.
BAS	BASF Corp.	KLM	Kalama Chemical, Inc.
BCP	Borden Chemical & Plastics Delaware Limited	LYP	Lyondell Petrochemical Co.
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Group	MER	Merichem Co.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	MOC	Marathon Petroleum Co., Texas Refining Div.
CCP	Crown Central Petroleum Corp.	OMC	Olin Corp.
CED	Cedar Chemical Co.	PAS	Atochem North America, Inc.
CGO	Citgo Petroleum Corp.	PLC	Phillips 66 Co.
CLK	Clark Oil & Refining Corp.	PPR	Phillips Puerto Rico Core, Inc.
CNE	Oxy Petrochemicals, Inc.	PPX	Phillips Paraxylene, Inc.
CPS	CPS Chemical Co., Inc.	PSG	PMC, Inc., Specialities Group, Inc.
CSD	Fina Oil & Chemical Co., Cosden Chemical Div.	RH	Rohm & Haas Co.
CSP	Coastal Refining & Marketing, Inc.	SC	Sterling Chemicals, Inc.
CXI	Chemical Exchange Industries, Inc.	SHC	Shell Chemical Co.
DA	Diamond Shamrock Refining & Marketing	SHO	Shell Oil Co.
DOW	Dow Chemical Co.	SIO	BP Oil Company
DUP	E. I. duPont de Nemours & Co., Inc. Eastman Kodak Co.:	SM	Mobil Oil Corp.: Gas Liquids Dept. Petrochemicals Div.
EKT	Tennessee Eastman Co. Div.	SOC	Chevron Corp., Chevron Chemical Co.
EKX	Texas Eastman Co. Div.	SOG	Hill Petroleum Co.
ELP	Rexene Products Company	SUN	Sun Company, Inc.
ENJ	Exxon Chemical Americas	SWR	Southwestern Refining Co., Inc.
EPC	EPC Partners, Ltd.	TNA	Ethyl Corp.
GAY	Gaylord Chemical Corp.	TPC	Texas Petrochemicals Corp.
GE	General Electric, Specialty Chemical Group	TX	Texaco Chemical Co.
GRS	Champlin Refining Co.	UCC	Union Carbide Corp., Industrial Chemical Div.
GYR	Goodyear Tire & Rubber Co.	UOC	Union Oil Co. of California
HAP	Helmerich & Payne Inc., Natural Gas Odorizing, Inc.	UPM	UOP, Inc.
		USI	Quatum Chemical Corp., USI Div.
		UTP	Union Texas Product Corp.
		VLR	Valero Refining Co. & Marketing Co.
		VST	Vista Chemical Co.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission

Section 3 Cyclic Intermediates

Cyclic intermediates are synthetic organic chemicals derived principally from petroleum and natural gas and from coal-tar crudes produced by destructive distillation (pyrolysis) of coal. Most cyclic intermediates are used in the manufacture of more advanced synthetic organic chemicals and finished products, such as dyes, medicinal chemicals, elastomers (synthetic rubber), pesticides, and plastics and resin materials. Some intermediates, however, are sold as end products without further processing. For example, ethylbenzene may be used as a raw material in the manufacture of styrene. In 1990, about 46 percent of the total output of cyclic intermediates was sold; the rest was consumed chiefly in the producing plants in the manufacture of more advanced intermediates and finished products.

The total annual production of cyclic intermediates during 1986-90 is shown in figure 3-1. Total production of cyclic intermediates in 1990 amounted to 23,996 million kilograms, a decrease of 3 percent compared with production reported to the Commission in 1989. Reported sales of cyclic intermediate

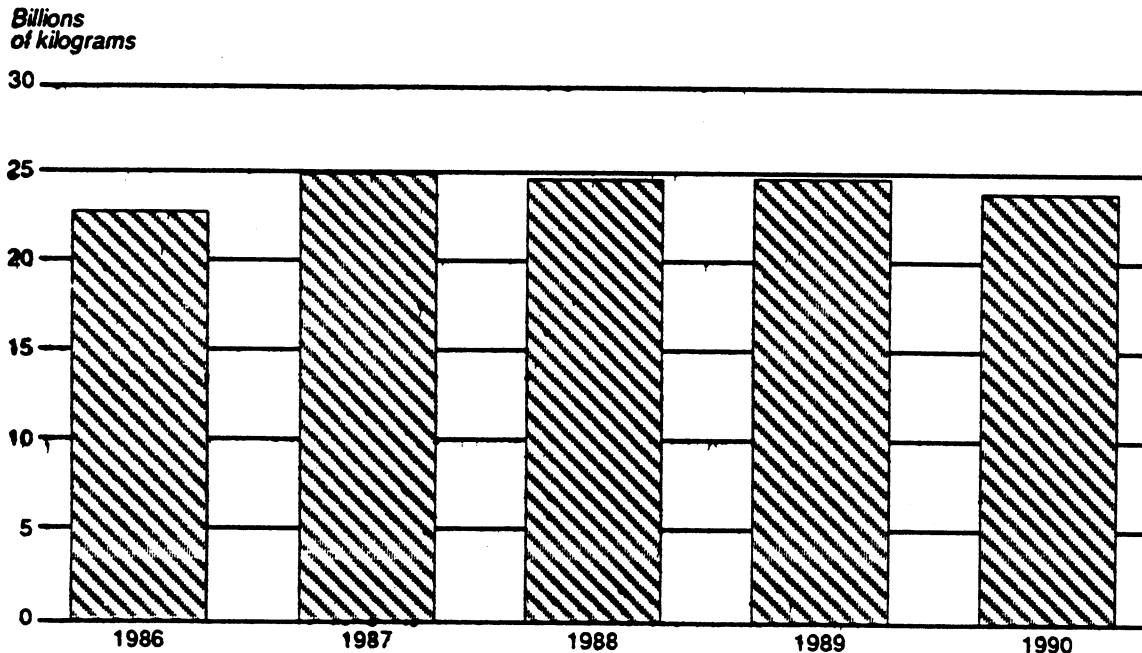
chemicals in 1990 were 11,866 million kilograms, valued at \$10,981 million, compared with 12,371 million kilograms, valued at \$10,284 million, in 1989.

Intermediates that were produced in excess of 500 million kilograms in 1990 were ethylbenzene (3,796 million kilograms), styrene (3,636 million kilograms), terephthalic acid and terephthalic acid dimethyl ester (3,526 million kilograms), p-xylene (2,359 million kilograms), cumene (1,955 million kilograms), phenol (1,604 million kilograms), cyclohexane (1,116 million kilograms), and bisphenol A (521 million kilograms), polymethylene polyphenylisocyanate (500,461 million kilograms). Intermediate chemicals produced in excess of 1 billion kilograms accounted for about 70 percent of the total output of cyclic intermediate chemicals produced in 1990.

Table 3-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 3-3.

Ed Matusik
202-205-3356

Figure 3-1
Cyclic Intermediates: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 3-1
Cyclic intermediates: U.S. production and sales, 1990

Cyclic intermediates	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	23,995,795	11,865,617	10,980,553	\$0.92
Aniline (Aniline oil)	448,620	254,260	180,807	.71
Benzoic acid, tech	45,579	(²)	(²)	(²)
Biphenyl	24,310	10,628	7,491	.70
Chlorobenzene, mono-	107,526	(²)	(²)	(²)
Cresols and cresylic acid ³	38,255	32,973	53,550	1.62
Cumene	1,955,372	1,257,751	636,823	.51
Cyclohexane	1,116,205	988,338	496,770	.50
Cyclohexanone	473,736	51,302	53,722	1.05
o-Dichlorobenzene	22,100	22,477	20,597	.92
p-Dichlorobenzene	41,004	35,530	32,818	.92
Dicyclopentadiene (including cyclopentadiene)	60,352	52,581	21,602	.41
p-Dodecylphenol	7,705	7,808	9,418	1.21
Ethylbenzene	3,796,296	467,093	284,927	.61
Isocyanic acid derivatives, total	1,050,267	722,869	1,225,293	1.70
Diphenylmethane-4,4'-diisocyanate (MDI)	81,320	38,038	83,595	2.20
Polymethylene polyphenylisocyanate	500,461	307,417	485,567	1.58
Toluene-2,4- and 2,6-diisocyanate (80/20 mixture)	445,781	367,797	628,081	1.71
All other isocyanic acid derivatives	22,705	9,617	28,050	2.92
4,4'-Isopropylidenediphenol (Bisphenol A)	521,258	194,589	226,036	1.16
Nonylphenol	79,176	43,241	46,775	1.08
Octylphenol	16,746	4,134	6,719	1.63
Phenol, total	1,604,623	682,234	521,514	.76
From cumene	1,592,813	671,351	512,816	.76
All other phenol	11,810	10,883	8,698	.80
Phthalic anhydride	426,483	189,704	115,269	.61
Salicylic acid, tech	14,084	6,011	11,098	1.85
Styrene	3,636,269	1,602,738	1,221,317	.76
Terephthalic acid, dimethyl ester ⁴	3,525,662	(²)	(²)	(²)
Tetrahydrofuran	84,980	35,603	71,638	2.01
o-Xylene	427,738	281,504	117,402	.42
p-Xylene	2,358,829	1,280,275	663,036	.52
All other cyclic intermediates	2,112,620	3,641,974	4,955,931	1.36

¹ Calculated from unrounded figures.

² Reported data were accepted in confidence and may not be published, or no data were reported.

³ Does not include data for coke oven and gas-retort ovens.

⁴ The figure for terephthalic acid, dimethyl ester (DMT) includes both the acid itself and the dimethyl ester without double counting. The acid production figure was multiplied by the factor 1.16 to convert it to equivalent DMT.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 3-2
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic:		
Acetoacetanilide		BRD, EKT.
o-Acetoacetanilide	No	BRD, EKT.
o-Acetoacetotoluidide	No	BRD, EKT.
2',4'-Acetoacetoxylidide	No	BRD, EKT.
Acetoguanamine	No	DIX.
1'-Acetonaphthone	No	GIV.
Acetophenone, tech	No	S.
p-Acetotoluidide	No	EK.
2-Acetylpyridine	No	(²)
Adamantane	No	DIX.
Aldadiene	No	SRL.
Alkylbenzenes:		
Alkylbenzene straight-chain (Except dodecyl and tridecyl)	No	GIV, MON.
Dodecylbenzene (including tridecylbenzene):		
Dodecylbenzene, straight-chain	No	MON, VST.
Other dodecylbenzene	No	MON.
Alkylbenzene all other (Except dodecyl, tridecyl and stright-chain)	No	(²)
Alkylphenols, mixed	No	PSG, SCN.
Alkylpyridines, mixed	No	(²)
4'-Aminoacetanilide (Acetyl-p-phenylenediamine)	No	HCL.
3'-Amino-p-acetanilide	No	BUC, SDC.
3-Amino-p-anisilide	No	PLC.
1-Aminoanthraquinone and salt	No	SDC.
p-Aminobenzamide	No	NSC.
o-Aminobenzenethiol	No	FMT.
p-Aminobenzoic acid, tech	No	NSC, WYK.
2-Aminobenzothiazole	No	VPC.
2-Amino-6-benzothiazolesulfonic acid	No	VPC.
2-Amino-1-bromo-3-chloroanthraquinone	No	PLC.
7-Aminocephalosporanic acid	No	BRS.
1-Amino-2-chlorobenzene	No	LMC.
5-Amino-2-chlorobenzenesulfonic acid	No	LMC.
3-Amino-5-chloro-2-hydroxybenzenesulfonic acid	No	CWN.
6-Amino-5-chloro-m-toluenesulfonic acid [SO ₃ H=1] (2B Acid)	No	DUP, PHC.
4-Amino-N,N-di(β-hydroxyethyl)aniline sulfate	No	WAY.
4-Amino-5-methoxy-2-methylbenzenesulfonic acid (5-methyl-o-anisidinesulfonic acid)	No	PSG.
m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid	No	VPC.
2-Amino-2-methylpropyl 8-bromotheophyllinate	No	CHT.
2-Amino-3-methylpyridine	No	(²)
2-Amino-4-methylpyridine	No	(²)
2-Amino-5-methylpyridine	No	(²)
2-Amino-6-methylpyridine	No	(²)
3-Amino-2,7-naphthalenedisulfonic acid	No	NES.
2-Amino-4-nitroacetanilide	No	SDC.
2-Amino-5-nitrothiazole	No	PCW, SAL.
5-Amino-2-[(2-oxo-5-benzimidazolyl)amino]benzenesulfonic acid	No	BRS, PFZ.
p-Aminophenol	No	MAL.
p-[(p-Aminophenyl)azo]benzenesulfonic acid	No	ATL, VPC.
3-Aminophenylphosphonic acid	No	ICI.
2-Aminopyridine	No	(²)
5-Aminosalicylic acid	No	SAL.
4-Amino-m-toluenesulfonic acid [SO ₃ H=1]	No	DUP.
6-Amino-m-toluenesulfonic acid [SO ₃ H=1]	No	DUP, PHC.
Aniline (Aniline oil)	Yes	ART, DUP, FST, ICI, MAL, MOB, RUC, USR.
2-Anilinoethanol	No	SCP. 2

See footnotes at end of table.

Section 3

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
Anilinomethanesulfonic acid and salt	No	ATL, VPC.
o-Anisidinomethanesulfonic acid	No	VPC.
Anisole, tech	No	CHF.
Anisoyl chloride	No	SD.
Anthranilic acid (o-Aminobenzoic acid)	No	PSG.
Anthra[1,9]pyrazol-6(2H)-one (Pyrazoleanthrone)	No	SDC.
N,N'-(1,5-Antraquinonylene)dianthranilic acid	No	SDC.
Benzaldehyde, tech	No	KLM.
Benzanilide	No	EK.
Benzene phosphorous chloride	No	ICI.
Benzenesulfonic acid	No	UPF.
Benzenesulfonyl chloride	No	UPF.
1,2,4,5-Benzenetetracarboxylic acid	No	AMO.
1,2,4-Benzenetricarboxylic acid, 1,2-dianhydride (Trimellitic anhydride)	No	AMO.
Benzhydrol(Diphenylmethanol)	No	PD.
Benzimidazole	No	EK.
1,3-Benzodioxole	No	AMB.
Benzoic acid, methyl ester	No	HCF.
Benzoic acid, tech	Yes	KLM, PFZ, VEL.
Benzoioxime	No	RSA.
Benzonitrile	No	PSG.
Benzophenone	No	CWN.
2-Benzothiazolethiol, sodium salt	No	BFG, USR.
1H-Benzotriazole	No	PSG.
2-Benzoxazolethiol	No	EK.
Benzoyl chloride	No	HK, VEL.
Benzylamine	No	HXL, KLM.
2-(Benzylamino)ethanol	No	HXL.
2-Benzyl-2'-hydroxy-5,9-dimethyl-6,7-benzomorphanhydrobromide	No	SD.
1-Benzyl-4-phenylisonipecotonitrile	No	SDW.
Benzyltrimethylammonium hydroxide	No	RSA.
Biphenyl	Yes	CXI, KHI, MON, SOC.
2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone	No	(²)
3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester	No	SCP.
N,N-Bis(2-hydroxyethyl)-p-toluidine	No	RSA.
N,N-Bis((4-methylphenyl)sulfonyl)amine, potassium salt	No	EK.
1,2-Bis(tribromophenoxy)ethane	No	GTL.
3-Bromoacetophenone	No	(²)
Bromobenzene, mono	No	DAZ, GTL.
p-Bromobenzenesulfonyl chloride	No	EK.
o-Bromobenzoic acid	No	PD.
2-Bromo-4,6-dinitroaniline	No	HCL.
Bromoethylbenzene	No	GTL.
p-Bromofluorobenzene	No	(²)
2-Bromopyridine	No	DAZ.
p-Butylaniline	No	TNA.
p-tert-Butylbenzaldehyde	No	GIV.
n-Butylbenzene	No	PLC.
2-tert-Butyl-p-cresol	No	PSG, RDA.
6-tert-Butyl-m-cresol	No	RDA.
o-sec-Butylphenol	No	SCN, TNA.
o-tert-Butylphenol	No	TNA.
p-sec-Butylphenol	No	SCN.
p-tert-Butylphenol	No	PSG, SCN.
Butylphenols, mixed	No	FMC, PSG, (²) (²)
p-tert-Butyltoluene	No	GIV.
6-tert-Butyl-2,4-xyleneol	No	GAF.

See footnotes at end of table.

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
4,4'-Carbonylbis[phthalic anhydride]	No	ACH.
N-Carboxy-N-methylantranilic anhydride	No	(²)
2-Chloroacetophenone	No	EK.
1-(3-Chloro-allyl)-D-3,5,7-triaza-1-azoniaadamante chloride	No	DOW.
2-Chloro-4-aminotoluene	No	LMC.
o-Chloroaniline	No	DUP.
p-Chloroaniline	No	DUP.
Chlorobenzene, mono	Yes	MON, PPG, SCC.
p-Chlorobenzenesulfonic acid	No	UPF.
4'-Chloro-2',5'-dimethoxyacetanilide	No	BRD.
2-Chloro-1,4-dimethoxybenzene	No	CHF.
1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	No	SDC.
4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt	No	LMC.
p-[(2-Chloroethyl)methylamino]benzaldehyde	No	VPC.
1-Chloro-4-hydroxyanthraquinone	No	SK.
1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)	No	DUP, MON.
1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)	No	DUP, MON.
4-Chloro-3-nitrobenzotrifluoride	No	DAZ.
2-Chloro-4-nitrotoluene	No	CED.
2-Chlorophenothiazine	No	SK.
N-(4-Chlorophenyl)-N'-(3,4-dichlorophenyl)urea	No	VPC.
(m-Chlorophenyl)diethanolamine	No	SCP.
4-Chloro-o-phenylenediamine	No	FMT.
4-Chlorophthalic acid	No	PSG.
1-(3-Chloropropyl)-4-methylpiperazine	No	SK.
3-Chloropropyl-2,5-xylol ether	No	PD.
2-Chloropyridine	No	OMC.
2-(4-Chlorosulfonylphenyl)ethyltrichlorosilane	No	NOD.
o-Chlorotoluene	No	S.
α -Chlorotoluene (Benzyl chloride)	No	MON.
3-Chloro-p-toluidine [NH ₂ =1]	No	DUP.
4-Chloro-3,5-xyleneol	No	FER.
Cresols:		
m-Cresol	No	MER.
o-cresol:		
o-Cresol, from petroleum	No	GE, MER, PSG.
p-Cresol	No	MER, PSG.
Cresols, mixed:		
(m,p)-cresol:		
(m,p)-Cresol, from petroleum	No	MER, PSG.
Cresylic acid, refined:		
Cresylic acid, refined, from petroleum	No	MER.
Cumene (Isopropyl benzene)	Yes	ASH, BTL, GGC, GRS, KHI, SHC, SOC, TX, (²)
Cumene hydrogen peroxide	No	ART.
4-(Cyanoacetyl)morpholine	No	DUP, PCW.
N-Cyanoethyl-N-acetoxyethylaniline	No	SCP.
N-Cyano-s-methyl-N-2(4-methyl-5-imidazolyl)-methylthioethylisothiourea	No	SK.
3-Cyanopyridine	No	(²)
Cyclohexane	Yes	GRS, PLC, PPR, SOC, SUN, TX, UOC.
1,2-Cyclohexanedicarboxylic acid anhydride	No	BCC, HK.
Cyclohexanol	No	ACS, BAS, DUP, MON.
Cyclohexanone	Yes	ACS, BAS, CNP, DUP, MON.
Cyclohexanone oxime	No	CNP.
Cyclohexene	No	USR.
4-Cyclohexene-1,2-dicarboxylic anhydride	No	DKA.
Cyclohexene oxide	No	USR.
β -(1-Cyclohexenyl)ethylamine	No	HXL.
Cyclohexylamine	No	AIP, HCL.

See footnotes at end of table.

Section 3

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
Cyclohexylmethyldimethoxysilane	No	NOD.
Cyclooctadiene	No	DUP.
2-Cyclopropylmethylamino-5-chlorobenzophenone	No	PD.
2-(N-Cyclopropylmethyl-N-phthalimidoacetyl)-amino-5-chlorobenzophenone	No	PD.
p-Cymene	No	HPC.
Decyldiphenyl oxide	No	TCC.
Dialkylbenzene	No	VST.
1,3-Diaminocyclohexane	No	DUP, (2)
2,6-Diaminopyridine	No	(2)
2,5-Dianilinoterephthalic acid	No	VPC.
m-Dibromobenzene	No	DAZ.
p-Dibromobenzene	No	DAZ.
(1,2-Dibromoethyl)benzene	No	DAZ.
2,6-Dibromo-4-nitroaniline	No	HCL.
Dibromostyrene	No	GTL.
p-Dibutoxybenzene (DBB)	No	ALL.
2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate salt (DBB Sulfate)	No	ALL.
2,5-Dibutoxy-4-morpholinonitrobenzene	No	ALL.
2,6-Di-tert-butyl-alpha-dimethylamino-p-cresol	No	TNA.
Dibutyl-p-cresol	No	PSG.
2,6-Di-t-butyl-p-cresol	No	PLC.
2,4-Di-tert-butylphenol	No	PSG, SCN.
2,6-Di-tert-butylphenol	No	SCN.
2,6-Di-tert-4-sec-butylphenol	No	SCN.
3,4-Dichloroaniline	No	DUP.
Dichlorobenzanthrone	No	SDC.
o(and p)-Dichlorobenzene	Yes	SCC.
o-Dichlorobenzene	No	MON, PPG, SCC, SOI.
m-Dichlorobenzene	Yes	MON.
p-Dichlorobenzene	No	MON, PPG, SCC, SOI.
3,3'-Dichlorobenzidine base and salts	No	LMC.
3,4-Dichlorobenzotrifluoride	No	HK, (2)
3,3'-Dichloro-4,4'-biphenyl	No	LMC.
Dichlorodiphenylsilane	No	DCC.
2,6-Dichloro-3-methylaniline	No	SDC.
Dichloromethylphenylsilane	No	DCC.
2,6-Dichloro-4-nitroaniline	No	CWN.
1,2-Dichloro-4-nitrobenzene	No	DUP.
2,4-Dichloro-4-(2-nitro-4-trifluoromethylphenyl)-cinnamic acid	No	SK.
2,6-Dichlorophenylamidinourea hydrochloride	No	PCW.
2,6-Dichloropyridine	No	OMC.
Dicyclohexylamine	No	AIP, HK.
Dicyclopentadiene (includes Cyclopentadiene)	Yes	CXI, DOW, ENJ, LYP, SHC, VEL, (2)
α,α-Diethoxyacetophenone	No	CWN.
p-(Diethylamino)benzaldehyde	No	VPC.
4-(Diethylamino)benzaldehyde, 1,1-diphenylhydrazone	No	EKT.
N-(3-Diethylamino-1,4-methoxyphenyl)acetamide	No	SCP.
N,N-Diethylaniline	No	BCC, DUP.
Diethylbenzene	No	UPM.
N,N-Diethylcyclohexylamine	No	AIP.
3,5-Diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	No	(2)
N,N-Diethyl-m-toluidine	No	DUP, FST.
N,N-Diethyl-p-toluidine	No	RSA.
6,11-Dihydrodibenz(b,e)oxepin-11-one	No	PFZ.
2,3-Dihydro-2,2-dimethyl-7-benzofuranol	No	FMN.
2,2-(2,3-Dihydro-1,3-dioxo-1H-inden-2yl)-(quinolinyl)-6-methylbenzothiazole-7-sulfonic acid	No	VPC.
2,4-Dihydroxybenzaldehyde	No	EK.

See footnotes at end of table.

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Cyclic intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 3-3)
Cyclic-Continued		
6,7-Dihydroxy-2-naphthalenesulfonic acid	No	CCC.
16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	No	EK.
m-Diiodobenzene	No	GGC.
m-Diisopropenylbenzene	No	DLT.
2,5-Dimethoxybenzaldehyde	No	CWN.
m-Dimethoxybenzene	No	ACY.
m-(Dimethylamino)benzoic acid	No	(²)
2-[4-(Dimethylamino)benzoyl]benzoic acid	No	EK.
m-Dimethylaminophenol	No	ACY.
N,N-Dimethylaniline	No	BCC, DUP.
N,N-Dimethylbenzylamine	No	HXL.
N,N-Dimethylcyclohexylamine	No	AIP, BAS.
5,5-Dimethylhydantoin	No	BRD.
2,6-Dimethylnaphthalene	No	UPM.
Dimethyl-2,6-naphthalenedicarboxylate	No	UPF.
N,N'-Dimethyl-3,4,9,10-perylenetetracarboxylic acid 3,4:9,10-diimide	No	VPC.
3,5-Dimethylpiperidine	No	(²)
N,N-Dimethyl-o-toluidine	No	RSA.
N,N-Dimethyl-p-toluidine	No	FST, RSA.
3,5-Dinitro-N ⁴ ,N ⁴ -dipropylsulfanilamide	No	LMC.
2,4-Dinitroacetanilide	No	SDC.
m-Dinitrobenzene	No	DUP, FST.
2,4-Dinitrobenzenesulfonic acid, sodium salt	No	EK.
3,5-Dinitrobenzoic acid	No	SAL.
2,4-Dinitrophenol, tech	No	SDC.
3,5-Dinitrosalicylic acid, methyl ester	No	SAL.
p-Dinitrosobenzene	No	LC.
2,4-Dinitrotoluene	No	DUP.
2,4 (and 2,6)-Dinitrotoluene	No	RUC, (²)
Dinitrotrimethyleneglycol-di-p-aminobenzoate	No	SAL.
Dinonylphenol	No	TX.
2,4-Dioxo-3-azaspiro[5,5]undecane-1,5-dicarbonitrile monocation salt	No	PD.
Di-para-benzoquinone dioxime	No	LC.
2,4-Di-tert-pentylphenol	No	PAS, PSG, SCN.
Diphenylamine	No	ART, RUC, USR.
Diphenyldimethoxysilane	No	NOD.
Diphenyldisulfide	No	PAH.
Diphenyl phosphorous chloride	No	ICI.
Diphenyl phthalate	No	EK.
Di-2-picolyamine	No	(²)
1,3-Di-4-piperidylpropane	No	(²)
2,5-Di-p-toluidinoterephthalic acid	No	VPC.
1,5-diureidonaphthalene	No	SOI.
Divinylbenzene	No	DLT, DOW, TCC.
1,1-Di-3,4-xylylethane	No	ACH.
Dodecyldiphenyl oxide	No	TCC.
p-Dodecylphenol	Yes	MON, SCN, SOC, TX.
4-Ethanolpiperidine	No	(²)
2-Ethanolpyridine	No	(²)
5-Ethanoxy-3-trichloromethyl-1,2,4-thiadiazole	No	OMC.
Ethisterone	No	SRL, UPJ.
N-Ethylaniline, refined	No	BCC, FST.
2-(N-Ethylanilino)ethanol	No	MIL, SCP.
3-(N-Ethylanilino)propionitrile	No	SCP.
α -(N-Ethylanilino)-m-toluenesulfonic acid	No	(²)
Ethylbenzene	Yes	AMO, CSD, DOW, ELP, GE, KHI, PLC, SC, SOC, SOG.
2-(N-Ethyl-N, β -cyanoethyl)-4-acetaminoanisole	No	SCP.
N-Ethylcyclohexylamine	No	BAS.

See footnotes at end of table.

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
N-Ethyl-N-(2-hydroxyethyl)-m-toluidine	No	SCP.
N-Ethylmaleimide	No	REG.
2-[Ethyl(3-methylphenyl)amino]ethanol	No	FST.
Ethyl 2(2-nitro-4-trifluoromethylphenyl)-3-oxobutanoate	No	SK.
N-Ethyl-N-phenylbenzylamine	No	(²)
N-Ethyl-m-toluidine	No	DUP, FST.
3-(N-Ethyl-m-toluidino)propionitrile	No	SCP.
o-Fluorobenzoyl chloride	No	OMC.
p-Fluoronitrobenzene	No	(²)
1-Formylpiperidine	No	(²)
Furan	No	QKO.
Furfuryl alcohol	No	QKO.
Guanine	No	LLI.
Hexachlorocyclopentadiene	No	VEL.
1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride (Chlorendic anhydride)	No	OMC, VEL.
Hexahydro-1-[(2-aminophenyl)sulfonyl]-1h-azepine	No	SAL.
Hexahydro-1-[(2-nitrophenyl)sulfonyl]-1h-azepine	No	SAL.
Hexamethyleneimine	No	CXI, DUP.
Hydroquinone, tech	No	EKT, GYR.
p-Hydroxybenzenesulfonic acid	No	UPF.
p-Hydroxybenzoic acid	No	LEM.
4-Hydroxy-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	No	PFZ.
2'-Hydroxy-5,9-dimethyl-6,7-benzomorphan	No	SD.
3-[N-(2-Hydroxyethyl)anilino]propionitrile	No	SCP.
N-β-Hydroxyethyl-2,4-dihydroxybenzamide	No	PCW.
5-Hydroxyisophthalic acid	No	(²)
4-Hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	No	PFZ.
2-Hydroxymethylene-17α-ethinylandroster-17β-ol-4-en-3-one	No	SD.
3-Hydroxy-N-(3-N-morpholino-γ-propyl)-2-naphthimide	No	PCW.
6-Hydroxy-2-naphthalenesulfonic acid, sodium salt	No	(²)
1-Hydroxy-2-naphthoic acid	No	PCW.
3-Hydroxy-2-naphthoic acid(B.O.N.)	No	PCW.
3-Hydroxy-2-naphthoic acid, methyl ester	No	PCW.
2-Imidazolidinone modification	No	(²)
5-indanol	No	(²)
p-Iodotoluene	No	RSA.
Isobutylbenzene	No	PLC, TNA.
Isobutylbiphenyl	No	TCC.
Isobutyrophenone	No	ARS.
Isocyanic acid derivatives:		
Bitoluene diisocyanate (TODI)	No	CWN.
Diphenylmethane-4,4'-diisocyanate (MDI)	No	BAS, DOW, ICI, MOB, RUC.
Polymethylene polyphenylisocyanate	No	BAS, DOW, ICI, MOB, RUC.
Toluene 2,4-diisocyanate	No	MOB.
Toluene 2,4-and 2,6-diisocyanate (80/20 Mixture)	No	BAS, DOW, ICI, MOB, OMC, RUC.
Toluene 2,4-and 2,6-diisocyanate (65/35 Mixture)	No	MOB.
p-Toluenesulfonyl isocyanate	No	VCM.
All other isocyanic acid derivatives	No	CWN, MOB, UCC.
Isonicotinic acid	No	(²)
Isonicotinonitrile	No	(²)
Isophthalic acid, diallyl ester	No	AMO.
Isophthalic acid, dimethyl ester	No	UTC.
Isophthalonitrile	No	DUP, PSG.
Isophthaloyl chloride	No	DUP, TLC.
Isopropylbiphenyl	No	TCC.
4,4'-Isopropylidenediphenol (Bisphenol A)	Yes	ART, DOW, GE, SHC.
4,4'-Isopropylidenediphenol, ethoxylated	No	ICI, SCP.
4,4'-Isopropylidenediphenol, propoxylated	No	ICI, SCP.

See footnotes at end of table.

Table 3-2—Continued
 Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
Isopropylphenol, mixed	No	FMC.
2,6-Lutidine	No	(²)
Melamine	No	ACY, MLC.
p-Mentha-1,4(8)-diene	No	NCI.
dl-p-Mentha-1,8-diene (Limonene)	No	ARZ, NCI.
4-Methoxyacetophenone	No	BUC.
4-Methoxybenzyl alcohol	No	BUC.
2-Methoxyethylpiperidine	No	(²)
N-(4-Methoxy-3-nitrophenyl)acetamide	No	SDC.
2-(N-Methylanilino)ethanol	No	SCP.
3-(N-Methylanilino)propionitrile	No	SCP.
2-Methylanthraquinone	No	ACY.
Methyl-2-benzimidazole carbamate	No	CED.
2-Methylbenzothiazole	No	FMT.
4-Methylbenzotriazole	No	VPC.
o-Methylbenzoyl chloride	No	TLC.
4-Methylbenzoyl chloride	No	CRZ, TLC.
N-Methylbenzylamine	No	HXL.
2-Methyl-1,1-biphenyl(n-3-yl) methanol	No	NES.
Methylcyclohexane	No	PLC.
Methyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboate	No	FMN.
2,2'-Methylenebis(4-methyl-6-nonyl-p-cresol)	No	PSG.
4,4'-Methylenedianiline	No	RUC, USR.
Methylenedicyclohexylmethane 1,4-diisocyanate	No	MOB.
1,2-Methylenedioxybenzene	No	CRZ.
5,5'-Methylenedisalicylic acid	No	KLM.
Methyl p-formylbenzoate	No	EKT.
(2,4-Methyl-5-imidazolyl)methylthioethylamine dihydrochloride-	No	SK.
N-Methyl-p-nitroaniline	No	ACY, USR.
4-Methyl-2-nitroanisole	No	PSG.
1-(2-Methyl-4-nitrophenyl)pyrrolidine	No	ALL.
2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	No	BCC.
N-(3-Methylphenyl)acetamide	No	SDC.
4-(1-Methyl-1-phenyl)ethylphenol	No	SCN.
4-Methylphthalic acid	No	EK.
1-Methylpiperidine	No	(²)
2-Methylpiperidine	No	(²)
α -Methylstyrene	No	ART, BTL, GGC.
ar-Methylstyrene (Vinyltoluene)	No	DLT.
2,6-Naphthalenedicarboxylic acid	No	AMO.
2-Naphthalenesulfonic acid	No	ACY.
Naphthalimide	No	VPC.
1-Naphthylamine (α -Naphthylamine)	No	DUP.
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2-naphthylamine)	No	SDC.
Nicotinonitrile (3-Cyanopyridine)	No	NEP.
o-Nitroaniline	No	BUC, MON.
p-Nitroaniline	No	MON.
5-Nitroanthranilic acid	Np	SAL.
1-Nitroanthraquinone	No	SDC.
-Nitrobenzamide	No	PD.
Nitrobenzene	No	FST, ICI, RUC.
m-Nitrobenzenesulfonic acid, sodium salt	No	USM.
o-Nitrobenzoic acid	No	SAL.
m-Nitrobenzoic acid	No	SAL, (²)
p-Nitrobenzoic acid	No	DUP.
m-Nitrobenzoic acid, sodium salt	No	SAL.
2-Nitro-N-benzoylaniline	No	SAL.
2-Nitro-p-cresol	No	PSG.

See footnotes at end of table.

Section 3

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
5-Nitrodimethylisophthalate	No	SAL.
Nitrodiphenylamine	No	ACY, MON.
5-Nitroisophthalic acid	No	SAL.
p-Nitrophenethyl alcohol	No	PCW.
p-Nitrophenol	No	MON.
p-Nitrophenol, sodium salt	No	DUP.
p-Nitrophenoxyethanol	No	SCP.
5-Nitrosalicylic acid	No	SAL.
p-Nitrosophenol	No	LC, SDC.
4-Nitrosophenol, sodium salt	No	SDC.
o-Nitrotoluene	No	FST.
m-Nitrotoluene	No	DUP, FST.
p-Nitrotoluene	No	DUP, FST.
Nitrotoluene mixtures	No	FST.
(2-Nitro-4-trifluoromethylphenyl)acetic acid	No	SK.
Nonylphenol	Yes	GAF, GE, KLM, MON, RH, SCN, TX.
Octylphenol	Yes	PSG, RH, SCN.
Octylphenoxydiethoxy chloride	No	RH.
1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]-anthraquinone	No	SDC.
3-Oxo-1,2-benzisothiazoline-2-acetic acid, methyl ester, 1,1-dioxide	No	PFZ.
Oxaluminum benzoate	No	CHT.
4,4'-Oxydianiline	No	DUP.
o-Pentylphenol (o-Amylphenol)	No	PAS, SCN.
p-tert-Pentylphenol	No	PAS.
3,4,9,10-Perylene-tetracarboxylic-3,4:9,10-dianhydride	No	VPC.
3,4,9,10-Perylene-tetracarboxylic-3,4:9,10-diimide	No	VPC.
1,10-Phenanthroline	No	VNC.
2-Phenethylamine	No	HXL.
p-Phenetidine	No	HCL, MNA.
Phenol:		
Natural:		
From petroleum:		
Phenol, natural, from petroleum, U.S.P.	No	MER.
All other phenol, natural, from petroleum	No	ISP, PSG.
Synthetic:		
By caustic fusion:		
All other phenol, synthetic, by caustic fusion	No	DOW.
Phenol, benzylated	No	MIL.
Phenol, styrenated	No	MIL, PSG.
Phenol, synthetic, from cumene by oxidation, U.S.P.	No	ACS, ART, BTL, GE, GGC.
All other phenol, synthetic	No	KLM, SHC, TX.
Phenolsulfonaphthalein	No	EK.
Phenolsulfonic acid	No	SAL.
Phenolsulfonic acid, sodium salt	No	SAL.
Phenoxyacetic acid, sodium salt	No	NCC.
m-Phenoxytoluene	No	MER.
4-(Phenylazo)diphenylamine	No	EK.
2-Phenylbenzimidazole	No	SAL.
m-Phenylenebismaleimide	No	NES.
o-Phenylenediamine	No	DUP, PSG.
m-Phenylenediamine	No	DUP, FST.
p-Phenylenediamine	No	DUP.
Phenyl ether (Diphenyl oxide)	No	DOW, MON.
d(-)- α -Phenylethylamine	No	HXL.
N-Phenylglycine	No	EK.
Phenylglycine, potassium salt	No	KAN.
Phenylglycine, sodium salt	No	BCC, LIL.
2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine)	No	MIL, SCP.
2,2'-[(Phenyl)imino]diethanol, diacetate ester	No	SCP.

See footnotes at end of table.

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Cyclic intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 3-3)
Cyclic-Continued		
o-Phenylphenol	No	DOW.
p-Phenylphenol	No	DOW.
o-Phenylphenol, sodium salt	No	DOW.
N-Phenyl-p-phenylenediamine	No	USR.
1-Phenyl-1,2-propanedione, 2-oxime	No	ORT.
Phenyl-2-propanone	No	SK.
4-Phenylpropylpyridine	No	(²)
Phenyltrimethyl ammonium chloride	No	LLI.
N-Phenylurea	No	RSA.
Phthalic acid	Yes	EK.
Phthalic anhydride	No	ART, BAS, ENJ, STP, USR.
Phthalimide	No	PSG.
[Phthalocyaninato(2-)]copper	No	PHC.
Phthalocyaninetetrasulfonyl chloride, copper derivative	No	VPC.
Phthaloyl chloride (Phthalyl chloride)	No	TLC.
Picolines:		
Picoline (3,4-mixture)	No	(²)
2-Picoline (α -Picoline)	No	(²)
3-Picoline (β -Picoline)	No	NEP, (²)
4-Picoline (γ -Picoline)	No	(²)
Picolinonitrile (2-Cyanopyridine)	No	NEP.
3-Picolylamine	No	(²)
Picric acid (Trinitrophenol)	No	SDC.
Piperidine	No	AIP, (²)
Polyethylbenzene (80 percent diethylbenzene)	No	ELP.
Propiophenone	No	ORT.
Pyridine hydrochloride	No	RSA.
3-Pyridinemethanol	No	(²)
Pyridine, refined:		
2 ^o Pyridine, refined	No	NEP.
All other grades pyridine, refined	No	(²)
2 Pyridinethiol-1-oxide, sodium salt	No	OMC.
2 Pyridinethiol-1-oxide, zinc salt	No	OMC.
Pyromellitic dianhydride	No	ACH.
2-Pyrrolidinone (2-Pyrrolidone)	No	GAF.
Pyrvinium pamoate	No	(²)
Quinaldine	No	ACY, CIC.
Quinone dioxime	No	LC.
Resorcinol, tech,	No	ISP.
β -Resorcylic acid	No	ISP.
Salicylaldehyde	No	RDA.
Salicylaldehyde oxime	No	EK.
Salicylanilide	No	PCW.
Salicylic acid, tech	Yes	DOW, KLM, RDA, (²)
Sodium p-sulfophenylmethallyl ether	No	SAL.
Sodium trichlorobenzenesulfate	No	UPF.
Styrene (Vinylbenzene)	No	AMO, ATR, CSD, DLT, DOW, ELP, GE, PLC, SC, SOC.
Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt	No	(²)
5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt	No	DUP.
5-Sulfoisophthalic acid, sodium salt	No	PCW.
4-Sulfoisophthalic acid	No	CWN.
Terephthalic acid	No	AMO, DUP, HCF.
Terephthalic acid, dimethyl ester	No	DUP, EKT, HCF.
Terephthaloyl chloride	No	DUP, TLC.
Terphenyl (Phenylbiphenyl) (m-, o-, and p-isomers)	No	MON.
Terpinene-4-ol	No	(²)
Tetrabromophthalic anhydride	No	GTL.
Tetrabromophthalic anhydride, diester	No	GTL.

See footnotes at end of table.

Section 3

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Cyclic intermediates	Separate statistics ¹	Manufacturers' identification codes (according to list in table 3-3)
Cyclic-Continued		
Tetrachlorophthalic anhydride	No	MON.
Tetrahydrofuran	Yes	ATR, BAS, DUP, GAF, QKO.
1,2,3,4-Tetrahydronaphthalene	No	RDA.
1,2,4,5-Tetramethylbenzene (Durene)	No	KHI.
p-(1,1,3,3-Tetramethylbutyl)phenol	No	GAF.
Tetranitrodibenzo-1,3 α ,4,6 α -tetraazapentalene	No	TLI.
3,3'-Thiobis[7h-benz[de]anthracen-7-one]	No	CRZ.
6,6'-Thiodimetanilic acid	No	CRZ.
Toluene-2,3-(and 3,4)-diamine (35/65 Mixture)	No	OMC.
Toluene-2,4-diamine (4-m-Tolylenediamine)	No	RUC. (2)
Toluene-2,4-(and 2,6)-diamine (80/20 Mixture)	No	OMC.
Toluene-3,4-diamine	No	(2)
p-Toluenesulfonamide	No	UTC.
p-Toluenesulfonic acid	No	TEN, UPF.
p-Toluenesulfonic acid, aniline salt	No	NES.
m-Toluic acid	No	WTC.
p-Toluic acid, methyl ester	No	HCF.
o-Toluidine	No	DUP, FST.
m-Toluidine	No	DUP, FST.
p-Toluidine	No	DUP, FST.
2,2'-(o-Tolylimino)diethanol	No	SCP.
2,2'-(m-Tolylimino)diethanol	No	MIL, SCP.
Tolyltriazole	No	PSG.
2,4,6-Tribromophenol	No	GTL.
1,2,3(and 1,2,4)-Trichlorobenzene	No	PPG, SCC.
1,2,4-Trichlorobenzene	No	SCC.
3-Trichloromethyl-1,2,4-thiadiazole	No	OMC.
Trichlorophenylsilane	No	DCC.
α,α,α -Trichlorotoluene (Benzotrichloride)	No	HK, VEL.
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	No	DGC.
Tri(dimethylaminomethyl)phenol	No	PEL.
Trimellitic anhydride, acid chloride	No	(2)
Trimellitic trichloride	No	TLC.
1,2,4-Trimethylbenzene (Pseudocumene)	No	KHI, SOG.
1,3,5-Trimethylbenzene (Mesitylene)	No	ABB, KHI.
1,3,3-Trimethyl- δ^2 , α -indolineacetaldehyde	No	VPC.
2,3,6-Trimethylphenol	No	GE.
Triphenylmethane	No	EK.
α,α',α'' -Tris(dimethylamino)mesitol	No	RH.
1,1,1-Tris(p-hydroxyphenyl)ethane	No	SAL.
Tris(2-methyl-1-aziridiny)phosphine oxide	No	ARS.
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J-Acid urea)	No	S.
Veratraldehyde (3,4-Dimethoxybenzaldehyde)	No	GIV.
2-Vinylpyridine	No	(2)
4-Vinylpyridine	No	(2)
o-Xylene (90-100% of o-xylene isomer)	Yes	ENJ, KHI, LYP, PLC, PPR.
m-Xylene (90-100% of m-xylene isomer)	No	AMO, PLC.
p-Xylene (90-100% Of p-xylene isomer)	Yes	AMO, ENJ, KHI, LYP, PLC, PPX, SOC, STX.
2,4-Xylenesulfonic acid	No	UPF.
Xylenesulfonic acid, mixed isomers	No	NES.
2,6-Xylenol	No	GE.
Xylenol crystals	No	HCL, HXL.
Xylenols:		
Xylenol, low boiling point	No	MER.
Xylenols, not classified as to boiling point	No	GE.

See footnotes at end of table.

Table 3-2—Continued
Cyclic intermediates for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Cyclic intermediates</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 3-3)</i>
Cyclic-Continued		
Xylidines:		
Xylidine, original mixture	No	DUP, (2)
All other cyclic intermediates	Yes	ACY, AMB, ATL, BRD, BRS, BUC, CHD, CRZ, DUP, EK, EKT, HCF, HCL, HK, HXL, KAN, LC, NOD, OMC, PCI, PCW, PD, PFZ, PIL, PRC, PSG, RAY, SAL, SCH, SCP, SD, SDC, SDW, SK, TCC, TNA, UCC, UPF, UPJ, UPJ, UPJ, UPJ, UPJ, UPJ, VPC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 3

Table 3-3

Cyclic intermediates: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	ELP	Rexene Products Company
ACH	Allco Chemical Corp.	ENJ	Exxon Chemical Americas
ACS	Allied Signal Inc., Engineered Material Sector	FER	Ferro Corp.: Bedford Chemical Div. Grant Div.
ACY	American Cyanamid Co.	FMC	FMC Corp., Nitro Div.
AIP	Air Products & Chemicals, Inc.	FMN	Agricultural Chemical Group
ALL	Alliance Chemical, Inc.	FMT	Fairmount Chemical Co., Inc.
AMB	American Bio-Synthetics Corp.	FST	First Chemical Corp.
AMO	Amoco Corp.	GAF	GAF Chemical Corp.
ARS	Arsynco, Inc., Sub. Div. of Aceto Corp.	GE	General Electric Co., Speciality Chemical Group
ART	Aristech Chemical Corp., Chemical Div.	GGC	Georgia-Gulf Corp.: Houston Div. Plaquemine Div.
ARZ	Arizona Chemical Co.	GIV	Givaudan Corp
ASH	Ashland Oil, Inc., Ashland Petroleum Co.	GRS	Champlin Refining Co.
ATL	Atlantic Industries, Inc.	GTL	Great Lakes Chemical Corp.
ATR	Atlantic Richfield Co., Arco Chemical Co.	GYR	Goodyear Tire & Rubber Co.
BAS	BASF Corp.	HCF	Cape Industries
BCC	Buffalo Color Corp.	HCL	Hoechst Celanese Corp.: Bayport Works Fine Chemicals Div. Sou-Tex Works Specialty Chem Group
BFG	B. F. Goodrich Co., B. F. Goodrich Chemical Group	HIL	Hilton Davis Co.
BRD	Lonza, Inc.	HK	Occidental Chemical Corp., ED & S Div.
BRS	Bristol-Myers Co.	HPC	Hercules, Inc.
BTL	BTL Specialty Resin Corp.	HXL	Hexcel Corp., Hexcel Chemical Products
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	ICI	ICI Americas, Inc., Agricultural Chemicals Div. Polyurethanes Group Specialty Chem Div.
CCC	C.N.C. International, Inc.	ISP	Indspec Chemical Corp.
CED	Cedar Chemical Co.	KAN	Kanasco, Ltd
CHD	Chemdesign Corp.	KHI	Koch Refining Co.
CHF	Kincaid Enterprises, Inc.	KLM	Kalama Chemical, Inc.
CHT	Chattem, Inc.	LC	Lord Corp., Chemical Products Group
CIC	Color Chem International Corp.	LEM	Napp Chemicals, Inc.
CNP	DSM Chemicals North America	LIL	Eli Lilly & Co.
CRZ	James River II Corp.	LLI	Lee Laboratories, Inc.
CSD	Fina Oil & Chemicals Co., Cosden Chemical Div.	LMC	Lomac, Inc.
CWN	Upjohn Co., Fine Chemicals	LYP	Lyondell Petrochemical Co.
CXI	Chemical Exchange Industries, Inc.	MAL	Mallinckrodt, Inc.
DAZ	Diaz Chemical Corp.	MER	Merichem Co.
DCC	Dow Corning Corp.	MIL	Milliken & Co., Milliken Chemical Div.
DGC	Degussa Corp.	MLC	Melamine Chemicals, Inc.
DIX	Dixie Chemical Co., Inc.	MNA	Monsanto Agriculture Co.
DKA	Mobay Synthetics Corp.		
DLT	Deltech Corporation		
DOW	Dow Chemical Co.		
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Petrochemicals Dept.		
EK	Eastman Kodak Co.:		
EKT	Tennessee Eastman Co. Div.		

See note at end of table.

Table 3-3—Continued

Cyclic intermediates: Directory of manufacturers, alphabetical by code, 1990

Code	Name of company	Code	Name of company
MOB	Mobay Chemical Corp., Pittsburgh Div.	SCP	Henkel Corp.
MON	Monsanto Co.	SD	Sterling Drug, Inc., Sterling Pharmaceuticals, Inc.
NCC	Niacet, Corp.	SDC	Sandoz Chemicals Corp.
NCI	Union Camp Corp., B B A Div.	SDW	Sterling Drug, Inc., Organic Div.
NEP	Nepera, Inc.	SHC	Shell Chemical Co.
NES	Ruetgers-Nease Chemical Co.	SK	Smithkline Beecham Chemicals
NOD	Huls America, Inc.	SOC	Chevron Corp., Chevron Chemical Co.
NSC	National Starch & Chemical Corp.	SOG	Hill Petroleum Company
OMC	Olin Corp.	SOI	Specialty Organics, Inc.
ORT	Roehr Chemicals, Inc., Div. of Aceto Corp.	SRL	G. D. Searle & Co.
PAH	Parish Chemical Co.	STP	Stepan Co.
PAS	Atochem North America, Inc.	STX	St. Croix Petrochemical Corp.
PCI	Piedmont Chemical Industries, Inc.	SUN	Sun Company, Inc.
PCW	Pfister Chemical, Inc.	TCC	Sybron Chemicals, Inc.
PD	Parke-Davis Div. of Warner-Lambert Co.	TEN	Tennessee Chemical Co.
PEL	Pelron Corp.	TLC	Twin Lake Chemical, Inc.
PFZ	Pfizer, Inc., & Pfizer Pharmaceuticals, Inc.	TLI	Teledyne Industries Inc., Teledyne McCormick Selph
PHC	Phthalchem, Inc.	TNA	Ethyl Corp.
PLC	Phillips 66 Co.	TX	Texaco Chemical Co.
PPG	PPG Industries, Inc.	UCC	Union Carbide Corp., Industrial Chemicals Div.
PPR	Phillips Puerto Rico Core, Inc.	UOC	Union Oil Co., of California
PPX	Phillips Paraxylene, Inc.	UPF	Sloss Industries
PRC	Products Research & Chemical Corp.	UPJ	Upjohn Co.
PSG	PMC, Inc., PMC Specialty Group, Inc.	UPM	UOP, Inc.
QKO	QO Chemicals, Inc.	USM	Crown Metro, Inc.
RAY	Rayonier Chemical Products, Inc.	USR	Uniroyal Chemical Co., Inc.
RDA	Rhone-Poulenc, Inc.	UTC	Unitex Chemical Corp.
REG	Regis Chemical Co.	VCM	Vanchem, Inc.
RH	Rohm & Haas Co.	VEL	Velsicol Chemical Corp.
RSA	R.S.A. Corp.	VNC	Vanderbilt Chemical Corp.
RUC	Rubicon, Inc.	VPC	Mobay Chemical Corp., Dyes & Pigments Div.
S	Sandoz Chemicals Corp.	VST	Vista Chemical Co.
SAL	Solvay Animal Health Inc.	WAY	Olin Hunt Specialty Products, Inc.
SC	Sterling Chemicals, Inc.	WTC	Witco Corp.
SCC	Standard Chlorine of Delaware, Inc.	WYK	Wyckoff Chemical Co., Inc.
SCH	The Schering Corp.		
SCN	Schenectady Chemical, Inc.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission

Section 4 Dyes

Synthetic dyes are derived in whole or in part from cyclic intermediates. Approximately two-thirds of the dyes consumed in the United States are used by the textile industry to dye natural and synthetic fibers or fabrics; about one-sixth is used for coloring paper, and the rest is used chiefly in the production of organic pigments and in dyeing leather and plastics. Of the several thousand different synthetic dyes that are known, more than one thousand are manufactured by domestic producers, collectively. The large number of dyes results from the many different types of materials to which dyes are applied, the different conditions of service for which dyes are required, and the cost that a particular use can bear. Commercial dyes are formulated products which are sold in a variety of physical forms (e.g. granular, powders, liquids, and pastes) containing concentrations of colorant ranging from 6 percent (approximately) to 100 percent. In the statistical tables, production and sales quantities are expressed in terms of a standard strength of product (based on dyeing performance) and not in terms of the amount of actual colorant.

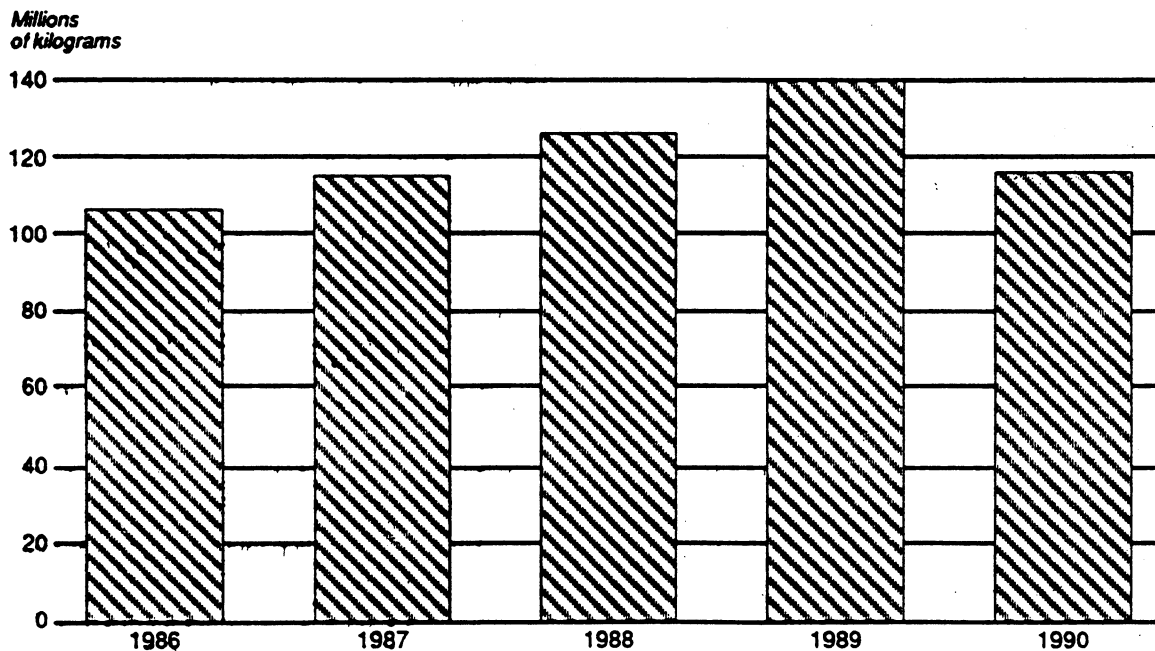
Total domestic production of dyes in 1990 amounted to 117 million kilograms, or 33 percent less than the 174 million kilograms produced in 1989 (table 4-1). Sales of dyes in 1990 amounted to 103 million kilograms, valued at \$775 million, compared with 146 million kilograms, valued at \$858 million, in 1989. In terms of quantity, sales of dyes in 1990 was 29 percent lower, and in terms of value 11 percent lower. The average unit value of sales of all dyes in 1990 was \$7.46 per kilogram, compared with \$5.83 per kilogram in 1989.

Production of five classes of dyes decreased in 1990, while the remaining six major classes increased their production. Fiber-reactive dyes and fluorescent brightening agents registered significant increases in 1990 while direct dyes and fluorescent brightening agent registered a noticeable declines. Changes in U.S. production of synthetic dyes followed overall changes in U.S. economic activity during 1986-90 (see figure 4-1).

Table 4-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 4-3.

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202-205-3363

Figure 4-1
Dyes: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 4

Table 4-1

Dyes: U.S. production and sales, 1990

Dyes	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	117,135	103,897	775,352	\$7.46
Acid dyes				
Total	7,309	6,295	82,533	13.11
Acid yellow dyes	1,914	1,532	17,624	11.51
Acid orange dyes	657	575	5,245	9.12
Acid red dyes, total	990	841	12,452	14.81
Acid violet dyes	26	26	596	22.51
Acid blue dyes,	1,910	1,787	28,807	16.12
Acid Blue 324	564	545	9,041	16.60
All other acid blue dyes	1,346	1,242	19,766	15.91
Acid green dyes	115	115	1,547	13.42
Acid brown dyes	627	526	6,786	12.91
Acid black dyes	1,070	893	9,476	10.62
Basic dyes (classical and modified)				
Total	5,991	4,936	72,912	14.77
Basic yellow dyes	2,027	1,087	15,500	14.26
Basic orange dyes	299	268	3,215	11.99
Basic red dyes	650	645	9,036	14.01
Basic violet dyes, total	1,410	1,409	15,250	10.82
Basic Violet 3	574	587	5,287	9.01
Basic violet 16	96	115	1,895	16.41
All other basic violet dyes	740	707	8,068	11.41
Basic blue dyes	968	1,004	18,099	18.03
All other basic dyes	637	523	11,812	16.48
Direct dyes				
Total	20,235	18,660	120,127	6.43
Direct yellow dyes	7,685	7,358	38,512	5.24
Direct orange dyes	614	523	3,677	7.03
Direct red dyes, total	3,347	3,084	23,619	7.66
Direct Red 254	1,016	929	5,709	6.15
All other direct red dyes	2,331	2,155	17,910	8.31
Direct violet dyes	109	104	1,383	12.24

See footnotes at end of table.

Table 4-1—Continued
 Dyes: U.S. production and sales, 1990

Dyes	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Direct dyes—Continued				
Direct blue dyes, total	3,946	3,144	25,479	\$8.10
Direct Blue 80	190	156	1,842	11.83
Direct Blue 86	384	338	2,411	7.13
Direct Blue 98	121	107	1,099	10.19
All other direct blue dyes	3,251	2,543	20,127	7.92
Direct green dyes	27	11	191	17.36
Direct brown dyes	136	130	854	6.26
Direct black dyes, total	4,371	4,306	26,412	6.13
Direct black 22	1,891	2,073	8,928	4.31
Direct black 80	837	819	5,937	7.25
All other, direct black	1,643	1,414	11,547	8.16
Disperse dyes				
Total	17,776	15,151	110,805	7.31
Disperse yellow dyes	1,113	791	9,294	11.75
Disperse orange dyes	6,044	5,502	10,436	1.90
Disperse red dyes, total	3,867	3,160	27,804	8.80
Disperse Red 167 and 167:1	485	492	1,891	3.84
Disperse Red 177	99	125	1,672	13.42
All other disperse red dyes	3,283	2,543	24,241	9.53
Disperse violet dyes	160	133	3,451	25.95
Disperse blue dyes	5,043	4,361	49,945	11.45
Disperse black, brown and green dyes, total	1,549	1,204	9,875	8.20
Disperse Brown 1	335	324	2,978	9.20
All other disperse black, brown, and green dyes	1,214	880	6,897	7.84
Fiber-reactive dyes				
Total	13,010	9,635	112,427	11.67
Fluorescent brightening agents				
Total	17,677	17,879	75,298	4.21

See footnotes at end of table.

Section 4

Table 4-1—Continued

Dyes: U.S. production and sales, 1990

Dyes	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Food, drug, and cosmetic colors				
Total	3,747	3,596	51,084	\$14.21
Food, drug and cosmetic dyes,	3,086	3,000	39,137	13.04
Drug and cosmetic dyes,	661	596	11,947	20.03
Mordant dyes				
Total	9	11	234	19.76
Solvent dyes				
Total	6,032	3,812	46,152	12.11
Solvent yellow dyes	986	562	10,572	18.80
Solvent orange dyes	98	127	2,633	20.72
Solvent red dyes	1,488	1,417	15,808	11.15
Solvent violet dyes	162	72	2,022	28.22
Solvent blue dyes	2,181	516	8,299	16.08
All other solvent dyes	1,117	1,118	6,818	6.10
Vat dyes				
Total	13,353	12,716	52,899	4.12
Vat orange dyes	88	85	1,666	19.55
Vat red dyes	153	168	3,499	20.85
Vat violet dyes	111	127	1,868	14.68
Vat blue dyes	12,689	12,088	42,783	3.54
Vat green dyes	69	44	494	11.24
Vat brown dyes	101	81	1,174	14.46
Vat black dyes	142	123	1,415	11.48
All other dyes				
Total ⁴	11,996	11,206	50,881	4.54

¹ Calculated from unrounded figures.² Reported data were accepted in confidence and may not be published, or no data were reported.³ The data include external drug and cosmetic dyes.⁴ The data include azoic compositions, azoic coupling components, azoic diazo components (bases and salts), sulfur dyes, and miscellaneous dyes. Statistics for those groups of dyes may not be published separately because publication would disclose information received in confidence.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 4-2
Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Acid dyes:	Yes	
Acid yellow dyes:	Yes	
Acid Yellow 3	No	BAS.
Acid Yellow 17	No	ATL, CK, (2).
Acid Yellow 19	No	CK.
Acid Yellow 23	No	BAS, CK, DGO, LVR, WJ, (2).
Acid Yellow 34	No	ATL.
Acid Yellow 36	No	ATL.
Acid Yellow 49	No	ATL, CK, FAB.
Acid Yellow 59	No	BAS, CK.
Acid Yellow 65	No	ATL, CK.
Acid Yellow 73	No	(2).
Acid Yellow 114	No	DGO.
Acid Yellow 135	No	ICI.
Acid Yellow 137	No	CK.
Acid Yellow 151	No	CK.
Acid Yellow 159	No	CK.
Acid Yellow 174	No	FAB.
Acid Yellow 198	No	CK.
Acid Yellow 200	No	CK.
Acid Yellow 219	No	CK.
Acid Yellow 226	No	BAS.
All other acid yellow dyes	No	CK.
Acid orange dyes:	Yes	
Acid Orange 7	No	BAS, CK.
Acid Orange 8	No	ATL, BAS, CK.
Acid Orange 10	No	ATL, CK.
Acid Orange 24	No	CK, FAB.
Acid Orange 60	No	CK.
Acid Orange 64	No	ATL.
Acid Orange 89	No	BAS.
Acid Orange 116	No	CK.
Acid Orange 128	No	CK.
Acid Orange 152	No	CK.
Acid Orange 156	No	CK, S.
Acid Orange 161	No	ATL.
All other acid orange dyes	No	CK.
Acid red dyes:	Yes	
Acid Red 1	No	ATL, CK, FAB.
Acid Red 4	No	ATL, FAB.
Acid Red 14	No	ATL.
Acid Red 57	No	CK.
Acid Red 73	No	PSC, S.
Acid Red 87	No	(2).
Acid Red 88	No	FAB.
Acid Red 119	No	CK.
Acid Red 137	No	ATL, BAS.
Acid Red 151	No	CK.
Acid Red 166	No	FAB.
Acid Red 182	No	CK, VPC.
Acid Red 226	No	BAS.
Acid Red 266	No	CK.
Acid Red 278	No	CK.
Acid Red 296	No	BAS.
Acid Red 299	No	CK.
Acid Red 337	No	ATL, CK, FAB.
Acid Red 364	No	CK.
Acid Red 384	No	CK.
Acid Red 388	No	CK.
Acid Red 400	No	ATL.
Acid Red 410	No	ATL.
Acid Red 418	No	CK.
Acid Red 419	No	CK.

See footnotes at end of table.

Section 4

Table 4-2—Continued

Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Acid dyes-Continued		
Acid red dyes-Continued		
All other acid red dyes	No	BAS, CK.
Acid violet dyes:	Yes	
Acid Violet 3	No	FAB.
Acid Violet 7	No	FAB.
Acid Violet 12	No	FAB.
Acid Violet 17	No	(?)
Acid Violet 49	No	(?)
Acid blue dyes:	Yes	
Acid Blue 9	No	BAS, WJ, (?)
Acid Blue 15	No	BAS.
Acid Blue 25	No	VPC.
Acid Blue 29	No	FAB.
Acid Blue 40	No	CK.
Acid Blue 41	No	CK.
Acid Blue 62	No	CK.
Acid Blue 67	No	BAS.
Acid Blue 92	No	FAB.
Acid Blue 113	No	CK.
Acid Blue 118	No	ATL.
Acid Blue 231	No	CK.
Acid Blue 281	No	CK.
Acid Blue 283	No	S.
Acid Blue 298	No	CK.
Acid Blue 321	No	ATL.
Acid Blue 324	Yes	CK, S, VPC.
Acid Blue 330	No	ATL.
All other acid blue dyes	No	CK.
Acid green dyes:	Yes	
Acid Green 1	No	LVR.
Acid Green 16	No	LVR.
Acid Green 20	No	ATL, FAB.
Acid Green 25	No	CK.
All other acid green dyes	No	CK.
Acid brown dyes:	Yes	
Acid Brown 14	No	CK.
Acid Brown 19	No	CK.
Acid Brown 50	No	BAS.
Acid Brown 96	No	FAB.
Acid Brown 97	No	BAS, FAB.
Acid Brown 98	No	FAB.
Acid Brown 147	No	CK.
Acid Brown 159	No	BAS.
Acid Brown 160	No	BAS.
Acid Brown 161	No	BAS.
Acid Brown 165	No	BAS.
Acid Brown 188	No	CK.
Acid Brown 189	No	CK.
Acid Brown 227	No	BAS.
Acid Brown 239	No	CK.
Acid Brown 264	No	BAS.
Acid Brown 439	No	CK.
All other acid brown dyes	No	CK.
Acid black dyes:	Yes	
Acid Black 1	No	CK.
Acid Black 2	No	ATL, LVR.
Acid Black 52	No	CK, S.
Acid Black 60	No	CK.
Acid Black 63	No	BAS.
Acid Black 92	No	FAB.

See footnotes at end of table.

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Acid dyes-Continued		
Acid black dyes-Continued		
Acid Black 107	No	CK.
Acid Black 172	No	CK.
Acid Black 194	No	BAS.
Acid Black 210	No	BAS.
All other acid black dyes	No	BAS.
Azoic dyes and components:	No	
Azoic compositions:	No	
Azoic yellow compositions:	No	
Azoic Yellow 1	No	BUC.
Azoic red compositions:	No	
Azoic Red 1	No	BUC.
Azoic Red 2	No	BUC.
Azoic Red 6	No	BUC.
All other azoic red compositions	No	BUC.
Azoic violet compositions:	No	
Azoic Violet 1	No	BUC.
All other azoic violet compositions	No	BUC.
Azoic blue compositions:	No	
Azoic Blue 3	No	BUC.
Azoic brown compositions:	No	
Azoic Brown 9	No	BUC.
Azoic black compositions:	No	
Azoic Black 4	No	BUC.
All other azoic black compositions	No	BUC.
Azoic diazo components, bases:	No	
Azoic Diazo Component 5, base	No	All.
Azoic Diazo Component 13, base	No	All.
Azoic Diazo Component 32, base	No	All.
All other azoic diazo components, base	No	All.
Azoic diazo components, salts:	No	
Azoic Diazo Component 1, salt	No	All, BUC.
Azoic Diazo Component 3, salt	No	BUC.
Azoic Diazo Component 5, salt	No	All, BUC.
Azoic Diazo Component 8, salt	No	All, BUC.
Azoic Diazo Component 9, salt	No	All, BUC.
Azoic Diazo Component 10, salt	No	BUC.
Azoic Diazo Component 12, salt	No	All, BUC.
Azoic Diazo Component 13, salt	No	All, BUC.
Azoic Diazo Component 32, salt	No	ATL.
Azoic Diazo Component 48, salt	No	ATL.
All other azoic diazo components, salt	No	All.
Azoic coupling components:	No	
Azoic Coupling Component 2	No	All.
Azoic Coupling Component 12	No	All.
Azoic Coupling Component 14	No	All.
Azoic Coupling Component 18	No	All.
Azoic Coupling Component 20	No	PCW.
Azoic Coupling Component 29	No	PCW.
Basic dyes (classical and modified):	Yes	
Basic yellow dyes:	Yes	
Basic Yellow 11	No	ATL, CK.
Basic Yellow 15	No	CK.
Basic Yellow 28	No	BAS, VPC.
Basic Yellow 29	No	BAS.
Basic Yellow 53	No	CK.
Basic Yellow 58	No	VPC.
Basic Yellow 65	No	BAS.
Basic Yellow 78	No	BAS.
Basic Yellow 79	No	CK.

See footnotes at end of table.

Section 4

Table 4-2—Continued
Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Basic dyes (classical and modified)-Continued		
Basic yellow dyes-Continued		
Basic Yellow 83	No	CK.
Basic Yellow 94	No	S.
Basic Yellow 96	No	BAS.
Basic Yellow 98	No	BAS.
Basic Yellow 102	No	BAS.
All other, basic yellow dyes	No	BAS.
All other basic yellow dyes, modified	No	(²).
Basic orange dyes:	Yes	
Basic Orange 1	No	ATL, BAS, CK.
Basic Orange 2	No	ATL, BAS, PSC.
Basic Orange 21	No	ATL, VPC.
Basic Orange 26	No	CK.
All other basic orange dyes	No	BAS, (²).
Basic red dyes:	Yes	
Basic Red 12	No	ATL, VPC.
Basic Red 14	No	ATL, BAS, CK.
Basic Red 15	No	ATL, BAS, CK.
Basic Red 17	No	CK.
Basic Red 29	No	BAS.
Basic Red 46	No	CK.
Basic Red 49	No	BAS.
Basic Red 54	No	BAS.
Basic Red 73	No	CK.
Basic Red 104	No	CK.
Basic Red 111	No	S.
All other, basic red dyes	No	BAS, (²).
Basic violet dyes:	Yes	
Basic Violet 1	No	BAS, DSC.
Basic Violet 3	No	BAS, CK, DSC.
Basic Violet 4	No	BAS, DSC.
Basic Violet 10	No	BAS.
Basic Violet 16	Yes	ATL, CK, VPC.
Basic Violet 35	No	BAS.
All other basic violet dyes	No	BAS, (²).
Basic blue dyes:	Yes	
Basic Blue 1	No	BAS.
Basic Blue 3	No	BAS, CK.
Basic Blue 7	No	DSC.
Basic Blue 10	No	BAS.
Basic Blue 21	No	CK.
Basic Blue 41	No	BAS.
Basic Blue 60	No	BAS.
Basic Blue 77	No	CK.
Basic Blue 94 and 94:1	No	CK.
Basic Blue 140	No	S, VPC.
Basic Blue 152	No	BAS.
All other basic blue dyes	No	BAS, (²).
All other basic blue dyes, modified	No	BAS.
Basic green dyes:	Yes	
Basic Green 1	No	BAS.
Basic Green 4	No	(²).
All other basic green dyes	No	BAS.
Basic brown dyes:	Yes	
Basic Brown 1	No	PSC.
Basic Brown 4	No	BAS, PSC.
All other basic brown dyes	No	BAS.
Basic black dyes:	Yes	
Basic Black 1	No	(²).
All other basic black dyes	No	BAS, (²).

See footnotes at end of table.

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Basic dyes (classical and modified)-Continued		
Basic black dyes-Continued		
All other modified basic black dyes	No	BAS.
Direct dyes:	Yes	
Direct yellow dyes:	Yes	
Direct Yellow 4	No	BAS, CK, LVR, VPC.
Direct Yellow 5	No	BAS.
Direct Yellow 6	No	VPC.
Direct Yellow 11	No	BAS, VPC.
Direct Yellow 28	No	CK.
Direct Yellow 34	No	CK.
Direct Yellow 44	No	CK.
Direct Yellow 51	No	S.
Direct Yellow 105	No	CK.
Direct Yellow 106	No	CK.
Direct Yellow 107	No	CK.
Direct Yellow 118	No	CK.
Direct Yellow 119	No	VPC.
Direct Yellow 127	No	BAS, CK, S, VPC.
Direct Yellow 131	No	VPC.
Direct Yellow 132	No	S.
Direct Yellow 133	No	S.
Direct Yellow 137	No	VPC.
Direct Yellow 147	No	BAS, VPC.
Direct Yellow 148	No	S.
Direct Yellow 154	No	VPC.
All other direct yellow dyes	No	ATL, BAS, CK.
Direct orange dyes:	Yes	
Direct Orange 15	No	VPC.
Direct Orange 26	No	CK.
Direct Orange 34	No	FAB.
Direct Orange 39	No	CK.
Direct Orange 72	No	CK.
Direct Orange 80	No	ATL.
Direct Orange 102	No	BAS, VPC.
Direct Orange 118	No	S.
All other direct orange dyes	No	ATL, BAS.
Direct red dyes:	Yes	
Direct Red 9	No	CK.
Direct Red 16	No	ATL, FAB.
Direct Red 24	No	ATL, FAB.
Direct Red 26	No	ATL.
Direct Red 72	No	CK.
Direct Red 73	No	ATL.
Direct Red 80	No	ATL, CK.
Direct Red 81	No	ATL, CK, FAB, VPC.
Direct Red 83	No	ATL, CK, FAB.
Direct Red 224	No	CK.
Direct Red 227	No	ATL.
Direct Red 236	No	BAS, VPC.
Direct Red 238	No	VPC.
Direct Red 239	No	BAS, CK, S.
Direct Red 254	Yes	BAS, CK, VPC.
All other direct red dyes	No	ATL, BAS, CK, VPC.
Direct violet dyes:	Yes	
Direct Violet 9	No	ATL.
Direct Violet 66	No	ATL.
Direct Violet 99	No	VPC.
Direct Violet 195	No	CK.
All other direct violet dyes	No	BAS.

See footnotes at end of table.

Section 4

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Direct dyes—Continued		
Direct blue dyes:	Yes	
Direct Blue 15	No	VPC.
Direct Blue 25	No	ATL, FAB.
Direct Blue 75	No	CK, S.
Direct Blue 76	No	CK.
Direct Blue 80	No	ATL, CK, FAB.
Direct Blue 86	No	CK, S, VPC.
Direct Blue 98	No	ATL, CK, FAB.
Direct Blue 100	No	FAB.
Direct Blue 108	No	ATL.
Direct Blue 120, 120:1, 120:2, and 120:3	No	FAB.
Direct Blue 160	No	CK.
Direct Blue 189	No	CK.
Direct Blue 191	No	CK.
Direct Blue 199	No	BAS, S, VPC.
Direct Blue 218	No	CK, FAB, VPC.
Direct Blue 269	No	VPC.
Direct Blue 279	No	VPC.
Direct Blue 281	No	VPC.
Direct Blue 283	No	ATL.
Direct Blue 285	No	ATL.
Direct Blue 286	No	ATL.
All other direct blue dyes	No	ATL, BAS, S, VPC.
Direct green dyes:	Yes	
Direct Green 92	No	ATL.
All other direct green dyes	No	FAB.
Direct brown dyes:	Yes	
Direct Brown 44	No	FAB.
Direct Brown 231	No	ATL.
Direct Brown 232	No	ATL.
All other direct brown dyes	No	BAS, FAB, VPC.
Direct black dyes:	Yes	
Direct Black 22	Yes	ATL, CK, FAB.
Direct Black 80	Yes	ATL, CK, FAB.
Direct Black 163	No	S.
Direct Black 165	No	ATL.
Direct Black 170	No	ATL.
Direct Black 179	No	CK.
All other direct black dyes	No	ATL, BAS, CK, FAB, VPC.
Disperse dyes:	Yes	
Disperse yellow dyes:	Yes	
Disperse Yellow 3	No	CK, FAB.
Disperse Yellow 23	No	ATL, CK.
Disperse Yellow 34	No	EKT.
Disperse Yellow 42	No	CK, S.
Disperse Yellow 54	No	BAS.
Disperse Yellow 64	No	BAS, HCL.
Disperse Yellow 77	No	VPC.
Disperse Yellow 86	No	CK, EKT.
Disperse Yellow 88	No	EKT.
Disperse Yellow 108	No	EKT.
Disperse Yellow 114	No	HCL.
Disperse Yellow 126	No	ICI.
Disperse Yellow 198	No	BAS.
Disperse Yellow 219	No	S.
Disperse Yellow 238	No	CK.
Disperse Yellow 239	No	CK.
All other disperse yellow dyes	No	BAS, ICI, VPC.

See footnotes at end of table.

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Disperse dyes—Continued		
Disperse orange dyes:		
Disperse Orange 3	No	ATL, CK.
Disperse Orange 25 and 25:1	No	ATL, CK, ICI.
Disperse Orange 29	No	CK.
Disperse Orange 30	No	ATL, BUC, CK, S, SDC.
Disperse Orange 37	No	ATL, CK, EKT.
Disperse Orange 41	No	CK, EKT, S.
Disperse Orange 44 and 44:1	No	ATL, CK, EKT.
Disperse Orange 73	No	ATL, BAS.
Disperse Orange 89	No	CK.
Disperse Orange 94	No	S.
Disperse Orange 138	No	EKT.
Disperse Orange 153	No	CK.
Disperse red dyes:		
Disperse Red 1	No	ATL, CK.
Disperse Red 5	No	ATL, CK.
Disperse Red 13	No	ATL.
Disperse Red 17	No	ATL, CK.
Disperse Red 22	No	MRT.
Disperse Red 30	No	EKT.
Disperse Red 50	No	CK.
Disperse Red 55	No	BAS.
Disperse Red 60	No	BAS.
Disperse Red 65	No	CK.
Disperse Red 73	No	ATL, CK, S.
Disperse Red 74	No	S.
Disperse Red 86	No	S, SDC.
Disperse Red 88	No	EKT.
Disperse Red 91	No	BAS, EKT.
Disperse Red 117	No	EKT.
Disperse Red 135	No	CK.
Disperse Red 136	No	EKT.
Disperse Red 137	No	EKT.
Disperse Red 145	No	CK.
Disperse Red 153	No	CK, FAB, S.
Disperse Red 159	No	VPC.
Disperse Red 167 and 167:1	Yes	ATL, CK, EKT, S.
Disperse Red 177	Yes	CK, ICI, S.
Disperse Red 179	No	BAS, CK, S.
Disperse Red 263	No	BAS.
Disperse Red 273	No	S.
Disperse Red 274	No	S.
Disperse Red 278	No	ICI.
Disperse Red 307	No	EKT.
Disperse Red 311	No	ICI.
Disperse Red 313	No	S.
Disperse Red 316	No	S.
Disperse Red 325	No	CK.
Disperse Red 333	No	S.
Disperse Red 338	No	EKT.
Disperse Red 339	No	EKT.
Disperse Red 340	No	EKT.
Disperse Red 345	No	CK.
Disperse Red 358	No	HCL.
All other disperse red dyes	No	BAS, SDC.
Disperse violet dyes:		
Disperse Violet 1	No	CK.
Disperse Violet 17	No	CK.
Disperse Violet 28	No	CK.
Disperse Violet 33	No	ICI, S.

See footnotes at end of table.

Section 4

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Disperse dyes—Continued		
Disperse violet dyes—Continued		
Disperse Violet 36	No	S.
Disperse Violet 48	No	HCL.
Disperse Violet 60	No	S.
All other disperse violet dyes	No	CK.
Disperse blue dyes:	Yes	
Disperse Blue 1	No	CK.
Disperse Blue 3	No	CK, EKT.
Disperse Blue 14	No	CK.
Disperse Blue 27	No	EKT.
Disperse Blue 60	No	BAS.
Disperse Blue 62	No	EKT.
Disperse Blue 64	No	EKT.
Disperse Blue 73	No	S.
Disperse Blue 79	No	BAS, BUC, ICI, S.
Disperse Blue 95	No	HCL.
Disperse Blue 102	No	CK, EKT.
Disperse Blue 106	No	CK.
Disperse Blue 118	No	EKT.
Disperse Blue 148	No	BAS.
Disperse Blue 175	No	CK.
Disperse Blue 183	No	S.
Disperse Blue 200	No	ICI.
Disperse Blue 281	No	S.
Disperse Blue 284	No	ICI.
Disperse Blue 291	No	CK, S.
Disperse Blue 333	No	HCL.
Disperse Blue 337	No	EKT.
Disperse Blue 359	No	CK.
All other disperse blue dyes	No	ATL, BAS, BUC, HCL, ICI, SDC.
Disperse green dyes:	No	
Disperse Green 9	No	ICI.
Disperse brown dyes:	No	
Disperse Brown 1	No	ATL, BUC, CK, S, SDC.
Disperse Brown 18	No	S.
Disperse Brown 22	No	EKT.
Disperse Brown 26	No	CK.
Disperse Brown 27	No	CK.
Disperse black dyes:	No	
Disperse Black 9	No	ATL, CK, EKT, FAB.
All other disperse black dyes	No	BAS, SDC.
Fiber-reactive dyes:	Yes	
Reactive yellow dyes:	No	
Reactive Yellow 17	No	HCL.
Reactive Yellow 18	No	ICI.
Reactive Yellow 37	No	HCL.
Reactive Yellow 86	No	ICI.
Reactive Yellow 125	No	S.
Reactive Yellow 135	No	ICI.
Reactive Yellow 160	No	HCL.
All other reactive yellow dyes	No	HCL.
Reactive orange dyes:	No	
Reactive Orange 1	No	ICI.
Reactive Orange 4	No	ICI.
Reactive Orange 12	No	ICI.
Reactive Orange 13	No	ICI.
Reactive Orange 16	No	ATL, CK, HCL.
Reactive Orange 20	No	CK.
Reactive Orange 72	No	CK.
Reactive Orange 78	No	HCL.

See footnotes at end of table.

Table 4-2—Continued
Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Fiber-reactive dyes—Continued		
Reactive orange dyes—Continued		
Reactive Orange 84	No	ICI.
Reactive Orange 86	No	ICI.
All other reactive orange dyes	No	HCL.
Reactive red dyes:		
Reactive Red 2	No	CK, ICI.
Reactive Red 11	No	ICI.
Reactive Red 21	No	HCL.
Reactive Red 31	No	ICI.
Reactive Red 43	No	CK, ICI.
Reactive Red 49	No	HCL.
Reactive Red 94	No	HCL.
Reactive Red 120	No	ATL, CK, ICI, S.
Reactive Red 141	No	ICI.
Reactive Red 147	No	S.
Reactive Red 180	No	HCL.
Reactive Red 198	No	ATL.
Reactive Red 35	No	HCL.
All other reactive red dyes	No	ATL, CK, HCL.
Reactive violet dyes:		
Reactive Violet 1	No	ICI.
Reactive Violet 5	No	HCL.
Reactive Violet 33	No	S.
All other reactive violet dyes	No	HCL, ICI.
Reactive blue dyes:		
Reactive Blue 3	No	ICI.
Reactive Blue 4	No	CK, ICI.
Reactive Blue 7	No	CK.
Reactive Blue 19	No	HCL.
Reactive Blue 21	No	HCL.
Reactive Blue 28	No	CK.
Reactive Blue 38	No	HCL.
Reactive Blue 41	No	S.
Reactive Blue 71	No	ICI.
Reactive Blue 89	No	ICI.
Reactive Blue 199	No	ICI.
All other reactive blue dyes	No	HCL, ICI.
Reactive green dyes:		
Reactive Green 19	No	ICI.
Reactive brown dyes:		
Reactive Brown 1	No	ICI.
Reactive Brown 17	No	ICI.
Reactive Brown 18	No	HCL.
All other reactive brown dyes	No	HCL.
Reactive black dyes:		
Reactive Black 5	No	ATL, CK, HCL, S.
Reactive Black 9	No	ICI.
All other reactive black dyes	No	HCL.
Fluorescent brighteners:		
Fluorescent Brightener 28	No	VPC.
Fluorescent Brightener 49	No	S.
Fluorescent Brightener 52	No	S.
Fluorescent Brightener 61	No	BAS.
Fluorescent Brightener 71	No	VPC.
Fluorescent Brightener 130	No	BAS.
Fluorescent Brightener 205	No	VPC.
Fluorescent Brightener 231	No	S.
Fluorescent Brightener 232	No	S.
Fluorescent Brightener 290	No	S.
All other fluorescent brighteners	No	S, VPC, (?).

See footnotes at end of table.

Section 4

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Food, drug, and cosmetic colors:	Yes	
Food, drug, and cosmetic dyes:	Yes	
Food, Drug, and Cosmetic Blue 1	No	WJ.
Food, Drug, and Cosmetic Blue 2	No	WJ, (?).
Food, Drug, and Cosmetic Green 3	No	WJ.
Food, Drug, and Cosmetic Red 3	No	WJ.
Food, Drug, and Cosmetic Red 4	No	CK.
Food, Drug, and Cosmetic Red 40	No	WJ, (?).
Food, Drug, and Cosmetic Yellow 5	No	WJ.
Food, Drug, and Cosmetic Yellow 6	No	CK, WJ, (?).
Drug and cosmetic dyes:	Yes	
Drug And Cosmetic Red 57:1	No	SNA.
Drug And Cosmetic Red 63	No	SNA.
Drug And Cosmetic Red 11	No	SNA.
Drug and Cosmetic Green 5	No	CK.
Drug and Cosmetic Green 8	No	(?).
Drug and Cosmetic Orange 4	No	CK.
Drug and Cosmetic Orange 5	No	CCG, SNA.
Drug and Cosmetic Red 3	No	CCG.
Drug and Cosmetic Red 6	No	CCG, SNA, (?).
Drug and Cosmetic Red 7	No	CCG, SNA, (?).
Drug and Cosmetic Red 17	No	WJ.
Drug and Cosmetic Red 21	No	CCG, SNA.
Drug and Cosmetic Red 27	No	CCG, SNA, (?).
Drug and Cosmetic Red 30	No	CCG, SNA.
Drug and Cosmetic Red 33	No	CCG, CK, SNA.
Drug and Cosmetic Red 34	No	CCG, SNA.
Drug and Cosmetic Red 36	No	SNA.
Drug and Cosmetic Yellow 5	No	CCG.
Drug and Cosmetic Yellow 10	No	CK, (?).
Drug and cosmetic dyes, external:	No	
External Drug and Cosmetic Orange 3	No	CK.
Ingrain dyes:	No	
Ingrain blue dyes:	No	
Ingrain Blue 2	No	WJ.
Mordant dyes:	Yes	
Mordant yellow dyes:	No	
Mordant Yellow 16	No	ATL.
Mordant Yellow 20	No	FAB.
Mordant orange dyes:	No	
Mordant Orange 3	No	FAB.
Mordant Orange 6	No	ATL, FAB.
Mordant brown dyes:	No	
Mordant Brown 1	No	FAB.
Mordant Brown 70	No	FAB.
Solvent dyes:	Yes	
Solvent yellow dyes:	No	
Solvent Yellow 3	No	PSC.
Solvent Yellow 13	No	BAS, FAB.
Solvent Yellow 14	No	PSC.
Solvent Yellow 16	No	PSC.
Solvent Yellow 33	No	BAS, CIC, MRT.
Solvent Yellow 40	No	CK.
Solvent Yellow 42	No	CK.
Solvent Yellow 43	No	HCL, MRT.
Solvent Yellow 56	No	PSC.
Solvent Yellow 72	No	CIC, FAB, PSC, UCM.
Solvent Yellow 94	No	(?).
Solvent Yellow 107	No	MRT.
Solvent Yellow 131	No	DGO.
Solvent Yellow 135	No	(?).

See footnotes at end of table.

Table 4-2—Continued

Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Solvent dyes-Continued		
Solvent yellow dyes-Continued		
Solvent Yellow 143	No	MRT.
Solvent Yellow 160	No	(²).
Solvent Yellow 161	No	MRT.
Solvent Yellow 167	No	CIC.
All other solvent yellow dyes	No	ATL, MIL, MRT, (²).
Solvent orange dyes:	Yes	
Solvent Orange 2	No	PSC.
Solvent Orange 3	No	BAS, PSC.
Solvent Orange 7	No	ATL, PSC.
Solvent Orange 20	No	BAS, CK, FAB.
Solvent Orange 23	No	CK.
Solvent Orange 31	No	PSC.
Solvent Orange 60	No	CIC.
Solvent Orange 77	No	MRT.
Solvent Orange 97	No	MRT.
All other solvent orange dyes	No	(²).
Solvent red dyes:	Yes	
Solvent Red 1	No	PSC.
Solvent Red 23	No	PSC.
Solvent Red 24	No	PSC.
Solvent Red 26	No	PSC.
Solvent Red 27	No	PSC.
Solvent Red 49	No	BAS.
Solvent Red 68	No	ATL, CK, MRT.
Solvent Red 111	No	MRT.
Solvent Red 164	No	AC, MRT, (²).
Solvent Red 166	No	MRT.
Solvent Red 168	No	MRT.
Solvent Red 169	No	MRT.
Solvent Red 172	No	MRT.
Solvent Red 175	No	MRT.
Solvent Red 179	No	CIC.
Solvent Red 207	No	MRT.
Solvent Red 208	No	MRT.
All other solvent red dyes	No	ATL, MIL, PSC.
Solvent violet dyes:	Yes	
Solvent Violet 8	No	DSC.
Solvent Violet 9	No	DSC.
Solvent Violet 11	No	CK.
Solvent Violet 13	No	CK.
Solvent Violet 14	No	MRT.
Solvent Violet 38	No	MRT.
All other solvent violet dyes	No	MIL.
Solvent blue dyes:	Yes	
Solvent Blue 3	No	PSG.
Solvent Blue 4	No	BAS.
Solvent Blue 5	No	DSC.
Solvent Blue 23	No	BAS.
Solvent Blue 35	No	AC, MRT, UCM.
Solvent Blue 36	No	MRT.
Solvent Blue 38	No	ATL, TNI.
Solvent Blue 58	No	VPC.
Solvent Blue 59	No	MRT, VPC.
Solvent Blue 98	No	MRT.
Solvent Blue 99	No	MRT.
Solvent Blue 100	No	MRT.
Solvent Blue 101	No	MRT.
Solvent Blue 102	No	MRT.
Solvent Blue 128	No	MRT.

See footnotes at end of table.

Section 4

Table 4-2—Continued
 Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Dyes	Separate statistics ¹	Manufacturers' identification codes (according to list in table 4-3)
Solvent dyes-Continued		
Solvent blue dyes-Continued		
Solvent Blue 129	No	MRT.
All other solvent blue dyes	No	MIL.
Solvent green dyes:		
Solvent Green 3	No	CK, MRT.
Solvent brown dyes:		
Solvent Brown 12	No	PSC.
Solvent Brown 20	No	ATL.
Solvent Brown 22	No	PSC.
Solvent Brown 38	No	FAB.
Solvent Brown 52	No	MRT.
Solvent black dyes:		
Solvent Black 7	No	BAS, OCC, PSC.
Solvent Black 13	No	CK.
Solvent Black 26	No	FAB.
Solvent Black 46	No	MRT.
Solvent Black 47	No	MRT.
Solvent Black 49	No	MRT.
Sulfur dyes:		
Sulfur yellow dyes:		
Leuco Sulfur Yellow 22	No	SDC.
All other sulfur yellow dyes	No	SDC.
Sulfur orange dyes:		
All other sulfur orange dyes	No	SDC.
Sulfur red dyes:		
Leuco Sulfur Red 14	No	SDC.
Sulfur Red 10	No	SDC.
Sulfur blue dyes:		
Leuco Sulfur Blue 7	No	S, SDC.
Leuco Sulfur Blue 11	No	SDC.
Leuco Sulfur Blue 20	No	S.
Sulfur green dyes:		
Leuco Sulfur Green 2	No	SDC.
Leuco Sulfur Green 16	No	SDC.
Leuco Sulfur Green 34	No	SDC.
Leuco Sulfur Green 35	No	SDC.
Leuco Sulfur Green 36	No	SDC.
Sulfur brown dyes:		
Leuco Sulfur Brown 1, 1:1	No	SDC.
Leuco Sulfur Brown 3	No	SDC.
Leuco Sulfur Brown 37	No	S, SDC.
Leuco Sulfur Brown 52	No	SDC.
Sulfur Brown 96	No	S.
All other sulfur brown dyes	No	SDC.
Sulfur black dyes:		
Leuco Sulfur Black 1	No	SDC.
Leuco Sulfur Black 2	No	S, SDC.
Leuco Sulfur Black 11, 11:1	No	SDC.
Leuco Sulfur Black 18	No	SDC.
Solubilized Sulfur Black 2	No	SDC.
Sulfur Black 2	No	SDC.
Sulfur Black 11, 11:1	No	SDC.
Vat dyes:		
Vat orange dyes:		
Vat Orange 1, 20%	No	SDC.
Vat Orange 2, 12%	No	BAS.
Vat Orange 7, 11%	No	HCL.
Vat Orange 9, 12%	No	BAS.
Vat red dyes:		
Vat Red 1, 13%	No	BAS.

See footnotes at end of table.

Table 4-2—Continued
Dyes for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Dyes</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 4-3)</i>
Vat dyes-Continued		
Vat red dyes-Continued		
Vat Red 10, 18%	No	BAS.
Vat Red 15, 10%	No	HCL.
All other vat red dyes	No	HCL.
Vat violet dyes:	Yes	
Vat Violet 13, 6-1/4%	No	BAS, SDC.
Vat blue dyes:	Yes	
Vat Blue 1, 20%	No	BCC.
Vat Blue 6, 8-1/3%	No	BAS, SDC.
Vat Blue 16, 16%	No	BAS.
Vat Blue 19	No	BAS.
Vat Blue 29	No	BAS.
Vat Blue 43	No	S, SDC.
Vat Blue 66	No	BAS.
All other vat blue dyes	No	SDC.
Vat green dyes:	Yes	
Vat Green 1, 6%	No	SDC.
Vat Green 3, 10%	No	SDC.
Vat Green 7	No	SDC.
Vat brown dyes:	Yes	
Vat Brown 57, 12.8%	No	HCL.
All other vat brown dyes	No	HCL.
Vat black dyes:	Yes	
Vat Black 22, 19%	No	SDC.
Vat Black 25, 12-1/2%	No	BAS, SDC.
Vat Black 63	No	S.
Miscellaneous dyes:	No	
All other dyes	No	DAN, MRT, SDC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 4

Table 4-3

Dyes: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ALL	Alliance Chemical, Inc.	ICI	ICI Americas, Inc., Specialty Chem Div.
ATL	Atlantic Industries, Inc.	LVR	C. Lever Co., Inc.
BAS	BASF Corp.	MIL	Milliken & Co., Milliken Chemical Div.
BCC	Buffalo Color Corp.	MRT	Morton International, Inc., Specialty Chemicals
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	OCC	Orient Chemical Corp.
CCG	Clark Color/HK Color Group	PCW	Pfister Chemical, Inc.
CIC	Color Chem International Corp.	PSC	Passaic Color & Chemical Co.
CK	Crompton & Knowles Corp.	PSG	PMC, Inc., PMC Specialities Group, Inc.
DAN	Dan River, Inc., Chemical Products Div.	S	Sandoz Chemical Corp.,
DGO	Day-Glo Color Corp.	SDC	Colors & Chemicals Div.
DSC	Dye Specialties, Inc.	SNA	Sun Chemical Corp., Pigments Div.
EKT	Eastman Kodak Co., Tennessee Eastman Co. Div.	TNI	Gillette Co., Chemical Div.
FAB	Fabricolor Manufacturing Corp.	UCM	United Color Manufacturing Co.
HCL	Hoechst Celanese Corp.: Sou-Tex Works Specialty Chem Group	VPC	Mobay Chemical Corp., Dyes & Pigments Div.
		WJ	Warner-Jenkinson Co.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaire of the U.S. International Trade Commission.

Section 5 Organic Pigments

Organic pigments are toners and lakes¹ derived in whole or in part from benzenoid chemicals and colors.

Statistics on production and sales of all organic pigments in 1989 are given in table 5-1. Individual toners and lakes are identified in this report by the names used in the third edition of the Colour Index.

Total production of organic pigments in 1990 was 52 million kilograms, 4 percent more than the 50 million kilograms produced in 1989. Total sales of organic pigments in 1990 amounted to 45 million kilograms, valued at \$717 million, compared with 43 million kilograms, valued at \$697 million, in 1989. In terms of quantity, sales of organic pigments in 1990 were 5 percent higher than in 1989; in terms of value, sales in 1990 were 3 percent higher than in 1989. Changes in U.S. production of pigments have followed overall changes in U.S. economic activity during 1986-90 (see figure 5-1).

¹ Toners and lakes are essentially the same in their final form; they differ in the method of preparation. A lake is an organic pigment produced by the interaction of a soluble dye, a precipitant, and an absorptive inorganic substrate. A toner is an insoluble dye produced as a powder; some toners are extended by the inclusion of a solid diluent.

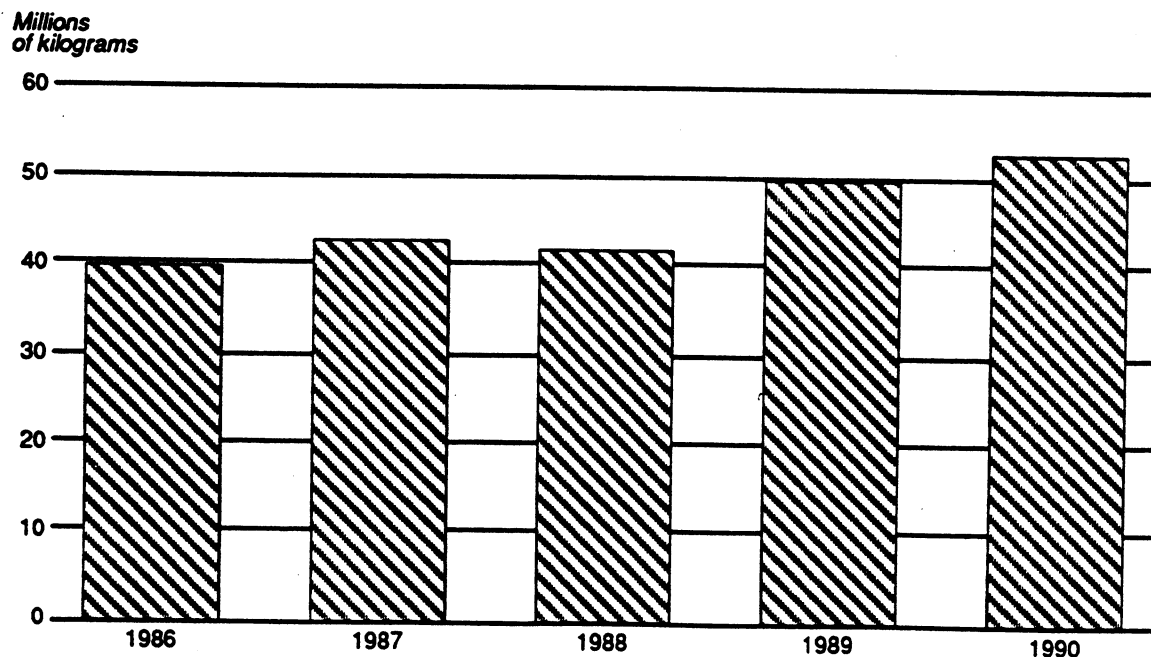
Production of toners in 1990 accounted for 99.4 percent of total pigment production. Changes in toner production and sales mirrored changes in production and sales of total pigments. The individual toners listed in the report which were produced in the largest quantities in 1990 were Pigment Yellow 12, Pigment Yellow 14, Pigment Red 48:1 barium toner, Pigment Red 49:1 barium toner, Pigment Red 53:1 barium toner, Pigment Red 57:1, calcium toner, Pigment Violet 19, Pigment Blue 15:3, beta form, and Pigment Green 7.

Production of lakes totaled 288,000 kilograms in 1990, 6 percent lower than the 307,000 pounds reported for 1989. Sales of lakes in 1990 amounted to 204,000 kilograms, valued at \$3.8 million. In terms of quantity, sales of lakes in 1990 were 7 percent lower than in 1989; in terms of value, sales in 1990 were 14 percent higher than in 1989.

Table 5-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 5-3.

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Figure 5-1
Organic pigments: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 5

Table 5-1
Organic pigments: U.S. production and sales, 1990

Organic pigments	Production	Sales		Average Unit value ²
		Quantity	Value ¹	
	1,000 Kilograms dry basis ³	1,000 Kilograms dry basis ³	1,000 dollars	Per kilogram
Grand Total	52,551	44,773	717,194	\$16.01
Toners				
Total	52,263	44,569	713,357	16.08
Yellow toners, total	14,176	11,126	137,826	12.39
Acetoacetarylide yellows, total	1,311	809	14,448	17.86
Pigment Yellow 3, C.I. 11 710	53	44	507	11.40
Pigment Yellow 65, C.I. 11 740	105	104	2,007	19.32
Pigment Yellow 74, C.I. 11 741	378	376	7,329	19.48
All other acetoacetarylide yellows	775	285	4,605	16.17
Diarylide yellows, total	12,788	10,255	120,900	11.79
Pigment Yellow 12, C.I. 21 090	8,850	6,663	75,371	11.31
Pigment Yellow 13, C.I. 21 100	278	236	3,404	14.41
Pigment Yellow 14, C.I. 21 095	2,863	2,612	26,463	10.13
Pigment Yellow 17, C.I. 21 105	276	261	4,065	15.57
Pigment Yellow 83, C.I. 21 108	521	483	11,597	24.03
All other yellow toners	77	62	2,478	39.97
Orange toners, total	1,288	1,099	15,848	14.42
Pigment Orange 5, C.I. 21 075	484	327	3,930	12.03
Pigment Orange 13	65	60	1,325	22.07
Pigment Orange 16, C.I. 21 160	258	247	4,201	16.99
Pigment Orange 34	57	45	992	22.23
Pigment Orange 46, C.I. 15 602	385	382	4,741	12.42
All other orange toners	39	38	659	17.38
Red toners, total	18,448	16,754	275,982	16.47
Naphthol reds, total	924	885	24,662	27.87
Pigment Red 2, C.I. 12 310	20	22	714	32.58
Pigment Red 17, C.I. 12 390	19	8	191	22.56
Pigment Red 22, C.I. 12 315	140	141	2,897	20.52
Pigment Red 23, C.I. 12 355	70	89	2,397	27.02
Pigment Red 31	7	6	147	26.11
All other naphthol reds	668	619	18,316	29.57
Other red toner, total	17,524	15,869	251,320	15.83
Pigment Red 3, C.I. 12 120	352	330	4,837	14.64
Pigment Red 4, C.I. 12 085	35	39	602	15.51
Pigment Red 38, C.I. 12 120	91	78	1,697	24.18
Pigment Red 48:1, barium toner, C.I. 15 865	901	985	14,009	14.22
Pigment Red 48:2, calcium toner, C.I. 15 865	964	1,014	13,368	13.19
Pigment Red 49:1, barium toner, C.I. 15 630	2,304	2,060	20,460	9.93

See footnotes at end of table.

Table 5-1—Continued
Organic pigments: U.S. production and sales, 1990

Organic pigments	Production	Sales		Average Unit value ²
		Quantity	Value ¹	
	1,000 Kilograms dry basis ³	1,000 Kilograms dry basis ³	1,000 dollars	Per kilogram
Red toners—Continued				
Pigment Red 49:2, calcium toner, C.I. 15 630	461	414	5,438	\$13.12
Pigment Red 52:1, calcium toner, C.I. 15 860	671	650	8,291	12.75
Pigment Red 53:1, barium toner, C.I. 15 585	1,962	1,902	19,524	10.26
Pigment Red 57:1, calcium toner, C.I. 15 850	8,247	6,251	72,072	11.53
Pigment Red 81, PMA, C.I. 45 160	218	221	8,617	39.08
Pigment Red 81 PTA	8	7	358	50.80
All other red toners	1,310	1,918	82,047	42.56
Violet toners, total	808	1,362	66,939	49.15
Pigment Violet 1, C.I. 45 170	13	13	506	38.27
All other violet toners	795	1,349	66,433	49.25
Blue toners, total	16,101	12,829	186,657	14.55
Pigment Blue 1, (PMA), C.I. 42 595	18	15	624	40.84
Pigment Blue 15, alpha form, C.I. 74 160	229	269	5,078	18.87
Pigment Blue 15:1, alpha form, C.I. 74 160	520	506	11,188	22.13
Pigment Blue 15:3, beta form, C.I. 74 160	8,749	7,129	96,924	13.60
Pigment Blue 15:4, beta form, C.I. 74 160	630	502	7,601	15.13
All other blue toners	5,955	4,408	65,242	14.80
Green toners, total	1,421	1,378	29,940	21.73
Pigment Green 7, C.I. 74 260	1,363	1,314	27,716	21.09
Pigment Green 36	38	43	1,179	27.45
All other green toners	20	21	1,045	48.93
Brown and black toners	21	21	165	7.86
Lakes				
Total	288	204	3,837	18.81
Pigment Red 83, C.I. 58 000	13	17	537	34.20
Pigment Violet 5:1, C.I. 58 055	25	25	619	24.76
All other lakes	250	162	2,681	16.33

¹ The value of sales for toners is reported on a dry-full strength basis and the value of sales for lakes is reported on a dry form basis. All sales value data exclude the additional cost of processing or packaging in commercial forms other than the dry full-strength or dry form.

² Calculated from unrounded figures.

³ Quantities for toners are reported as dry full-strength toner content, excluding the weight of any dispersing agent, vehicle, or extender. Quantities for lakes are reported as dry lake content, excluding the weight of any dispersing agent or vehicle.

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

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 5

Table 5-2

Organic pigments for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Organic pigments</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 5-3)</i>
Toners:		
Yellow toners:	Yes	
Acetoacetylide yellows:	Yes	
Pigment Yellow 1	No	BAS, DUP, GLX, HSH, MAX, SNA.
Pigment Yellow 3	Yes	HEU, HSH, KCW, MAX, SNA.
Pigment Yellow 60	No	HSH.
Pigment Yellow 65	Yes	HEU, HSH, MAX, SNA, VPC.
Pigment Yellow 73	No	HCL, HSH, SNA.
Pigment Yellow 74	Yes	BAS, HCL, HEU, HSH, ROM, SNA, VPC, (²)(E).
Pigment Yellow 75	No	SNA.
Pigment Yellow 97	No	HCL.
All other acetoacetylide yellows	No	KCW.
Diarylide yellows:	Yes	
Pigment Yellow 12	Yes	AMS, APO, BAS, HCL, HSH, IDC, IND, POP, ROM, SNA, (²)(E).
Pigment Yellow 13	Yes	AMS, APO, BAS, GLX, HCL, IDC, IND, ROM, SNA.
Pigment Yellow 14	Yes	AMS, BAS, BNS, FAB, GLX, HCL, HSH, IDC, IND, ROM, SNA.
Pigment Yellow 17	Yes	APO, BAS, FAB, GLX, HCL, HSH, IDC, IND, ROM, SNA.
Pigment Yellow 83	Yes	BAS, FAB, GLX, HCL, IDC, IND, ROM, SNA.
Pigment Yellow 124	No	GLX.
Yellow pigments, other:		
(Basic Yellow 2), fugitive	No	MAX.
Pigment Yellow 139	No	VPC.
All other pigment yellow toners	No	HSH.
Orange toners:	Yes	
Pigment Orange 1	No	MAX.
Pigment Orange 2	No	UHL.
Pigment Orange 5	Yes	BAS, HCL, HSH, PCW, SNA, (²)(E).
Pigment Orange 13	Yes	BAS, HSH, IND, SNA.
Pigment Orange 15	No	BNS.
Pigment Orange 16	Yes	BNS, GLX, HSH, IND, ROM, SNA.
Pigment Orange 34	Yes	BAS, HCL, IND, ROM, SNA.
Pigment Orange 36	No	SNA.
Pigment Orange 38	No	HCL, UHL.
Pigment Orange 46	Yes	AMS, BAS, CDR, CIK, MGR, SNA.
Pigment Orange 49	No	CGY.
All other pigment orange toners	No	GLX.
Red toners:	Yes	
Naphthol reds:	Yes	
Pigment Red 2	Yes	GLX, HCL, HSH.
Pigment Red 5	No	GLX, HSH.
Pigment Red 13	No	KCW.
Pigment Red 14	No	HCL.
Pigment Red 17	Yes	BNS, ROM, SNA, UHL.
Pigment Red 21	No	BNS.
Pigment Red 22	Yes	FAB, GLX, HEU, MAX, ROM, SNA, UHL.
Pigment Red 23	Yes	DUP, FAB, GLX, HEU, HSH, IND, KCW, ROM, SNA, UHL.
Pigment Red 31	Yes	GLX, ROM, (²)(E).
Pigment Red 112	No	HCL.

See footnotes at end of table.

Table 5-2—Continued

Organic pigments for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Organic pigments	Separate statistics ¹	Manufacturers' identification codes (according to list in table 5-3)
Toners—Continued		
Red toners—Continued		
Naphthol reds—Continued		
Pigment Red 146	No	HCL.
Pigment Red 147	No	HSH.
Pigment Red 170	No	GLX, HCL, HEU.
Pigment Red 210	No	SNA.
All other naphthol reds	No	BUC, FAB, GLX, IND, ROM, (2)(E), (2)
Red pigments, other:	Yes	
Pigment Red 1, (light)	No	HSH.
Pigment Red 3	Yes	BAS, HSH, KCW, MAX, SNA, UHL, X(E).
Pigment Red 4	Yes	HSH, MAX, UHL, (2)(E).
Pigment Red 38	Yes	HCL, HSH, SNA.
Pigment Red 41	No	APO.
Pigment Red 48:1, (barium)	Yes	AMS, APO, BAS, CDR, CIK, HEU, HSH, MAX, MGR, SNA, UHL, (2)(E).
Pigment Red 48:2, (calcium)	Yes	AMS, APO, BAS, CDR, CIK, HEU, HSH, MAX, MGR, SNA, UHL, VPC, (2)(E).
Pigment Red 48:3, (strontium)	No	HSH.
Pigment Red 48:4, (manganese)	No	HEU, HSH, SNA, UHL.
Pigment Red 49:1, (barium)	Yes	AMS, BAS, BNS, CDR, CIK, IDC, MAX, MGR, SNA, UHL, (2)(E).
Pigment Red 49:2, (calcium)	Yes	AMS, BNS, CDR, CIK, IDC, MGR, SNA, UHL.
Pigment Red 52:1, (calcium)	Yes	BAS, CDR, CIK, HSH, MGR, SNA, UHL.
Pigment Red 52:2, (manganese)	No	BAS, HSH, UHL.
Pigment Red 53:1, (barium)	Yes	AMS, BAS, CDR, CIK, FAB, HCL, HSH, IDC, MAX, MGR, SNA, UHL, (2)(E).
Pigment Red 57	No	BNS.
Pigment Red 57:1, (calcium)	Yes	AMS, APO, BAS, BNS, CDR, CIK, FAB, HEU, HSH, IDC, MGR, POP, PS, SNA, UHL.
Pigment Red 63	No	HSH, UHL.
Pigment Red 63:1, calcium	No	SNA.
Pigment Red 81, (PMA)	Yes	BAS, MGR, SNA, UHL.
Pigment Red 81, (PTA)	Yes	BAS, MAX, UHL.
Pigment Red 122	No	SNA, VPC.
Pigment Red 123	No	VPC.
Pigment Red 168	No	VPC.
Pigment Red 169	No	MAX.
Pigment Red 179	No	SNA, VPC.
Pigment Red 188	No	HCL.
Pigment Red 190	No	VPC.
Pigment Red 200	No	BAS.
Pigment Red 202	No	CGY, SNA, VPC.
Pigment Red 206	No	CGY.
Pigment Red 207	No	CGY.
Pigment Red 209	No	SNA.
Pigment Red 224	No	VPC.
Pigment Red 245	No	IND.
All other pigment red toners	No	HCL, UHL.
Violet toners:	Yes	
Pigment Violet 1, (fugitive)	No	KCW, UHL.
Pigment Violet 1, (PMA)	No	MAX, MGR, UHL.

See footnotes at end of table.

Section 5

Table 5-2—Continued
Organic pigments for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Organic pigments</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 5-3)</i>
Toners—Continued		
Violet toners—Continued		
Pigment Violet 1, (PTA)	No	MGR, SNA, UHL.
Pigment Violet 3, (fugitive)	No	KCW, MGR, UHL.
Pigment Violet 3, (PMA)	No	MAX, MGR, UHL, (²)(E).
Pigment Violet 3, (PTA)	No	MAX, MGR, UHL.
Pigment Violet 4, (fugitive)	No	KCW.
Pigment Violet 19	No	BAS, CGY, SNA.
Pigment Violet 23	No	HCL, IPP, SNA.
Pigment Violet 27	No	MAX.
Pigment Violet 29	No	SNA, VPC.
Pigment Violet 39, (PMA)	No	BAS.
All other pigment violet toners	No	BUC, UHL.
Blue toners:	Yes	
Pigment Blue 1, (PMA)	Yes	BNS, MAX, MGR, UHL, (²)(E).
Pigment Blue 1, (PTA)	No	MGR.
Pigment Blue 2, (PMA)	No	UHL.
Pigment Blue 14, (PMA)	No	BAS, UHL.
Pigment Blue 15, (α form)	Yes	BAS, BFC, CGY, HEU, HSH, SNA.
Pigment Blue 15:1, (α form)	Yes	CGY, HEU, SNA, VPC, (²)(E).
Pigment Blue 15:2, (α form)	No	CGY, HEU, SNA, VPC.
Pigment Blue 15:3, (β form)	Yes	ALG, AMS, APO, BAS, BFC, CDR, CGY, CIK, HEU, IDC, MGR, POP, PS, ROM, SNA.
Pigment Blue 15:4, (β form)	Yes	BAS, CGY, HEU, POP, SNA.
Pigment Blue 19	No	PSG.
Pigment Blue 25	No	GLX.
Pigment Blue 61	No	BAS.
Pigment Blue 62	No	MAX.
All other pigment blue toners	No	FAB.
Green toners:	Yes	
Pigment Green 1, (PMA)	No	MAX, UHL.
Pigment Green 2, (PMA)	No	MAX.
Pigment Green 2, (PTA)	No	MAX.
Pigment Green 4, (fugitive)	No	UHL.
Pigment Green 4, (PMA)	No	UHL.
Pigment Green 7	Yes	ALG, BAS, BFC, HCL, MGR, POP, SNA, VPC, (²)(E)
Pigment Green 8	No	KCW.
Pigment Green 10	No	HEU.
Pigment Green 36	No	ALG, BAS, SNA, VPC.
All other pigment green toners	No	UHL.
Brown toners:	No	
Pigment Brown 5	No	GLX.
Black toners:	No	
Pigment Black 7	No	BAS.
All other pigment black toners	No	HCL, UHL.
Lakes:	No	
Yellow lakes:	No	
(Acid Yellow 23)	No	MAX.
Orange lakes:	No	
Pigment Orange 17	No	KCW.
Red lakes:	No	
(Acid Red 26)	No	KCW.
(Basic Red 1)	No	BNS.

See footnotes at end of table.

Table 5-2—Continued
Organic pigments for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Organic pigments</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 5-3)</i>
Toners—Continued		
Lakes—Continued		
(Basic Red 81, PMA)	No	LVR.
Pigment Red 60:1	No	HSH, MAX, SNA.
Pigment Red 83	Yes	HSH, MAX, UHL.
Violet lakes:	No	
(Basic Violet 1)	No	BNS.
(Basic Violet 4)	No	BNS.
Violet 5:1	Yes	HSH, MAX, UHL, VPC.
Blue lakes:	No	
(Basic Blue 14, PMA)	No	LVR.
Green lakes:	No	
(Basic Green 1, PMA)	No	LVR.
(Basic Green 1, PMA)	No	LVR.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 5

Table 5-3
Organic pigments: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ALG	Allegheny Chemical Corp.	HEU	Cookson Pigment, Inc.
AMS	Ridgway Color Co.	HSH	Engelhard Corporation
APO	Apollo Colors, Inc.	IDC	Industrial Color, Inc.
BAS	BASF Corp.	IND	Indol Color Co., Inc.
BFC	Baker Fine Color, Inc.	IPP	Spectrachem Corp.
BNS	Binney and Smith, Inc.	KCW	Keystone Color Works, Inc.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	LVR	C. Lever Co., Inc.
CDR	CDR Pigments & Dispersions	MAX	Max Marx Color Corp.
CGY	Ciba-Geigy Corp.	MGR	Magruder Color Co., Inc.
CIK	Flint Ink Corp., Cal/Ink Div.	PCW	Pfister Chemical, Inc.
DUP	E.I. duPont de Nemours & Co., Inc., Chemicals and Pigments Dept.	POP	Daicolor-Pope, Inc.
FAB	Fabricolor Manufacturing Corp.	PS	CPS Corp.
GLX	Galaxie Chemical Corp.	PSG	PMC, Inc. Specialities Group, Inc.
HCL	Hoechst Celanese Corp.: Sou-Tex Works Specialty Chem Group	ROM	Roma Color, Inc.
		SNA	Sun Chemical Corp., Pigment Div.
		UHL	Paul Uhlich & Co., Inc.
		VPC	Mobay Chemical Corp., Dyes & Pigments Div.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 6 Medicinal Chemicals

Medicinal chemicals include the medicinal and feed grades of all organic chemicals having therapeutic value, whether obtained by chemical synthesis, by fermentation, by extraction from naturally occurring plant or animal substances, or by refining a technical grade product. They include antibiotics and other anti-infective agents, antihistamines, autonomic drugs, cardiovascular agents, central nervous system depressants and stimulants, hormones and synthetic substitutes, vitamins, and other therapeutic agents for human or veterinary use, and for animal feed supplements. Data for the production of these products during 1986-90 are shown in figure 6-1.

Table 6-1 shows statistics for production and sales of medicinal chemicals grouped by pharmacological class. The statistics shown are for bulk chemicals only. Finished pharmaceutical preparations and products in dosage form (i.e., pills, capsules, tablets, or other measured doses) are excluded.¹ Differences in

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

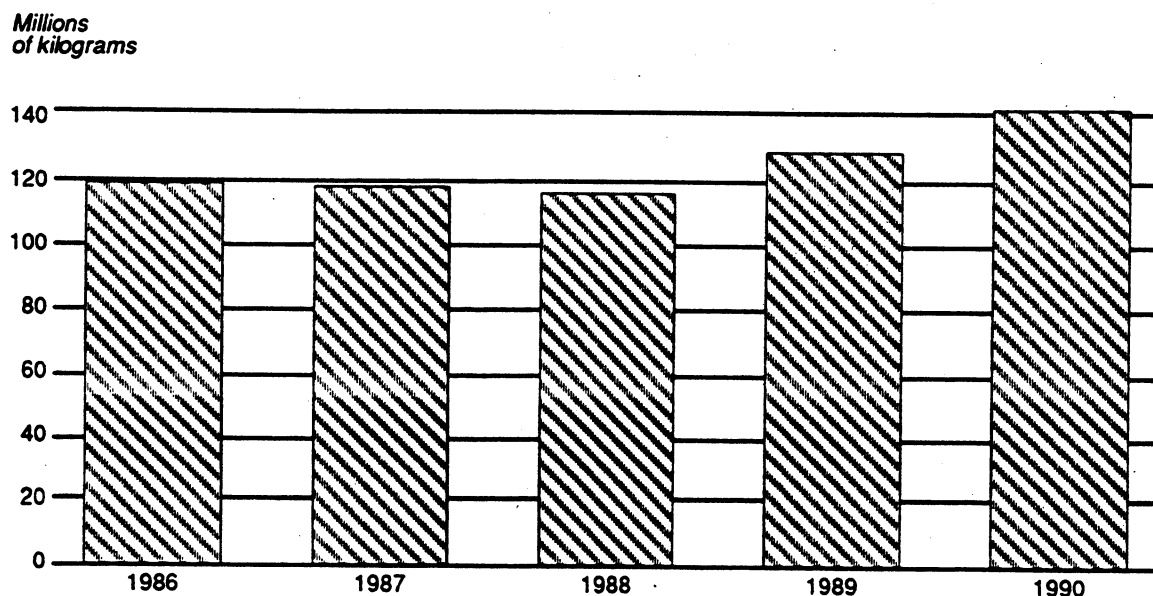
reported levels of production and sales reflect inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the differences may also include quantities for medicinal grade products used as intermediates: for example, penicillin V used as an intermediate in the manufacture of other antibiotics. All quantities are given in terms of 100 percent content of the pure bulk drug. Table 6-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 6-3.

Total U.S. production of bulk medicinal chemicals in 1990 amounted to 144.0 million kilograms. Total sales of bulk medicinal chemicals in 1990 amounted to 107.2 million kilograms, valued at \$2,169.3 million. Since 1980, methionine and most other amino acids and their salts have been reported in the section on Miscellaneous End-Use Chemicals and Chemical Products. Section totals are not, therefore, comparable with years prior to 1980.

Production of the larger groups of medicinal chemicals in 1990 was as follows (see table 6-1): Antibiotics, 24.1 million kilograms, 2 percent higher than in 1989; anti-infective agents other than antibiotics, 8.2 million kilograms, 8 percent lower than in 1989; central nervous system depressants and stimulants, 40.3 million kilograms, 17 percent higher than in 1989; gastrointestinal agents and therapeutic nutrients, 24.9 million kilograms, 28 percent lower than in 1989; and vitamins, 37.6 kilograms, 34 percent higher than in 1989.

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202-205-3355

Figure 6-1
Medicinal Chemicals: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 6

Table 6-1

Medicinal chemicals: U.S. production and sales, 1990

Medicinal chemicals	Production ¹ 1,000 kilograms	Sales		Average Unit value ² Per kilogram
		Quantity 1,000 kilograms	Value 1,000 dollars	
Grand total	144,341	107,247	2,169,344	\$20.23
Acyclic	24,615	41,400	301,351	7.28
Benzenoid ³	90,371	47,234	963,447	20.40
Cyclic nonbenzenoid ⁴	29,355	18,613	904,546	48.60
Antibiotics	24,696	10,718	574,188	53.57
Antihistamines	279	148	7,412	50.08
Anti-infective agents (except antibiotics), total	8,173	4,618	46,379	10.04
Anthelmintics	3,847	2,176	6,054	2.78
All other anti-infective agents (except antibiotics) ⁵	4,326	2,442	40,325	16.51
Central depressants and stimulants, total	40,314	30,656	423,356	13.81
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents, total	37,102	28,823	172,665	5.99
Aspirin	10,230	(⁶)	(⁶)	(⁶)
All other analgesics, antipyretics, and nonhormonal anti-inflammatory agents ⁷	26,872	28,823	172,665	5.99
Antidepressants	33	12	2,928	244.00
Antitussives	214	165	51,019	309.21
All other central depressants and stimulants ⁸	2,965	1,656	196,744	118.81
Expectorants and mucolytic agents	602	530	11,441	21.59
Gastrointestinal agents and therapeutic nutrients ⁹	24,948	41,324	122,737	2.97
Vitamins ¹⁰	37,566	17,017	173,458	10.19
Miscellaneous medicinal chemicals ¹¹	7,763	2,236	810,373	362.42

¹ The data on production and sales are for bulk medicinal chemicals only. Methionine and most other amino acids and their salts are now reported in the section on Miscellaneous End-Use Chemicals and Chemical Products. Section totals are not, therefore, comparable with years prior to 1980.

² Calculated from rounded figures.

³ Benzenoid, as used in this report, describes any cyclic medicinal chemical whose molecule contains either a 6-membered carbocyclic ring with conjugated double bonds or a 6-membered heterocyclic ring with 1 or 2 hetero atoms and conjugated double bonds, except the pyrimidine ring.

⁴ Includes antibiotics of unknown structure.

⁵ Includes production and sales of antiprotozoan agents, sulfonamides, and urinary antiseptics; does not include production of sulfaguanidine used as an intermediate in the production of anti-infective sulfonamides.

⁶ Reported data were accepted in confidence and may not be published, or no data were reported.

⁷ Includes sales quantity and value of aspirin.

⁸ Includes production and sales of amphetamines; general anesthetics; respiratory and cerebral stimulants; skeletal muscle relaxants; tranquilizers; and anticonvulsants, hypnotics, and sedatives.

⁹ Methionine and its salts are reported in the section in Miscellaneous End-Use Chemicals and Chemical Products under amino acids.

¹⁰ Includes production and sales of vitamin A, vitamin B, vitamin C, vitamin D, vitamin E, and vitamin K.

¹¹ Includes production and sales of antineoplastic agents, cardiovascular agents, diagnostic agents, hematological agents, renal-acting and edema-reducing agents, autonomic drugs, dermatological agents and unclassified medicinal chemicals. Also includes production and sales of local anesthetics, smooth muscle relaxants (including theophylline derivatives), and hormones and synthetic substitutes.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 6-2
Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Antibiotics	Yes	
Cephalosporins:	No	
Cefaclor	No	LIL.
Cefamandole	No	LIL.
Cefazolin, sodium	No	LIL.
Cefoxitin	No	MRK.
Cephalexin	No	BRS, LIL.
Cephalothin, sodium	No	LIL.
Cephapirin, sodium	No	BRS.
Cephradine	No	BRS.
Penicillins, semisynthetic:	No	
Amoxicillin:	No	
Amoxicillin (trihydrate)	No	BEE, BOC, KAN.
Amoxicillin (anhydrous)	No	BEE, BRS.
Ampicillin:	No	
Ampicillin (trihydrate)	No	BOC, BRS, KAN.
Other semisynthetic penicillins:	No	
Ampicillin, sodium	No	BEE, WYT.
Cloxacillin, sodium	No	BEE, BOC.
Dicloxacillin, sodium	No	BEE, BOC, KAN.
Hetacillin	No	BRS.
Nafcillin, sodium	No	BEE, WYT.
Oxacillin, sodium	No	BEE, BOC.
Piperacillin	No	BRS.
Ticarcillin, disodium	No	BEE.
All other semisynthetic penicillins	No	BEE.
Penicillins (except semisynthetic):	No	
For medicinal use:	No	
Penicillin V	No	BRS.
Penicillin G, benzathine	No	WYT.
Penicillin G, potassium	No	PFZ.
Penicillin V, potassium	No	BRS, LIL.
Penicillin G, procaine (medicinal grade)	No	PFZ, WYT.
For nonmedicinal uses:	No	
Penicillin G, procaine (animal feed grade)	No	PFZ.
Tetracyclines:	No	
For medicinal use:	No	
Chlortetracycline (medicinal grade)	No	ACY.
Demeclocycline	No	ACY.
Methacycline	No	GAN.
Minocycline	No	ACY.
Tetracycline	No	ACY.
For nonmedicinal uses:	No	
Chlortetracycline (animal feed grade)	No	ACY, PFZ.
Oxytetracycline (animal feed grade)	No	PFZ.
Other antibiotics:	No	
For medicinal use:	No	
Antifungal antibiotics:	No	
Amphotericin B	No	BRS, PEN.
Nystatin (medicinal grade)	No	ACY, BRS.
Tobramyctn	No	LIL.
Antitubercular antibiotics:	No	
Dihydrostreptomycin	No	PFZ.
Other antibiotics for medicinal use:	No	
Aztreonam	No	BRS.
Cefonicid	No	SK.
Ceftiofur	No	UPJ.
Cefuroxime	No	LIL.
Clindamycin	No	ABB.
Erythromycin	No	ABB, ANG, UPJ.
Erythromycin estolate	No	LIL, UPJ.
Erythromycin stearate	No	UPJ.

See footnotes at end of table.

Section 6

Table 6-2—Continued
Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Medicinal chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 6-3)</i>
Antibiotics-Continued		
Other antibiotics-Continued		
For medicinal use-Continued		
Other antibiotics for medicinal use-Continued		
Gentamycin	No	SCH.
Kanamycin	No	BRS.
Moxalactam	No	LIL.
Neomycin (medicinal grade)	No	UPJ.
Netilmicin	No	SCH.
Novobiocin, sodium	No	UPJ.
Polymyxin B	No	PFZ.
Sisomycin	No	SCH.
Spectinomycin (medicinal grade)	No	ABB, BRS, UPJ.
Vancomycin	No	ABB, ACY, LIL.
All other antibiotics, for medicinal use	No	ABB, MRK.
For nonmedicinal uses:		
Bacitracin (animal feed grade)	No	IMC.
Cycloheximide	No	UPJ.
Hygromycin B	No	LIL.
Lasalocid, sodium	No	HOF.
Lincomycin (animal feed grade)	No	UPJ.
Monesin	No	LIL.
Neomycin (animal feed grade)	No	PFZ, UPJ.
Spectinomycin (animal feed grade)	No	UPJ.
Streptomycin	No	PFZ.
Tylosin	No	LIL.
Antihistamines:	Yes	
Antinauseants:		
Dimenhydrinate	No	GAN.
Diphenidol	No	SK.
Diphenidol hydrochloride	No	SK.
Metoclopramide hydrochloride	No	LLI.
Other antihistamines:		
Brompheniramine maleate	No	LLI.
Chlorpheniramine	No	SK, UPJ.
Chlorpheniramine maleate	No	SK.
Cyproheptadine hydrochloride	No	MRK.
Dimethindene maleate	No	CGY.
Diphenhydramine citrate	No	VTM.
Diphenhydramine hydrochloride	No	PD, WYK.
Diphenylpyraline	No	SK.
Diphenylpyraline hydrochloride	No	SK.
Doxylamine succinate	No	BKC, MAL.
Phenidamine tartrate	No	HOF.
Phenyltoloxamine citrate	No	GAN.
Terfenadine	No	GAN.
Trimeprazine	No	SK.
Tripelennamine	No	CGY.
Tripelennamine citrate	No	CGY.
Tripelennamine hydrochloride	No	CGY.
Tripolidine hydrochloride	No	AMD, BUR.
Tripolidine oxalate	No	AMD.
Anti-infective agents (except antibiotics):	Yes	
Anthelmintics agents:		
Diethylcarbamazine citrate	No	SK.
Piperazine	No	TX, UCC.
Piperazine dihydrochloride	No	FLM.
Piperazine hexahydrate	No	BRS.
Piperazine hydrochloride	No	FLM.
Piperazine sulfate	No	FLM.

See footnotes at end of table.

Table 6-2—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Anti-infective agents (except antibiotics)-Continued		
Anthelmintics agents-Continued		
Thiabendazole	No	MRK.
All other anthelmintic agents	No	MRK.
Antiprotozoan agents:		
Arsenic and bismuth compounds:		
Arsanilic acid	No	FLM.
Bismuth subsalicylate	No	MAL.
Nitarsons	No	SAL.
Roxarsone	No	SAL.
Roxarsone, sodium	No	SAL.
Other antiprotozoan agents:		
Amprolium	No	MRK.
Dinitolmide	No	SAL.
Ethopabate	No	MRK.
Florfenicol	No	SCH.
Hydroxychloroquine sulfate	No	SD.
Iodochlorhydroxyquin	No	CGY.
Metronidazole	No	SRL.
Sulfonamides:		
Mafenide	No	SDW.
Mafenide acetate	No	SDW.
Sulfadiazine, silver	No	BOT, LEM.
Sulfadimethoxine	No	HOF.
Sulfamethizole	No	ACY.
Sulfamethoxazole	No	HOF.
Sulfapyridine	No	ACY.
Sulfasalazine	No	SAL.
Sulfathiazole, sodium	No	SAL.
Sulfisoxazole	No	HOF.
Sulfisoxazole, acetyl	No	HOF.
Urinary antiseptics:		
Methenamine	No	ARN.
Methenamine mandelate	No	ARN, PD.
Other anti-infective agents:		
Antifungal agents:		
Benzoic acid	No	KLM.
Calcium undecylenate	No	WTL.
Fluconazole	No	PFZ.
Flucytosine	No	HOF.
Sodium caprylate	No	LEM.
Zinc undecylenate	No	WTL.
All other antifungal agents	No	ARN.
Antileprotic and antitubercular agents:		
Aminosalicylic acid	No	HXL.
Sulfoxone, sodium	No	ABB.
Antiviral agents:		
Acyclovir	No	(2).
Azidothymidine	No	(2).
Rimantidine hydrochloride	No	HOF.
General antiseptics and antibacterial agents:		
Capreomycin	No	LIL.
Ceftazidime	No	BRS, LIL, SK.
Ceftazidime dihydrochloride	No	SK.
Cetylpyridinium chloride	No	HXL.
Iodoform	No	MAL.
Magnesium salicylate	No	ARN.
Ormetoprim	No	HOF.
Oxyquinoline citrate	No	LEM.
Oxyquinoline sulfate	No	LEM.

See footnotes at end of table.

Table 6-2—Continued
Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Medicinal chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 6-3)</i>
Anti-infective agents (except antibiotics)—Continued	Yes	
Other anti-infective agents—Continued	Yes	
General antiseptics and antibacterial agents—Cont.	No	
Pentamidine isethionate	No	MRX.
Povidone - iodine	No	GAF, LEM.
Resorcinol	No	ISP.
Trimethoprim	No	BUR.
Autonomic drugs:	No	
Sympathomimetic agents:	No	
Albuterol sulfate	No	SCH.
Dobutamine	No	LIL.
Methoxyphenamine hydrochloride	No	HXL.
Naphazoline hydrochloride	No	CGY.
Phenylephrine hydrochloride	No	GAN, SDW.
Phenylpropanolamine bitartrate	No	ARS.
Phenylpropanolamine hydrochloride	No	ARS, ORT.
Propylhexedrine	No	SK.
Pseudoephedrine hydrochloride	No	GAN.
Pseudoephedrine sulfate	No	GAN.
Terbutaline sulfate	No	CGY.
Other autonomic drugs:	No	
Parasympatholytic quaternary ammonium compounds (except tropane derivatives):	No	
Glycopyrrolate	No	LLI.
Methantheline bromide	No	SRL.
1,1-Trimethylene-bis-(4-formylpyridinium bromide) oxime	No	ARN.
Parasympatholytic tertiary amines (except tropane derivatives):	No	
Oxybutynin chloride	No	ABB.
Parasympathomimetic agents:	No	
Bethanechol chloride	No	GAN.
Neostigmine methylsulfate	No	HOF.
Pyridostigmine bromide	No	HOF.
Sympatholytic agents:	No	
Timolol maleate	No	MRK.
Central depressants and stimulants:	Yes	
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents:	Yes	
Acetaminophen	No	MAL, RDA, SDW.
Aspirin	Yes	DOW, NOR, RDA, SD.
Auranofin	No	SK.
Aurothioglucose	No	SCH.
Butorphanol tartrate	No	BRS.
Choline magnesium salicylate	No	ARN, LEM.
Choline salicylate	No	ARN.
Diflunisal	No	MRK.
Fenoprofen	No	LIL, (2).
Fentanyl citrate	No	MRX.
Hydromorphone hydrochloride	No	PEN.
Ibuprofen	No	TNA.
Indomethacin	No	MRK.
Ketoprofen	No	WYK.
Meclofenamate, sodium	No	PD, WYK.
Meclofenamic acid	No	PD.
Mefenamic acid	No	PD.
Meperidine hydrochloride	No	PEN, SDW.
Mesalamine	No	SRL.
Methadone hydrochloride	No	MAL.
Morphine sulfate	No	MAL, PEN.

See footnotes at end of table.

Table 6-2—Continued
 Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Central depressants and stimulants—Continued	Yes	
Analgesics, antipyretics, and nonhormonal anti-inflammatory agents—Continued	Yes	
Oxycodone hydrochloride	No	DUP, MAL, PEN.
Oxycodone terephthalate	No	PEN.
Pentazocine	No	SD.
Pentazocine hydrochloride	No	SD.
Piroxicam	No	PFZ.
Potassium salicylate	No	KLM.
Propoxyphene hydrochloride	No	GAN, LIL.
Propoxyphene napsylate	No	ABB, GAN, LIL.
Salsalate	No	(²).
Sodium salicylate	No	KLM.
Sulindac	No	MRK.
Anticonvulsants, hypnotics, and sedatives:	No	
Anticonvulsants (except barbiturates):	No	
Ethosuximide	No	PD.
Ethotoin	No	ABB.
Methsuximide	No	PD.
Phensuximide	No	PD.
Phenytoin	No	PD.
Phenytoin, sodium	No	PD.
Valproic acid	No	ABB.
Barbiturates:	No	
Amobarbital, sodium	No	GAN.
Butabarbital	No	GAN.
Butalbital	No	GAN.
Pentobarbital	No	GAN.
Phenobarbital	No	GAN.
Phenobarbital, sodium	No	GAN.
Poly(oxy-1,2-ethanediyl)- α -carboxymethyl, omega-(tridecyloxy), potassium salt	No	GAN.
Secobarbital	No	GAN.
Secobarbital, sodium	No	GAN.
Thiamylal, sodium	No	PD.
Thiopental, sodium	No	ABB.
Hypnotics and sedatives (except barbiturates):	No	
Alprazolam	No	UPJ.
Dichloralphenazone	No	ARN.
Ethchlorvynol	No	ABB.
Glutethimide	No	GAN.
Antidepressants:	Yes	
Amitriptyline hydrochloride	No	GAN, MRK.
Benactyzine hydrochloride	No	ARN.
Bupropion	No	BUR.
Doxepin hydrochloride	No	SK.
Imipramine hydrochloride	No	CGY.
Maprotiline hydrochloride	No	ABB.
Nortriptyline hydrochloride	No	LIL, WYK.
Antitussives:	Yes	
Benzonatate	No	CGY, WYK.
Caramiphen	No	SK.
Caramiphen edisylate	No	SK.
Codeine	No	MAL, PEN.
Dextromethorphan hydrobromide	No	AMD, HOF.
Doxepin	No	SK.
Hydrocodone bitartrate	No	MAL, PEN.
Noscapine	No	MAL, PEN.
Thebaine	No	MAL, PEN.

See footnotes at end of table.

Section 6

Table 6-2—Continued
 Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Central depressants and stimulants—Continued	Yes	
Tranquilizers:	No	
Phenothiazine derivatives:	No	
Chlorpromazine	No	SK.
Chlorpromazine hydrochloride	No	SK.
Fluphenazine hydrochloride	No	BRS.
Perphenazine	No	SCH.
Prochlorperazine	No	SK.
Prochlorperazine edisylate	No	SK.
Prochlorperazine maleate	No	SK.
Other tranquilizers:	No	
Chlorprothixene	No	HOF.
Clorazepate dipotassium	No	ABB.
Hydroxyzine pamoate	No	LEM.
Molindone hydrochloride	No	PD.
Thiothixene hydrochloride	No	PFZ.
Other central depressants and stimulants:	Yes	
Amphetamines:	No	
Amphetamine	No	ARN, SK.
Amphetamine sulfate	No	ARN.
Dextroamphetamine	No	ARN, SK.
Dextroamphetamine sulfate	No	ARN, SK.
Methamphetamine	No	ARN.
Methamphetamine hydrochloride	No	ARN.
Tranlycypromine	No	SK.
General anesthetics:	No	
Enflurane	No	OH.
Isoflurane	No	OH.
Ketamine hydrochloride	No	PD.
Respiratory and cerebral stimulants:	No	
Caffeine (natural and synthetic):	No	
Caffeine, natural	No	CPR.
Caffeine, synthetic	No	PFZ.
Other respiratory and cerebral stimulants:	No	
Benzphetamine hydrochloride	No	UPJ.
Diethylpropion hydrochloride	No	GAN.
Doxapram hydrochloride	No	LLI.
Methylphenidate hydrochloride	No	CGY.
Pemoline	No	ABB.
Phentermine	No	GAN, SDW.
Skeletal muscle relaxants:	No	
Cyclobenzaprine hydrochloride	No	MRK.
Metaxalone	No	LLI.
Methocarbamol	No	LLI.
Orphenadrine citrate	No	ABB, WYK.
Succinylcholine chloride	No	ABB, BUR.
Tubocurarine	No	ABB.
Dermatological agents:	No	
Ammonium phenolsulfonate	No	SAL.
Bismuth subgallate	No	MAL.
Salicylic acid	No	DOW, KLM.
Sodium phenolsulfonate	No	MAL.
Expectorants and mucolytic agents:	Yes	
Ethylenediamine dihydriodide	No	AJY, DPW.
Guaiifenesin	No	LLI.
Iodinated glycerol	No	(?).
Gastrointestinal agents and therapeutic nutrients:	Yes	
Gastrointestinal agents:	No	
Choline chloride (all grades):	No	
Choline chloride (animal feed grade)	No	CHO, NUT, TMH.

See footnotes at end of table.

Table 6-2—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Gastrointestinal agents and therapeutic nutrients		
-Continued	Yes	
Gastrointestinal agents-Continued	No	
Choline chloride (all grades)-Continued	No	
Choline chloride (medicinal grade)	No	CHO.
Other gastrointestinal agents:	No	
Betaine hydrochloride	No	CHO.
Calcium polycarbophil	No	DAN, LLI.
All other cholereitics and hydrocholereitics	No	UPJ.
Choline bicarbonate	No	CHO.
Choline bitartrate	No	CHO.
Choline citrate	No	CHO.
Choline dihydrogen citrate	No	CHO.
Cimetidine	No	SK.
Cimetidine hydrochloride	No	SK.
Colestipol hydrochloride	No	UPJ.
Dihydroxyaluminum aminoacetate	No	CHT.
Diphenoxylate	No	MAL.
Docusate, calcium	No	MAL.
Docusate, potassium	No	ACY.
Docusate, sodium	No	ACY, MAL.
Gemfibrozil	No	PD.
All other lipotropic agents and cholesterol reducers, other than choline salts,	No	MRK.
Methscopolamine bromide	No	UPJ.
Nizatidine	No	LIL.
Sitosterols	No	UPJ.
Sucralfate	No	SK.
All other gastrointestinal agents	No	MRK.
Therapeutic nutrients:	No	
Calcium gluceptate	No	PFN.
Copper gluconate	No	PFZ.
Manganese gluconate	No	PFZ.
z-l-Threoninamide mesylate	No	BRS.
Zinc gluceptate	No	PFN.
Zinc gluconate	No	PFZ.
Hormones and synthetic substitutes:	No	
Anabolic agents and androgens:	No	
Fluoxymesterone	No	UPJ.
Methyltestosterone	No	UPJ.
Stanozolol	No	SD.
Testosterone	No	UPJ.
Testosterone cypionate	No	UPJ.
Testosterone propionate	No	UPJ.
Zeranol	No	IMC.
All other anabolic agents and androgens	No	UPJ, (2).
Corticosteroids:	No	
Aclomethasone	No	SCH.
Betamethasone	No	SCH.
Betamethasone dipropionate	No	SCH, (2).
Betamethasone sodium phosphate	No	SCH, (2).
Betamethasone valerate	No	SCH, (2).
Cortisone acetate	No	MRK, UPJ.
Dexamethasone	No	MRK, (2).
Dexamethasone sodium phosphate	No	MRK, (2).
Diflorasone diacetate	No	UPJ.
Fludrocortisone acetate	No	UPJ.
Fluorometholone	No	UPJ.
Halcinonide	No	BRS.
Hydrocortisone	No	UPJ.

See footnotes at end of table.

Section 6

Table 6-2—Continued
 Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Hormones and synthetic substitutes—Continued	No	
Corticosteroids—Continued	No	
Hydrocortisone acetate	No	UPJ.
Isoflupredone, acetate	No	UPJ.
Medrysone	No	UPJ.
Methylprednisolone	No	ABB, SCH, UPJ.
Prednisolone	No	MRK, UPJ.
Prednisolone acetate	No	UPJ.
Prednisone	No	UPJ.
Triamcinolone	No	BRS, (?).
Triamcinolone acetonide	No	BRS, (?).
Triamcinolone diacetate	No	BRS, (?).
Estrogens and progestogens:	No	
Estrogens:	No	
Estradiol cypionate	No	UPJ.
Estrogens, conjugated	No	ORG.
Estrogens, esterified	No	ORG.
All other estrogens	No	ORG.
Progestogens:	No	
Alprostadiol	No	(?).
Dinoprostone	No	UPJ.
Hydroxyprogesterone	No	CWN.
Medroxyprogesterone acetate	No	UPJ.
Megestrol acetate	No	UPJ.
Melengestrol acetate	No	(?).
Norgestrel	No	UPJ.
Synthetic hypoglycemic agents:	No	
Chlorpropamide	No	SAL.
Glipizide	No	PFZ.
Tolazamide	No	UPJ.
Tolbutamide	No	UPJ.
Thyroid hormone and antithyroid agents:	No	
Levothyroxine, sodium	No	BOT.
Methimazole	No	LIL.
Thyroglobulin	No	NEP.
Thyroid	No	ARP.
Other hormones and synthetic substitutes:	No	
Calcitonin	No	ARP.
Corticotropin	No	ARP, ORG.
Danazol	No	SD.
Flutamide	No	SCH.
Gonadorelin, acetate	No	ABB.
Humatrope	No	LIL.
Insulin	No	LIL.
Local anesthetics:	No	
Benzocaine	No	MAL, WYK.
Butamben	No	ABB, WYK.
Cocaine	No	MAL.
Dibucaine	No	CGY.
Dibucaine hydrochloride	No	CGY.
Lidocaine	No	LEM, WYK.
Lidocaine hydrochloride	No	LEM, WYK.
Pramoxine hydrochloride	No	ABB.
Prilocaine hydrochloride	No	WYK.
Tetracaine hydrochloride	No	WYK.
Renal-acting and edema-reducing agents:	No	
Benzothiadiazine derivatives:	No	
Chlorothiazide	No	MRK.
Hydrochlorothiazide	No	CGY, MRK, SK.

See footnotes at end of table.

Table 6-2—Continued

Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Medicinal chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 6-3)
Renal-acting and edema-reducing agents—Continued	No	
Other renal-acting and edema-reducing agents:	No	
Acetazolamide	No	ACY.
Amiloride hydrochloride	No	MRK.
Canrenoate, potassium	No	SRL.
Dichlorphenamide	No	MRK.
Ethacrynic acid	No	MRK.
Probenecid	No	MRK, SAL.
Spironolactone	No	SRL.
Triamterene	No	GAN, SK.
Smooth muscle relaxants:	No	
Atracurium besylate	No	(3).
Flavoxate hydrochloride	No	SK.
Oxtriphylline	No	PD.
Papaverine hydrochloride	No	CHT.
Theophylline	No	AMB.
Vitamins:	Yes	
Vitamin A:	No	
Beta carotene (provitamin A)	No	HOF.
Tretinoin (vitamin A acid)	No	EK.
Vitamin A acetate (animal feed grade)	No	RDA.
Vitamin A acetate (medicinal grade)	No	HOF.
Vitamin A alcohol	No	EK, HOF.
Vitamin A palmitate (medicinal grade)	No	HOF.
All other vitamin A	No	EK.
Vitamin B-complex:	No	
Niacin and derivatives:	No	
Niacinamide (medicinal grade)	No	HOF, NEP.
Niacinamide (animal feed grade)	No	RDA.
Pantothenic acid derivatives:	No	
Dexpanthenol	No	HOF.
Panthenol	No	HOF.
Other B-complex vitamins:	No	
Biotin	No	AMD, HOF, RDA.
Cyanocobalamin (animal feed grade)	No	RDA.
Cyanocobalamin (medicinal grade)	No	MRK.
Pyridoxine	No	HOF.
Riboflavin (animal feed grade)	No	MRK.
Thiamine hydrochloride	No	HOF.
Thiamine mononitrate	No	TKD.
All other vitamin B-complex	No	HOF.
Vitamin C:	No	
Ascorbic acid	No	HOF, TKD.
Calcium ascorbate	No	HOF.
Sodium ascorbate	No	HOF.
All other vitamin C	No	HOF.
Vitamin D:	No	
Calcifediol (vitamin D ₃)	No	UPJ.
Cholecalciferol (vitamin D ₃)	No	RDA, VTM.
Ergocalciferol (vitamin D ₂)	No	VTM.
All other vitamin D	No	DUP.
Vitamin E:	No	
DI-alpha tocopheryl acetate (all grades):	No	
dl- α -Tocopheryl acetate (animal feed grade)	No	BAS, HOF, RDA.
dl- α -Tocopheryl acetate (medicinal grade)	No	BAS, HOF.
Other vitamin E:	No	
d- α -Tocopherol	No	EKT, SCP.
d- α -Tocopheryl acetate	No	EKT, SCP.
d- α -Tocopheryl acid succinate	No	EKT, SCP.

See footnotes at end of table.

Section 6

Table 6-2—Continued
Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Medicinal chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 6-3)</i>
Miscellaneous medicinal chemicals:	Yes	
Antineoplastic agents:	No	
Azathioprine	No	BUR.
Carboplatin	No	MRX.
Cisplatin	No	MRX.
Cytarabine	No	PFN, UPJ.
Gallium nitrate	No	MRX.
Leuprolide acetate	No	ABB.
Procarbazine hydrochloride	No	HOF.
Streptozocin	No	PFN.
Vinblastine sulfate	No	LIL.
Vincristine sulfate	No	LIL.
All other antineoplastic agents	No	(?).
Cardiovascular agents:	No	
Antihypertensive agents:	No	
Captopril	No	BRS.
Diazoxide	No	SCH.
Dilevalol hydrochloride	No	SCH.
Hydralazine hydrochloride	No	CGY.
Methyldopa	No	MRK.
Metoprolol tartrate	No	CGY.
Minoxidil	No	UPJ.
Nadolol	No	BRS.
Phenoxybenzamine	No	SK.
Prazosin	No	ABB.
Prazosin hydrochloride	No	PFZ.
Sodium nitroprusside	No	ABB.
Terazosin	No	ABB.
All other antihypertensive agents, other than rauwolfia and veratrum alkaloids	No	MRK.
Vasodilators:	No	
Nifedipine	No	PFZ.
Other cardiovascular agents:	No	
Disopyramide phosphate	No	GAN, SRL.
Procainamide hydrochloride	No	PD, WYK.
Propranolol hydrochloride	No	WYK.
Tocainide	No	SDW.
All other cardiovascular agents	No	MRK.
Diagnostic agents:	No	
Roentgenographic contrast media:	No	
Diatrizoate, sodium	No	SDW.
Iohexol	No	SD.
Iothalamate, meglumine	No	MAL.
Other diagnostic agents:	No	
Albumin	No	SPR.
Edrophonium chloride	No	MRX.
Glutamyl-p-nitroaniline (liver function test)	No	REG.
Metyrapone	No	CGY.
Xylose (intestinal malabsorption test)	No	PFN.
All other diagnostic agents, other than roentgenographic contrast media	No	PFZ.
Hematological agents:	No	
Anticoagulants:	No	
Ammonium heparin	No	SPR.
Benzalkonium heparin	No	RIK.
Lithium heparin	No	SPR.
Sodium heparin	No	SPR.
Other hematological agents:	No	
Cellulose, oxidized	No	EKT.
Dextran	No	PHR.

See footnotes at end of table.

Table 6-2—Continued
 Medicinal chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Medicinal chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 6-3)</i>
Miscellaneous medicinal chemicals—Continued	Yes	
Unclassified medicinal chemicals:	No	
Allopurinol	No	BUR.
Aminobenzoic acid, potassium salt	No	WYK.
Carbidopa	No	MRK.
Etidronate, disodium	No	NOR.
Levodopa	No	SRL.
Melatonin	No	REG.
Nicotine polacrilex	No	WYK.
Oxiracetam	No	SK.
Tacrine	No	PD.
All other medicinal chemicals	No	ABB, BIB.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 6-3

Medicinal chemicals: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	MAL	Mallinckrodt, Inc.
ACY	American Cyanamid Co.	MRK	Merck & Co., Inc.
AJY	Ajay Chemicals, Inc.	MRX	Johnson Matthey, Inc.
AMB	American Bio-Synthetics Corp.	NEP	Nepera Inc.
AMD	Cyclo Products, Inc.	NOR	Norwich Eaton Pharmaceutical, Inc.
ANG	Angus Chemical Co.	NUT	Bioproducts, Inc.
ARN	Arenol Chemical Corp.	OH	Anaquest
ARP	Armour Pharmaceutical Co.	ORG	Organics/LaGrange, Inc.
ARS	Arsynco, Inc., Sub. Div. of Aceto Corp.	ORT	Roehr Chemicals, Inc., Div. of Aceto Corp.
BAS	BASF Corp.	PD	Parke-Davis Div. of Warner-Lambert Co.
BEE	Beecham, Inc.:	PEN	Penick Corp.
BIB	Beecham Laboratories Div.	PFN	Pfanstiehl Laboratories, Inc.
BKC	Beckman Instruments, Inc., Spinco Div.	PFZ	Pfizer, Inc. & Pfizer Pharmaceuticals, Inc.
BOC	J. T. Baker Chemical Co.	PHR	Pharmachem Corp.
BOC	Biocraft Laboratories, Inc.	RDA	Rhone-Poulenc, Inc.
BOT	The Boots Company	REG	Regis Chemical Co.
BRS	Bristol-Myers Co.	SAL	Solvay Animal Health, Inc.
BUR	Burroughs Wellcome Co.	SCH	The Schering Corp.
CGY	Ciba-Geigy Corp.	SCP	Henkel Corp.
CHO	Ducon	SD	Sterling Drug, Inc.:
CHT	Chattem, Inc.		Sterling Pharmaceuticals, Inc.
CPR	Certified Processing Corp.	SDW	Sterling Organics Div.
CWN	Upjohn Co., Fine Chemicals	SK	Smithkline Beecham Chemicals
DAN	Dan River, Inc., Chemical Products Div.	SPR	Scientific Protein Laboratories
DOW	Dow Chemical Co.	SRL	G.D. Searle & Co.
DPW	Deepwater, Inc.	TKD	Takeda Chemical Product USA, Inc.
DUP	E. I. duPont de Nemours & Co., Inc.	TMH	Harcros Chemicals, Inc.
	Medical Products Dept.	TNA	Ethyl Corp.
EK	Eastman Kodak Co.:	TX	Texaco Chemical Co.
EKT	Tennessee Eastman Co. Div.	UCC	Union Carbide Corp., Industrial Chemical Div.
FLM	Fleming Laboratories, Inc.	UPJ	Upjohn Co.
GAF	GAF Corp., Chemical Group	VTM	Vitamins, Inc.
GAN	Ganes Chemicals, Inc.	WTL	Atochem North America, Inc., Organic Peroxides Div.
HOF	Hoffmann-LaRoche, Inc.	WYK	Wyckoff Chemical Co., Inc.
HXL	Hexcel Corp., Hexcel Chemical Products	WYT	Wyeth Laboratories, Inc., Wyeth Laboratories
IMC	IMC Pitman-Moore, Inc.		Div. of American Home Products Corp.
ISP	Inspec Chemical Corp.		
KAN	Kanasco, LTD		
KLM	Kalama Chemical, Inc.		
LEM	Napp Chemicals, Inc.		
LIL	Eli Lilly & Co., Eli Lilly Industries, Inc.		
LLI	Lee Laboratories, Inc.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 7 Flavor and Perfume Materials

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

Total domestic production of flavor and perfume materials in 1990 amounted to 59.9 million kilograms (see figure 8-1). Sales of these materials in 1990 amounted to 36.5 million kilograms, valued at \$991.6 million, compared with 38.4 million kilograms, valued at \$1,005.2 million, in 1989. U.S. production of flavor and perfume materials in 1990 decreased by 6.8 percent from the level in 1989 while the value of sales decreased by 1.4 percent.

Production of cyclic flavor and perfume materials in 1990 amounted to 39.5 million kilograms; sales

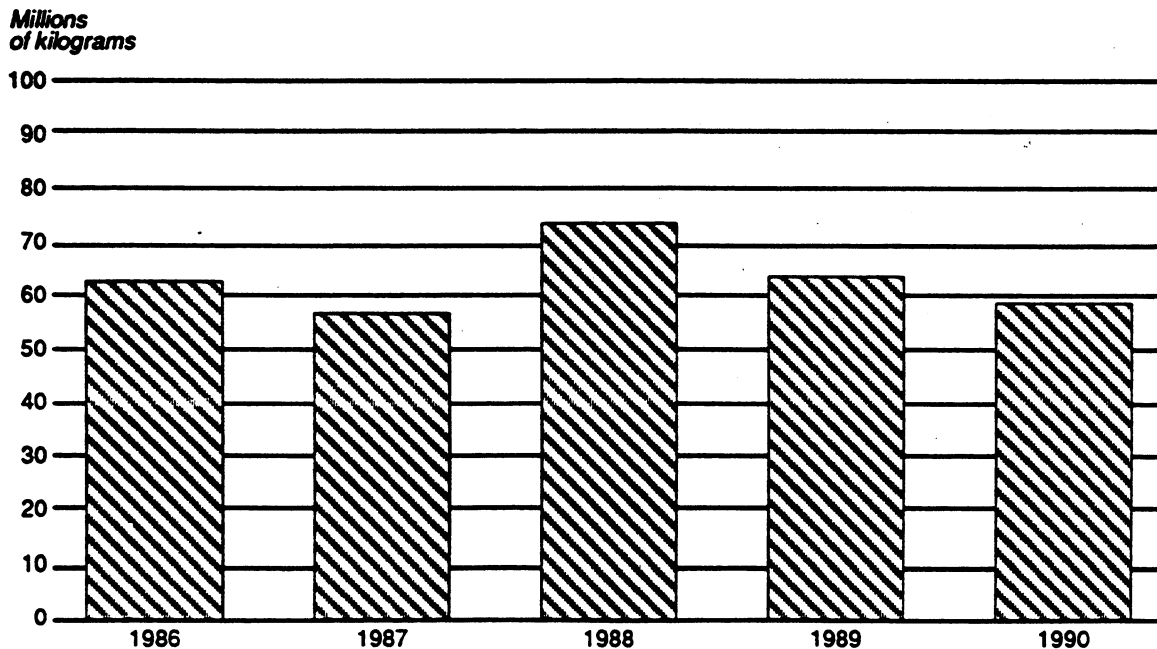
amounted to 27.9 million kilograms, valued at \$909.6 million. Individual publishable chemicals in the cyclic group produced in the greatest volume in 1990 were anethole (1.2 million kilograms), and α -terpineol (984 thousand kilograms).

U.S. output of acyclic flavor and perfume materials in 1990 amounted to 20.4 million kilograms; sales of these materials amounted to 8.6 million kilograms, valued at \$70.3 million. Individual publishable acyclic flavor and perfume chemicals produced in the greatest volume in 1990 were, tetrahydrogeraniol (266 thousand kilograms) and geranyl acetate (93 thousand kilograms).

Table 8-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 8-3.

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202-205-3349

Figure 7-1
Flavor and perfume materials: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 7

Table 7-1

Flavor and perfume materials: U.S. production and sales, 1990

Flavor and perfume materials	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	59,931	36,514	991,612	\$27.16
Cyclic				
Total	39,514	27,867	909,620	32.64
Benzenoid and Naphthalenoid				
Total	30,077	22,304	839,268	37.63
4-Allyl-2-methoxyphenol (Eugenol)	11	15	146	9.54
Benzyl benzoate	245	255	721	2.82
Phenethyl isobutyrate	10	(²)	(²)	(²)
2-Phenethyl phenylacetate	24	(²)	(²)	(²)
p-Propenylanisole (Anethole)	1,178	1,049	10,027	9.56
All other benzenoid and naphthalenoid materials	28,609	20,985	828,374	39.47
Terpenoid, Heterocyclic, and Alicyclic				
Total	9,437	5,563	70,352	12.65
β-Caryophyllene	13	11	82	7.47
Cedryl acetate	96	30	424	13.96
γ-Methylionone	602	288	6,024	20.89
α-Terpineol	984	692	1,419	2.05
All other terpenoid, heterocyclic, and alicyclic materials	7,742	4,542	62,403	13.74
Acyclic				
Total	20,417	8,647	81,992	9.48
Citronellyl acetate	41	22	261	12.12
Citronellyl formate	11	5	109	21.60
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	13	12	129	10.33
3,7-Dimethyloctanol-1 (Tetrahydrogeraniol)	266	52	436	8.37
3,7-Dimethyl-6-octen-1-ol (Citronellol)	1,198			
Geranyl acetate	93	77	796	10.34
All other acyclic materials	18,795	8,479	80,261	9.47

¹ Calculated from unrounded figures.² Reported data are accepted in confidence and may not be published, or no data were reported.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 7-2
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Cyclic:		
Benzenoid and naphthalenoid:		
Acetaldehyde ethyl phenethyl acetal	No	IFF.
Acetaldehyde phenethyl propyl acetal	No	IFF.
2'-Acetonaphthone (β -Methyl naphthyl ketone)	No	GIV.
1-Acetoxy-2-sec-butyl-1-ethenylcyclohexane	No	GIV.
p-Allylanisole	No	NCI, SCM.
4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	No	CI.
4-Allyl-2-methoxyphenol (Eugenol)	Yes	BDS, CI, ELN, GIV.
l-Amyl cinnamic aldehyde	No	KLM.
Amyl cinnamyl alcohol	No	IFF.
p-Anisaldehyde	No	GIV.
Anisyl acetate	No	ELN, GIV.
Aurantiol	No	BDS.
Benzaldehyde glyceryl acetal	No	GIV.
Benzophenone	No	CWN, PD.
Benzyl acetate	No	HAR.
Benzyl benzoate	Yes	HAR, KLM, (?).
Benzyl butyrate	No	ELN.
Benzyl isobutyrate	No	ELN.
Benzyl isopentyl ether	No	GIV.
Benzyl isovalerate	No	ELN.
1-(Benzylloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether)	No	GIV.
Benzyl phenylacetate	No	ELN, GIV.
Benzyl propionate	No	ELN.
Benzyl salicylate	No	HAR.
p-tert-Butyl- α -methylhydrocinnamalehyde	No	GIV.
Carvacrol	No	GIV.
Cineole [eucalyptol]	No	SCM.
Cinnamyl acetate	No	ELN.
Cinnamyl nitrile	No	IFF.
Cinnamyl propionate	No	ELN.
Coumarin	No	RDA.
Cuminyl acetate	No	IFF.
trans-Decahydro- β -naphthol	No	IFF.
Dihydrocoumarin	No	ARS.
1,2-Dimethoxy-4-propenylbenzene (4-Propenylveratrole)	No	CI.
2,4-Dimethyl-5-acetylthiazole	No	STG.
β ,4-Dimethyl-3-cyclohexene-1-propanal	No	CI.
γ ,4-Dimethyl-3-cyclohexene-1-propanol	No	CI.
3,7-Dimethyl-1,6-octadien-3-yl formate	No	GIV.
3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate)	No	GIV.
α , α -Dimethylphenethyl acetate	No	IFF.
N-(p-Ethoxycarbonylphenyl)-N'-ethyl-N'-phenylformamide	No	GIV.
2-Ethoxynaphthalene	No	GIV.
Ethyl benzoate	No	ELN.
Ethyl cinnamate	No	ELN.
Ethyl- α , β -epoxy- β -methylhydrocinnamate	No	ELN.
2-Ethylhexyl-p-methoxy cinnamate	No	GIV.
Ethyl phenylacetate	No	ELN.
Heliotropyl acetate	No	IFF.

See footnotes at end of table.

Section 7

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Cyclic-Continued		
Benzenoid and naphthalenoid-Continued		
Heliotropyl acetone	No	AMB.
cis-3-Hexenyl salicylate	No	BDS, IFF.
α-Hexylcinnamaldehyde	No	CI, KLM.
Hydratropaldehyde, dimethyl acetal	No	IFF.
Hydrocinnamic acid	No	ELN.
Hydrocoumarin	No	ELN, GIV.
Hydroxycitronellal methyl anthranilate	No	GIV, IFF.
4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin)	No	RDA.
4-Hydroxy-3-methoxybenzaldehyde [Vanillin]	No	RAY, RDA.
4(4-Hydroxy-3-methoxyphenyl)-2-butanone (Vanillylacetone)	No	GIV.
p-Hydroxy phenylbutanone	No	GIV.
Isoamyl phenylacetate	No	ELN.
Isobutyl phenylacetate	No	ELN.
Isobutylquinoline	No	IFF.
Isohexenyl tetrahydrobenzaldehyde (Myrac aldehyde)	No	IFF.
Isopentyl benzoate	No	GIV.
l-Limonene	No	SCM.
Linalyl anthranilate	No	BDS, FMT.
p-Mentha-1,8-diene (Limonene)	No	IFF, SCM.
4,7-Methano-1H-indene-2-methanol octahydro acetate	No	CI.
o-Methoxy benzaldehyde	No	CI.
p-Methoxybenzyl alcohol (Anisyl alcohol)	No	ELN, GIV.
2-Methoxynaphthalene	No	GIV.
3-(4-Methoxyphenyl)-2-methyl propanal	No	CI.
1-p-Methoxyphenyl penten-1-one-3 (α-Methyl-anisalacetone)	No	GIV.
3-(2-Methoxyphenyl)-2-propenal	No	CI.
2-Methoxy-4-propenylphenol (Isoeugenol)	No	CI.
2-Methoxy-4-propenylphenol, acetate	No	ELN.
2-Methoxy-4-propylphenol	No	CI.
4'-Methylacetophenone	No	CWN.
p-Methylanisole	No	GIV.
Methyl anthranilate	No	PSG.
β-Methylbenzene propanal	No	CI.
Methyl benzoate	No	KLM, MRF.
α-Methylbenzyl acetate (Styralyl acetate)	No	IFF.
α-Methylcinnamaldehyde	No	IFF.
1,2-Methylenedioxy-4-propylene benzene (isoSafrole)	No	AMB.
p-Methylhydratropaldehyde	No	GIV.
3-Methylindole (Skatole)	No	GIV.
Methyl N-methylantranilate	No	AMB.
α-Methyl-3,4-methylene dioxyhydrocinnamaldehyde	No	GIV.
Methyl phenylacetate	No	GIV.
3-Methyl-5-phenyl-1-pentanol	No	IFF.
Methyl salicylate	No	KLM, RDA.
Octahydro-5-methoxy-4,7-methano-1H-indene, 2-carboxaldehyde	No	CI.
1,1,3,3,5-Pentamethyl-4,6-dinitroindan (Moskene)	No	GIV.
α-Pentylcinnamaldehyde	No	CI.
Phenethyl acetate	No	BDS, IFF.

See footnotes at end of table.

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Cyclic-Continued		
Benzenoid and naphthalenoid-Continued		
Phenethyl alcohol	No	IFF.
Phenethyl formate	No	ELN, IFF.
Phenethyl isobutyrate	Yes	ELN, GIV, IFF.
Phenethyl isovalerate	No	ELN.
2-Phenethyl phenylacetate	Yes	BDS, ELN, GIV, IFF.
Phenethyl propionate	No	ELN.
2-Phenoxyethyl isobutyrate	No	IFF.
Phenylacetaldehyde	No	CI, GIV.
Phenylacetaldehyde, dimethyl acetal	No	(?)
Phenylacetic acid	No	GIV.
Phenylethyl benzoate	No	IFF.
Phenylethyl 2-methyl butyrate	No	SCM.
3-Phenylpropyl acetate	No	ELN, GIV.
Piperonal (Heliotropin)	No	AMB.
p-Propenylanisole (Anethole)	No	ARZ, HPC, NCI, SCM.
p-Propylanisol (Dihydroanethole)	No	GIV.
p-Tolyl acetate	No	ELN.
p-Tolyl isobutyrate	No	IFF.
p-Tolyl octanoate	No	IFF.
p-Tolylphenylacetate	No	GIV.
α -(Trichloromethyl)benzyl acetate (Rosetone)	No	ARS.
Trimethylcyclohexyl salicylate	No	ARS.
Sweeteners, synthetic:		
Cyclohexanesulfamic acid (Cyclamic acid)	No	ABB.
Cyclohexanesulfamic acid, sodium salt (Sodium cyclamate)	No	ABB.
Saccharin (1,2-Benzisothiazolin-3-one,-1,1-dioxide)	No	PSG.
Saccharin, sodium salt	No	PSG.
Tetramethyl, octahydro acetophenone	No	IFF.
Tetramethyl octahydro acetyl naphthalene	No	IFF.
Synthetic sweetener material, all other	No	NSW.
All other benzenoid or naphthalenoid chemicals	No	IFF, PFZ.
Terpenoid, heterocyclic, and alicyclic:		
Acetyl cedrene (Vertoflex)	No	BDS.
N-Acetyl methyl anthranilate	No	AMB.
Allo-ocimene	No	SCM, (?).
Allyl cyclohexyl propionate	No	GIV.
Amyl cyclohexyl acetate	No	IFF.
Amyris acetate	No	GIV.
2-tert-Butyl cyclohexanol	No	IFF.
2-sec-Butylcyclohexanone	No	GIV.
o-tert-Butylcyclohexyl acetate	No	CI, IFF.
p-tert-Butylcyclohexyl acetate (Verbeniex)	No	IFF.
Canrenoate, potassium	No	IFF.
l-Carvone	Yes	SCM.
β -Caryophyllene	Yes	BDS, CI, GIV.
α -Cedrene epoxide (Andrane)	No	BDS, IFF.
Cedrenol	No	BDS, ELN, IFF.
Cedrol	Yes	ELN, IFF.
Cedryl acetate	Yes	BDS, ELN, IFF.
Cyclohexyl ethyl acetate	No	IFF.
Cyclohexyl methanol dimethyl acetate	No	IFF.

See footnotes at end of table.

Section 7

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Cyclic-Continued		
Terpenoid, heterocyclic, and alicyclic-Continued		
Dihydronordicyclopentadienyl acetate (Cyclacet)	No	CI.
Dihydronordicyclopentadienyl propionate (Cyclaprop) (Verdyl propionate extra)	No	CI.
Dihydro terpineol	No	NCI, SCM.
Dimethyl cyclohexane methanol	No	IFF.
2, 6-Dimethylheptan-2-ol	No	GIV.
Dimethyl-3-oxo-2-pentylcyclopentane propanedioate	No	(²).
Ethyl furoate	No	IFF, SCM.
Galaxolide (1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta- γ -2-benzopyran)	No	IFF.
Guaiacwood acetate	No	ELN.
2-Heptylcyclopentanone	No	IFF.
Hexadecanolide	No	IFF.
3-Hydroxy-2-ethyl-4-pyrone (Ethylmaltol)	No	PFZ.
4-(4-Hydroxy-4-methyl pentyl)-3-cyclohexene-10-carboxaldehyde (Lyrall)	No	IFF.
3-Hydroxy-2-methyl-4-pyrone (Maltol)	No	PFZ.
4-Hydroxynonanonic acid, γ -lactone (γ -Nonalactone) . .	No	ELN.
2-(1-Hydroxypentyl)-cyclopentanone	No	(²).
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)	No	ELN.
Ionone(α - and β -)	No	NCI, SCM.
α -Ionone	No	GIV, IFF.
β -Ionone	No	GIV.
Isobornyl acetate	No	SCM.
Isobornyl methyl ether	No	SCM.
Isobornyl propionate	No	ELN.
Isolongifolene epoxide	No	GIV.
Isomenthone	No	GIV.
2-Isopropylcyclohexanol	No	GIV.
6-Isopropyldecalone	No	GIV.
Isopulegyl acetate	No	GIV.
p-Mentha-1,3-diene (α -Terpinene)	No	SCM.
p-Mentha-1,4-diene (γ -Terpinene)	No	SCM.
p-Menth-8-en-3-ol (Isopulegol)	No	GIV.
p-Menth-1-en-3-one (Piperitone)	No	GIV.
p-Menth-4-(8)-en-3-one (Pulegone)	No	GIV.
1-1-p-Menthen-6-yl-1-propanone	No	GIV.
dl-Menthol, synthetic	No	HAR, NCI, SCM.
l-Menthol, synthetic	No	HAR.
l-Menthyl acetate	No	SCM.
Methylionone(α - and β -)	No	GIV, IFF, NCI.
γ -Methylionone	Yes	BDS, GIV, IFF, NCI.
6-Methyl- α -ionone	No	BDS, GIV.
Methyl-3-oxo-2-pentane acetate	No	CI.
Methyl-2-thiofuroate	No	STG.
Nopyl acetate	No	NCI.
3-Oxo-2-pentylcyclopropane acetic acid	No	(²).
para-Cymene	No	SCM.
2-Pentyl-cyclopenten-1-one	No	(²).
1-Phenylsal-1,2-propanidione	No	STG.
Plinyl acetate	No	SCM.
Terpinene-ol	No	SCM.

See footnotes at end of table.

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Cyclic-Continued		
Terpenoid, heterocyclic, and alicyclic-Continued		
α-Terpineol	Yes	HPC, NCI, SCM.
α-Terpinyl acetate	No	NCI, SCM.
α-Terpinyl propionate	No	ELN.
3,3,5-Trimethyl cyclohexanol (m-Homomenthol)	No	ARS.
Trimethyl cyclohexenyl butenone	No	IFF.
1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl-α-ionone)	No	IFF.
Trimethyl norbornane methanol	No	IFF.
α,α,5-Trimethyl-5-vinyl-furfuryl alcohol and tetrahydro-2,2,6-trimethyl-6-vinyl-3-ol	No	GIV.
5-(2,2,3-Trimethyl(cyclopent-3-en-1-yl)-3-methylpentan-2-ol	No	GIV.
Vetivenol	No	GIV.
Vetivenyl acetate	No	BDS, ELN, IFF.
All other terpenoid, heterocyclic, or alicyclic flavor and perfume chemicals	No	IFF, SCM, STG.
Acyclic:		
Allyl disulfide	No	IFF.
Allyl heptanoate	No	ELN.
Allyl hexanoate	No	ELN.
Ammonium isovalerate	No	RSA.
Butanoic acid, 1-cyclohexylethyl ester	No	(²).
Butyl butyryl lactate	No	ELN.
Citral dimethyl acetal	No	IFF.
Citronellyl acetate	Yes	BDS, ELN, GIV, IFF, SCM.
Citronellyl formate	Yes	BDS, ELN, GIV, IFF.
Citronellyl isobutyrate	No	ELN, IFF.
Citronellyl nitrile	No	SCM.
Citronellyl propionate	No	IFF.
Crude acetate mixture (Linalyl, neryl, geranyl acetates, main components)	No	NCI.
Decanal (Capraldehyde)	No	CI.
Decyl acetate	No	GIV.
Diethyl sebacate	No	ELN.
Diethyl succinate	No	MRF.
Dihydrocarvone	No	SCM.
Dihydrolinalool	No	SCM.
Dihydro myrcenol	No	SCM.
Dihydro pentamethyl indanone	No	IFF.
Dihydroterpinyl acetate	No	IFF, NCI.
1,1-Dimethoxy octane	No	IFF.
3,7-Dimethyl-cis-2,6-octadienal (Citral B) (Neral)	No	NCI.
3,7-Dimethyl-trans-2,6-octadienal (Citral A, geranial)	No	BDS, NCI.
3,7-Dimethyl-2,6-octadienal (Citral A & B)	No	SCM.
3,7-Dimethyl-2,6-octadienenitrile	No	CI.
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	Yes	ELN, GIV, NCI, SCM.
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)	Yes	ELN, FEL, GIV, NCI, SCM.
3,7-Dimethyl-1,6-octadien-3-ol (Linalool) (Linalyl alcohol)	No	IFF, SCM.
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	Yes	ELN, GIV, IFF, SCM.

See footnotes at end of table.

Section 7

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Acyclic—Continued		
3,7-Dimethyl-1,6-octadien-3-ol, acetate (Linalyl acetate)	No	GIV, SCM.
3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate)	No	GIV.
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate)	No	GIV.
Dimethyloctanal	No	SCM.
3,7-Dimethyloctanol-1 (Tetrahydrogeraniol)	Yes	GIV, IFF, NCI, SCM.
3,7-Dimethyl-3-octanol	No	NCI, SCM.
Dimethyloctanyl acetate	No	GIV.
3,7-Dimethyl-6-octen-1-al (Citronellal)	No	GIV, SCM.
3,7-Dimethyl-6-octen-1-ol (Citronellol)	Yes	ELN, GIV, IFF, NCI, SCM.
3,7-Dimethyl-7-octenol 70%, 6-octenol isomer 30%	No	GIV.
Ethyl butyrate	No	HPC, NW.
Ethyl heptanoate	No	ELN.
Ethyl hexanoate	No	ELN, NW.
Ethyl isovalerate	No	ELN.
Ethyl laurate	No	ELN.
Ethyl-2-methyl butyrate	No	SCM.
Ethyl-2 methyl pentanoate	No	HPC.
Ethyl myristate	No	ELN.
Ethyl propionate	No	NW.
Ethyl trimethyl cyclopentenyl buterol	No	IFF.
Ethyl valerate	No	ELN.
Geranyl acetate	Yes	BDS, CI, ELN, FEL, GIV, IFF, NCI, NW, SCM.
Geranyl butyrate	No	ELN, GIV.
Geranyl formate	No	BDS, ELN.
Geranyl isobutyrate	No	IFF.
Geranyl nitrile (Citralva)	No	IFF, SCM.
Geranyl propionate	No	ELN.
N-hexanal	No	CI.
2-Hexenal	No	GIV.
cis-3-Hexen-1-yl acetate	No	BDS, GIV.
cis-3-Hexenyl butyrate	No	SCM.
cis-3-Hexenyl methyl carbonate	No	IFF.
cis-3-Hexenyl tiglate	No	BDS.
Hexyl 2-methylbutyrate	No	SCM.
Hydroxycitronellol	No	SCM.
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	No	GIV, IFF, SCM.
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal)	No	GIV.
Isobutyl-2-butenate	No	AMB.
Isopentyl acetate (Isoamyl acetate)	No	ELN, NW.
Isopentyl butyrate	No	GIV, NW.
Isopentyl formate	No	ELN.
Isopentyl isovalerate	No	ELN, HPC.
3-Methyl-2-butenyl acetate	No	IFF.
2-Methylbutyl isovalerate	No	SCM.
2-Methylene undecanal	No	(²).
Methyl hexyl ether	No	SCM.
Methyl isobutyrate	No	HPC.
Methyl-2-methyl butyrate	No	SCM.

See footnotes at end of table.

Table 7-2—Continued
Flavor and perfume materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Flavor and perfume materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 7-3)</i>
Acyclic—Continued		
3-Methyl-2-[and3]nonene nitrile	No	GIV.
Methyl-2-nonenoate	No	HPC.
2-Methylundecanal	No	CI, GIV.
Myrcenyl acetate	No	IFF.
Myristaldehyde	No	GIV.
Nonanal	No	CI.
1,3-Nonanediol acetate	No	ELN, GIV, SBC.
Ocimene	No	IFF.
Ocimenyl acetate	No	IFF.
Octanal	No	CI.
2-Octene-4-one	No	STG.
N-Octyl acetate	No	SCM.
Octyl isovalerate	No	GIV.
Pseudo linalyl acetate (Neobergamate)	No	IFF.
Rhodinol	No	GIV, IFF.
Tepyl acetate	No	ELN.
Tetrahydrolinalyl acetate	No	SCM.
Tetrahydromyrcenol	No	SCM.
2,4,6,8-Tetramethylnonan-1-yl acetate	No	CI.
Trimethyl-cyclododeca-trienyl ethanone	No	IFF.
3,5,5-Trimethyl hexanal	No	IFF.
Undecanal	No	CI, GIV.
All other acyclic flavor and perfume materials	No	AIP, IFF, PFZ.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 7

Table 7-3

Flavor and perfume materials: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	KLM	Kalama Chemical, Inc.
AIP	Air Products & Chemicals, Inc.	MRF	Morflex Inc.
AMB	American Bio-Synthetics Corp.	NCI	Union Camp Corp., BBA Div.
ARS	Arsynco, Inc., Sub. Div., of Aceto Corp.	NSW	Nutrasweet Co.
ARZ	Arizona Chemical Co.	NW	Northwestern Chemical Co.
BDS	Fragrance Resources, Inc.	PD	Parke-Davis, Div. of Warner-Lambert
CI	Firmenich, Inc.	Co.
CWN	Upjohn Co., Fine Chemicals	PFZ	Pfizer, Inc.
ELN	Elan Chemical Co.	PSG	PMC Inc., Specialities Group, Inc.
FEL	Felton Worldwide, Inc.	RAY	Rayonier Chemical Products Inc.
FMT	Fairmount Chemical Co., Inc.	RDA	Rhone-Poulenc, Inc.
GIV	Givaudan Corp.	SBC	Scher Chemicals, Inc.
HAR	Haarmann & Reimer Corp.	SCM	SCM Corp., Glidco Organics
HPC	Hercules, Inc.	STG	McCormick & Co., Inc.
IFF	International Flavors & Fragrances, Inc.	McCormick-Stange Flavor Div.

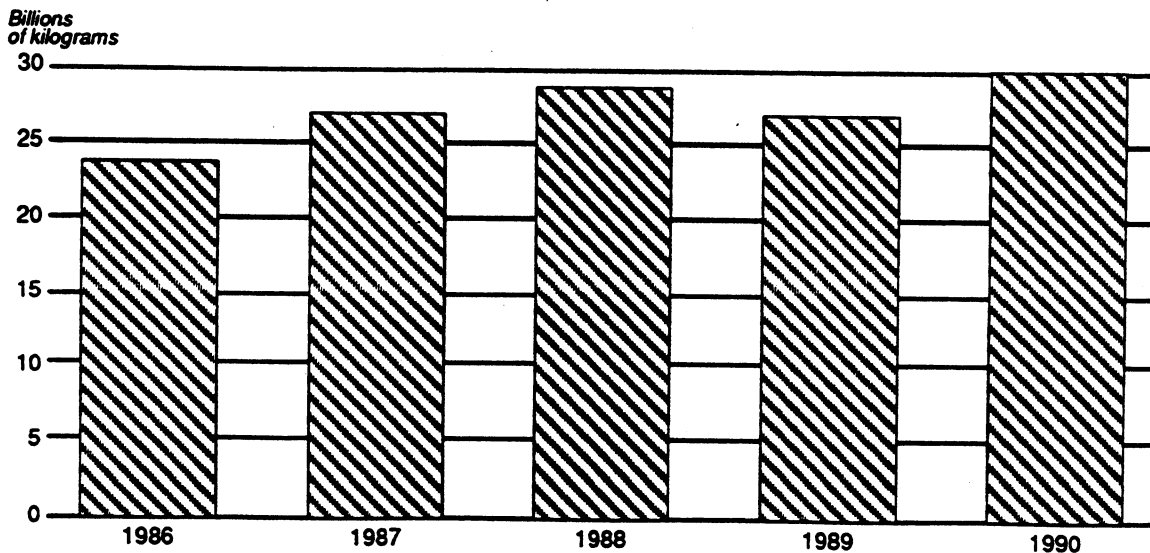
Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
 Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 8 Plastics and Resin Materials

Plastics and resin materials are high molecular weight polymers which, at some stage in their manufacture, exist in such physical condition that they can be shaped or otherwise processed by the application of heat and pressure. The terms "plastics," "resin," and "polymers," can be (and often are) used interchangeably by the trade. Depending on the chemical composition, manufacturing process, or intended use, the commercial products may contain plasticizers, fillers, extenders, stabilizers, coloring agents, or other additives. There are about 40 to 50 basic plastics and resins which are available commercially. These basic materials are available in literally thousands of individual compounds each with its distinct properties depending on the molecular weight of the resin and the types and amounts of the additives present. Plastics materials may be molded, cast, or extruded into semifinished or finished solid forms. Resin materials may be in the form of solutions, pastes, or emulsions for applications such as protective coatings, adhesives, or paper and textile treatment.

Statistics on U.S. production and sales of synthetic plastics and resin materials for 1990 are given in table 8-1. U.S. production of plastics and resin materials in 1990 totaled 30,053 million kilograms, or 11.3 percent more than the 26,995 million kilograms produced in 1989. From 1986-90, the production of plastics and resin materials increased irregularly from 23,790 million kilograms in 1986 to 30,053 million kilograms in 1990, or at an average, annual rate of growth of 6.0 percent (see figure 8-1). Sales in 1990 totaled 25,729 million kilograms, valued at \$30,529 million, compared with 23,819 million kilograms, valued at \$32,180 million, in 1989.

Figure 8-1
Plastics and resin materials: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Thermosetting materials are those which harden with a change in composition in the final treatment so that in their final state as finished articles they are substantially infusible and insoluble; that is, they cannot again be softened by heat or solvents. U.S. production of thermosetting materials totaled 4,309 million kilograms in 1990, compared with 4,033 million kilograms in 1989. Production of the most important products in 1990 included phenolic (944 million kilograms), amino (urea and melamine) resins (1,213 million kilograms), polyester resins, unsaturated (537 million kilograms), and alkyd resins (349 million kilograms).

Thermoplastic materials are those which in their final state as finished articles can be repeatedly softened by heat and hardened by a decrease in temperature. U.S. production of thermoplastic materials totaled 25,743 million kilograms in 1990 (or 85.7 percent of the total plastics and resin materials output for 1990), compared with 22,962 million kilograms in 1989. Production of the most important products in 1990 included polyethylene (9,071 million kilograms), polypropylene (3,465 million kilograms), vinyl resins (4,944 million kilograms), and styrene type materials (4,624 million kilograms). In 1990, production of saturated polyester resins reached 1,598 million kilograms (polyethylene terephthalate alone reached 1,348 million kilograms). Production of engineering plastics, in the aggregate, amounted to 526 million kilograms in 1990.

Table 8-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 8-3.

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202-205-3362

Section 8

Table 8-1

Plastics and resin materials: U.S. Production and sales, 1990

Plastics and resin materials	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms dry basis ²	1,000 kilograms dry basis ²	1,000 dollars	Per kilogram
Grand total	30,052,906	25,728,728	30,529,355	\$1.19
Thermosetting resins				
Total	4,309,457	3,177,057	4,141,133	1.30
Alkyd resins, total	349,019	264,323	358,212	1.36
Alkyd-acrylate copolymer resins	4,912	2,195	6,426	2.93
Phthalic anhydride type	290,456	227,789	276,724	1.21
Polybasic acid type	9,429	6,093	9,119	1.50
Styrenated-alkyds or copolymer alkyds	7,057	1,746	4,126	2.36
Vinyl toluene alkyds	12,962	12,460	21,355	1.71
All other alkyd resins	24,203	14,040	40,462	2.88
Dicyandiamide resins (an amino resin)	1,285	1,461	3,174	2.17
Epoxy resins: ^{3,4}				
Unmodified	315,895	230,026	535,670	2.33
Advanced	(158,283)	(100,997)	(179,310)	(1.78)
Furfuryl type resins	6,368	6,375	9,889	1.55
Glyoxal-formaldehyde resins	6,962	(⁵)	(⁵)	(⁵)
Melamine-formaldehyde resins (an amino resin)	109,181	89,639	218,729	2.44
Phenolic and other tar acid resins	943,851	621,871	843,403	1.36
Polyester resins, unsaturated ⁶	537,224	512,696	735,388	1.43
Polyether and polyester polyols for urethanes ⁷	760,612	561,408	733,484	1.31
Polyurethane elastomers and plastics products, total	114,239	98,237	337,924	3.44
Elastomers ⁸	62,575	48,605	200,932	4.13
Plastics	51,664	49,632	136,992	2.76
Urea-formaldehyde resins (an amino resin) ⁹	1,103,881	742,723	235,889	.32
All other thermosetting resins ¹⁰	60,940	48,298	129,371	2.68
Thermoplastic resins				
Total	25,743,449	22,551,671	26,388,222	1.17
Acrylic resins, total ¹¹	683,771	610,847	1,543,286	2.53
Homopolymer resins, except PMMA, of acrylic or methacrylic acid esters	26,902	21,319	56,290	2.64
Polymethyl methacrylate (PMMA) resins	304,726	189,221	449,571	2.38
Thermosetting acrylic resins	41,395	22,833	67,142	2.94
All other acrylic resins	310,748	377,474	970,283	2.57

See footnotes at end of table.

Table 8-1—Continued
 Plastics and resin materials: U.S. Production and sales, 1990

Plastics and resin materials	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms dry basis ²	1,000 kilograms dry basis ²	1,000 dollars	Per kilogram
Thermoplastics resins—Continued				
Engineering plastics ¹²	526,105	470,522	1,551,075	\$3.30
Petroleum hydrocarbons resins	171,762	156,225	166,516	1.07
Polyamide resins, total	288,561	279,926	823,034	2.94
Nylon type ^{11 13}	261,912	253,893	783,991	3.09
Non-nylon type	26,649	26,033	39,043	1.50
Polyester resins, saturated, total ^{11 14}	1,598,385	1,381,640	2,524,161	1.83
Polyethylene terephthalate (PET)	1,347,638	1,147,676	1,615,026	1.41
All other saturated polyesters, including Polybutylene terephthalate, (PBT) resins	250,747	233,964	909,135	3.89
Polyethylene resins, total	9,070,936	8,125,164	7,708,072	.95
Ethylene-vinyl acetate and other copolymer resins	279,944	267,621	371,511	1.39
Specific gravity 0.940 and below, total ¹⁵	4,675,025	4,310,109	4,005,593	.93
Low density polyethylene (LDPE) resins	3,281,300	3,059,978	2,912,078	.95
Linear low density polyethylene (LLDPE) resins	1,393,725	1,250,131	1,093,515	.87
Specific gravity over 0.940	4,115,967	3,547,434	3,330,968	.94
Polypropylene resins	3,465,465	3,146,662	2,523,573	.80
Rosin modifications, total	176,016	157,378	198,026	1.26
Modified rosin (unesterified)	77,846	64,342	60,259	.94
Modified rosin esters	67,247	62,392	98,826	1.58
Rosin esters, unmodified (Ester gums)	30,923	30,644	38,941	1.27
Styrene plastics materials, total	4,624,113	3,648,932	4,481,201	1.23
Acrylonitrile-butadiene-styrene terpolymer (ABS) resins	521,932	519,157	1,011,673	1.95
Polystyrene homopolymers, total	3,427,928	2,536,623	2,437,499	.96
Expandable polystyrene beads	679,661	364,259	419,692	1.15
Rubber modified polystyrene	1,067,546	954,005	964,295	1.01
Straight polystyrene	1,680,721	1,218,359	1,053,512	.86
Styrene latexes, total	369,320	327,804	457,619	1.40
Styrene-butadiene latexes	348,048	307,909	428,315	1.39
All other styrene latexes	21,272	19,895	29,304	1.47
All other styrene plastics materials ¹⁶	304,933	265,348	574,410	2.16

See footnotes at end of table.

Section 8

Table 8-1—Continued
Plastics and resin materials: U.S. Production and sales, 1990

Plastics and resin materials	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms dry basis ²	1,000 kilograms dry basis ²	1,000 dollars	Per kilogram
Thermoplastics resins—Continued				
Vinyl resins, total ¹⁷	4,943,944	4,430,301	4,102,318	\$.93
Polyvinyl acetate ¹⁸	305,943	204,811	310,587	1.52
Polyvinyl chloride and copolymers	4,247,008	3,848,569	3,203,036	.83
Vinyl acetate-acrylate copolymers	220,976	218,696	217,312	.99
All other vinyl and vinylidene resins ¹⁹	170,017	158,225	371,383	2.35
All other thermoplastic resins ²⁰	194,391	144,074	766,960	5.32

¹ Calculated from unrounded figures.

² Dry weight basis unless otherwise specified. Dry weight basis is the total weight of the materials including resin and coloring agents, extenders, fillers, plasticizers, and other additives, but excluding water and other liquid diluents unless they are an integral part of the materials.

³ Includes reactive diluents which are an integral part of the resin. Excludes the weight of hardeners sold in association with the resin as part of a two-component system.

⁴ Data shown for advanced epoxy resins are that part of the unmodified epoxy resins which is further processed; therefore, the total in parentheses are not included in the grand total.

⁵ Reported data were accepted in confidence and may not be published, or no data were reported.

⁶ Polyester resins are unsaturated alkyd resins, later to be copolymerized with a monomer (Such as styrene or methyl methacrylate), and polyallyl resins (such as diallyl phthalate and diglycol carbonate). Data are on an "as sold" basis, including monomer if part of the resin system.

⁷ In addition to the polyols, the other principal starting materials used in the production of urethane products are the isocyanic acid derivatives, mainly the 80/20 mixture of toluene-2,4- and 2,6-diisocyanate.

Statistics for the isocyanic acid derivatives are reported in the "Cyclic Intermediates" section of the Synthetic Organic Chemicals report.

⁸ The data on urethane elastomers are believed to be not fully representative of the total urethane market in view of the very large number of urethane elastomer producers. The commission has begun reporting statistics for urethane elastomers in two sections, section VIII, plastics and resin materials, and section X, elastomers (synthetic rubber). Henceforth those polyurethane products classified as "thermoplastic" urethane elastomers will be reported in SOC section X; all other urethane elastomers will remain in SOC section VIII.

⁹ Includes thiourea resins.

¹⁰ Includes acetone-formaldehyde resins, glyoxal-formaldehyde resins (sales only), polybutadiene resins, silicone resins, and certain other thermosetting resins.

¹¹ Does not include production or sales for fiber use.

¹² Engineering plastics: Includes acetal, polycarbonate, polyetheretherketone (PEEK) resins, polyimide and amide-imide polymers, polyphenylene oxide, polyphenylene sulfide, and polysulfone. Engineering plastics are defined in *Whittington's Dictionary of Plastics*, as "All plastics, with or without fillers or reinforcements, which have mechanical, chemical and thermal properties suitable for use in construction, machine components and chemical processing equipment." The above list of plastics (all of which are thermoplastic) was selected from a larger group in this source. Certain other plastics named in *Whittington's Dictionary* as engineering plastics, such as ABS resins, acrylic resins, and nylon resins, are not included in the above list as they are published separately.

¹³ Statistics for nylon 6 and nylon 6/6 which are used in plastics applications (e.g., molding, etc.) are included here.

¹⁴ Statistics are included here for polyethylene terephthalate used in plastics applications (e.g., molding, etc.) Statistics also are included here for production only when the starting materials are converted directly to a finished product (i.e., "in situ" production); polyester film and tape are examples of such a conversion.

¹⁵ Data shown for LLDPE resins are incomplete because several of the leading producers of LLDPE (e.g., Union Carbide Corp.) still continue to aggregate these data with that of LDPE.

¹⁶ Includes data for α -methyl styrene polymers, methyl methacrylate-butadiene-styrene (MBS), styrene acrylonitrile (SAN) copolymer resins, styrene-allyl alcohol copolymer resins, styrene-divinylbenzene copolymer resins, styrene-maleic anhydride copolymers resins, styrene-methyl methacrylate copolymers resins, and other styrene resins.

¹⁷ Data are on the basis of dry resin content, excluding the weight of plasticizers, extenders, fillers coloring agents, stabilizers, or impact modifiers, unless otherwise noted.

¹⁸ Data for polyvinyl acetate produced and sold in latex form includes the weight of any protective colloids which are used as emulsion stabilizers and form an integral part of the resin system. Production and sales do not include polyvinyl acetate used as a reactive intermediate for polyvinyl alcohol or other vinyl resins.

¹⁹ Includes polyvinyl alcohol, polyvinyl butyral, polyvinyl formal, polyvinylidene chloride, and other vinyl resins.

²⁰ Includes cellulose plastics, coumarone-indene resins, fluorocarbon resins, phenoxy resins, polybutylene type resins, polyphenyl aromatic ester resins, and certain other thermoplastic materials.

Note.—Data reported to the U.S. International Trade Commission do not necessarily coincide with that reported to the Society of the Plastics Industry (SPI) because of differences in both the reporting instructions and in the coverage of certain resins.

Source: Compiled from data received in response to questionnaires of the U.S International Trade Commission.

Table 8-2
Plastics and resin materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plastics and resin materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 8-3)</i>
Thermosetting resins:	Yes	
Acetone-formaldehyde resins	Yes	ACY, CMP, FLH, GP.
Alkyd resins:		
Acrylate-alkyd copolymer resins	No	ACY, CKC, CPV, DRC, FRE, MNP, PPG, QCP, REL, VSP, (2).
Alkoxy phenol	Yes	(2).
Phthalic anhydride type alkyd resins	No	ACO, ACY, AKZ, BLC, BRU, CGL, CJO, CPV, DRC, DUP, EW, FOC, FRE, GLD, GRG, GRV, ICF, IMI, JOB, LIC, MMM, MNP, NCP, OBC, PPG, PRT, RCI, RDA, REL, SRY, TCC, UNO, VSP, (2) (2), (2), (2).
Polybasic acid type alkyd resins	Yes	CJO, CKC, CPV, EW, FOC, GLD, ICF, IMI, IOV, PPG, REL, SCN, VSP, (2).
Styrenated-alkyds, or copolymer alkyds	Yes	CJO, CKC, CPV, DRC, EW, FRE, IMI, JOB, MNP, MRT, SCN, VSP, (2).
Vinyl toluene alkyds	Yes	BLC, CGL, CKC, CPV, FRE, GLD, IMI, JOB, MNP, REL, (2).
All other alkyd copolymers	Yes	ACO, BLC, CGL, CJO, DUP, ICF, MNP.
Amino resins:		
Melamine-formaldehyde resins	Yes	ACY, AUX, BOR, CBD, CKC, CPV, DRC, GP, GRG, MNP, MON, PLS, PMC, PPL, PST, RCI, RDA, REL, TCC, WRD.
Thiourea resins	No	CMP.
Urea-formaldehyde resins	Yes	ACY, AUX, BOR, CBD, CGL, CKC, CMP, CPV, GP, GRV, MMM, PMC, PPL, PST, RDA, REL, SAC, SOR, SQA, VSP, WPG.
Dicyandiamide resins	Yes	CMP, ECC, HCL, S, TCC.
Epoxy resins:		
Epoxy resins, advanced	Yes	AKZ, CGL, CGY, CKC, CNI, CPV, DOW, EW, GE, GLD, GRG, GRV, HXL, ICF, LIC, MID, MIL, MMM, MRT, OCF, PPG, RCI, RDA, SMO, VSP, (2).
Epoxy resins, unmodified	Yes	ASH, CGY, CJO, CKC, CLU, CPV, DAN, DOW, HYA, MNP, NES, PRT, RCI, RDA, SHC, UCC, (2).
Furfuryl type resins	Yes	CLU, DRR, HVG, UNO, WRD.
Glyoxal-formaldehyde resins	Yes	AUX, CMP, HCL, SQA, TCC, WPG.
Phenolic and other tar acid resins	Yes	ADC, ARZ, ASH, BME, BOR, BSC, BTL, CBD, CGL, CKC, DRR, EW, GE, GP, HCL, HER, HKD, HPC, HVG, ICF, IMI, IRI, ISP, LII, MCA, MID, MMM, NCI, OBC, OCF, PLS, PSG, RH, SCN, SIM, SPL, UCC, UNO, USR, VSP, VSV, WPG, WRD, (2), (2), (2).
Polybutadiene resins	Yes	CCS, CNI, HCL, LC, PSL.
Polyester resins, unsaturated, and allyl resins:		
Allyl resins	No	CMS.
Diallyl isophthalate	No	CMS, IMI.
Polyester resins, unsaturated	No	ACY, ADC, APH, ART, ASH, CGL, CKC, CMS, CPV, EW, GLD, GRG, ICF, ICI, IMI, IPC, JOB, LII, MRT, NCP, OCF, PPG, PPL, RCI, SCN, SHX, SIC, VSP.

See footnotes at end of table.

Section 8

Table 8-2—Continued
Plastics and resin materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plastics and resin materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 8-3)</i>
Thermosetting resin—Continued		
Polyether and polyester polyols for urethanes	Yes	BAS, BMC, BPT, CHC, CKC, CPV, CXI, DOW, FRE, GRG, HCF, ICF, ICI, MRT, OMC, PPG, PPL, RCI, RUO, SLC, SYT, UCC, WM, (²).
Polyurethane elastomer and plastic products:		
Polyurethane elastomers	Yes	ACY, ADC, ARO, BPT, CAS, CGY, CNI, DNS, EPI, GLC, HXL, ICF, INP, MRT, PPG, PRC, QUN, RUO, SCN, SLC, SMO, SYT, USM, USR, VSP.
Polyurethane resins	Yes	ACO, BAS, CGL, DUP, EW, GLD, GRD, HYC, IMI, INP, JOB, LC, MID, MOB, OMC, PEL, SHX, SIF, (²).
Silicone resins	No	CJO, DCC, PEL, RH, SPD.
All other thermosetting resins, benzenoid	Yes	ACY, AKZ, BAS, FRE, GLD, ICF, MID, OBC, REL, RTC, S, TCC, (²), (²), (²).
Thermoplastic resins:		
Acrylic resins:		
Copolymer resins of acrylic and/or methacrylic acid resins:		
Butyl acrylate ethyl acrylate copolymer resins	No	AIP, BFG, ICI, RDA, RH, TCC, UOC.
Butyl methacrylate-ethyl methylacrylate copolymer resins	No	CGL, RDA, UOC.
2-Ethylhexyl acrylate-methyl acrylate copolymer resins	No	RDA, UOC.
Lauryl methacrylate-stearyl methacrylate copolymer resins	No	ICI.
Other copolymer resins of acrylic and/or methacrylic acid esters	No	ACO, AIP, BPT, CHP, CKC, CPV, DRB, DRC, FLH, GGI, GLD, ICF, ICI, JNS, KMP, MON, NES, NSC, PPG, PRA, PYI, RAS, RCD, RCI, RDA, RH, SCN, SYT, TCC, UCC, VSP, (²).
Homopolymer resins of acrylic and/or methacrylic acid resins:		
Other homopolymer resins of acrylic and/or methacrylic acid esters	Yes	CKC, CPV, DRC, DUP, ESS, GRV, PYI, RH, SAR, SCP, UOC, (²).
Polymethyl methacrylate (PMMA)	Yes	ART, CTP, CYR, DUP, JOB, MRT, PKL, RH, SAR, SQA, TCC.
Thermosetting acrylate resins	Yes	AIP, AKZ, CKC, CPV, DRC, DUP, FRE, GRV, ICF, MID, MNP, PPG, PRA, RDA, REL, SCP, SM.
Cellulose plastics and resins:		
Cellulose acetate	No	EKT.
Cellulose acetate butyrate	No	EKT.
Cellulose acetate propionate	No	EKT.
Ethyl cellulose	No	AQU.
Coumarone-indene resins	No	CKC.
Engineering plastics:		
Acetal resins	No	DRR, DUP, HCL, PRT.
Polycarbonate resins	No	DOW, GE, MOB, SQA.

See footnotes at end of table.

Table 8-2—Continued

Plastics and resin materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plastics and resin materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 8-3)</i>
Thermoplastic resins—Continued		
Engineering plastics—Continued		
Polyetheretherketone (PEEK) resins	No	GE.
Polyimides and amide-imide polymers	No	DUP, EW, GRG, PDI, SCN.
Polyphenylene oxide type resins	No	ELP, GE.
Polyphenylene sulfide resins	No	HCL, PLC.
Fluorocarbon resins:		
Ethylene/chlorotrifluoro ethylene copolymer (Halar)	No	AUS.
Polytetrafluoroethylene (PTFE)	No	AUS, DUP, ICI.
Polyvinylidene fluoride	No	AUS.
Polyvinylidene fluoride resin	No	PAS.
All other fluorocarbon resins	No	DUP.
Nylon 6,6-acrylonitrile-butadiene-styrene	No	MON.
Petroleum hydrocarbon resins	Yes	ARZ, CFX, CXI, EKX, ENJ, GYR, HPC, LII, NEV, (²).
Phenoxy (R) resin (other than for coating and adhesives)	No	ICF, NEV, UCC.
Plastics alloys or blends	No	MOB.
Polyamide resins:		
Non-nylon type, polyamide resins	Yes	ARZ, COO, EFH, GP, LII, NCI, OBC, S, SHX, SQA, USM.
Nylon type, polyamide resins	Yes	ACS, AGI, BAS, BCM, CTR, DUP, GRG, HCL, MON, RSN, SKP, USM.
Polybutylene type resins	No	ENJ, SHC.
Polyester resins, saturated:		
Polybutylene terephthalate (PBT)	No	BAS, CKC, DUP, GE, HCL, MOB.
Polyethylene terephthalate (PET)	Yes	ACS, DUP, EKT, FBI, GYR, HCL, ICI, IMI, MOB, RDA, (²).
All other polyester resins, saturated	Yes	ACS, BPT, CPV, DUP, EKT, GLD, GRG, GYR, HCL, ICF, ICI, MNP, PPG, REL, SCN, USM.
Polyethylene and copolymers resins:		
Ethylene-vinyl acetate (EVA) copolymer resins	Yes	COO, ENJ, NSC, RCI, USI.
Other ethylene copolymer resins	Yes	DOW, EKT, EKX, ENJ, EVL, SQA, (²).
Specific gravity 0.940 and below	Yes	ACS, DOW, DUP, EKX, ELP, ENJ, LYP, SM, SOC, SQA, UCC, USI.
Specific gravity 0.940 and below	Yes	CMP, DOW, ENJ, SM, USI.
Specific gravity over 0.940	Yes	ACS, CNE, DOW, HCL, HIM, SLT, SOC, UCC, USI.
Polypropylene polymer and copolymer resins	Yes	AMO, ART, BAS, CSD, EKX, ENJ, HIM, LYP, MIL, PLC, SHC, SLT, USI.
Polyterpene resins	No	ARZ, GRV, HPC.
Rosin modifications:		
Modified rosin (unesterified)	Yes	ARZ, CJO, HPC, NCI, SYL, WVA, (²).
Modified rosin esters	Yes	CKC, CPV, EW, FRP, GP, GRV, HCL, HPC, ICF, LII, NCI, SYL, WVA.
Rosin esters, unmodified (Ester gums)	Yes	ARZ, CKC, CPV, FRP, HPC, NCI, SYL.
Styrene type plastics materials:		
Acrylonitrile-butadiene-styrene (ABS) terpolymer resins	Yes	DOW, GE, GRD, MON.
α-Methyl styrene polymers	Yes	AIP, AMO, ATR, CKC, CPV, JNS.

See footnotes at end of table.

Section 8

Table 8-2—Continued

Plastics and resin materials for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plastics and resin materials</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 8-3)</i>
Thermoplastic resins—Continued		
Styrene type plastics materials—Continued		
Styrene-acrylonitrile copolymer resins (SAN)	No	DOW, GE, ICI, MON, USR.
Polystyrene:	Yes	
Expandable polystyrene beads	Yes	ATR, BAS, DPI, HMN, TXS.
Rubber modified polystyrene	Yes	AMO, API, CSD, DOW, DPI, HMN, PLR, SM.
Straight polystyrene	Yes	AEP, AMO, API, ATR, CSD, DOW, DPI, GAF, HMN, HPC, KTP, PLR, RCD, SM, SOC, TXS.
Styrene latexes:	Yes	
Styrene-butadiene latexes	Yes	DOW, GRD, GYR, PYI, RCI, RDA, UOC.
All other styrene latexes	No	ADC, CCS, FRS, GRD, SPO, UCC, UOC.
Other styrene copolymers:		
Acrylic-styrene-acrylonitrile	No	MON.
Methyl methacrylate-butadiene styrene (MBS) resins	No	CYR, RH.
Styrene-acrylonitrile- α -methyl styrene	No	MON.
Styrene-allyl alcohol copolymer resins	No	HPC, MON.
Styrene-divinylbenzene copolymer resins	No	EK, RH, TCC.
Styrene-limonene copolymer	No	ARZ, MON.
Styrene-maleic anhydride copolymer resins	No	ATR, JNS, RSN.
Styrene-maleic anhydride, glass filled	No	MON.
Styrene-maleic anhydride-isobutanol terpolymer	No	MON.
Styrene-methyl methacrylate copolymer resins	No	ADC, RCD.
All other styrene copolymers	No	AIP, ATR, CKC, CPV, EW, FLH, GE, GGI, HPC, JNS, MON, OBC, PLC, TCC, VSP, (2).
All other styrene type plastics materials	No	FER, GYR, HMN, ICI.
Vinyl resins:		
Polyvinyl acetate resins	Yes	AIP, CGL, DAN, FLH, FLN, GLD, GRD, JOB, MNP, MON, NSC, PRA, PYI, RCI, SQA, TCC, UCC, UOC, (2).
Polyvinyl alcohol resins	No	AIP, DUP.
Polyvinyl butyral resins	No	MON.
Polyvinyl formal resin	No	GRG, MON.
Vinyl acetate-acrylate copolymers	Yes	ACO, AIP, CMP, DAN, FLH, GLD, KMP, NCJ, NTC, OBC, PRA, RCI, RDA, RH, SPC, UCC, UOC, VSP.
Polyvinyl chloride and copolymer resins:	Yes	
Polyvinyl chloride homopolymer resins	No	AIP, BCP, BFG, CNT, FOR, GGC, GYR, HKP, KYS, SHT, UCC, VST, VYN.
All other polyvinyl chloride copolymer resins	No	BCP, BFG, HKP, KYS, VYN.
Polyvinylidene chloride resins:	Yes	
Latex type polyvinylidene chloride resins	No	BFG, GRD, UOC.
All other vinyl resins	No	DOW, DUP, EW, FLH, GLD, NCJ, RH, UCC.
All other thermoplastic resins, benzenoid	No	DUP, ENJ, HCL, LII, NES, PRC, RSN, TNA, UOC, VSP.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 8-3

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1990

Code	Name of company	Code	Name of company
ACO	Adco Chemical Co.	CMP	Commercial Products Co., Inc.
ACS	Allied Signal, Inc. Engineered Materials Sector. Engineered Plastic Div. High Density Polyethylene Business	CMS	Cosmic Plastics, Inc.
ACY	American Cyanamid Co.	CNE	Oxy Petrochemicals, Inc.
ADC	Anderson Development Co.	CNI	Conap, Inc.
AEP	A & E Plastics Corp.	CNT	Certainfeed Corp.
AGI	EMS-American Grilon, Inc.	COO	H.B. Fuller Co.
AIP	Air Products & Chemicals, Inc.	CPV	Cook Paint & Varnish Co.
AKZ	Akzo Coating, Inc.	CSD	Fina Oil & Chemical Co., Cosden Chemical Div.
AMO	Amoco Corp.	CTP	Continental Polymers, Inc.
APH	Alpha Corporation of Tennessee	CTR	Custom Resins Div. of Bemis Co., Inc.
API	American Polymers, Inc.	CXI	Chemical Exchange Industries, Inc.
AQU	Aqualon Co.	CYR	CYRO Industries
ARO	Arnco	DAN	Dan River, Inc., Chemical Products Div.
ART	Aristech Chemical Corp.	DCC	Dow Corning Corp.
ARZ	Arizona Chemical Co.	DNS	Dennis Chemical Co.
ASH	Ashland Oil, Inc.	DOW	Dow Chemical Co.
ATR	Atlantic Richfield Co., Arco Chemical Co.	DPI	Dart Polymers, Inc., Sub of Dart Container Corp.
AUS	Ausimont N.V.	DRB	Rohm Tech, Inc.
AUX	Auralux Corp.	DRC	Dock Resins Corp.
BAS	BASF Corp.	DRR	Delta Resins & Refractories
BCM	Belding Chemical Industries	DUP	E. I. duPont de Nemours & Co., Inc. Automotive Product Dept. Chemicals and Pigments Dept. ED/IMG Dept. Petrochemicals Dept. Polymer Products Dept.
BCP	Borden Chemical & Plastics Delaware Limited Partnership	ECC	Eastern Color & Chemical Co.
BFG	B. F. Goodrich Co.	EFH	E. F. Houghton & Co.
BLC	Ranbar Technology, Inc.	EK	Eastman Kodak Co.:
BMC	Brin-Mont Chemicals, Inc.	EKT	Tennessee Eastman Co. Div.
BME	Allied Signal Bendix Corp., Friction Materials Div.	EKX	Texas Eastman Co. Div.
BOR	Borden, Inc., Packaging & Industria Products Div.	ELP	Rexene Products Company
BPT	Permethane Coatings, Inc.	ENJ	Exxon Chemical Americas
BRU	M. A. Bruder & Sons, Inc.	EPI	Eagle Picher Industries, Orthane Div.
BSC	Cascade Resins, Inc.	ESS	Essential Industries, Inc.
BTL	BTL Specialty Resin Corp.	EVL	Eval Company of America
CAS	CasChem, Inc.	EW	Westinghouse Electric Corp., Insulating Materials Div.
CBD	Chembond Corp.	FBI	Fibers Industries, Inc.
CCS	Colorado Chemical Specialties, Inc.	FER	Ferro Corp., Keil Chemical Div.
CFX	Chemfax, Inc.	FLH	H. B. Fuller Co.
CGL	Cargill, Inc.	FLN	Franklin International
CGY	Ciba-Geigy Corp.	FOC	Handschy Industries, Inc., Ink & Chemicals Div.
CHC	Carpenter Chemical Co.	FOR	Formosa Plastics Corp. - U.S.A.
CHP	C. H. Patrick & Co., Inc.	FRE	Freeman Chemical Corp.
CJO	C. J. Osborn Chemicals, Inc.	FRP	Akzo Coatings, Inc.
CKC	Cook Composites and Polymers Company		
CLU	CL Industries, Inc.		

See note at end of table.

Section 8

Table 8-3—Continued

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.	JNS	S.C. Johnson & Son, Inc.
GAF	GAF Chemical Corp.	JOB	Jones-Blair
GE	General Electric Co.: Electromaterials Div. Specialty Chemical Group	KMP	Kelly-Moore Paint Co., Inc.
GGC	Georgia-Gulf Corp.: PVC Compound Div. Plaquemine Div.	KTP	Kama Corp.
GGI	Grow Group, Inc.	KYS	Keysor Century Corp.
GLC	General Latex & Chemical Corp.	LC	Lord Corp., Chemical Products Group
GLD	Glidden Co.	LIC	Lilly Industrial Coatings, Inc.
GP	Georgia-Pacific Corp.: Resins Operations	LII	Lawter International, Inc.
GRD	W. R. Grace & Co., Organic Chemicals Div.,	LYP	Lyondell Petrochemical Co.
GRG	P. D. George Co.	MCA	Masonite Corp., Alpine Resin Div.
GRV	Guardsman Chemicals, Inc.	MID	Dexter Corp., Dexter Specialty Coatings
GYR	Goodyear Tire & Rubber Co.	MIL	Milliken & Co., Milliken Chemical Co.
HCF	Cape Industries	MMM	Minnesota Mining & Manufacturing Co.
HCL	Hoechst Celanese Corp.: Bayport Works Engineering Plastics Div. Fibers Industrial Div. Sou-Tex Works	MNP	Mcwhorther, Inc.
HER	Heresite Protective Coatings, Inc.	MOB	Mobay Chemical Corp., Pittsburgh Div.
HIM	Himont U.S.A., Inc. Occidental Chemical Corp.:	MON	Monsanto Co.
HKD	Durez Div.	MRT	Morton International Inc., Morton Chemical Div.
HKP	Polymers and Plastics Div.	NCI	Union Camp Corp.
HMN	Huntsman Chemical Corp.	NCJ	National Casein of New Jersey
HPC	Hercules, Inc.	NCP	Niles Chemical Paint Co.
HVG	Ametek, Inc., Haveg Div.	NES	Ruetgers-Nease Chemical Co.
HXL	Hexcel Corp., Hexcel Chemical Products Dexter Corp.:	NEV	Neville Chemical Co.
HYA	Dexter Adhesives and Structural Material Div.	NSC	National Starch & Chemical Corp.
HYC	Dexter Electronic Materials Div.	NTC	National Casein Co.
ICF	BASF Corp., Coating and Colorants	OBC	O'Brien Corp.
ICI	ICI Americas: Film Group Div. Resin Div. Specialty Chemical Div.	OCF	Owens-Corning Fiberglas Corp.
IMI	Insulating Materials, Inc.	OMC	Olin Corp.
INP	Synair Corp.	PAS	Atochem North America, Inc.
IOV	Akzo/lovite, Inc.	PDI	Pheips Dodge Industries, Inc., Phelps Dodge Magnet Wire Co. Div.
IPC	Interplastic Corp.	PEL	Pelron Corp.
IRI	Stuart-Ironsidcs, Inc.	PKL	Plaskolite, Inc.
ISP	Indspec Chemical Corp.	PLC	Phillips 66 Co.
		PLR	Polysar, Inc., Plastics Div.
		PLS	Plastics Engineering Co.
		PMC	Plastics Manufacturing Co.
		PPG	PPG Industries, Inc.
		PPL	Pioneer Plastics Corp.
		PRA	Para-Chem Southern, Inc.
		PRC	Products Research & Chemical Corp.
		PRT	Pratt & Lambert, Inc.
		PSG	PMC Specialites Group
		PSL	Plaslok Corp.
		PST	Perstorp Compounds, Inc.
		PYI	Morton International, Inc., Morton Chemical Div.
		QCP	Quaker Chemical Corp.
		QUN	K. J. Quinn & Co., Inc.

See footnotes at end of table.

Table 8-3—Continued

Plastics and resin materials: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
RAS	Surface Coatings, Inc.	SOR	MW Manufacturers, Inc., Southern Resin Div.
RCD	Polysar, Inc.	SPC	Insilco Corp., Sinclair Paint Co. Div.
RCI	Reichhold Chemicals, Inc.	SPD	General Electric Co., Silicone Products Dept.
RDA	Rhone-Poulenc, Inc.	SPL	Spaulding Composites Co., Inc.
REL	Akzo Coatings, Inc.	SPO	Ameripol Synpol Co. Div. of Uniroyal Goodrich Tire Co.
RH	Rohm & Haas Co.	SQA	Sequa Chemicals, Inc.
RSN	Atochem, Inc., Polymers Div.	SRY	Synray Corp.
RTC	Mount Vernon Mills, Inc.	SYL	Arizona Chemical Co.
RUO	Ruco Polymer Corp.	SYT	Synthron, Inc.
S	Sandoz Chemicals Corp., Color and Chemicals Div.	TCC	Sybron Chemicals, Inc.
SAC	Southeastern Adhesives Co.	TNA	Ethyl Corp.
SAR	Esschem, Inc.	TXS	Scott Polymers, Inc.
SCN	Schenectady Chemicals, Inc.	UCC	Union Carbide Corp., Industrial Chemical Div.
SCP	Henkel Corp.	UNO	United-Erie, Inc.
SHC	Shell Chemical Co.	UOC	Union Oil Co. of California
SHT	Shintech, Inc.	USI	Quantum Chemical Corp., USI Division
SHX	Sherex Chemical Co.	USM	Emhart Corp., Bostik Div.
SIC	BP Chemicals, Inc., Silmar Div.	USR	Uniroyal, Chemical Co., Inc.
SIF	BP Chemicals, Inc., Filon Div.	VSP	Valspar Corporation
SKP	Shakespeare Co. Monofilament Div.	VST	Vista Chemical Co.
SLC	Soluol Chem Co., Inc.	VSV	Valentine Sugars, Inc.
SLT	Soltex Polymer Corp.	VYN	Vygen, Inc.
SM	Mobil Oil Corp.: Mobil Chemical Co.: Chemical Products Div. Petrochemicals Div. Polystyrene Business Group	WM	Inolex Chemical Co.
SMO	Smooth-On, Inc.	WPG	West Point-Pepperell, Inc., Griffitex Chemical Co. Sub.
SOC	Chevron Corp., Chevron Chemical Co.	WRD	Weyerhaeuser Co.
		WVA	Westvaco Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 9 Rubber-Processing Chemicals

Rubber-processing chemicals are organic compounds that are added to natural and synthetic rubber to give them qualities necessary for their conversion into finished rubber goods. In this report, statistics are given for cyclic and acyclic compounds by use--such as accelerators, antioxidants, and vulcanizing agents. Data on production and sales of rubber-processing chemicals in 1989 are given in table 9-1. Data on production of rubber-processing chemicals during 1985-89 are given in figure 9-1.

Production of rubber-processing chemicals as a group in 1990 amounted to 179 million kilograms, or 2 percent more than the 176 million kilograms produced in 1989. Sales of rubber-processing chemicals in 1990 amounted to 136 million kilograms, valued at \$458 million, compared with 129 million kilograms, valued at \$474 million, in 1989.

The production of cyclic rubber-processing chemicals in 1990 amounted to 138 million kilograms, or 11 percent less than the 155 million kilograms produced in 1989. Sales of cyclic rubber-processing chemicals in 1990 totaled 104 million kilograms, valued at \$413 million, compared with 109 million

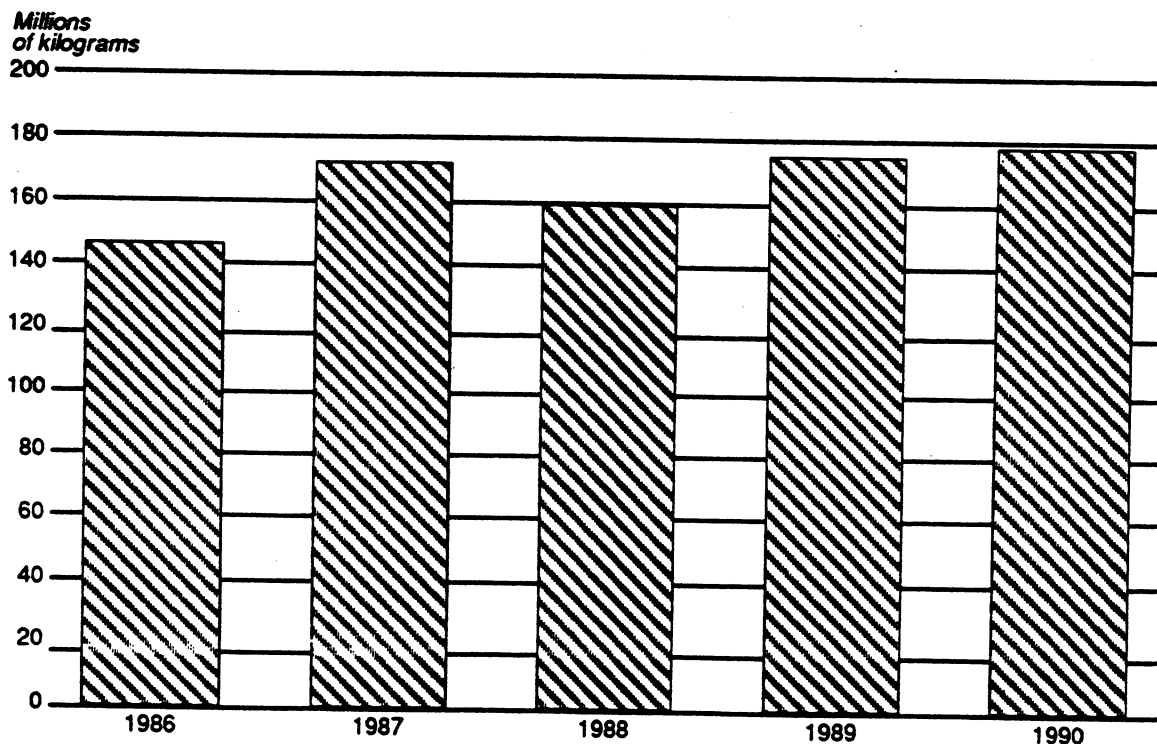
kilograms, valued at \$430 million, in 1989. Of the total production of cyclic rubber-processing chemicals in 1990, antioxidants, antiozonants, and stabilizers accounted for 69 percent, and accelerators, activators, and vulcanizing agents for 29 percent. Production of antioxidants, antiozonants, and stabilizers, which amounted to 96 million kilograms in 1990, included 59 million kilograms of amino compounds and 37 million kilograms of phenolic and phosphite compounds. Sales of amino antioxidants, antiozonants, and stabilizers in 1990 amounted to 73 million kilograms, valued at \$274 million; sales of phenolic and phosphite compounds totalled 26 million kilograms, valued at \$91 million.

Production of acyclic rubber-processing chemicals in 1990 amounted to 40 million kilograms, or 93 percent more than the 21 million kilograms produced in 1989. Sales in 1990 totaled 32 million kilograms, valued at \$44 million, compared with 20 million kilograms, valued at \$43 million, in 1989.

Table 9-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 9-3.

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Figure 9-1
Rubber-processing chemicals: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 9-1
Rubber-processing chemicals: U.S. production and sales, 1990

Rubber-processing chemicals	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand Total	178,607	136,411	457,652	\$3.35
Cyclic				
Total	138,426	104,280	413,253	3.96
Accelerators, activators, and vulcanizing agents total				
	39,476	27,381	108,120	3.95
Thiazole derivatives, total	37,690	25,445	91,020	3.58
N-tert-Butyl-2-benzothiazolesulfenamide	10,257	9,415	38,628	4.10
2,2'-Dithiobis[benzothiazole]	5,585	5,500	14,252	2.59
All other thiazole derivatives	21,848	10,530	38,140	3.62
All other accelerators, activators, and vulcanizing agents ^{2,3}	1,786	1,936	17,100	13.72
Antioxidants, antiozonants, and stabilizers, total				
	96,043	72,851	274,695	3.77
Amino compounds, total	59,375	46,557	183,673	3.95
Substituted p-phenylenediamines	36,741	26,600	123,073	4.63
All other amino compounds ⁴	22,634	19,957	60,600	3.34
Phenolic and phosphite compounds, total ⁵	36,668	26,294	91,022	3.46
Polyphenolics	3,281	2,529	18,756	7.42
All other phenolic and phosphite compounds	33,387	23,765	72,266	3.04
All other cyclic rubber-processing chemicals ⁶	2,907	4,048	30,438	7.52
Acyclic				
Total	40,181	32,131	44,399	1.38

¹ Calculated from unrounded figures.

² Includes aldehyde-amine reaction products, dithiocarbamates, and other accelerators, activators, and vulcanizing agents.

³ Data on dithiocarbamates included in this table are for materials used chiefly in the processing of natural and synthetic rubber. Data on dithiocarbamates, which are used chiefly as fungicides, are included in the section on "Pesticides and Related Products."

⁴ Includes aldehyde- and acetone-amine reaction products and other amines.

⁵ Also includes other antioxidants, antiozonants, and stabilizers.

⁶ Includes blowing agents and other cyclic rubber-processing chemicals.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 9-2
Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Rubber-processing chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 9-3)</i>
Cyclic:		
Accelerators, activators, and vulcanizing agents:		
Aldehyde-amine reaction products:		
Heptaldehyde-aniline condensate	No	USR.
Triethyltrimethylenetriamine	No	USR.
All other aldehyde-amine reaction products, cyclic ..	No	DUP.
Dithiocarbamic acid derivatives:		
Dibenzylidithiocarbamic acid, sodium salt	No	USR.
Dibenzylidithiocarbamic acid, zinc salt	No	USR.
Guanidines:		
Dicatechol borate, di-o-tolylguanidine salt	No	VNC.
All other guanidines, cyclic	No	VNC.
Thiazole derivatives:		
N-tert-Butyl-2-benzothiazolesulfenamide	Yes	BFG, MON, USR.
N-Cyclohexyl-2-benzothiazolesulfenamide	No	MON, USR.
2,2'-Dithiobis[benzothiazole]	Yes	BFG, MON, USR.
2-Mercaptobenzothiazole	No	MON, USR.
2-Mercaptobenzothiazole, copper salt	No	ACY.
2-Mercaptobenzothiazole, zinc salt	No	USR, VNC.
N-Morpholinyl-2-benzothiazolyl disulfide	No	GYR.
N-Oxydiethylene-2-benzothiazolesulfenamide	No	BFG, USR.
N-Oxydiethylenethiocarbamyl-N'-oxydiethylenesulfenamide	No	BFG.
All other thiazole derivatives, cyclic	No	(²).
All other cyclic accelerators, activators, and vulcanizing agents:		
Bis(morpholinethiocarbamoyl) disulfide	No	ACY.
Dibenzylamine	No	HXL.
1,3-Dihydro-4(or 5)-methyl-2H-benzimidazole-2-thione	No	VNC.
Dimethylammonium hydrogen isophthalate	No	VNC.
Di-N,N'-pentamethylenethiuram tetrasulfide	No	VNC.
4,4'-Dithiodimorpholine	No	MON.
2-Mercaptotoluimidazole, zinc salt	No	VNC.
m-Phenylenebismaleimide	No	DUP.
All other accelerators, activators, and vulcanizing agents, cyclic	No	DUP, USR.
Antioxidants, antiozonants, and stabilizers:		
Amino antioxidants, antiozonants, and stabilizers:		
Aldehyde- and acetone-amine reaction products:		
Diphenylamine-acetone aldehyde	No	USR.
Diphenylamine-acetone condensate	No	BFG, USR.
All other aldehyde and acetone-amine reaction products, cyclic	No	USR.
Substituted p-phenylenediamines:		
Alkylaryl-p-phenylenediamines	No	MON.
N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	No	MON, UPM.
N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine	No	UPM.
N,N'-Bis(1-methylheptyl)-p-phenylenediamine ..	No	UPM.
N-Cyclohexyl-N'-phenyl-p-phenylenediamine ...	No	USR.
Diarylenediamines, mixed	No	GYR.
N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine	No	UPM, USR.

See footnotes at end of table.

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Table 9-2—Continued
Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Rubber-processing chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 9-3)</i>
Cyclic-Continued		
Antioxidants, antiozonants, and stabilizers-Continued		
Amino antioxidants, antiozonants, and stabilizers-Continued		
Substituted p-phenylenediamines:		
N,N'-Di-2-naphthyl-p-phenylenediamine	No	BFG.
N,N'-Diphenyl-p-phenylenediamine	No	BFG.
N-Isopropyl-N'-phenyl-p-phenylenediamine	No	USR.
N-(1-Methylheptyl)-N'-phenyl-p-phenylenediamine	No	UPM.
N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine	No	USR.
All other p-Phenylenediamines, substituted	No	KPI, USR.
Other amines:		
p-Anilinophenol	No	BFG.
1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline (Ethoxyquin)	No	USR.
1,2-Dihydro-2,2,4-trimethylquinoline	No	BFG, MON.
Nonyldiphenylamine mixture (Mono-, di-, and tri-)	No	USR.
Octyldiphenylamine	No	BFG, USR.
Octyldiphenylamine, alkylated	No	BFG.
p-(p-Toluenesulfonamido)diphenylamine	No	USR.
All other amino antioxidants, antiozonants, and stabilizers	No	FER.
Phenolic and phosphite antioxidants and stabilizers:		
Phosphites:		
Alkylaryl phosphites mixed	No	GE.
Nonylphenyl phosphites, mixed	No	GE, USR.
Polymeric phosphites	No	GE.
Polyphenolic phosphites, polyalkylated	No	BFG, GE.
Triaryl phosphites	No	GE.
Polyphenolics (including bisphenols):		
Bisphenol, hindered	No	USR.
4,4'-Butylidenebis(6-tert-butyl-m-cresol)	No	MON.
2,5-Di-sec-butyldecylhydroquinone	No	USR.
2,5-Di-(1,1-dimethylpropyl)hydroquinone	No	MON.
2,2'-Methylenebis(6-tert-butyl-p-cresol)	No	ACY, FER.
2,2'-Methylenebis(6-tert-butyl-4-ethylphenol)	No	ACY.
1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane	No	ICI.
All other phenolic antioxidants and stabilizers:		
Phenol, alkylated	No	ACY, BFG, GYR, NEV.
Phenol, hindered	No	FER, GYR, USR.
Phenol, styrenated, mixtures	No	NEV, USR.
N-Stearoyl-p-aminophenol	No	HXL.
All other phenolic antioxidants,	No	USR.
Blowing agents:		
p,p'-Oxybis(benzenesulfonhydrazide)	No	USR.
5-Phenyltetrazole	No	OMC.
p-Toluenesulfonylsemicarbazide	No	USR.
All other cyclic rubber-processing chemicals:		
p-tert-Amylphenol sulfide (Tackifier)	No	PAS.
N-(Cyclohexylthio)phthalimide	No	MON.
Diphenyl-4,4'-diphenylmethylenedicarbamate	No	USR.
All other rubber-processing chemicals, cyclic	No	FER.

See footnotes at end of table.

Table 9-2-Continued
Rubber-processing chemicals for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Rubber-processing chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 9-3)</i>
Acyclic		
Accelerators, activators, and vulcanizing agents:		
Dithiocarbamic acid derivatives:		
Dialkyldithiocarbamic acid derivative	No	VNC, (2).
Dibutyldithiocarbamic acid, nickel salt	No	USR, VNC.
Dibutyldithiocarbamic acid, sodium salt	No	DUP, USR, VNC.
Dibutyldithiocarbamic acid, zinc salt	No	VNC.
Diethyldithiocarbamic acid, cadmium salt and bis(diethylthiocarbamoyl)disulfide, mixture	No	VNC.
Diethyldithiocarbamic acid, tellurium salt	No	VNC.
Diethyldithiocarbamic acid, zinc salt	No	VNC.
Dimethyldithiocarbamic acid, bismuth salt	No	VNC.
Dimethyldithiocarbamic acid, copper salt	No	VNC.
Dimethyldithiocarbamic acid, lead salt	No	VNC.
Dimethyldithiocarbamic acid, selenium salt	No	VNC.
Dimethyldithiocarbamic acid, zinc salt	No	VNC.
All other dithiocarbamic acid derivatives, acyclic ..	No	(2).
Thiurams:		
Bis(dibutylthiocarbamoyl) disulfide	No	VNC, (2).
Xanthates and sulfides:		
Di-n-butylxantho disulfide	No	USR.
Zinc isopropyl xanthate	No	VNC.
All other xanthates and sulfides, acyclic	No	USR.
All other acyclic accelerators, activators, and vulcanizing agents:		
All other accelerators, activators, and vulcanizing agents, acyclic	No	DUP, (2).
Polymerization regulators:		
n-Dodecyl mercaptans	No	PAS, PLC.
tert-Nonyl mercaptan	No	PAS, PLC.
n-Octyl mercaptan	No	PAS, PLC.
All other polymerization regulators, acyclic	No	PLC.
Shortstops:		
Dimethyldithiocarbamic acid, potassium salt	No	USR.
Dimethyldithiocarbamic acid, sodium salt	No	ALC, USR, VCC, VNC.
All other acyclic rubber-processing chemicals:		
Cobalt borate neodecanoate complexes	No	KCH.
Waxes and paraffinic products	No	DUP.
Zinc laurate (Activator, physical property improver, and processing auxiliary)	No	USR.
All other rubber-processing chemicals, acyclic	No	VNC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 9

Table 9-3

Rubber-processing chemicals: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACY	American Cyanamid Co.	ICI	ICI Americas, Inc., Specialty Chemicals Div.
ALC	Alco Chemical Corp.	KCH	Manchem, Inc.
BFG	B.F. Goodrich Co., B.F. Goodrich Chemical Group	KPI	Kenrich Petrochemicals, Inc.
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. Polymer Products Dept.	MON	Monsanto Co.
FER	Ferro Corp., Bedford Chemical Div.	NEV	Neville Chemical Co.
GE	General Electric Co., Speciality Chemical Group	OMC	Olin Corp.
GYR	Goodyear Tire & Rubber Co.	PAS	Atochem North America, Inc.
HXL	Hexcel Corp., Hexcel Chemical Products	PLC	Phillips 66 Co.
		UPM	UOP, Inc.
		USR	Uniroyal Chemical Co., Inc.
		VCC	Vinings Chemical Co.
		VNC	Vanderbilt Chemical Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 10 Elastomers

Elastomers (synthetic rubber) are high polymeric materials with properties similar to those of natural rubber. The term "elastomers" as used in this report means substances, whether in bale, crumb, powder, latex, or other crude form, which can be vulcanized or similarly processed into a material that can be stretched to at least twice their original length; and, after having been so stretched and the stress removed, will return with force to approximately their original length. U.S. production and sales of elastomers in 1990 are shown in table 10-1.

Total U.S. production¹ of synthetic rubber in 1990 amounted to 2,233 million kilograms, an increase of 6.8 percent from that produced in 1989. The production of synthetic rubber increased irregularly from 1,851 million kilograms in 1986 to 2,233 million kilograms in 1990, or by 20.6 percent. (see figure 10-1). Total sales of elastomers in 1990 amounted 1,555 million kilograms, an increase of 11.5 percent from that sold in 1989.

¹ Until now urethane type elastomers have been included in the section VIII "Plastics and Resin Materials." The Commission has now begun reporting statistics for urethane elastomers in two sections, section VIII, plastics and resin materials, and section X, elastomers (synthetic rubber). Henceforth those polyurethane products classified as "thermoplastic" urethane elastomers will be reported in SOC section X; all other urethane elastomers will remain in SOC section VIII.

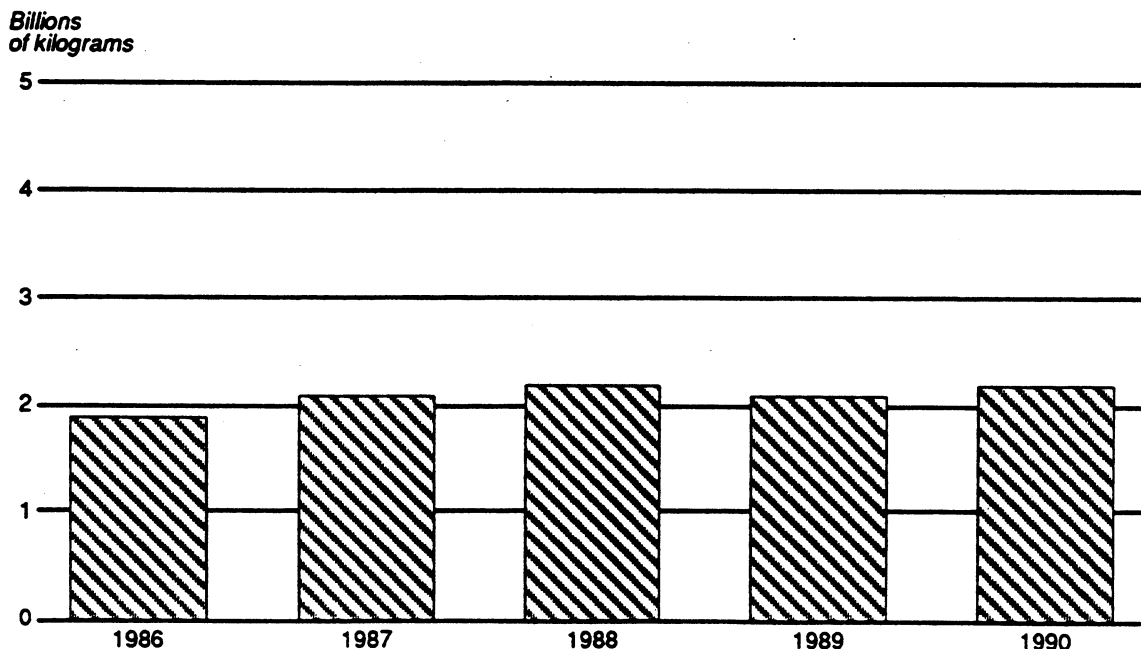
Styrene-butadiene rubber (SBR-type rubber) in 1990 continued to be the elastomer produced in the greatest quantity as it has been for more than 35 years. U.S. production of SBR-type rubber, including vinylpyridine sub-type, amounted to 900 million kilograms in 1990. Polybutadiene rubber, mainly solution-polymerized type, was produced domestically in 1990 in the next largest amount--349 million kilograms. Other principal types of synthetic elastomers for which U.S. production data are reported separately are ethylene-propylene rubber, production of which was 232 million kilograms in 1990; butadiene-acrylonitrile (nitrile or NBR-type) rubber, production of which was 58 million kilograms in 1990; and thermoplastic elastomers (a family of products), production of which was 257 million kilograms in 1990.

Sales of SBR-type rubber, including its vinylpyridine sub-type, by U.S. producers in 1990 amounted to 604 million kilograms. In 1990, sales of polybutadiene rubber amounted to 176 million kilograms, and those of ethylene-propylene rubber to 204 million kilograms. Sales of nitrile or NBR-type rubber amounted to 57 million kilograms, silicone type elastomer sales amounted to 68 million kilograms, and sales of thermoplastic elastomers amounted to 167 million kilograms in 1990.

Table 10-2 lists the products reported in this section and indicates the manufacture(s) of each by code. These codes are identified by company names in table 10-3.

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202-205-3362

Figure 10-1
Elastomers: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 10

Table 10-1

Elastomers (synthetic rubber):¹ U.S. production and sales, 1990

Elastomers	Production ² 1,000 kilograms	Sales		Average Unit value ³ Per kilogram
		Quantity ² 1,000 kilograms	Value 1,000 dollars	
Grand total	2,233,076	1,555,122	3,127,863	\$2.01
Butadiene-acrylonitrile type (nitrile) (NBR-type)	57,889	56,894	117,044	2.06
Ethylene-propylene type (EP-type)	232,336	204,101	415,460	2.04
Polybutadiene type (BR-type)	349,199	175,575	196,262	1.12
Silicone (Q) type elastomers	94,698	68,412	508,308	7.43
Styrene-butadiene type (SBR-type) ⁴	900,175	604,301	741,988	1.23
Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, thermoplastic polyurethane elastomers, and co-polyesters)	256,787	166,995	464,322	2.78
All other elastomers ⁵	341,992	278,844	684,479	2.45

¹ The term "elastomers" is defined as substances in bale, crumb, powder, latex, and other crude forms which can be vulcanized or similarly processed into materials that can be stretched at 68° F. to at least twice their original length and, after having been stretched and the stress removed, will return with force to approximately their original length.

² Includes oil content of oil-extended elastomers.

³ Calculated from unrounded figures.

⁴ About three-fourths of SBR elastomer production is the dry type of product. The data includes the styrene-butadiene vinylpyridine type.

⁵ Includes butyl, chlorinated natural rubber, chlorosulfonated polyethylene, epichlorohydrin, fluoroelastomers, polyacrylic ester type, polychloroprene (neoprene) type, polyisoprenes (including cyclorubber), polysulfide, and miscellaneous elastomers.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 10-2
Elastomers for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Elastomers</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 10-3)</i>
Cyclic elastomers:		
Styrene-butadiene (S or SBR) type:	Yes	
Styrene-butadiene, dry type	No	BFG, CPY, FRS, GYR, SPO.
Styrene-butadiene, latex type	No	BAS, BFG, GNT, GRD, GYR, MMM.
Styrene-butadiene-vinylpyridine	No	FRS, GNT, GYR.
Styrene-butadiene type elastomers, other	No	ASY, LC.
Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, thermoplastic polyurethanes elastomers, and copolyester)	Yes	BAS, BFG, DOW, ENJ, FRS, GEP, HCL, MON, SHC, TNA.
Acyclic elastomers:		
Butadiene-acrylonitrile type (nitrile) (NBR-type)	Yes	BFG, CPY, GYR, RCI, USR.
Butyl (isobutylene-isoprene) type	No	ENJ.
Chlorinated rubber, natural and synthetic	No	DOW.
Chlorosulfonated polyethylene (CSM) type	No	DUP.
Ethylene-propylene (EP) type	Yes	CPY, DUP, ENJ, USR.
Fluorelastomers (CFM, FKM, FFKM) type	No	DUP, MMM.
Polyacrylic (ACM) type elastomers	No	ACY.
Polybutadiene acrylic acid acrylonitrile terpolymer (PBAN)	No	ASY.
Polybutadiene (br) type:	Yes	
Polybutadiene, emulsion-polymerized	No	GNT, GYR, RCI, SPO.
Polybutadiene, solution-polymerized	No	ASY, FRS, GYR, PLC.
Polychloroprene (Neoprene) (CR) type	No	DUP, LC.
Polyisoprene (IR) type	No	GYR.
Polysulfide (T) type elastomers	No	MRT.
Silicone (Q) type elastomers	Yes	DCC, DUP, MRT, SPD, SWS.
All other acyclic elastomers	No	(²).

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 10-3

Elastomers (synthetic rubber): Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACY	American Cyanamid Co.	HCL	Hoechst Celanese Corp., Engineering Plastics Div.
ASY	American Synthetic Rubber Corp.	LC	Lord Corp., Chemical Products Group
BAS	BASF Corp.	MMM	Minnesota Mining and Manufacturing Co.
BFG	B. F. Goodrich Co.	MON	Monsanto Co.
CPY	Copolymer Rubber & Chemical Corp.	MRT	Morton International, Inc., Morton Chemical Div.
DCC	Dow Corning Corp.	PLC	Phillips 66 Co.
DOW	Dow Chemical Co.	RCI	Reichold Chemicals, Inc.
DUP	E. I. duPont de Nemours & Co., Inc., Polymer Products Dept.	SHC	Shell Chemical Co.
ENJ	Exxon Chemical Americas	SPD	General Electric Co., Silicone Products Dept.
FRS	Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div.	SPO	Ameripol Synpol Co., Div. of Uniroyal Goodrich Tire Co.
GEP	General Electric Co., Plastic Div.	SWS	Wacker Silicones Corp.
GNT	Gencorp Polymers Products	TNA	Ethyl Corp
GRD	W. R. Grace & Co., Organic Chemicals Div. Polymers & Chemical Div.	USR	Uniroyal Chemical Co., Inc.
GYR	Goodyear Tire & Rubber Co.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 11 Plasticizers

Plasticizers are organic chemicals that are added to synthetic plastics and resin materials to (1) improve workability during fabrication, (2) extend or modify the natural properties of these materials, or (3) develop new improved properties not present in the original material. Table 11-1 presents statistics on U.S. production and sales of plasticizers in as great detail as is possible without revealing the operations of individual producers.

U.S. production of plasticizers totaled 891 million kilograms in 1990, a decrease of 8.7 percent from the 976 million kilograms reported for 1989. The trend of production of these products is shown in the graph in figure 11-1. Sales of plasticizers totaled 827 million kilograms, valued at \$967 million, in 1990 compared with 837 million kilograms, valued at \$1,046 million, in 1989.

Production of cyclic plasticizers in 1990, which consisted chiefly of the esters of phthalic anhydride, phosphoric acid, and trimellitic acid, amounted to 640

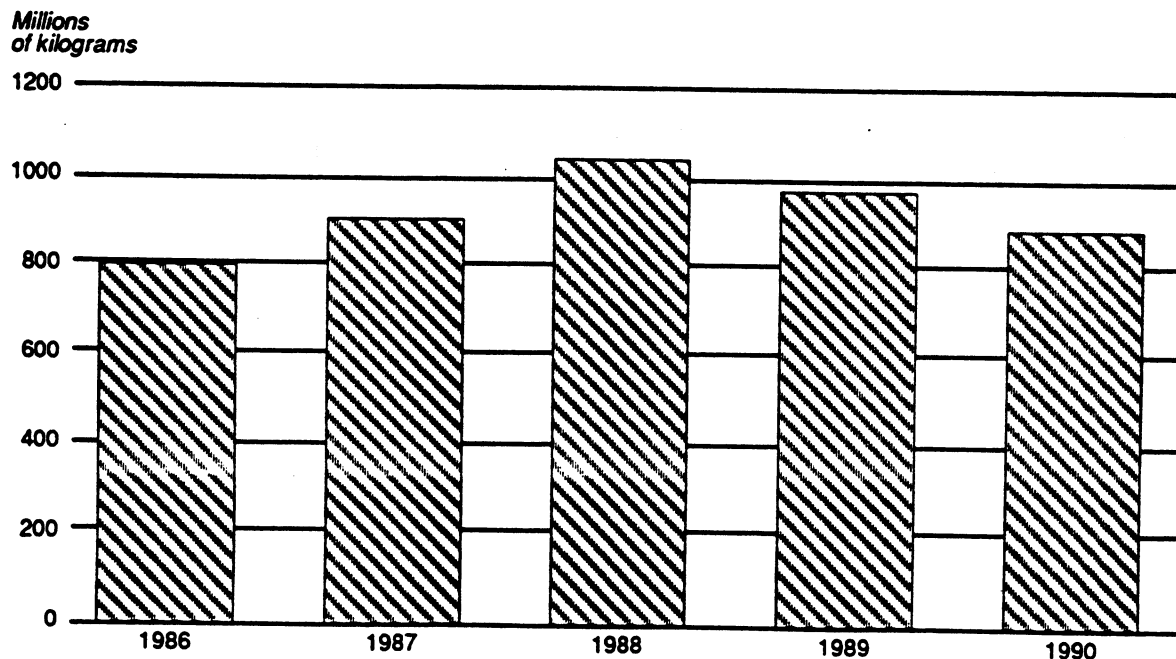
million kilograms, an decrease of 12.9 percent from the 735 million kilograms reported for 1989. Sales of cyclic plasticizers in 1990 totaled 644 million kilograms, valued at \$665 million, compared with 634 million kilograms, valued at \$704 million, in 1989. The most important cyclic plasticizers were the dioctyl phthalates, with production of 141 million pounds, in 1990.

Production of acyclic plasticizers in 1990 totaled 251 million kilograms, an increase of 3.7 percent from the 242 million kilograms reported for 1989. Sales of acyclic plasticizers totaled 182 million kilograms, valued at \$301 million, in 1990, compared with 202 million kilograms, valued at \$342 million, in 1989. Adipic acid esters were the most important acyclic plasticizers in 1990 with production of 87 million kilograms.

Table 11-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 11-3.

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202-205-3351

Figure 11-1
Plasticizers: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 11-1
Plasticizers: U.S. production and sales, 1990

Plasticizers	Production ¹	Sales		Average Unit value ²
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	890,718	826,527	966,517	\$1.17
Benzenoid ³	754,231	716,678	795,127	1.11
Nonbenzenoid	136,487	109,849	171,390	1.56
Cyclic				
Total	640,099	644,104	665,385	1.03
Phthalic anhydride esters, total	573,892	572,137	544,485	.95
Dibutyl phthalates (including diisobutyl phthalates)	7,917	7,714	7,936	1.03
Diisononyl phthalate	93,575	93,911	78,011	.83
Dimethyl phthalate (including dimethyl isophthalate)	5,679	5,194	5,830	1.12
Dioctyl phthalates ⁴	140,649	149,805	119,159	.80
All other phthalic anhydride esters	326,072	315,513	333,549	1.06
Trimellitic acid esters	22,942	28,631	44,524	1.56
All other cyclic plasticizers ⁵	43,265	43,336	76,376	1.76
Acyclic				
Total	250,619	182,423	301,132	1.65
Adipic acid esters, total	87,020	46,683	79,371	1.70
Di(2-ethylhexyl) adipate	24,228	24,587	30,498	1.24
Diisodecyl adipate	1,494	732	1,211	1.65
All other adipic acid esters	61,298	21,364	47,662	2.23
Complex linear polyesters and polymeric plasticizers	52,904	28,820	59,484	2.06
Epoxidized esters	47,456	46,518	54,132	1.16
Butyl oleate	805	775	1,149	1.48
Sebacic acid esters, total	3,139	2,902	14,995	5.17
Dibutyl sebacate	259	268	1,008	3.76
Sebacic acid esters, all other	2,880	2,634	13,987	5.31
Stearic acid esters, total	5,093	4,850	8,632	1.78
Isobutyl stearate	3,444	3,406	4,338	1.27
All other stearic acid esters	1,649	1,444	4,294	2.97
All other acyclic plasticizers ⁶	54,202	51,875	83,369	1.61

See footnotes at end of table.

Table 11-1—Continued

Plasticizers: U.S. production and sales, 1990

¹ Includes data for compounds used principally (but not exclusively) as primary plasticizers. Does not include clearly defined extenders or secondary plasticizers.

² Calculated from unrounded figures.

³ Includes benzenoid products as defined in part 1, schedule 4, of the Tariff Schedules of the United States Annotated.

⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (including Synthetic Plastics and Resin Materials), 1989*, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustments, and rounding.

⁵ Includes data for cresyl diphenyl phosphate, dibutyl phenyl phosphate, diphenyl octyl phosphate, tricresyl phosphate, triphenyl phosphate, and other cyclic phosphoric acid esters, glycol dibenzoates, toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

⁶ Includes data for azelaic acid esters, citric and acetylcitric acid esters, myristic acid esters, pelargonic acid esters, ricinoleic and acetylricinoleic acid esters, glyceryl and glycol esters, and other acyclic plasticizers.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

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Table 11-2
Plasticizers for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plasticizers</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 11-3)</i>
Cyclic plasticizers:		
N-n-butyl benzenesulfonamide	No	UTC.
Diethylene glycol dibenzoate	No	KLM, VEL.
Dipropanediol dibenzoate (Dipropylene glycol dibenzoate)	No	KLM, VEL.
N-Ethyl-p-toluenesulfonamide	No	UTC.
Phosphoric acid esters:		
Isodecyl diphenyl phosphate	No	MON.
Tricresyl phosphate	No	FMC.
Triphenyl phosphate	No	FMC, MON.
All other phosphoric acid esters,	No	FMC, MON, SCP, SM.
Phthalic anhydride esters:		
Bis(2-ethylhexyl)terephthalate	No	EKT.
Butyl benzyl phthalate	No	DKA, MON.
Butyl octyl phthalates	No	ART.
Di(2-butoxyethyl) phthalate	No	HAL.
Dibutyl phthalate (including diisobutyl phthalate)	Yes	ART, BAS, EKT, NOD, UTC, WTH.
Dicyclohexyl phthalate	No	UTC, (²).
Diethyl isophthalate	No	(²).
Diethyl phthalate	No	CMB, EKT, MRF.
Di-(n-heptyl-n-nonyl) phthalate	No	BAS, SC.
Di-(n-heptyl-n-nonyl) undecyl phthalate	No	BAS, ENJ, SC.
Diisodecyl phthalate	No	ART, BAS, ENJ, HCC, MON, NOD, TEK.
Diisononyl phthalate	Yes	ART, BAS, ENJ, TEK.
Dimethyl isophthalate	No	UTC, (²).
Dimethyl phthalate	No	EKT, MRF, UTC.
Dinonyl phthalate	No	ENJ, MRF, SC, TEK.
Dinonyl undecyl phthalate	No	TEK.
Di-tridecyl phthalate	No	ART, ENJ, HCC, NOD, SM, TEK.
Diundecyl phthalate	No	ART, BAS, SC, TEK.
Hexyl n-decyl phthalate	No	VST.
n-Octyl n-decyl phthalate	No	ART, VST.
Diocetyl phthalates:		
Di(2-ethylhexyl) phthalate	No	ART, BAS, EKT, ENJ, TEK.
Diiso-octyl phthalate	No	ENJ, HAL, HCC, NOD, TEK.
Di-n-octyl phthalate	No	EK.
All other dioctyl phthalates	No	BAS, HCC, WTH.
Glycol phthalate esters:		
Butyl phthalyl butyl glycolate	No	(²).
All other glycol phthalate esters	No	HAL.
All other phthalic anhydride esters	Yes	BAS, MON, NOD, SC, TEK, TNA, WTC.
Polyethylene glycol dibenzoate	No	VEL.
Tetrahydrofurfuryl oleate	No	WTC.
Toluenesulfonamide o-, p-mixtures	No	UTC.
Trimellitic acid esters:		
Tri(2-ethylhexyl) trimellitate	No	BAS, ENJ, TEK.
Tri-n-hexyltrimellitate	No	(²).
Triisodecyl trimellitate	No	ENJ, WM.
Triisononyl trimellitate	No	ART, TEK.
Triiso-octyl trimellitate	No	ENJ, HAL, NOD, TEK.
Trimethyl trimellitate	No	FER.
Tri-n-octyl n-decyl trimellitate	No	HAL.
Triocetyl trimellitate	No	ART, EKT, HAL.
All other trimellitic acid esters	No	AQU, ART, BAS, TEK, (²), (²).
Cyclic plasticizers, all other	Yes	BOE, NEV, NOD, TNA, UTC.

See footnotes at end of table.

Table 11-2—Continued
Plasticizers for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Plasticizers	Separate statistics ¹	Manufacturers' identification codes (according to list in table 11-3)
Acyclic plasticizers:		
Adipic acid esters:	Yes	
Butylene glycol adipate	No	HAL.
Di(2-(2-butoxyethoxy)ethyl) adipate	No	HAL, MON.
Dibutoxyethyl adipate	No	EKT, HAL.
Di(2-ethylhexyl) adipate	Yes	ART, BAS, CAS, EKT, ENJ, HAL, MON, NOD, TEK, WTH.
Di-n-hexyl adipate	No	EKT, MON.
Diisobutyl adipate	No	HAL, WM, WTC. (2).
Diisodecyl adipate	Yes	HAL, HCC, NOD, QCP.
Diisononyl adipate	No	ART, TEK.
Diiso-octyl adipate	No	HAL, HCC, SM.
Diisopropyl adipate	No	VND, WTH.
Dimethyl adipate	No	MRF. (2).
Di-n-octyl adipate	No	WTH.
Di-tridecyl adipate	No	NOD, WM.
Ethylene glycol adipate	No	HAL.
Neopentyl glycol adipate	No	HAL.
All others adipic acid esters	Yes	CMB, HAL, PCI, SCP, SM, WTC.
Azelaic acid esters:		
Di(2-ethylhexyl) azelate	No	HAL, SCP, TEK.
All other azelaic acid esters	No	SCP.
Citric and acetylcitric acid esters:		
Tributyl acetylcitrate	No	UTC.
Tributyl citrate	No	MRF.
Triethyl acetylcitrate	No	(2).
Triethyl citrate	No	(2).
All other citric and acetylcitric acid esters	No	CCL, MRF. (2), (2).
Complex linear polyesters and polymeric plasticizers:	Yes	
Adipic acid type complex linear polyesters and polymeric plasticizers	No	CMB, HAL, SCP, TEK, WTC, WTH.
All other complex linear polyesters and polymeric plasticizers	No	EKX, HPC, SBC, SCP, SM, TEK, VND, WTC.
Epoxidized esters:	Yes	
Epoxidized linseed oils	No	UCC, WTC.
Epoxidized pentaerythritol tetraphthalate	No	UCC.
Epoxidized soya oils	No	FER, FMB, TEK, UCC, WTC.
2-Ethylhexyl epoxytallates	No	UCC, WTC.
All other epoxidized esters	No	UCC.
Glyceryl tripropionate	No	EKT.
Glutaric acid esters:		
Neopentyl glycol glutarate	No	HAL.
All other glutaric acid esters	No	HAL.
Lauric acid esters:		
All other lauric acid esters	No	HAL.
Myristic acid esters:		
Isopropyl myristate	No	WM, WTH.
All other myristic acid esters	No	WTH.
Octadecylic acid esters:		
2-Butoxyethyl oleate	No	HAL.
Oleic acid esters:		
Butyl oleate	Yes	CHL, HAL, SCP, WTC, WTH.
Decyl oleate	No	SBC, VND.
2-Ethylhexyl oleate	No	HAL.
Glyceryl trioleate (Triolein)	No	SCP, WTC.
Isobutyl oleate	No	SBC.

See footnotes at end of table.

Table 11-2—Continued
Plasticizers for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Plasticizers</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 11-3)</i>
Acyclic plasticizers:		
Oleic acid esters:		
Iso-octyl oleate	No	HAL.
Methyl oleate	No	SCP, WTC.
Oleyl oleate	No	CAS, SBC.
Propyl oleates:		
n-Propyl oleate	No	SCP.
All other oleic acid esters	No	HAL, SCP.
Palmitic acid esters:		
n-Butyl palmitate	No	EKT.
2-Ethylhexyl palmitate	No	VND, WM, WTH.
Isobutyl palmitate	No	WTH.
Isopropyl palmitate	No	CAS, WM, WTH.
Pelargonic acid esters:		
Glycol pelargonate	No	SCP.
Isodecyl pelargonate	No	SCP.
All other pelargonic acid esters	No	CAS, SBC, SM, WM.
Phosphoric acid esters:		
Tri(2-butoxyethyl) phosphate	No	FMC, MON, RDA.
Triethyl phosphate	No	EKT.
Trioctyl phosphate	No	FMC, RDA.
All other phosphoric acid esters	No	FMC.
Ricinoleic and acetylricinoleic acid esters:		
n-Butyl acetylricinoleate	No	CAS.
Butyl ricinoleate	No	CAS.
Glyceryl monoricinoleate	No	CAS, SM.
Glyceryl tri(acetylricinoleate)	No	CAS.
Methyl ricinoleate	No	CAS, SCP.
Propylene glycol monoricinoleate	No	CAS.
All other ricinoleic and acetylricinoleic acid esters	No	CAS.
Sebacic acid esters:		
Dibutyl sebacate	Yes	HAL, WM, (2), (2).
Di(2-ethylhexyl) sebacate	No	HAL, TEK, (2).
Diisopropyl sebacate	No	SBC, (2).
Dimethyl sebacate	No	(2), (2).
Propylene glycol sebacate	No	HAL.
All other sebacic acid esters	Yes	
Stearic acid esters:		
n-Butyl stearate	No	CHL, SCP, WM, WTC, WTH.
Diethylene glycol succinate	No	CMB.
2-Ethylhexyl stearate	No	CAS, HCL, WM.
Glyceryl triacetyl stearate	No	CAS.
Isobutyl stearate	Yes	SCP, WM, WTC, WTH.
Isopropyl stearate	No	CAS.
Myristyl stearate	No	VND.
Tridecyl stearate	No	WM.
All other stearic acid esters	Yes	SBC, VND, WM, WTC.
Sucrose acetate isobutyrate	No	EKT.
Tetraethylene glycol di(2-ethylhexanoate)	No	HAL, UCC, WM.
Triethylene glycol di(caprylate-caprate)	No	HAL, WM.
Triethylene glycol di(2-ethylbutyrate)	No	HAL.
Triethylene glycol di(2-ethylhexanoate)	No	EKT, HAL.
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	No	EKX.
All other acyclic plasticizers	No	ARZ, HCL, VND, WM.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 11-3

Plasticizers: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
AQU	Aqualon Co.	HPC	Hercules, Inc.
ART	Aristech Chemical Corp., Chemical Div.	KLM	Kalama Chemical, Inc.
ARZ	Arizona Chemical Co.	MON	Monsanto Co.
BAS	BASF Corp.	MRF	Morflex Chemical Co., Inc.
BOE	Boehme Filatex, Inc.	NEV	Neville Chemical Co.
CAS	CasChem, Inc.	NOD	Huls America, Inc.
CCL	Catawba-Charlab, Inc.	PCI	Piedmont Chemical Industries, Inc.
CHL	Chemol Co.	RDA	Rhone-Poulenc, Inc.
CMB	Cambridge Industries Co.	SBC	Scher Chemicals, Inc.
DKA	Mobay Synthetics Corporation	SC	Sterling Chemical, Inc.
EK	Eastman Kodak Co.:	SCP	Henkel Corp.
EKT	Tennessee Eastman Co. Div.	SM	Mobil Oil Corp. Chemical Products Div.
EKX	Texas Eastman Co. Div.	TEK	Teknor Apex Co.
ENJ	Exxon Chemical Americas	TNA	Ethyl Corp.
FER	Ferro Corp.:	UCC	Union Carbide Corp., Industrial Chemicals Div.
	Bedford Chemical Div.	UTC	Unitex Chemical Corp.
	Grant Chemical Div.	VEL	Velsicol Chemical Corp.
FMB	FMC Corp., Chemical Products Group	VND	Van Dyk, Div. of Mallinckrodt, Inc.
FMC	FMC Corp., Nitro Div.	VST	Vista Chemical Co.
HAL	C. P. Hall Co.	WM	Inolex Chemical Co.
HCC	Hatco Chemical Corp.	WTC	Witco Chemical Corp.
HCL	Hoechst Celanese Corp., Sou-Tex Works	WTH	Union Camp Corp., Chemical Division

Note.—Complete names, telephone number, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 12 Surface-Active Agents

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

The statistics for production and sales of surface-active agents (table 12-1) are grouped by ionic class and by chemical class and subclass. All quantities are reported in terms of 100-percent organic surface-active ingredients and thus exclude all inorganic salts, water, and other diluents. Sales statistics reflect sales of bulk surface-active agents only; sales of formulated products are excluded. Data for the production of surface-active agents during 1986-90 are shown in figure 12-1.

Total U.S. production of surface-active agents in 1990 amounted to 3,795 million kilograms, or 23 percent more than the 3,085 million kilograms reported for 1989. Sales of bulk surface-active agents in 1990 amounted to 1,930 million kilograms, valued at \$2,193 million, compared with sales in 1989 of 1,724 million kilograms, valued at \$2,086 million. In terms of

quantity, sales in 1990 were 12 percent more than in 1989.

Production of anionic surface-active agents in 1990 amounted to 2,586 million kilograms, or 68 percent of the total surfactant output reported for 1990. Sales of anionics in 1990 amounted to 982 million kilograms, valued at \$704 million.

Production of cationic surface-active agents in 1990 amounted to 343 million kilograms, 17 percent more than the 293 million kilograms reported in 1989. Production of nonionic surface-active agents amounted to 845 million kilograms in 1990, 14 percent more than the 743 million kilograms reported in 1989. Sales of cationic surface-active agents in 1990 increased by 13 percent in terms of quantity, and by 6 percent in terms of value when compared with sales as reported in 1989. Sales of nonionics in 1990 increased by 12 percent in terms of quantity, but decreased by less than 1 percent in terms of value when compared with sales as reported in 1989.

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

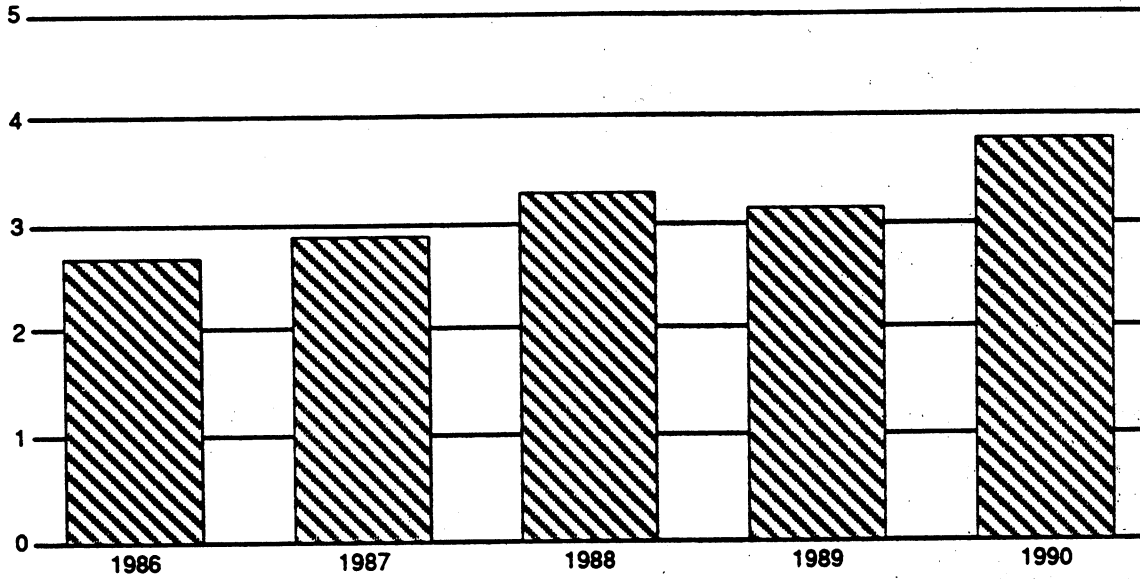
Table 12-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 12-3.

Eric Land
202-205-3349

Section 12

Figure 12-1
Surface-active agents: U.S. production, 1986-90

*Billions
of kilograms*



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 12-1

Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average
		Quantity	Value	Unit value ³
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	3,794,654	1,930,260	2,192,848	\$1.14
Benzenoid ⁴	710,700	481,169	586,917	1.22
Nonbenzenoid	3,083,954	1,449,091	1,605,931	1.11
Amphoteric				
Total	20,621	12,262	30,104	2.46
(Carboxymethyl)[3-(coconut oil amido)propyl] dimethylammonium hydroxide, inner salt	1,981	1,885	5,053	2.68
(Mixed alkyl) sulfobetaine	249	(⁵)	(⁵)	(⁵)
All other amphoteric surface active agents	18,391	10,377	25,051	2.41
Anionic				
Total	2,585,985	982,220	703,913	.72
Carboxylic acids (and salts thereof), total	1,143,058	103,730	105,495	1.02
Amine salts of fatty, rosin, and tall oil acids,	5,737	4,887	5,544	1.13
Carboxylic acids having amide, ester, or ether linkages	6,513	6,247	14,375	2.30
Coconut oil acids, potassium salt		225	3,637	16.13
Coconut oil acids, sodium salt	274,773	4,475	4,552	1.02
Oleic acid, sodium salt	46	45	81	1.82
Rosin acids, potassium salt	36,568	38,172	19,450	.51
Stearic acid, sodium salt		25	46	1.84
Tall oil acids, potassium salt	6,101	885	1065	1.20
Tallow acids, sodium salt	459,827	13,033	7,560	.58
All other carboxylic acids (and salts thereof)	353,493	35,736	49,185	1.38
Phosphoric and polyphosphoric acid esters (and salts thereof), total	32,688	27,325	50,106	1.83
Alcohols and phenols, alkoxyated and phosphated, total	25,644	22,493	36,635	1.63
Decyl alcohol, ethoxyated and phosphated	134	236	595	2.52
Dinonylphenol, ethoxyated and phosphated	630	417	839	2.01
2-Ethylhexanol, ethoxyated and phosphated	928	787	795	1.01
Mixed linear alcohols, ethoxyated and phosphated	1,372	1,711	4,128	2.41
Nonylphenol, ethoxyated and phosphated	3,988	3,300	7,667	2.32
9-Octadecenyl alcohol, ethoxyated and phosphated	1,323	617	2,238	3.62
Phenol, ethoxyated and phosphated	1,312	1,170	2,779	2.38
All other alcohols and phenols, alkoxyated and phosphated	15,957	14,255	17,594	1.23

See footnotes at end of table.

Section 12

Table 12-1—Continued

Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average
		Quantity	Value	Unit value ³
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Anionic—Continued				
Phosphoric and polyphosphoric acid esters (and salts thereof)—Continued				
Decyl and octyl phosphate	754	754	1,378	\$1.83
2-Ethylhexyl phosphate	386	298	564	1.89
Mixed alkyl phosphate	1,181	929	3,163	3.40
All other phosphoric and polyphosphoric acid esters (and salts thereof)	4,723	2,851	8,366	2.93
Sulfonic acids (and salts thereof), total	931,522	696,400	348,810	.50
Alkylbenzenesulfonates, total	300,161	141,335	143,345	1.01
Dodecylbenzenesulfonic acid	150,901	102,305	80,284	.78
Dodecylbenzenesulfonic acid, ammonium salt	67			
Dodecylbenzenesulfonic acid, calcium salt	3,202	1,837	4,485	2.44
Dodecylbenzenesulfonic acid, isopropylamine salt	2,230	1,733	3,802	2.19
Dodecylbenzenesulfonic acid, potassium salt	21			
Docecylbenzenesulfonic acid, sodium salt	101,881	28,769	44,118	1.53
Dodecylbenzenesulfonic acid, triethanolamine salt	3,721	2,721	4,890	1.80
All other alkylbenzene sulfonates	38,138	3,970	5,766	1.45
Benzene-, cumene-, toluene-, and xylenesulfonates, total	71,634	58,809	44,014	.75
Xylenesulfonic acid, sodium salt	33,406	29,203	21,834	.75
All other benzene-, cumene-, toluene-, and xylenes sulfonates	38,228	29,606	22,180	.75
Ligninsulfonates and naphthalenesulfonates, total	468,425	465,728	93,393	.20
Ligninsulfonic acid, ammonium salt	2,276	2,257	599	.27
Ligninsulfonic acid, calcium salt	255,694	255,871	28,319	.11
Ligninsulfonic acid, sodium salt	125,153	122,668	16,100	.13
Diisopropyl-naphthalenesulfonic, sodium salt	1,119	1,479	2,835	1.92
All other ligninsulfonates and naphthalene-sulfonates	84,183	83,453	45,540	.55
Mixed linear olefin sulfonate	13,855	13,494	22,025	1.63
Sulfosuccinamic acid derivatives	1,579	2,112	2,626	1.24
Sulfonic acids having ester or ether linkages, total	69,489	10,953	33,900	3.09
Sulfosuccinic acid esters, total	11,566	8,583	23,962	2.79
Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt	7,720	5,839	17,514	3.00
All other sulfosuccinic acid esters	3,846	2,744	6,448	2.35
All other sulfonic acids having ester or ether linkages	57,923	2,370	9,938	4.19
All other sulfonic acids (and salts thereof)	6,379	3,969	9,507	2.40

See footnotes at end of table.

Table 12-1—Continued
Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹ 1,000 kilograms	Sales ²		Average Unit value ³ Per kilogram
		Quantity 1,000 kilograms	Value 1,000 dollars	
Anionic—Continued				
Sulfuric acid esters (and salts thereof), total ⁶	478,717	154,765	199,502	\$1.29
Acids, amides, and esters, sulfated, total	4,609	4,039	7,388	1.83
Butyl oleate, sulfated, sodium salt	344	343	483	1.41
All other acids, amides, and esters, sulfated	4,265	3,696	6,905	1.87
Alcohols, sulfated, total	169,166	44,653	75,873	1.70
Dodecyl sulfate, ammonium salt	17,132	7,506	15,969	2.13
Dodecyl sulfate, sodium salt	13,665	12,432	33,977	2.73
Dodecyl sulfate, triethanolamine salt	4,081	2,104	5,334	2.54
2-Ethylhexyl sulfate sodium salt	812	815	2,331	2.84
All other alcohols, sulfated	133,476	21,796	18,262	.84
Ethers, sulfated, (included all other anionic surface-active agents)	291,736	94,575	104,503	1.10
Natural fats and oils, sulfated, total	13,206	11,498	11,738	1.02
Castor oil, sulfated, sodium salt	2,429	2,095	3,546	1.69
Tall oil, sulfated, sodium salt	465	425	501	1.18
Tallow, sulfated, sodium salt	299	210	191	.91
All other natural fats and oils, sulfated	10,013	8,768	7,500	.86
Cationic				
Total	343,469	191,503	396,663	2.07
Amine oxides and oxygen-containing amines (except those having amide linkages), total				
85,723	27,214	57,365	2.11	
Acyclic, total				
80,405	24,365	49,053	2.01	
N,N-Bis(2-hydroxyethyl)octadecylamine, ethoxylated	683			
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine, ethoxylated		1,546	3,016	1.95
(Coconut oil alkyl)amine, ethoxylated	1,595	1,329	2,033	1.53
(Hydrogenated tallow alkyl)amine, ethoxylated	546	511	615	1.20
(Mixed alkyl)amine, ethoxylated	687	480	1,672	3.48
(9-Octadecenyl)amine, ethoxylated	1,364	1,541	2,440	1.58
Octadecylamine, ethoxylated	707	558	1,509	2.70
(Soybean oil alkyl)amine, ethoxylated	501	237	554	2.33
(Tallow alkyl)amine, ethoxylated	3,784	3,492	4,643	1.33
N-(Tallow alkyl) trimethylene diamine, ethoxylated	1,274	772	1,054	1.37
All other acyclic amine oxides and oxygen containing amines (except those having amide linkages)	69,264	13,899	31,517	2.27
Cyclic (including imidazoline and oxazoline derivatives), total				
5,318	2,849	8,312	2.92	
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	479	471	1,529	3.25
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2- imidazoline	728	303	1,555	5.13
All other cyclic amine oxides and oxygen containing amines (except those having amide linkages)	4,111	2,075	5,228	2.52

See footnotes at end of table.

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Table 12-1—Continued
Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average Unit value ³
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Cationic—Continued				
Amines and amine oxides having amide linkages	24,914	19,346	29,832	\$1.54
Amines, not containing oxygen (and salts thereof), total	112,672	51,837	82,353	1.59
Amines salts	4,471	4,299	4,548	1.06
Amine salts, diamines and polyamines	13,954	10,000	16,331	1.63
Monoamines, total	94,247	37,538	61,474	1.64
(Coconut oil alkyl)amine	(⁵)	497	1,306	2.63
N,N-Dimethylhexadecylamine	2,792	935	1,655	1.77
N,N-Dimethyloctadecylamine	3,245	2,382	6,390	2.68
(Hydrogenated tallow alkyl)amine	3,907	1,599	2,287	1.43
9-Octadecenylamine	3,288	2,093	4,030	1.93
Octadecylamine	1,256	733	1,846	2.52
(Tallow alkyl)amine	(⁵)	5,809	8,735	1.50
All other monoamines	79,759	23,490	35,225	1.50
Quaternary ammonium salts, containing oxygen, total	24,999	16,905	39,662	2.35
Quaternary ammonium salts, not containing oxygen, total	88,658	74,166	165,791	2.24
Acyclic, total	67,161	61,782	129,803	2.10
Bis(coconut oil alkyl)dimethylammonium chloride	1,541	1,487	3,798	2.55
Bis(hydrogenated tallow alkyl)dimethylammonium chloride	38,317	35,552	64,580	1.82
N-(coconut oil alkyl) aminobutyric acid, sodium salt	294	265	1,024	3.86
Hexadecyltrimethylammonium chloride	638	593	2,820	4.76
Trimethyl(tallow alkyl)ammonium chloride	1,368	1,308	3,757	2.87
All other acyclic quaternary ammonium salts, not containing oxygen	25,003	22,577	53,824	2.38
Benzenoid, total ⁴	21,497	12,384	35,988	2.91
Benzyl(coconut oil alkyl)dimethylammonium chloride	838	812	1,753	2.16
Benzyl(mixed alkyl)dimethylammonium chloride	9,033	4,489	15,083	3.36
Benzyl(mixed alkyl)octadecyl ammonium chloride	566	398	1,508	3.79
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride	1,665	879	1,898	2.16
Benzyltrimethyl ammonium chloride	1,553	1,250	2,558	2.05
All other benzenoid quaternary ammonium salts, not containing oxygen	7,842	4,556	13,188	2.89
All other cationic surface-active agents	6,503	2,035	21,660	10.64

See footnotes at end of table.

Table 12-1—Continued
 Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average Unit value ³
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Nonionic				
Total	844,579	744,275	1,062,168	\$1.43
Carboxylic acid amides, total	42,304	49,103	78,495	1.60
Diethanolamine condensates, amine/acid ratio = 2/1, total	7,729	7,075	13,735	1.94
Coconut oil acids	1,304	1,181	2,080	1.76
Lauric and myristic acids	14	(⁵)	(⁵)	(⁵)
Oleic acid	103	100	427	4.26
Tall oil acids	497	(⁵)	(⁵)	(⁵)
All other diethanolamine condensates, amine/acid ratio = 2/1	5,811	5,794	11,228	1.94
Diethanolamine condensates (other amine/acid ratios), and other carboxylic acid amides, total	34,575	42,028	64,760	1.54
Coconut oil acids, amine/acid ratio = 1/1	7,943	6,700	11,969	1.79
Lauric acid, amine/acid ratio = 1/1	647	630	1,580	2.51
Lauric and myristic acids, amine/acid ratio = 1/1	799	792	1,865	2.36
Oleic acid, amine/acid ratio = 1/1	39	43	126	2.91
Stearic acid, amine/acid ratio = 1/1	96	85	124	1.45
All other diethanolamine condensates (other amine/acid ratios), and other carboxylic acid amides	25,051	33,778	49,096	1.45
Carboxylic acid esters, total	166,424	129,375	238,044	1.84
Anhydrosorbitol esters, total	18,986	14,303	24,106	1.69
Anhydrosorbitol monolaurate	3,744	2,399	4,594	1.92
Anhydrosorbitol mono-oleate	4,442	2,493	4,676	1.88
Anhydrosorbitol monostearate	8,782	7,919	12,170	1.54
All other anhydrosorbitol esters	2,018	1,492	2,666	1.79
Diethylene glycol esters, total	2,857	1,653	3,701	2.24
Diethylene glycol monolaurate	105	105	172	1.64
All other diethylene glycol esters	2,752	1,548	3,529	2.28
Ethoxylated anhydrosorbitol esters, total	14,292	13,117	29,875	2.28
Ethoxylated anhydrosorbitol monolaurate	3,315	2,991	7,332	2.45
Ethoxylated anhydrosorbitol mono-oleate	3,852	3,554	7,486	2.18
Ethoxylated anhydrosorbitol monostearate	5,117	4,772	10,803	2.26
Ethoxylated anhydrosorbitol tristearate	273	291	659	2.26
All other ethoxylated anhydrosorbitol esters	1,735	1,509	3,595	2.38
Ethylene glycol distearate	1,483	1,434	2,475	1.73
Ethylene glycol monostearate	2,021	1,907	3,554	1.86
Glycerol esters, total	47,883	37,518	71,108	1.90
Glycerol dilaurate	233	176	489	2.79
Glycerol mono-oleate	4,802	4,926	8,466	1.72
Glycerol monostearate	3,828	3,869	7,252	1.87
All other glycerol esters	39,020	28,547	54,901	1.92
Natural fats and oils, ethoxylated, total	26,300	18,239	28,530	1.56
Castor oil, ethoxylated	10,552	9,025	12,366	1.37
Hydrogenated castor oil, ethoxylated	1,895	1,671	2,233	1.34
Lanolin, ethoxylated	215	201	529	2.64
All other natural fats and oils, ethoxylated	13,638	7,342	13,402	1.83

See footnotes at end of table.

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Table 12-1—Continued

Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average Unit value ³
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Nonionic—Continued				
Carboxylic acid esters—Continued				
Polyethylene glycol esters, total	27,483	21,503	34,975	\$1.63
Polyethylene glycol diester of tall oil acids	3,003	832	844	1.01
Polyethylene glycol dilaurate	724	643	946	1.47
Polyethylene glycol dioleate	1,729	610	1,153	1.89
Polyethylene glycol distearate	920	821	2,726	3.32
Polyethylene glycol monolaurate	3,456	3,504	5,309	1.51
Polyethylene glycol mono-oleate	1,865	1,752	2,312	1.32
Polyethylene glycol monopalmitate	792	(⁵)	(⁵)	(⁵)
Polyethylene glycol monostearate	3,158	2,928	5,353	1.83
Polyethylene glycol sesquiester of tall oil acids	865	873	1,652	1.89
All other polyethylene glycol esters	10,971	9,540	14,680	1.54
Polyglycerol mono-oleate	315	265	829	3.12
Polyglycerol monostearate		26	102	3.82
1,2-Propanediol monostearate	775	199	812	4.09
All other carboxylic acid esters	24,029	19,211	37,977	1.98
Ethers, total	627,651	562,299	733,542	1.30
Benzenoid ethers, total⁴				
Dinonylphenol, ethoxylated	2,104	1,508	3,251	2.16
Dodecylphenol, ethoxylated	2,602	2,307	4,664	2.02
Iso-octylphenol, ethoxylated	25,047	17,215	41,599	2.42
(Mixed alkyl)phenol-formaldehyde, alkoxyated	8,562	7,706	13,455	1.75
Nonylphenol, ethoxylated	181,204	163,671	191,929	1.17
Nonylphenol, ethoxylated and propoxylated	1,667	1,142	2,906	2.54
Nonylphenol-formaldehyde, alkoxyated	3,561	(⁵)	(⁵)	(⁵)
Phenol, ethoxylated	1,494	619	1,610	2.60
All other benzenoid ethers	16,607	9,315	28,975	3.11
Nonbenzenoid ethers, total	339,396	319,891	368,302	1.15
Chemically-defined linear alcohols, ethoxylated, total				
Decyl alcohol, ethoxylated	4,333	(⁵)	(⁵)	(⁵)
Dodecyl alcohol, ethoxylated	1,767	1,245	2,986	2.40
Hexadecyl alcohol, ethoxylated	761	715	1,945	2.72
9-Octadecenyl alcohol, ethoxylated	1,952	1,212	2,311	1.91
Oleyl alcohol, ethoxylated	1,963	1,905	5,308	2.74
All other chemically-defined linear alcohols, ethoxylated	1,686	5,119	11,692	2.28
Mixed linear alcohols, alkoxyated, total	326,934	309,695	344,060	1.11
Mixed linear alcohols, ethoxylated	301,987	289,765	312,728	1.08
Mixed linear alcohols, ethoxylated and propoxylated	10,690	10,570	17,329	1.64
All other mixed linear alcohols, alkoxyated	14,257	9,360	14,003	1.50

See footnotes at end of table.

Table 12-1—Continued
 Surface-active agents: U.S. production and sales, 1990

Surface-active agents	Production ¹	Sales ²		Average Unit value ³
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Nonionic—Continued				
Ethers—Continued				
Other ethers and thioethers, total	45,407	38,925	76,851	1.97
Mixed alcohols, ethoxylated	927	(⁵)	(⁵)	(⁵)
Poly(mixed ethylene, propylene) glycol	5,255	(⁵)	(⁵)	(⁵)
Tridecyl alcohol, ethoxylated	5,478	3,364	5,849	1.74
Trimethylol propane, alkoxyated	938	938	2,263	2.41
All other ether ethers and thioethers	32,809	34,623	68,739	1.99
All other nonionic surface-active agents	8,200	3,498	12,087	3.46

¹ All quantities are given in terms of 100 percent organic surface-active ingredient.

² Sales include products sold as bulk surface-active agents only.

³ Calculated from unrounded figures.

⁴ The term "benzenoid" used in this report, describes any surface-active agent, except lignin derivatives, whose molecular structure includes 1 or more 6-membered carbocyclic or heterocyclic rings with conjugated double bonds (e.g., the benzene ring or the pyridine ring).

⁵ Reported data were accepted in confidence and may not be published, or no data were reported.

⁶ Includes all other anionic surface-active agents.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 12-2
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Amphoteric		
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolium hydroxide, disodium salt	No	PCI.
Caprylamphopropionate	No	MOA.
1-Carboxyethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
1-Carboxyethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
N-[2-(Carboxymethylamino)ethyl]-N-(2-hydroxyethyl)-coconut oil amide, sodium salt	No	WM.
Carboxymethyl-3-cocoamidopropyl dimethyl ammonium chloride, sodium salt	No	ENJ.
(Carboxymethyl)[3-(coconut oil amido)propyl]-dimethylammonium hydroxide, inner salt	No	BRD, PPG, RDA, SBC, SCP, SHX, WTC, (2).
(Carboxymethyl)dodecyldimethylammonium hydroxide, inner salt	No	RDA.
1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt	No	RDA.
(1-Carboxytridecyl)trimethylammonium hydroxide, inner salt	No	SQA.
Cocoamidoamphoglycinate	No	MOA.
Cocoamidopropyl betaine	No	MOA.
N-Cocoamido-propyl-N,N-dimethylamine oxide	No	MOA.
3-[3-(Cocoamidopropyl)dimethylammonio]-2-hydroxypropane sulfonate	No	RDA.
3-Cocoamidopropyl-2-hydroxy-3-sulfopropyl dimethyl ammonium hydroxide, inner salt	No	SHX.
Cocoamphocarboxyglycinate	No	MOA.
Cocoamphocarboxypropionate	No	MOA.
Cocoamphopropionate	No	MOA.
3-[(Coconut oil alkyl)amidoethylene-(2-hydroxyethyl)-amino]propionic acid	No	RDA.
N,N-di(hydroxyethyl)-n-carboxymethyl tallow ammonium quat, inner salt	No	SHX.
N,N-Dihydroxyethyl tallow glycinat	No	MOA.
N-Dodecyl-3-iminodipropionic acid	No	MOA.
N-Dodecyl-3-iminodipropionic acid, disodium salt	No	MOA, RDA, SCP.
N-Dodecyl-3-imino-dipropionic acid, monosodium salt	No	RDA.
1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-nor-coconut oil fatty acids-2-imidazolium hydroxide	No	RDA.
1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-oleyl-2-imidazolium hydroxide	No	RDA.
N-(2-Hydroxyethyl)-N-(2-stearamidoethyl)glycine, sodium salt	No	MOA.
Isodecyloxypropyliminopropionic acid, monosodium salt	No	ENJ.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Amphoteric—Continued		
Isonanylamidocaproic acid, triethanolamine salt	No	TNI.
Laurylamidopropyl betaine	No	MOA.
Laurylamphoglycinat	No	MOA.
(Mixed alkyl)sulfobetaine	Yes	BRD, MOA, SBC, (2).
Oleamidopropyl betaine	No	RDA.
Oleic acid-ethylenediamine condensate, propoxylated and sulfated, sodium salt	No	MOA.
Oleyl betaine	No	RDA.
1-(Sodium carboxyethylene)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(tall oil fatty acids)-2-imidazolium hydroxide	No	RDA.
1-(Sodium carboxymethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(coconut oil fatty acids)-2-imidazolium lauryl sulfate	No	RDA.
N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	No	MOA, RDA, SCP.
Tridecylpoly(ethyleneoxy)propionic acid, potassium salt	No	MRV.
All other acyclic amphoteric surface-active agents	No	BRD, CGY, DUP, ENJ, MOA, RDA, S, SCP.
All other cyclic amphoteric surface-active agents	No	BRD, SBC, UTC.
Anionic		
Carboxylic acids (and salts thereof):		
Amine salts of fatty, rosin, and tall oil acids:		
Coconut oil acids, diethanolamine salt	No	RDA, SHX.
Coconut oil acids, ethanolamine salt	No	SBP.
Coconut oil acids, triethanolamine salt	No	SCP.
Isostearic acid, mixed isopropanolamines salt	No	(2).
Isostearic acid, triethanolamine salt	No	PCI.
Oleic acid, diethanolamine salt	No	RDA.
Oleic acid, mixed isopropanolamine salt	No	UTC, (2).
Oleic acid, morpholine salt	No	(2).
Oleic acid, triethanolamine salt	No	(2).
Rosin acids, triethanolamine salt	No	CPC.
Stearic acid, triethanolamine salt	No	PCI, SBP, (2).
Tall oil acids, diethanolamine salt (Condensate)	No	RDA.
Tall oil acids, triethanolamine salt	No	PNX.
(Tall oil fatty acids), triethanolamine salt	No	WPG.
Tallow acids, triethanolamine salt	No	CPC, ENJ, SBP.
All other amine salts of fatty, rosin, and tall oil acids	No	BRD, S, WVA, (2).
Carboxylic acids having amide, ester, or ether linkages:		
Butoxyethylene oxyacetic acid, sodium salt	No	RDA.
5(or 6)-Carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, reaction products with castor oil	No	(2).
N-(Coconut oil acyl)sarcosine, sodium salt	No	ENJ, HMP.
N,N-Dimethyl capramide	No	PEL.
Dodecylpoly(ethyleneoxy)acetic acid, sodium salt	No	RDA.
N-Lauroylsarcosine, sodium salt	No	HMP, RDA.
Maleic acid, monoalkyl ester	No	(2).
Mixed(secondary linear alcohol)polyethylene propionic acid, sodium salt	No	CHP.
Naphthenic acid, ethoxylated	No	(2).
Nonylphenol poly(ethyleneoxy)acetic acid, sodium salt	No	BRI.
Poly(oxy-1,2-ethanediyl), w-(2-carboxyethoxy)-w-hydroxy- α , α' -(iminodi-2, 1-ethanediyl) bis-,N-tallow alkyl derivs., potassium salt	No	RDA.
Poly(oxy-1,2 ethanediyl) α carboxy-methyl, ω -(tri-decyl), potassium salt	No	PCI.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic -Continued		
Carboxylic acids (and salts thereof)-Continued		
Carboxylic acids having amide, ester, or ether linkages-Continued		
Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt	No	FTX, HMP, S.
All other carboxylic acids with amide, ester or ether linkage	No	WM.
Potassium and sodium salts of fatty, rosin, and tall oil acids:		
Alkoxy triacryl titanate	No	KPI.
5(or 6)carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, potassium/sodium salts	No	(²).
Castor oil acids, potassium salt	No	CAS, GRL.
Castor oil acids, sodium salt	No	DEX, HEW.
Coconut oil acids and oleic acid, potassium salt	No	HCL.
Coconut oil acids, potassium salt	Yes	AGP, CON, ESS, GRL, HEW, HNT, NMC, PG, PNK.
Coconut oil acids, sodium salt	Yes	BSW, CON, CP, ENJ, HEW, LEV, NMC, PG, PNK, (²).
Corn oil acids, potassium salt	No	EKT, HNT.
Corn oil acids, sodium salt	No	NMC.
Gluconic acid, potassium and sodium salts W/20% mix of sodium bisulfite-formaldehyde	No	HCL.
Heptanoic acid, potassium salt	No	(²).
Isostearic acid, isopropoxy titanium salt	No	KPI.
Lauric acid, potassium salt	No	PG.
Mixed vegetable fatty acids, potassium salt	No	CRT, GRL.
Mixed wool grease and tall oil fatty acids	No	SLM.
Neoalkoxy, trineodecanoyl titanate	No	KPI.
Neoalkoxy, trineodecanoyl zirconate	No	KPI.
Oleic acid, ammonium salt	No	CCC.
Oleic acid, potassium salt	No	BSW, EKT, HNT, PG, VKR, WBG, (²).
Oleic acid, sodium salt	Yes	BSW, NMC, SCP, WBG.
Olive oil acids, potassium salt	No	HNT.
Palmitic and stearic acids, sodium salt	No	BRI.
Palm kernel oil acids, potassium salt	No	PG.
Palm kernel oil acids, sodium salt	No	PG.
Palm oil acids, sodium salt	No	BSW, CON, PG.
Rosin acids, potassium salt	Yes	ARZ, WVA, (²).
Rosin acids, sodium salt	No	SLM, (²).
Soybean oil acids, potassium salt	No	ARZ.
Stearic acid, ammonium salt	No	BSW.
Stearic acid, potassium salt	No	CON, SCP.
Stearic acid, sodium salt	Yes	CON, CRT, HEW, LEV, PNK.
Tall oil acids, potassium salt	Yes	CCC, CON, DAN, ESS, FER, HNT, LEA, PNK, SBP, SCP, VKR, WVA, (²).
Tall oil acids, sodium salt	No	NMC, WVA, (²), (²).
Tallow acids, potassium salt	No	AGP, BSW, PG, PNK.
Tallow acids, sodium salt	Yes	CON, CP, HEW, LEV, NMC, PG, (²).
All other potassium and sodium salts of fatty, rosin and tall oil acids	No	MOA, USR, WVA.
Other carboxylic acids:		
All other carboxylic acids	No	MOA, TX, WVA.
Phosphoric and polyphosphoric acid esters (and salts thereof):		
Alcohols and phenols, alkoxyated and phosphated:		
C ₁₂ -C ₁₅ Alcohol, ethoxylated, propoxylated and phosphated	No	GAF.
Butyl alcohol, ethoxylated and phosphated	No	RDA.
Decyl alcohol, ethoxylated and phosphated	Yes	MCP, OC, RDA.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic-Continued		
Phosphoric and polyphosphoric acid esters (and salts thereof)-Continued		
Alcohols and phenols, alkoxyated and phosphated -Continued		
Dinonylphenol, ethoxylated and phosphated	Yes	CPC, ETC, GAF, RDA, WTC.
Dodecyl alcohol, ethoxylated and phosphated	No	CPC, ENJ, GAF, HCL, RDA.
Dodecylphenol, ethoxylated and phosphated	No	DEX, GAF, RDA.
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated	No	CCC.
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated, sodium salt	No	CCC.
2-Ethylhexanol, ethoxylated and phosphated	Yes	CPC, ETC, PPG, SCP, SDC, UTC, WTC.
2-Ethylhexanol, ethoxylated, phosphated, potassium salt	No	BRI.
Hexylalcohol, ethoxylated and phosphated	No	RDA.
Lauryl alcohol, ethoxylated and phosphated	No	RDA.
Meta, para-cresol, ethoxylated and polyphosphated, neutralized	No	RDA.
Mixed linear alcohols, alkoxyated and phosphated, potassium salt	No	PCI.
Mixed linear alcohols, ethoxylated and phosphated	Yes	BAS, CRD, CTL, ENJ, ESS, ETC, FER, HCL, HRT, LUR, MOA, MRV, NES, RDA, SOS, WTC.
Mixed linear alcohols, ethoxylated and phosphated, sodium salt	No	CHP.
Mixed tridecyl alcohol and 2-ethylhexanol, phosphated, potassium salt	No	CHP.
Nonylphenol, ethoxylated and phosphated	Yes	ARL, CPC, CTL, DEX, ESS, ETC, GAF, GDC, HDG, HRT, LEA, MCP, MOA, NES, OC, OMC, PPG, RDA, UTC, VKR, WTC.
Nonylphenol, ethoxylated and phosphated, diethanolamine salt	No	OMC, WTC.
Nonylphenol, ethoxylated and phosphated, sodium salt	No	WTC.
9-Octadecenyl alcohol, ethoxylated and phosphated	Yes	ETC, GAF, HCL, RDA, WTC.
Octylphenol, ethoxylated and phosphated	No	LUR, PPG, RDA, RH, WTC.
Octylphenol, ethoxylated and phosphated, magnesium salt	No	HIP.
Phenol, ethoxylated and phosphated	Yes	ETC, GAF, HDG, LUR, MOA, PEL, PPG, RDA, WTC.
Polyhydric alcohol, ethoxylated and phosphated	No	ETC, RDA.
Polypropylene glycol, phosphated	No	BAS.
Tridecyl alcohol, ethoxylated and phosphated, polyalkylene polyamine salt	No	(²).
Tridecyl alcohol, ethoxylated and phosphated	Yes	CPC, DAN, DEX, ETC, GAF, MIL, RDA, WTC.
Tridecyl alcohol ethoxylated and phosphated, potassium salt	No	DEX.
Tridecylphenol, ethoxylated and phosphated	No	TCC.
All other alcohols and phenols, alkoxyated and phosphated or polyphosphated	No	ETC, RDA, SCP, TCC, (²)(E).
Alcohols, phosphated or polyphosphated:		
Butyl phosphate	No	HRT, TCC.
Butyl phosphate, potassium salt	No	DUP.
Decyl and octyl phosphate	Yes	ENJ, ETC, HCL, SCP.
Decyl polyphosphate, sodium salt	No	CRD.
Ethyl alcohol, phosphated, amine salt	No	UTC.
2-Ethylhexyl phosphate	No	CHP, ETC, FER, OC, OMC, RDA, SOS, VKR, (²).
2-Ethylhexyl phosphate, sodium salt	No	CHP, DAN, ENJ, S.
2-Ethylhexyl polyphosphate, sodium salt	No	DEX.
Hexadecylmonophosphate	No	(²).

See footnotes at end of table.

Section 12

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic-Continued		
Phosphoric and polyphosphoric acid esters (and salts thereof)-Continued		
Alcohols, phosphated or polyphosphated-Continued		
Hexyl phosphate	No	ETC, HCL, ICI.
Hexyl phosphate, potassium salt	No	ICI.
Isooctyl phosphate	No	BOE, BRI, QCP.
Isooctyl phosphate, potassium salt	No	QCP, RDA.
Isopropyl phosphate	No	TCC.
Methylbutyl pyrophosphate, ethylenedioxy titanium salt	No	KPI.
Mixed alkyl phosphate, sodium salt	No	(²).
Mixed alkyl phosphate	Yes	CTL, DUP, HCL, HIP, WTC, (²).
Mixed alkyl phosphate, alkylamine salt	No	(²).
Mixed alkyl phosphate, diethanolamine salt	No	DUP, SCP.
Mixed alkyl phosphate, potassium salt	No	QCP.
Mixed alkyl phosphate, triethanolamine salt	No	(²).
Neoalkoxy tris(dioctyl) pyrophosphato zirconate	No	KPI.
9-Octadecenyl phosphate	No	GAF.
Octyl phosphate, alkylamine salt	No	(²).
Octyl phosphate, isoproxy titanium salt	No	KPI.
Octyl phosphate neoalkoxy titanium salt	No	KPI.
Octyl polyphosphate	No	DEX.
Octyl polyphosphate, potassium salt	No	DEX.
Octyl pyrophosphate, ethylenedioxy titanium salt	No	KPI.
Octyl pyrophosphate, isoproxy titanium salt	No	KPI.
Octyl pyrophosphate neoalkoxy titanium salt	No	KPI.
Octyl pyrophosphate, oxoethylenedioxy titanium salt	No	KPI.
Octyl pyrophosphate titanium salt	No	KPI.
N-2(C ₂ to C ₁₇)alkylamido-N-carboxyethyl,N-2-hydroxyethyl, 3-amino-2-mydroxypropyl phosphate, disodium salt	No	MOA.
Tridecyl phosphate	No	HCL.
All other phosphated and polyphosphated alcohols	No	ETC.
Other phosphoric and polyphosphoric acid esters:		
Blend of fatty and phosphate esters	No	MIL.
Glycerol, ethoxylated and phosphated	No	(²).
Glycerol monoester of mixed fatty acids, phosphated	No	WTC.
Octadecylamine, ethoxylated and phosphated, sodium salt	No	GDC.
All other phosphoric and polyphosphoric acid esters	No	ENJ, MOA, SCP, WTC.
Sulfonic acids (and salts thereof):		
Alkylbenzenesulfonates:		
Dodecylbenzenesulfonates:		
Dodecylbenzenesulfonic acid	Yes	EMK, ENJ, JLP, LEV, NPR, PIL, STP, TEN, VST, WTC, (²).
Dodecylbenzenesulfonic acid, (Mixed alkyl)amine salt	No	JLP, (²).
Dodecylbenzenesulfonic acid, ammonium salt	Yes	CCC, NES, WTC, (²).
Dodecylbenzenesulfonic acid, calcium salt	Yes	HCL, ICI, RH, STP, TMH, WTC, (²).
Dodecylbenzenesulfonic acid, diethanolamine salt	No	RDA.
Dodecylbenzenesulfonic acid, isopropanolamine salt	No	PIL.
Dodecylbenzenesulfonic acid, isopropylamine salt	Yes	HIP, ICI, KPI, NES, PPG, RDA, STP, WTC, (²).

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic-Continued		
Sulfonic acids (and salts thereof)-Continued		
Alkylbenzenesulfonates-Continued		
Dodecylbenzenesulfonates-Continued		
Dodecylbenzenesulfonic acid, monoethanolamine salt	No	ESS, RDA.
Dodecylbenzenesulfonic acid, potassium salt	Yes	BRI, ESS, GDC, LEA.
Dodecylbenzenesulfonic acid, sodium salt	Yes	BLA, BOE, BRI, CP, CPC, CTL, DOW, DUP, ECC, LEA, LEV, NES, NPR, PCI, PIL, PNX, RDA, STP, TEN, VST, WTC, (?)
Dodecylbenzenesulfonic acid, triethanolamine salt	Yes	BRD, BRI, CCC, CPC, CTL, ESS, NES, PCI, PIL, PPG, RDA, SCP, STP, WTC.
All other dodecylbenzene sulfonates	No	ENJ, PG, (?) (E).
Other alkylbenzenesulfonates:		
Benzene sulfonic acid	No	WTC.
Didodecylbenzenesulfonic acid, sodium salt	No	ENJ.
Neoalkoxy, dodecylbenzene-sulfonyl titanate	No	KPI.
Tridecylbenzenesulfonic acid	No	CP, STP.
Tridecylbenzenesulfonic acid, sodium salt	No	BLA, CMT, CPC, STP.
Benzene-, cumene-, toluene-, and xylenesulfonates:		
Cumenesulfonic acid, ammonium salt	No	NES, STP.
Cumenesulfonic acid, sodium salt	No	NES, STP, WTC.
Toluenesulfonic acid, potassium salt	No	NES.
Toluenesulfonic acid, sodium salt	No	NES, PG, VST.
Toluene xylene sulfonic acid	No	WTC.
Xylenesulfonic acid, ammonium salt	No	NES, STP, WTC.
Xylenesulfonic acid, sodium salt	Yes	ICI, NES, PIL, STP, WTC.
All other benzene-, cumene-, toluene-, and xylenesulfonates	No	SCP.
Ligninsulfonates:		
Ligninsulfonic acid, ammonium salt	Yes	MAR, PSP, RAY, SPA.
Ligninsulfonic acid, calcium salt	Yes	FPC, MAR, PSP.
Ligninsulfonic acid, chromium salt	No	PSP, RAY.
Ligninsulfonic acid, iron salt	No	MAR, PSP.
Ligninsulfonic acid, magnesium salt	No	MAR, WVA.
Ligninsulfonic acid, mixed chromium and iron salts	No	PSP.
Ligninsulfonic acid, potassium salt	No	PSP.
Ligninsulfonic acid, sodium salt	Yes	ENJ, MAR, PSP, RAY.
Ligninsulfonic acid, zinc salt	No	MAR, PSP.
All other ligninsulfates	No	ETC, LKY, MAR.
Naphthalenesulfonates:		
Butylnaphthalenesulfonic acid, sodium salt	No	SCP, UDI.
Di(C ₅ -C ₈ alkyl)naphthalenesulfonic acid	No	(?)
Dibutylnaphthalenesulfonic acid	No	UDI.
Diisopropylnaphthalenesulfonic acid, sodium salt	No	DUP, SCP, UDI.
Isopropylnaphthalenesulfonic acid	No	UDI.
Methylnaphthalenesulfonic acid, sodium salt	No	CPC, SCP, UDI.
Methylnonylnaphthalenesulfonic acid, sodium salt	No	UDI.
Naphthalenesulfonic acid, sodium salt, formaldehyde condensate	No	ICI.
All other naphthalenesulfonates	No	HAL, SCP, UDI.
Sulfonic acids having amide linkages:		
Sulfosuccinamic acid derivatives:		
N-(Coconut oil alkyl)sulfosuccinamic and disodium salt	No	WPG.
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt	No	ACY, MOA.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic-Continued		
Sulfonic acids (and salts thereof)-Continued		
Sulfonic acids having amide linkages-Continued		
Sulfosuccinamic acid derivatives-Continued		
N-Octadecylsulfosuccinamic acid, disodium salt . . .	No	ACY, HIP.
Oleamidossulfosuccinamic acid, disodium salt	No	SBC.
N-(Oleoyloxyisopropyl)sulfosuccinamic acid	No	WTC.
All other sulfosuccinamic acid derivatives	No	SCP.
Taurine derivatives:		
N-(Coconut oil acyl)-N-methyltaurine, sodium salt	No	FTX, RDA.
N-Methyl-N-oleoyltaurine, sodium salt	No	CPC, FTX, HCL, RDA, WPG.
N-Methyl-N-palmitoyltaurine, sodium salt	No	GAF, RDA.
N-Methyl-N-(tall oil acyl)taurine, sodium salt	No	CCC, RDA, WVA.
All other sulfonic acids having amide linkages:		
All other sulfonic acids having amide linkages . . .	No	HCL.
Sulfonic acids having ester or ether linkages:		
Sulfosuccinic acid esters:		
Sulfosuccinic acid, bis(diisobutyl)ester, amidodisodium salt	No	MOA.
Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl)- ester, sodium salt	No	MOA, NSC.
Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt	Yes	ACY, AMU, APX, BRI, CCC, CHP, ECC, EMK, ENJ, FTX, HCL, MCP, MOA, RDA, RH, WTC.
Sulfosuccinic acid, dihexyl ester, sodium salt	No	FTX, MOA.
Sulfosuccinic acid, diisobutyl ester, sodium salt	No	FTX.
Sulfosuccinic acid, diisodecyl ester, sodium salt	No	ACY.
Sulfosuccinic acid, diisooctyl ester, sodium salt	No	ACY, ARI, SCP, SHX, SOS.
Sulfosuccinic acid, dioctyl ester, sodium salt	No	MOA.
Sulfosuccinic acid, dipentyl ester, sodium salt . . .	No	ACY.
Sulfosuccinic acid, ditridecyl ester, sodium salt	No	ACY, MOA.
Sulfosuccinic acid, (lauryl polyethylene glycol ether) ester, disodium salt	No	SHX.
Sulfosuccinic acid, (coconut oil alkyl)- iminoisopropanol half-ester, sodium salt	No	MOA.
Sulfosuccinic acid, lauramidomonoethanolamine, disodium salt	No	RDA.
Sulfosuccinic acid, monolaurate ester, disodium salt	No	MOA, RDA.
Sulfosuccinic acid myristyl ester disodium monoethanolamine salt	No	WTC.
Sulfosuccinic acid, nonoxynyl-10 ester, disodium salt	No	MOA.
Sulfosuccinic acid, oleamidopolyethyleneglycol, disodium salt	No	MOA.
Sulfosuccinic acid, ricinoleamide monoethanolamine, disodium salt	No	RDA.
All other sulfosuccinic acid esters	No	FTX, MOA, WTC.
All other sulfonic acids having ester or ether linkages:		
Coconut oil acids, 2-sulfoethyl ester, sodium salt	No	FTX, GAF, LEV, RDA.
Dodecyl diphenyloxidedisulfonic acid	No	(²).
Dodecyl diphenyloxidedisulfonic acid, disodium salt	No	CTL, PIL, RDA, (²).

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Anionic-Continued		
Sulfonic acids (and salts thereof)-Continued		
Sulfonic acids having ester or ether linkages-Continued		
All other sulfonic acids having ester or ether linkages-Continued		
Iso-octylphenol, ethoxylated and sulfonated, sodium salt	No	RH.
n-Octylphenol, ethoxylated and sulfonated, sodium salt	No	APX.
All other sulfonic acid with ester linkages	No	GAF.
All other sulfonic acids with ether linkages	No	PG, PPG, SCP.
Other sulfonic acids:		
Allyl sulfonate, sodium salt	No	ARD.
Diphenylsulfone sulfonic acid, potassium salt	No	UPF.
Mixed alkanesulfonic acid	No	(²).
Mixed alkane sulfonic acid, sodium salt	No	SLM, STP, WTC, (²).
Mixed linear olefin sulfonate	Yes	RDA, STP, WVA.
n-Octanesulfonic acid, sodium salt	No	(²).
Oleyloxyethyl diamide oxypropanol sulfonic acid	No	S.
Petroleum sulfonic acid, water soluble (Acid layer), sodium salt	No	PIL.
Tall oil, sulfonated, potassium salt	No	(²).
All other sulfonic acids	No	CGY, CLU, HAL.
Sulfuric acid esters (and salts thereof):		
Acids, amides, and esters, sulfated:		
Coconut oil acids-ethanolamine salt, sulfated, potassium salt	No	EMK, ENJ.
Mixed alkyl phenol sulfate, ethoxylated, triethanolamine salt	No	MIL.
Carboxylic acid esters (except natural fats and oils), sulfated:		
Esters of sulfated oleic acid:		
Butyl oleate, sulfated, sodium salt	Yes	HIP, ICI, MCP, MRV, NSC.
Isopropyl oleate, sulfated, sodium salt	No	DEX.
Methyl oleate, sulfated, sodium salt	No	ICI.
Oleic acid, sulfated	No	ACT.
Oleic acid, sulfated, disodium salt	No	MCP.
Oleic acid, sulfated, sodium salt	No	ACY, CIN.
Propyl oleate, sulfated, sodium salt	No	MRV.
All other esters of sulfated oleic acid	No	LUR, SCP.
Other sulfated esters:		
Glycerol monoester of coconut oil acids, sulfated, sodium salt	No	CP.
Tall oil acids, sulfated, sodium salt	No	ICI.
All other sulfated esters	No	RDA.
Alcohols, sulfated:		
Decyl and octyl sulfate, sodium salt	No	STP.
Decyl sulfate, sodium salt	No	ARI, SCP, WTC.
Dodecylsulfate salts:		
Dodecyl sulfate, 2-amino-2-methylpropanol salt	No	SCP.
Dodecyl sulfate, ammonium salt	Yes	BRD, LEV, RDA, STP, TNI, WTC, (²).
Dodecyl sulfate, diethanolamine salt	No	DUP, JRG, STP.
Dodecyl sulfate, N,N-diethylcyclohexylamine salt	No	DUP.
Dodecyl sulfate, isopropanolamine salt	No	JRG.
Dodecyl sulfate, magnesium salt	No	RDA, STP.
Dodecyl sulfate, sodium salt	Yes	BRD, DUP, RDA, STP.
Dodecyl sulfate, triethanolamine salt	Yes	BRD, RDA, STP, TNI.
3,9-Diethyl-6-tridecyl sulfate, sodium salt	No	NCC.
2-Ethylhexyl sulfate, sodium salt	Yes	NCC, PCI, RDA, WTC.

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Anionic—Continued		
Sulfuric acid esters (and salts thereof)—Continued		
Alcohols, sulfated—Continued		
7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	No	NCC.
Hexadecyl sulfate, sodium salt	No	RDA.
Hexyl sulfate, potassium salt	No	DEX.
All other linear alcohols, sulfated	No	PG, RDA.
Mixed linear alcohols, sulfated, ammonium salt	No	CP, S, SCP, WTC, (²).
Mixed linear alcohols, sulfated, sodium salt	No	BRD, CP, DUP, PG, SCP, WTC.
Mixed linear alcohols, sulfated, triethanolamine salt	No	SCP, WTC.
Octyl sulfate, sodium salt	No	ARC, DUP, RDA.
Oleyl sulfate, sodium salt	No	DUP, RDA.
Oxoalcohol bottoms, sulfated, sodium salt	No	WVA.
Tridecyl sulfate, sodium salt	No	RDA.
All other alcohols and phenols, sulfated	No	RDA.
Ethers, sulfated:		
Alkylphenols, ethoxylated and sulfated:		
1-Naphthol, ethoxylated and sulfated, free acid . .	No	SCP.
Nonylphenol, ethoxylated and sulfated, ammonium salt	No	GAF, RDA, STP.
Nonylphenol, ethoxylated and sulfated, sodium salt	No	GAF, RDA, WTC.
Octylphenol, ethoxylated and sulfated, sodium salt	No	RDA, STP.
Octylphenoxy polyethoxy ethyl sulfate	No	RH.
All other sulfated cyclic ethers	No	RDA.
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt	No	MOA, RDA.
Dodecyl alcohol, ethoxylated and sulfated, sodium salt	No	BRD, RDA.
Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt	No	(²).
Isobutanol, ethoxylated and sulfated, ammonium salt	No	(²).
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt	No	PG, RDA, SCP, SHC, STP, TNA, VST, WTC, (²).
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	No	DUP, PG, PIL, RDA, SCP, SHC, STP, VST, WTC, WVA.
Tridecyl alcohol, ethoxylated and sulfated, sodium salt	No	RDA.
Natural fats and oils, sulfated:		
Castor oil, sulfated, sodium salt	Yes	ACT, ACY, ARI, ARL, CRT, DEX, HIP, ICI, LEA, LUR, MRV, S, SCP, SLM, WHW.
Coconut oil, sulfated, sodium salt	No	ACY.
Cod oil, sulfated, sodium salt	No	ARI.
Cod oil, sulfated, sodium salt	No	WHW.
Grease, other than wool, sulfated, sodium salt	No	WHW.
Herring oil, sulfated	No	SLM.
Herring oil, sulfated, sodium salt	No	ARI, SLM, WHW.
Lard, sulfated, sodium salt	No	CIN, CRT, WHW.
Mixed animal and vegetable oil, sulfated, sodium salt	No	SLM.
Mixed fish oils, sulfated, ammonium salt	No	CIN.
Mixed fish oils, sulfated, sodium salt	No	CRT, SLM, WHW.
Mixed vegetable oils, sulfated, sodium salt	No	CRT, LUR.
Mixed vegetable oils, sulfated, sodium salt	No	CPC.
Mustard seed oil, sulfated, sodium salt	No	CRT.
Neatsfoot oil, sulfated, sodium salt	No	ARI, WHW.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Anionic-Continued		
Sulfuric acid esters (and salts thereof)-Continued		
Natural fats and oils, sulfated-Continued		
Peanut oil, sulfated, sodium salt	No	ACY.
Soybean oil, sulfated, sodium salt	No	ACT, SCP, WHW.
All other sulfated animal fats and oils	No	WHW.
All other sulfated fish and marine fat oils	No	WHW.
Synthetic fatty alcohol ester, sulfated, sodium salt	No	SLM.
Tall oil, sulfated, ammonia salt	No	CIN.
Tall oil, sulfated, sodium salt	Yes	ACT, AMU, ARI, CIN, CRT, WHW, WTC.
Tallow, sulfated, sodium salt	Yes	CCC, CRT, NSC, SCP, WHW.
All other vegetable oils, sulfated	No	CRT, LUR, SCP, TEN.
All other sulfuric acid esters	No	SCP.
Other anionic surface-active agents:		
Alkylalcohol ethoxylated and carbonated, sodium salt	No	MIL.
Ethoxylated acetic acid, sodium salt	No	S.
Half-phthalic acid ester of tallow alkanolamide/monoglyceride	No	EFH.
Lignin, sodium salt	No	WVA.
Mixed alpha-olefins and vegetable	No	SLM.
Mixed linear alcohols, ethoxylated and carbonated, sodium salt	No	S.
Nonylphenol, ethoxylated and carbonated, sodium salt	No	WTC.
Stearoyl iso-lactylate, sodium salt	No	BFP.
Stearoyl lactylate, mixed sodium and calcium salt	No	BFP.
Stearoyl lactylate, sodium salt	No	BFP.
Stearoyl lactylate, sodium salt	No	BFP.
Tridecyl alcohol, ethoxylated and carbonated, sodium salt	No	S.
All other anionic surface-active agents	No	CGY, DUP, MOA.
Cationic surface-active agents:		
Amine oxides and oxygen-containing amines (except those having amide linkages):		
Acyclic:		
3-(C ₁₂ -C ₁₅ alkyloxy)-1-propanamine	No	ENJ.
N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine	No	ARC.
N,N-Bis(2-hydroxyethyl)(coconut oil alkyl)amine oxide	No	SHX.
N,N-Bis(2-hydroxyethyl)dodecylamine	No	ARC.
Bis-(2-hydroxyethyl)isodecylpropylamine oxide	No	ENJ.
N,N-Bis(2-hydroxyethyl)octadecylamine	Yes	ARC, GAF, SHX.
N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine	Yes	ARC, ENJ, HCL, JTO, SHX, (2).
Cocoamidopropyl dimethyl amine	No	(2).
(Coconut oil alkyl)amine, ethoxylated	No	ARC, BAS, ENJ, ETC, SHX, SVC, WTC, (2),(2).
Coconut oil(alkyl)amine, ethoxylated and phosphated	No	(2).
Coconut oil alkyl amine, propoxylated	No	SHX.
Diethylenetriamine, alkoxyated	No	(2).
N,N-Dimethyl(coconut oil alkyl)amine oxide	No	ARC.
N,N-Dimethyldodecylamine oxide	No	(2).
N,N-Dimethyldodecylamine oxide	No	BRD, CTL, PG, SHX.
N,N-Dimethylhexadecylamine oxide	No	ARC.
N,N-Dimethyl(mixed alkyl)amine oxide	No	S.
Di(pyrrolidonylethyl)imine	No	PCI.
Ethylene diamine ethoxylated	No	KPI.
Hexyloxypropyl amine	No	DUP, ENJ.
(Hydrogenated tallow alkyl)amine, ethoxylated	Yes	ENJ, ETC, RDA, SHX, WTC.

See footnotes at end of table.

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Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Cationic-Continued		
Amine oxides and oxygen-containing amines (except those having amide linkages)-Continued		
Acyclic-Continued		
N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)-ethylenediamine	No	(²).
Isodecyloxypropylamine	No	ENJ.
Isodecyloxypropylamine, ethoxylated	No	ENJ.
3-(3-Isodecyloxy)propylaminopropyl amine	No	SHX.
N-Isodecyloxypropyl trimethylene diamine	No	ENJ.
Isopropoxy-tris(2-ethylenediamino)ethyl titanate	No	KPI.
Isotridecyloxypropylamine	No	ENJ.
N-Isotridecyloxypropyl trimethylene diamine	No	ENJ.
3-(Mixed alkoxy)propylamine, ethoxylated oxides	No	SHX.
3-(3-Mixed alkoxy)propylaminopropyl amine	No	SHX.
(Mixed alkyl)amine, ethoxylated	Yes	BRD, ICI, RH.
Neoalkoxy, tri(m-amino)-phenyl titanate	No	KPI.
Neoalkoxy, tris(m-amino) phenyl zirconate	No	KPI.
(9-Octadecenyl)amine, ethoxylated	Yes	ETC, RDA, SHX, WTC, (²).
Octadecylamine, ethoxylated	Yes	ARC, ETC, WTC.
Octyldimethylamine oxide	No	HNT.
Polyalkylene polyamine, ethoxylated	No	BAS.
Polyether amine, ethoxylated	No	RH.
(Soybean oil alkyl)amine, ethoxylated	Yes	ARC, ENJ, ETC, JTO, SHX, SVC, (²).
(Tallow alkyl)amine, ethoxylated	Yes	BAS, DUP, ENJ, ETC, HCL, PPG, RDA, S, SCP, SHX, WTC, (²), (²).
(Tallow alkyl)amine, propoxylated	No	SHX.
N-(Tallow alkyl)trimethylenediamine, ethoxylated	Yes	ARC, ENJ, ETC, JTO, (²).
[Tallow ethyl alkyl]amine, ethoxylated, sulfate	No	RDA.
N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	No	BAS, (²).
N,N,N',N'-Tetrakis(2-Hydroxyethyl)ethylenediamine, propoxylated	No	HCL.
N,N,N',N'-Tetrakis(2-hydroxypropyl)-ethylenediamine, propoxylated and ethoxylated	No	BAS, ETC.
3-(3-Tridecyloxy)propylaminopropyl amine	No	SHX.
Tridecyl-3-(trimethyleneamine), ethoxylated	No	JTO.
Triethanolamine, ethoxylated	No	MIL, RSA, SCP.
Triethanolamine phosphate ester	No	(²).
All other amine oxides and oxygen-containing amines (Except those with amide linkages), acyclic	No	ARC, ENJ, ETC, MOA, PG, RDA, SCP, SHX, WTC, (²), (²).
Cyclic:		
Aniline, ethoxylated	No	MIL.
2-Butenedioic acid-(²)-diamine - 1-(2-aminoethyl)-2-(tall oil alkyl)-2-imidazoline condensate	No	(²).
2,5-Dimethoxyaniline, ethoxylated	No	MIL.
2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline	No	ENJ.
N-Hexadecylmorpholine	No	BRD, RDA.
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	No	MOA, RDA.
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	Yes	BRD, MOA, RDA, SHX, WTC.
1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline	No	BRD, FTX, MOA.
1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	Yes	HDG, MOA, RDA, SCP, (²).
1-(2-Hydroxyethyl)-2-(tall oil alkyl)imidazoline, fatty acid salt	No	(²).
Lignin amine	No	WVA.
Rosin amine, ethoxylated	No	HPC, (²).
m-Toluidine, ethoxylated	No	MIL.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Cationic-Continued		
Amine oxides and oxygen-containing amines (except those having amide linkages)-Continued		
Cyclic-Continued		
All other amine oxides and oxygen-containing amines (Except those having amine linkages), cyclic	No	BRD, RDA, SCP, (2).
Amines and amine oxides having amide linkages:		
Carboxylic acid - diamine and polyamine condensates:		
Acetic acid, amides with polyalkylene polyamines, salt	No	(2).
All other carboxylic acid-diamine and polyamine condensates,	No	ARI, ENJ, ICI, WVA.
Coconut oil acids-N,N-dimethyltrimethylenediamine condensate	No	ENJ.
Naphthenic acids-polyalkylene polyamine condensate	No	(2).
Naphthenic acids-tall oil fatty acids-polyalkylene polyamine condensate	No	(2).
2-Nor-tall oil alkyl-1-tall oil amido-ethyl imidazoline	No	SHX.
Oleic acid-1-(2-aminoethyl)piperazine condensate . .	No	ARC.
Oleic acid-N,N-dimethyltrimethylenediamine condensate	No	CCW.
Pelargonic acid-tetraethylenepentamine condensate	No	ETC, ICI, OC.
Stearic acid-diethylenetriamine condensate	No	ARC, OC, RDA, S, SCP, SQA.
Stearic acid-diethylenetriamine condensate, ethyl sulfate	No	GDC.
Stearic acid - ethylenediamine condensate	No	ARP, RPC, (2).
Stearic acid mixed amine condensate	No	HCL.
Stearic acid-tetraethylenepentamine condensate . . .	No	(2).
Tall oil acids/aminoethylpiperazine condensate	No	ENJ.
Tall oil acids-diethylenetriamine condensate	No	SCP, WTC, WVA.
Tall oil acids-polyalkylenepolyamine condensate . . .	No	FER, WVA, (2).
Tall oil acids-polyalkylene polyamine condensate, salts, with dodecylbenzene sulfonic acid and/or tall oil fatty acids	No	(2).
Tallow fatty acids-aminoethylethanolamine condensates	No	OC.
Carboxylic acid - diamine and polyamine condensates, alkoxyated:		
Mixed fatty acids-alkylenediamine condensate, polyethoxylate	No	WTC.
Stearic acid-ethylenediamine condensate, monoethoxylated	No	APC, DEX, GDC, ICI.
All other carboxylic acid-diamine and polyamine condensates alkoxyated	No	SCP.
Other amines and amine oxides having amide linkages:		
3-Cocoamido-N,N-dimethyl propylamine oxide	No	(2).
Cocoamidopropyl dimethyl amine oxide	No	PAT, RDA, SBC.
N,N'-(Di-tall oil acid)amidoethylamine	No	(2).
1-(2-Hydrogenated tallow amidoethyl)-2-nor(hydrogenated tallow)-2-imidazoline	No	SHX.
3-Lauramido-N,N-dimethylpropylamine oxide	No	SQA.
Stearamidoethyldiethylamine	No	S.
Stearamidoethylethanolamine acetate	No	S.
Stearic acid, diethanolamine condensate, methyl sulfate	No	DUP, PCI.
Stearylamidopropyldimethyl amine	No	RDA.

See footnotes at end of table.

Section 12

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Cationic-Continued		
Amines, not containing oxygen (and salts thereof):		
Amine salts:		
(Coconut oil alkyl)amine acetate	No	ENJ.
N,N-Dimethyl-N-alkylamine phosphate	No	(²).
(Hydrogenated tallow alkyl)amine acetate	No	ARC.
(Mixed alkyl)amine phosphate	No	(²).
Octadecylamine acetate	No	ARC.
(Tallow alkyl)amine acetate	No	ARC, SHX, (²).
N-(Tallow alkyl)trimethylenediamine acetate	No	ARC.
N-(Tallow alkyl)trimethylenediamine oleate	No	ARC.
All other amine salts (not containing oxygen)	No	BRD, CRT.
Diamines and polyamines:		
Imidazoline derivatives:		
1-(2-Aminoethyl)-2-naphthyl-2-imidazoline	No	(²).
1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline	No	WTC, (²).
N-(Coconut oil alkyl)trimethylenediamine	No	ARC, JTO, SHX.
N-(Dimeracidalkyl)trimethylenediamine	No	ENO.
Dimer diamine	No	SHX.
N-(Mixed alkyl)polyethylenepolyamine	No	CCW.
N-(9-Octadecenyl)trimethylenediamine	No	ARC, JTO, SHX.
Polyalicyclic polyamines and salts and quats	No	(²).
Polyamine/tall oil imidazoline	No	WTC.
1-Propanamine, 3-(C ₁₂ -C ₁₅ alkoxy derivatives)	No	SHX.
N-(Soybean oil alkyl)trimethylenediamine	No	ENO, WTC.
Stearamidoethyl-2-heptadecyl imidazoline	No	ICI.
N-(Tallow alkyl)dipropylenetriamine	No	ARC, ENJ.
N-(Tallow alkyl)trimethylenediamine	No	ARC, ENJ, JTO, SHX.
All other diamines and polyamines	No	ARC, BRD, JTO, WTC.
Primary monoamines:		
Arachidylbehenylalkyl amine	No	ENO.
(Coconut oil alkyl)amine	Yes	ARC, ENO, JTO, SHX, WTC.
Dimeracidalkyl amine	No	WTC.
Dodecylamine	No	ARC, JTO, SHX.
[Erucyl alkyl]amine	No	ENO.
Hexadecylamine	No	ARC, ENO, WTC.
(Hydrogenated tallow alkyl)amine	Yes	ARC, ENO, JTO, SHX, WTC.
(Mixed alkyl)amine	No	JTO, SHX.
9-Octadecenylamine	Yes	ARC, ENO, JTO, SHX, WTC.
Octadecylamine	Yes	ARC, ENO, JTO, SHX.
(Soybean oil alkyl)amine	No	ARC, ENO, JTO, WTC.
(Tallow alkyl)amine	Yes	ARC, ENJ, ENO, JTO, SHX, WTC.
All other primary monoamines	No	ARC, WTC.
Secondary and tertiary monoamines:		
Bis(coconut oil alkyl)amine	No	ARC.
Bis(hydrogenated tallow alkyl)amine	No	ARC, ENO, WTC.
N,N-Didecylmethylamine	No	SHX.
N,N-Dimethyl(coconut oil alkyl)amine	No	ARC, JTO.
N,N-Dimethyldodecylamine	No	ARC, BRD, SHX, TNA, WTC.
N,N-Dimethylhexadecylamine	Yes	ARC, BRD, SHX, TNA.
N,N-Dimethyl(hydrogenated tallow alkyl)amine	No	ARC, CPC.
N,N-Dimethyl(mixed alkyl)amine	No	BRD, TNA.
N,N-Dimethyl(9-octadecenyl-alkyl)amine	No	ENO.
N,N-Dimethyloctadecenylamine	No	WTC.
N,N-Dimethyloctadecylamine	Yes	ARC, BRD, ENO, SHX, TNA, WTC.
N,N-Dimethyl(soybean oil alkyl)amine	No	ARC, JTO.
N,N-Dimethyltetradecylamine	No	BRD, SHX, TNA.
N-Methylbis(coconut oil alkyl)amine	No	ARC, JTO, SHX.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Cationic-Continued		
Amines, not containing oxygen (and salts thereof)		
-Continued		
Secondary and tertiary monoamines-Continued		
N-Methylbis(hydrogenated tallow alkyl)amine	No	ARC, SHX.
N-Methyldioctadecylamine	No	ARC.
Tri(hydrogenated tallow) amine	No	SHX.
Trisododecylamine	No	SCP.
Trilaurylamine	No	SCP.
Tri(mixed alkyl)amine	No	SHX.
Trioctylamine	No	SCP, SHX.
All other secondary and tertiary monoamines	No	ARC, BRD, ENO, JTO, TNA, WTC.
Oxygen-containing quaternary ammonium salts:		
β -Alanine-N-(2-hydroxyethyl)-N-2-1-oxococoyl amino ethyl, sodium salt	No	SHX.
2-(C ₁₃ -C ₁₇ Alkyl)-1-(C ₁₋₁₈ amidoethyl)(4,5-dimethyl)imidazolium, methyl sulfate	No	DOW, SVC.
(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)(2-hydroxyethyl)ammonium ethyl sulfate	No	OC.
Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)ammonium chloride	No	(²).
1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium chloride	No	HDG.
1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline	No	(²).
Benzyl(tallow alkyl)bis(2-hydroxyethyl)ammonium chloride	No	DUP.
Bis(N-amidopropyl)-N,N-dimethyl-N-ethylammonium ethyl sulfate, dimer acid	No	SBC.
Bis(N,N1-ethyl(stearic/arachidic/behenic)amide)-cyanoethyl ethylammonium ethosulfate	No	PCI.
Bis(2-hydroxyethyl, ethoxylated)-methyloctadecylammonium chloride	No	SHX.
Bis-2-hydroxyethyl-hydrogenated tallow-ethyl sulfate	No	ICI.
Bis[2-hydroxyethyl]methyl(tallow alkyl)ammonium chloride	No	ARC, JTO.
Bis-2-hydroxyethyl-octyl-methyl-p-toluene sulfonate (Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)-methylammonium chloride	No	HXL.
Dimethyl dodecyl ethyl ammonium ether sulfate	No	ENJ, GAF, RDA, SHX.
Distearyl dimethyl ammonium methosulfate	No	PCI.
Ethoxylated(hydrogenated tallow amine), methyl ammonium chloride	No	HXL.
Ethoxylated, quaternized(C ₁₂ -C ₁₈ alkyl) oxypropyl trimethylene diamine	No	ENJ.
Ethoxylated, quaternized reaction product of formaldehyde and tallow diamine	No	ENJ.
N-Ethyl-N,N-bis(polyoxyethylene)tallow ammonium ethyl sulfate	No	ENJ.
1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolium ethyl sulfate	No	SHX.
N-Ethyl-N-hexadecylmorpholinium ethyl sulfate	No	ICI, SHX.
Ethyl(polyoxyethylene, cocoamine) ethylsulfate	No	BRD, ICI.
N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate	No	S.
α -Gluconamidopropyl dimethyl-2-hydroxyethyl ammonium chloride	No	ICI.
(2-Hydroxyethyl)dimethyl(3-stearamidopropyl)ammonium nitrate	No	VND.
	No	ACY.

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Cationic-Continued		
Oxygen-containing quaternary ammonium salts-Continued		
Hydroxyethyl-2-undecyl-2,3-imidazoline	No	MOA.
N-2-hydroxy propyl-n-methyl-N,n-bis[tallow amide ethyl] ammonium ethyl sulfate	No	SHX.
Imidazolium, 1-carboxymethyl-4,5-dihydro-1-(hydroxyethyl)-2-nor(cocoalkyl), hydroxides, monosodium salts	No	SHX.
Isostearamidopropyl dimethylamino glycolate	No	SBC.
(3-Lauramidopropyl)trimethylammonium methyl sulfate	N	ACY.
2-(2-Lauroxyloxyethyl)carbamoyl-1-methylpyridinium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) hydrogenated tallow alkylammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) isodecyloxypropylammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) isotridecyloxypropylammonium chloride	No	ENJ.
Methyl, bis-(2-hydroxyethyl) soyaalkylammonium chloride	No	ENJ.
Methyl-ditallowimidazolium methosulfate	No	SVC.
Methyl(hydrogenated tallow alkyl)diethylamine condensate, polyethoxylated, methyl sulfate	No	SVC.
1-Methyl-2-nor-tallow-1-[2-tallow amidoethyl]-imidazoliummethyl sulfate	No	SHX.
N-Methyl-N-polyoxyethylene-N,N-bis(hydrogenated tallow amidoethyl)ammonium	No	SHX.
N-Methyl-N-polyoxyethylene-N,N-bis(tallow amidoethyl)	No	SHX.
Methyltallowdiethylenetriamine condensate, polyethoxylated, methyl sulfate	No	SVC.
Methyltallowdiethylenetriamine condensate, polypropoxylated, methyl sulfate	No	SVC.
Mixed alkyl imidazoline derivative, ethoxylated	No	MOA.
Mixed(coco and soya fatty acids), reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	No	ENJ.
Mixed fatty acid amide with diethylene triamine/ethyl sulfate	No	EFH.
N-Octadecyl-N,N-di(2-hydroxyethyl)-N-methylammonium chloride	No	SHX.
All other oxygen-containing quaternary ammonium salts (Except those having amide linkages)	No	ARC, ETC, SBC, SCP, SDC, SHX, SVC, (2).
Polyethoxy methylstearyl ammonium chloride	No	WTC.
Poly(oxyethanyl, 2-diyl)-di-[2-bis(2-aminoethyl)-methylamiumethyl]-	No	SVC.
Polypropoxy diethylmethyl ammonium chloride	No	WTC.
1-Propanaminium, N-ethyl-N,N-dimethyl-3-[(1-oxooctadecyl)amino]-, ethyl sulfate	No	SBC.
Soya fatty acids, reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	No	ENJ.
Soya fatty acids, reaction products with chloromethane and diethylenetriamine, propoxylated, quaternized	No	ENJ.
Stearamidopropyl dimethylcetyl ammonium tosylate and propylene glycol	No	VND.
Stearylamidopropyl dimethyl myristyl acetate ammonium chloride	No	VND.
Tallow amine, ethoxylated, quaternary ammonium salt	No	DUP, VND.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Cationic-Continued		
Oxygen-containing quaternary ammonium salts		
-Continued		
All other quaternary ammonium salts having amide linkages	No	BRD, ENJ.
Quaternary ammonium salts, not containing oxygen:		
Acyclic:		
Bis(coconut oil alkyl)dimethylammonium chloride	Yes	ARC, ENJ, JTO, PPG, SHX.
Bis(hydrogenated tallow alkyl)dimethylammonium chloride	Yes	ARC, ENO, SHX, WTC.
Bis(hydrogenated tallow alkyl)-dimethylammoniummethyl sulfate	No	ARC, SHX.
Bis(tallow alkyl)dimethylammonium chloride	No	ARC, SHX.
N-(Cocoamidopropyl,N,N-acetic acid) ammonium salt	No	(²).
Cocodimethyl ethyl ammonium ethyl sulfate	No	SHX.
N-[(Coconut oil alkyl)amino]butyric acid, sodium salt	Yes	ARC, JTO, PPG, SHX.
Didecyldimethylammonium chloride	No	HNT, SHX.
Dimethyldi(C ₁₂ -C ₁₈)ammonium chloride (mixed straight and branched chains)	No	SHX.
Dimethyldioctadecylammonium chloride	No	ARC, SHX.
N,N-Dioctyl-N,N-dimethyl ammonium chloride	No	HNT.
Dodecyltrimethylammonium bromide	No	RSA.
Dodecyltrimethylammonium chloride	No	ARC, BRD, SHX.
Ethylidimethyl(mixed alkyl)ammonium ethyl sulfate	No	DEX.
Hexadecyltrimethylammonium bromide	No	ARC.
Hexadecyltrimethylammonium chloride	Yes	ARC, BRD, SHX.
Hexane-1, 6-bis(tributylammonium bromide)	No	HXL.
(Hydrogenated tallow alkyl)trimethylammonium chloride	No	ARC, SHX.
Lauryl pyridinium chloride	No	WTC.
Methyl (tri-hydrogenated tallow alkyl) ammonium chloride	No	WTC.
Methyl tri(C ₉ -C ₁₀)ammonium chloride	No	SHX.
Methyltrioctylammonium chloride	No	SCP.
(Mixed alkyl)ammonium chloride	No	MIL.
Octyl decyl dimethyl ammonium chloride	No	HNT.
N,N,N',N'-Pentamethyl-N-(tallow alkyl)-trimethylene-bis[ammonium chloride]	No	ARC, SHX.
Stearyl pyridium chloride	No	WTC.
Trihydrogenated tallow ammonium chloride	Yes	ENO.
Trimethyloctadecylammonium chloride	No	SHX.
Trimethyl(soybean oil alkyl)ammonium chloride	No	ARC, JTO, SHX.
Trimethyl(tallow alkyl)ammonium chloride	No	ARC, ENO, JTO, SHX, WTC.
All other quaternary ammonium salts, not containing oxygen acyclic	No	ARC, BRD, CRD, MOA, SHX, TNA.
Benzenoid:		
Benzyl(alkylpyridinium)chloride	No	(²).
Benzyl(cocoamidopropyl)dimethyl ammonium chloride	No	(²).
Benzyl(coconut oil alkyl)dimethylammonium chloride	Yes	ARC, ENJ, ENO, GDC, HRT, LUR, WTC.
Benzylidimethyl(mixed alkyl)ammonium chloride	Yes	(²), BRD, CRD, HNT, PCI, SHX, STP, TCC, (²),(²).
Benzylidimethyloctadecylammonium chloride	Yes	BRD, PPG, RDA, SHX, TNI.
Benzylidimethyloleylammonium chloride	No	RDA.
Benzylidimethyl(tallow alkyl)ammonium chloride	No	BOE, ENO, WTC.
Benzylidimethyltetradecylammonium chloride	No	BRD.
Benzylidodecyldimethylammonium chloride	No	HIP.
Benzylhexadecyldimethylammonium chloride	No	BKM.
Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride	Yes	ARC, ENO, SHX, WTC.

See footnotes at end of table.

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Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Cationic-Continued		
Quaternary ammonium salts, not containing oxygen		
-Continued		
Benzenoid-Continued		
Benzyl-methyl-bis(hydrogenated tallow)ammonium chloride	No	ENO.
Benzyl(mixed alkyl)pyridinium chloride	No	(²).
Benzyl picolinium chloride	No	GDC, LUR.
1-Benzylpyridinium chloride	No	PCI.
Benzyltrimethylammonium chloride	Yes	HIP, RSA, SHX, TCC, UTC.
Butyl picolinium bromide	No	HXL.
1-Dodecylpyridinium chloride	No	CCL, DAN.
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride	No	BRD, HNT, STP.
Octadecyl-dibenzyltrimethyl-1,3-propane diammonium chloride	No	GDC.
All other quaternary ammonium salts not containing oxygen cyclic	No	ARC, BRD, CRT, RDA, WTC, (²).
Other cationic surface-active agents:		
All other cationic surface-active agents	No	BRD, BRI, CGY, CRT, DUP, JTO, LUR, MOA, PPG, RDA, S, SCP, WM, WTC.
Nonionic:		
Carboxylic acid amides:		
(amine/acid ratio = 2/1):		
Capric acid (Ratio = 2/1)	No	SCP.
Castor oil acids (Ratio = 2/1)	No	NSC, RDA.
Coconut oil acids (Ratio = 2/1)	Yes	ARD, ARL, BRI, CCC, CON, CRT, CTL, EFH, ETC, HNT, HRT, LEA, LUR, MCP, MOA, MRV, PNx, PPG, RDA, SBC, SCP, SHX, VKR, WPG, WTC.
Coconut oil and tallow acids (Ratio = 2/1)	No	ENJ, MOA, SBC, UNN.
Lard oil acids	No	FER.
Lauric acid (Ratio = 2/1)	No	CRD, MOA.
Lauric and myristic acids (Ratio = 2/1)	Yes	CRD, FTX, MOA, SBC.
Linoleic acid (Ratio = 2/1)	No	MOA.
Mixed carboxylic acids	No	FER, SOS.
Mixed fatty acids, neutralized	No	FTX.
Oleic acid (Ratio = 2/1)	Yes	CRT, CTL, EFH, MOA, RDA.
Pelargonic acid (Ratio = 2/1)	No	MIL.
Stearic acid (Ratio = 2/1)	No	AIP, OC, RDA.
Tall oil acids (Ratio = 2/1)	Yes	BRI, ECC, MOA, PNx, PPG, SBC, WVA.
Tallow acids (Ratio = 2/1)	No	EFH, ICI, MOA.
All other diethanolamine condensates (Ratio = 2/1)	No	LUR, MOA, RDA, SHX.
Other amine/acid ratios:		
Capric acid (Ratio = 1/1)	No	MOA.
Coconut oil acids (Ratio = 1/1)	Yes	ARD, BRD, CCL, CPC, CTL, EMK, ESS, ETC, FTX, HNT, HTN, JRG, MIL, MOA, PIL, RDA, SBC, SCP, SHX, VND, WTC, (²).
Lauric acid (Ratio = 1/1)	Yes	FTX, MOA, RDA, SBC, SHX, TNI, WTC.
Lauric and myristic acid (Ratio = 1/1)	Yes	BRD, HTN, MOA, RDA, SBC.
Linoleic acid (Ratio = 1/1)	No	MOA, SBC, VND.
Mixed carboxylic acids	No	SOS, WTC.
Mixed fatty acids (Ratio = 1/1)	No	RDA, WTC.
Myristic acid (Ratio = 1/1)	No	MOA.
Oleic acid (Ratio = 1/1)	Yes	BRD, RDA, SBC.
Palm kernel oil acids (Ratio = 1/1)	No	SVC, TMH.
Rapeseed acids (Ratio = 1/1)	No	EFH.
Soybean oil acids (Ratio = 1/1)	No	MOA, RDA, SBC.
Stearic acid (Ratio = 1/1)	Yes	ECC, ENJ, ETC, HIP, LEA, MRV, RDA.

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Surface-active agents</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 12-3)</i>
Nonionic-Continued		
Carboxylic acid amides-Continued		
Other amine/acid ratios-Continued		
Tall oil acids	No	ESS, WTC, (2).
Tallow acids	No	MOA.
All other diethanolamine condensates, (Ratio = 1/1)	No	BRD, MOA.
All other carboxylic acid amides:		
All other alkanolamine condensates	No	SCP, (2).
All other carboxylic acid - alkanolamine condensates	No	SCP.
All other carboxylic acid-diamine and polyamine condensate	No	JTO.
Coconut oil acids	No	NES.
Coconut oil acids (Ratio = 1/1)	No	FTX, MOA, RDA, STP.
Coconut oil acids (Ratio = 2/1)	No	ENJ, HTN, MOA, SCP.
Coconut oil acids	No	MOA, PAT, PPG.
Coconut oil acids-dimethylaminopropylamine condensate (Ratio = 1/1)	No	(2).
Coconut oil acids-ethanolamine condensate, ethoxylated	No	SVC.
All other diethanolamine condensate	No	EFH, RDA, SCP, SHX.
Dioleic acid (Ratio = 1/2)	No	(2).
All other ethanolamine condensates	No	LUR.
All other ethanolamine condensates, (Ratio = 1/1)	No	BRD.
Ethanolamine condensates (Ratio = 2/1)	No	SHX.
Hydrogenated tallow amides, ethoxylated	No	PCI.
Hydrogenated tallow glycerides diethylenediamine condensate	No	LEA.
Hydrogenated tallow glycerides diethylenetriamine condensate	No	HRT.
Isonanoic acid, mono- and triethanolamine salt	No	HCL.
All other isopropanolamine condensates	No	SBC, VND.
Isostearic acid, aminoethylethanolamide, acetate salt	No	PCI.
Lauric acid	No	HTN, MOA.
Lauric acid (Ratio = 1/1)	No	RDA.
Lauric and myristic acids	No	RDA.
Lauric and myristic acids (Ratio = 1/1)	No	MOA, STP.
Mixed fatty acids, diethanolamine condensate	No	WTC.
Oleic acid-ethanolamine condensate, ethoxylated ..	No	ETC.
Ricinoleic acid	No	RDA.
Stearic acid (Ratio = 1/1)	No	MOA, RDA.
Stearic acid (Ratio = 2/1)	No	ECC.
Stearic acid aminoethanolamine (Ratio = 1.0/1.65 ..	No	CHP.
Stearic acid aminoethylethanolamine (Ratio = 1/2)	No	VKR.
Stearic acid-N-aminoethyl ethanolamine condensate	No	BOE.
Stearic acid-ethylenediamine condensate (Ratio = 1/2)	No	SLC.
Stearic acid monoethanolamine condensate	No	VND, WTC.
Tall oil acids-dimethylamine condensate (Ratio = 1/1)	No	BKM.
Tall oil fatty acids (Ratio = 1/2)	No	EFH.
Tall oil fatty acids (Ratio = 2.7/1)	No	EFH.
Tall oil fatty acids (Ratio = 1.5/1)	No	EFH.
Tall oil fatty acids-triethanolamine condensate	No	(2).

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Carboxylic acid amides-Continued		
All other carboxylic acid amides-Continued		
Tallow acids (amide/acid ratio=1.00/1.65)	No	PAT.
Tallow, n-3-(dimethylamino)propyl (Ratio = 1/3) . . .	No	PAT.
All other carboxylic acid amides	No	CGY.
Carboxylic acid esters:		
Anhydrosorbitol esters:		
Anhydrosorbitol dioleate	No	ICI.
Anhydrosorbitol monoester of tall oil acids	No	HDG.
Anhydrosorbitol monolaurate	Yes	BRD, HDG, ICI, PPG.
Anhydrosorbitol mono-oleate	Yes	BRD, HDG, ICI, PPG, SCP.
Anhydrosorbitol monopalmitate	No	BRD, ICI, PPG.
Anhydrosorbitol monostearate	Yes	BRD, HDG, ICI, PPG.
Anhydrosorbitol sesquioleate	No	BRD, HDG.
Anhydrosorbitol triester of tall oil acids	No	BRD, (2).
Anhydrosorbitol trioleate	No	BRD, HDG, ICI, PPG.
Anhydrosorbitol tristearate	No	BRD, PPG.
All other anhydrosorbitol esters	No	BRD, PG.
Diethylene glycol esters:		
Diethylene glycol monoester of tall oil acids	No	BKM.
Diethylene glycol monoester of tallow acids	No	ENJ.
Diethylene glycol monolaurate	Yes	BRD, CTL, ECC, HDG, PPG.
Diethylene glycol mono-oleate	No	BRD, SCP, SHX.
Diethylene glycol monostearate	No	BRD, ECC, HDG, RDA.
Diethylene glycol sesquiester of tall oil acids	No	ECC, WVA.
Diethylene glycol terephthalate	No	UPF.
All other diethylene glycol esters	No	(2).
Ethoxylated anhydrosorbitol esters:		
Ethoxylated anhydrosorbitol monolaurate	Yes	BRD, ETC, HDG, ICI, PPG, SVC.
Ethoxylated anhydrosorbitol mono-oleate	Yes	BRD, ETC, HDG, ICI, PPG, SVC.
Ethoxylated anhydrosorbitol monopalmitate	No	HDG, ICI, PPG.
Ethoxylated anhydrosorbitol monostearate	Yes	BRD, ETC, HDG, ICI, PPG.
Ethoxylated anhydrosorbitol triester of tall oil acids	No	WTC.
Ethoxylated anhydrosorbitol trioleate	No	ETC, HDG, ICI, PPG.
Ethoxylated anhydrosorbitol tristearate	Yes	BRD, HDG, ICI, PPG.
All other ethoxylated anhydrosorbitol esters	No	BRD.
Ethoxylated sorbitol esters:		
Ethoxylated sorbitol beeswax ester	No	ICI.
Ethoxylated sorbitol hexaester of tall oil acids	No	PPG.
Ethoxylated sorbitol hexaoleate	No	ICI.
Ethoxylated sorbitol lanolin ester	No	ICI.
Ethoxylated sorbitol mono-oleate	No	CPC, ICI.
Ethoxylated sorbitol monostearate	No	CPC.
Ethoxylated sorbitol oleate, acetylated	No	ICI.
Ethoxylated sorbitol tetraester of lauric and oleic acids	No	ICI.
Ethoxylated sorbitol tetraester of tall oil acids	No	(2).
Ethoxylated sorbitol tetraoleate	No	ICI.
Ethoxylated sorbitol tetrastearate	No	ICI.
Ethylene glycol esters:		
Ethylene glycol distearate	Yes	BRD, ENJ, HDG, ICI, PPG, RDA, STP, WM, WTC.
Ethylene glycol mono-oleate	No	EFH.
Ethylene glycol monostearate	Yes	BRD, HDG, PPG, RDA, SCP, STP, VND, WM, WTC.
Ethylene glycol sesquistearate	No	JTO.

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Carboxylic acid esters-Continued		
Glycerol esters:		
Complex glycerol esters:		
Glycerol diacetylitartrate monostearate	No	EKT.
Glycerol mono- and diesters of mixed fatty acids	No	ICI.
Glycerol monoester of mixed fatty acids, acetylated	No	EKT.
Glycerol monoester of mixed fatty acids, succinylated	No	EKT.
All other complex glycerol esters	No	BRD, LEV, RDA, SCP.
Glycerol esters of chemically defined acids:		
Glycerol dilaurate	Yes	CAS, HIP, STP, VND.
Glycerol monolaurate	No	BRD, HDG.
Glycerol mono-oleate	Yes	BRD, EFH, ETC, HAL, HDG, PPG, SCP, STP, SVC, WTC.
Glycerol monoricinoleate	No	BRD, HDG.
Glycerol monostearate	Yes	BRD, CCC, CHL, CPC, HAL, HDG, HRT, PPG, SCP, SQA, STP, VND, WM, WTC, WM.
Glycerol trioctanoate/decanoate	No	
All other glycerol esters of chemically defined acids	No	SCP, SVC, VND, WTC, (²)(E).
Glycerol esters of mixed acids:		
Glycerol diester of lard acids	No	BRD, SVC, WPG.
Glycerol monoester of C ₈ -C ₁₀ acids	No	SVC.
Glycerol monoester of cottonseed oil acids	No	EKT.
Glycerol monoester of hydrogenated cottonseed oil acids	No	EKT, WM.
Glycerol monoester of hydrogenated lard acids ..	No	EKT.
Glycerol monoester of hydrogenated soybean oil acids	No	BFP, EKT.
Glycerol monoester of lard acids	No	EKT.
Glycerol monoester of palm oil acids	No	EKT.
Glycerol monoester of safflower oil acids	No	EKT.
Glycerol monoester of tall oil acids	No	EFH, FER.
Glycerol monoester of tallow acids	No	EKT.
Glycerol sesquiesther of hydrogenated tallow acids	No	PCI.
Glycerol triester of mixed fatty acids	No	SVC.
All other glycerol esters of mixed acids	No	BFP, EKT, ETC.
Natural fats and oils, ethoxylated:		
Castor oil, ethoxylated	Yes	CAS, CPC, CRD, ETC, GAF, HCL, ICI, MIL, PPG, RDA, S, SCP, SVC, TMH, WTC, (²).
Coconut oil, ethoxylated	No	SVC.
Hydrogenated castor oil, ethoxylated	Yes	ETC, ICI, MIL, PPG, RDA, SCP.
Lanolin, ethoxylated	Yes	CRD, HCL, SVC, (²).
Mixed fatty acids, alkyl ether, ethoxylated	No	(²).
Mixed tall oil and rosin acids, ethoxylated	No	HCL.
Oleic acid, ethoxylated	No	TMH.
Oleic acid, ethoxylated and propoxylated	No	MIL.
Tall oil acids, ethoxylated	No	HCL, RDA.
Tall oil acids, ethoxylated and propoxylated	No	RDA, (²).
Tall oil, refined, ethoxylated	No	(²).
All other natural fats and oils, ethoxylated	No	BAS, CRD, ETC, HDG, MIL, RDA, SCP.
Polyethylene glycol esters:		
Polyethylene glycol esters of chemically defined acids:		
Polyethylene glycol dilaurate	Yes	BRD, EFH, ETC, HDG, PPG, STP, WM.
Polyethylene glycol dioleate	Yes	BRD, EFH, HAL, HDG, MIL, OC, PPG, QCP, SCP, SOS, STP, (²), (²).

See footnotes at end of table.

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Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Carboxylic acid esters-Continued		
Polyethylene glycol esters-Continued		
Polyethylene glycol esters of chemically defined acids-Continued		
Polyethylene glycol distearate	Yes	BRD, ETC, HDG, HIP, PPG, RDA, SBC, STP, WTC.
Polyethylene glycol monocaprylate	No	ECC.
Polyethylene glycol monolaurate	Yes	BRD, CCA, ECC, EFH, ENJ, ETC, HAL, HDG, ICI, PPG, RDA, STP.
Polyethylene glycol mono-oleate	Yes	BOE, BRD, CCA, CRT, ECC, EFH, ETC, GDC, HAL, HCL, HDG, MRT, MRV, OC, PPG, SHX, STP, SVC, WTC, (2).
Polyethylene glycol monopalmitate	Yes	BRD, ETC, HCL, ICI, RDA.
Polyethylene glycol monopelargonate, methoxylated	No	RDA.
Polyethylene glycol monopelargonate	No	ETC, SOS.
Polyethylene glycol monoricinoleate	No	ECC, S.
Polyethylene glycol monostearate	Yes	APC, BRD, CCC, CPC, CRT, EFH, ETC, GDC, HDG, HRT, ICI, LUR, OC, PPG, RDA, SCP, STP, SVC, VKR, VND, (2)(E), (2).
Polyethylene glycol monotallate	No	CCC, PPG.
Polyethylene glycol sesquinoleate	No	SOS.
Polyethylene glycol terephthalate	No	BOE, PCI.
All other polyethylene glycol esters of chemically defined acids	No	BRD, ETC, HCL.
Polyethylene glycol esters of mixed acids:		
Polyethylene glycol diester of coconut oil acids	No	PPG.
Polyethylene glycol diester of coconut oil and oleic acids	No	EFH.
Polyethylene glycol diester of mixed linoleic/oleic acid	No	PCI.
Polyethylene glycol diester of tall oil acids	Yes	ARI, BRD, EFH, ETC, HIP, LUR, PAT, PPG, QCP, (2).
Polyethylene glycol ester of mixed fatty acids	No	SHX, SOS.
Polyethylene glycol monoester of coconut oil acids	No	CRT, ICI, LUR.
Polyethylene glycol monoester of tall oil acids	No	BKM, EFH, FER.
Polyethylene glycol (mixed ester) of tall oil acids	No	CRT.
Polyethylene glycol sesquiester of coconut oil acids	No	ENJ, SCP, WPG.
Polyethylene glycol sesquiester of tall oil acids	No	ICI, SLM, WTC, (2).
Polyethylene glycol sesquiester of tallow acids	No	PAT, RDA.
All other polyethylene glycol esters of mixed acids	No	BRD, ETC, LEA, WPG, WTC, (2)(E).
Polyglycerol esters:		
Hexaglycerol	No	SVC.
Mixed oleic, lauric, stearic, and palmitic hexaglycerol esters	No	SVC.
Polyglycerol distearate	No	BRD.
Polyglycerol mono-oleate	Yes	HDG, PPG, WTC.
Polyglycerol monostearate	Yes	BRD, HDG, PPG, SVC.
Triglycerol distearate	No	PPG.
All other polyglycerol esters	No	BRD.
Propanediol esters:		
1,2-Propanediol dioctanoate/decanoate	No	SVC.

See footnotes at end of table.

Table 12-2—Continued
Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Carboxylic acid esters-Continued		
Propanediol esters-Continued		
1,2-Propanediol monolaurate	No	SBC, STP.
1,2-Propanediol mono-oleate	No	EFH.
1,2-Propanediol monostearate	Yes	BRD, EKT, HAL, PPG, SBC, STP, WM.
Other carboxylic acid esters:		
Di-isobutylene maleate	No	RH.
ethoxylated 1,3-butylene glycol condensed with oil fatty aci		
Ethoxylated 1,3-butylene glycol stearate	No	HCL.
Ethoxylated castor oil, ditridecylmaleate	No	UPF.
Ethoxylated glycerol and propylene glycol esters of coco fatty acids	No	SVC.
Ethoxylated glycerol sesquiesther of mixed fatty acids	No	SHX.
Ethoxylated 1,2-propanediol monostearate	No	ICI.
Ethoxylated and propoxylated glycerol mono- and diesters of tallow acids	No	SVC.
Linoleic acid dimers, alkoxyated	No	(²).
Maleic anhydride, polypropylene glycol copolymer	No	PCI.
dMethylglucoside laurate	No	HDG, PPG.
Mixed alkyl benzoate	No	APC.
Mixed alkyl stearate	No	SOS.
Nonyl phenol ethoxylate, oleate	No	EFH.
Pentaerythritol stearate	No	BRD, PPG.
Polyalkylene glycol oleate	No	SOS.
Polycarboxylic acid, alkylate	No	(²).
Polycarboxylic acid, alkylphenoxyalkoxylate	No	(²).
Polypropylene glycol dioleate	No	(²).
Propylene glycol esters of hydrogenated palm oil	No	PG, VND.
All other carboxylic acid esters	No	ARI, BRD, ETC, HDG, MOA, PPG, QCP, SVC, SYL, WM, (²), (²)(E).
Ethers:		
Benzenoid ethers:		
Alkylphenol-formaldehyde condensates, alkoxyated	No	ETC, (²).
t-Amylphenol, ethoxylated	No	(²).
Amylphenol-formaldehyde, alkoxyated	No	(²).
Bisphenol A, ethoxylated and propoxylated	No	PPG.
Bisphenol A, ethoxylated	No	PPG, RDA.
P-tert-Butylphenol-formaldehyde, alkoxyated	No	(²).
Dinonylphenol, ethoxylated	Yes	CPC, ETC, GAF, HTN, PPG, RDA, RH, S, (²).
Dodecylphenol, ethoxylated	Yes	GAF, MON, RDA, SCP, TMH.
Epichlorohydrin bisphenol A, ethoxylated	No	(²).
Iso-octylphenol, ethoxylated	Yes	BAS, GAF, PPG, RDA, RH, TMH.
(Mixed alkyl)phenol epichlorohydrin-formaldehyde, alkoxyated	No	(²).
(Mixed alkyl)phenol, ethoxylated	No	MIL.
(Mixed alkyl)phenol, ethoxylated, butyl ether	No	RH.
(Mixed alkyl)phenol-formaldehyde, alkoxyated	Yes	ENJ, HCL, WTC, (²), (²).
Naphthalene sulfonic acid, polymer with formaldehyde, sodium salt	No	PCI.
β -Naphthol, ethoxylated	No	BAS.
Naphthalene sulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone, ammonium salt	No	PCI.

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Ethers-Continued		
Benzenoid ethers-Continued		
Nonylphenol, ethoxylated	Yes	BAS, BRD, CPC, DUP, ENJ, ETC, GAF, HCL, HDG, HTN, ICI, MIL, MOA, MON, OMC, PPG, RDA, RH, S, SCP, STP, TMH, TX, UCC, WPG, WTC, (2), (2).
Nonylphenol, ethoxylated, phosphate esters	No	OMC.
Nonylphenol, ethoxylated and propoxylated	Yes	RDA, RH, SCP, STP, TMH, WTC, (2).
Nonyl phenol, ethoxylated with mixed fatty acids	No	SOS.
Nonylphenol-formaldehyde, alkoxyated	Yes	RDA, WTC, (2), (2).
Nonyl phenol oleate, ethoxylated	No	SOS.
nonylphenoxy ethoxycocoate	No	AMU.
Nonylphenoxy poly(ethyleneoxy)ethyl iodide	No	RDA.
n-Octylphenol, ethoxylated	No	SCP, WTC.
tert-Octylphenol-formaldehyde, ethoxylated	No	SDW.
Phenol, ethoxylated	Yes	ETC, GAF, ICI, MIL, PPG, RDA, SCP.
Phenol-formaldehyde resin (with lignite)	No	PSP.
Phenol, propoxylated	No	RH.
p-Phenylphenol, alkoxyated	No	BAS.
p-Phenylphenol, ethoxylated and propoxylated	No	RDA.
Phenylstyrene, ethoxylated	No	HCL.
Xylenol, ethoxylated	No	RDA.
All other phenols, ethoxylated	No	ETC, GAF, RDA, SCP, (2)(E).
Nonbenzenoid ethers:		
Linear alcohols, alkoxyated:		
Butyl alcohol, propoxylated	No	WTC.
Decyl alcohol, ethoxylated	Yes	BAS, CPC, ENJ, GAF, HCL, ICI, S.
Decyloxypoly(ethyleneoxy)ethyl chloride	No	GAF, RDA.
Dodecyl alcohol, ethoxylated	Yes	BRD, ENJ, HCL, HDG, ICI, MIL, PPG, (2).
Glycerol, ethoxylated	No	RDA.
Hexadecyl alcohol, ethoxylated	Yes	BRD, ICI, RDA, SVC.
Hexadecyl alcohol, propoxylated	No	PPG.
N-Hexyl alcohol, ethoxylated	No	RDA.
Isostearyl alcohol, ethoxylated	No	SHX.
Methyl alcohol, alkoxyated	No	(2).
9-Octadecenyl alcohol, ethoxylated	Yes	ETC, GAF, ICI, RDA, S.
Octadecyl alcohol, ethoxylated	No	GAF, HTN, ICI, PPG, SCP.
Oleyl alcohol, ethoxylated	Yes	CPC, CRD, HCL, PPG, RDA, SHX.
Stearyl alcohol, propoxylated	No	SVC.
All other chemically defined linear alcohol, alkoxyated	No	CRD, GAF, HDG, RDA, SCP.
Coconut oil alcohol, ethoxylated	No	ETC, GAF, HCL, RDA, TX.
Decyl and octyl alcohols, ethoxylated	No	GAF, MIL, SHX, STP.
Decyl and octyl alcohols, ethoxylated and propoxylated	No	PPG.
Mixed linear alcohols, alkoxyated	No	WTC, (2).
Mixed linear alcohols, ethoxylated	Yes	BAS, DUP, ENJ, GAF, HCL, HDG, ICI, MIL, MOA, RDA, RH, S, SCP, SHC, SHX, STP, TMH, TNA, TX, UCC, VST, WTC, (2).
Mixed linear alcohols, ethoxylated, benzyl ether	No	(2).
Mixed linear alcohols, ethoxylated and propoxylated	Yes	BAS, DUP, ENJ, ETC, GAF, MIL, OMC, PPG, RDA, S, SCP, SHX, STP, SVC, UCC, (2).
Myristyl alcohol, propoxylated	No	WTC.
Stearyl alcohol, propoxylated	No	WTC.
Tallow alcohol, ethoxylated	No	ENJ, ETC, HCL, PPG, RDA, TX.
Wool wax alcohols, ethoxylated	No	CRD.
All other mixed linear alcohols, alkoxyated	No	ETC, RDA, RH, SHC.
Other ethers and thioethers:		

See footnotes at end of table.

Table 12-2—Continued

Surface-active agents for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Surface-active agents	Separate statistics ¹	Manufacturers' identification codes (according to list in table 12-3)
Nonionic-Continued		
Ethers-Continued		
Other ethers and thioethers-Continued		
Bis-cumylphenyl-oxoethylene titanate	No	KPI.
1,3-Butylene glycol, ethoxylated	No	HCL.
tert-Dodecyl mercaptan, ethoxylated	No	ETC, RDA.
Glucose, ethoxylated	No	RDA.
Glycerine, alkoxyated	No	(²).
Glycerol, alkoxyated, toluene diisocyanate copolymer	No	(²).
Isodecyl alcohol, ethoxylated	No	ETC, PPG.
Iso-octyl alcohol, ethoxylated	No	ETC.
Lignin, ethoxylated	No	WVA.
Mixed alcohols, ethoxylated	Yes	ENJ, MIL, S, (²).
Poly(epichlorhydrin	No	(²).
Polyether diols	No	WTC.
Polyether triols	No	WTC.
Polyethoxylate/polypropoxylate dibenzyl ether	No	(²).
Polyethylene glycol mono(nonylphenol)ether ammonium sulfate	No	(²).
Polyethylene glycol, propoxylated	No	RDA.
Poly(mixed ethylene, propylene)glycol	Yes	ETC, UCC, WTC, (²), (²).
Poly(mixed ethylene/propylene glycol) capped with alkyl oxirone	No	(2).
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy,C ₁₂ C ₁₅ alkyl ethers	No	PCI.
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, ethoxylated nonylphenol alkyl ether	No	PCI.
Polypropylene glycol, alkoxyated, polymer with maleic anhydride, acrylic acid, and alkylphenol-formaldehyde resin, alkoxyated	No	(²).
Polypropylene glycol, ethoxylated	No	BAS, ETC, HCL, HDG, PPG, RDA, SCP, WTC, (²).
Polypropylene glycol glycerol triether, copolymer with epichlorhydrin bisphenol epoxy resin	No	(²).
2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated	No	SCP.
Thiodiglycol ethoxylated	No	RDA.
Tridecyl alcohol, ethoxylated	No	BAS, CPC, DUP, ETC, GAF, HCL, ICI, MIL, OMC, PPG, RDA, S, WTC, (²).
Tridecyl alcohol, propoxylated and ethoxylated	No	ETC, HTN, PPG, TX.
Trimethylnonyl alcohol, ethoxylated	No	UCC.
Trimethylolpropane, alkoxyated	Yes	BAS, ETC, RDA, WTC.
All other ethers and thioethers	No	BAS, ETC, HCL, OMC, RDA, RH, SCP, (²).
Other nonionic surface-active agents:		
Cumyl phenolate isopropoxy titanium salt	No	KPI.
Formaldehyde, dicyandiamide, ethylene sulfate polymers	No	PCI.
(Mixed alkyl)phenol alkylenediaminealkanolamine formaldehyde	No	(²).
Tetra-(2,2-dialyloxymethylene)-1-butoxy titanium bis-(ditridecyl) phosphite	No	KPI.
Tetra-isopropoxy titanium (bis dioctyl) phosphite	No	KPI.
Tetra octyloxy titanium (bis-tridecyl phosphite)	No	KPI.
All other nonionic surface-active agents	No	BAS, BRD, BRI, CGY, CLU, CRT, DUP, ICI, KPI, LUR, MIL, MOA, PG, RDA, SCP, SVC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 12-3

Surface-active agents: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACT	Climax Performance Materials Corp.	ESS	Essential Industries, Inc.
ACY	American Cyanamid Co.	ETC	Ethox Chemicals, Inc.
AGP	Dial Corp.	FER	Ferro Corp., Keil Chemical Div.
AIP	Air Products & Chemicals, Inc.	FPC	Flambeau Paper Corp.
AMU	RPM American Emulsion Co., Inc.	FTX	Finetex, Inc.
APC	Apollo Chemicals Corp.	GAF	GAF Chemical Corp.
APX	Apex Chemical Co., Inc.	GDC	Gresco Mfg., Inc.
ARC	Akzo Chemicals, Inc.	HAL	C. P. Hall Co.
ARD	Ardmore Chemical Co., Inc.	HCL	Hoechst Celanese Corp., Sou-Tex Works
ARI	Atlas Refinery, Inc.	HDG	Hodag Chemical Corp.
ARL	Arol Chemical Products Co.	HEW	Hewitt Soap Co., Inc.
ARP	Armour Pharmaceutical Co.	HIP	High Point Chemical Corp.
ARZ	Arizona Chemical Co.	HMP	W. R. Grace & Co., Hampshire Chemicals Div. and Organic Chemical Div.
BAS	BASF Corp.	HNT	Huntington Laboratories, Inc.
BFP	American Ingredients Company	HPC	Hercules, Inc.
BKM	Buckman Laboratories, Inc.	HRT	Hart Products Corp.
BLA	Astor Products, Inc., Blue Arrow Div.	HTN	Heterene Chemical Co.
BOE	Boehme Filatex, Inc.	HXL	Hexcel Corp., Hexcel Chemical Products
BRD	Lonza, Inc.	ICI	ICI Americas, Inc., Specialty Chemicals Div.
BRI	Sedgefield Specialities	JLP	J. L. Prescott Co.
BSW	Original Bradford Soap Works, Inc.	JRG	Andrew Jergens Co.
CAS	CasChem, Inc.	JTO	Jetco Chemicals, Inc.
CCA	Akzo Chemicals, Inc.	KPI	Kenrich Petrochemicals, Inc.
CCC	C.N.C. International, Inc.	LEA	Leatex Chemical Co.
CCL	Catawba-Charlab, Inc.	LEV	Lever Brothers Co.
CCW	Morton International, Inc. (Specialty Chemicals Group).	LKY	Lake States Div. of Rhinelander Paper Co.
CGY	Ciba-Geigy Corp.	LUR	Reilly Whiteman, Inc.
CHL	Chemol Co.	MAR	Daishowa Chemicals, Inc.
CHP	C. H. Patrick & Co., Inc.	MCP	Moretex Chemical Products, Inc.
CIN	Stockhausen, Inc.	MIL	Milliken & Co., Milliken Chemical Div.
CLU	CL Industries, Inc.	MOA	Mona Industries, Inc.
CMT	Chemithon Corp.	MON	Monsanto Co.
CON	Concord Chemical Co., Inc.	MRT	Morton International, Inc., Morton Chemical Div.
CP	Colgate-Palmolive Co.	MRV	Marlowe-Van Loan Corp.
CPC	Grant Industries, Inc.	NCC	Niacet Corp.
CRD	Croda, Inc.	NES	Ruetgers-Nease Chemical Co.
CRT	Reilly-Whiteman, Inc.	NMC	Namico, Inc.
CTL	Continental Chemical Co.	NPR	Safeway Stores, Inc.
DAN	Dan River, Inc., Chemical Products Div.	NSC	National Starch & Chemical Corp.
DEX	Dexter Chemical Corp.	OC	Omega Chemicals, Inc.
DOW	Dow Chemical Co.	OMC	Olin Corp.
DUP	E. I. duPont de Nemours & Co., Inc. Chemicals & Pigments Dept.	PAT	Pat-Chem, Inc.
ECC	Eastern Color & Chemical Co.	PCI	Piedmont Chemical Industries, Inc.
EFH	E. F. Houghton & Co.		
EKT	Tennessee Eastman Co. Div.		
EMK	Emkay Chemical, Inc.		
ENJ	Exxon Chemical Americas		
ENO	Enenco, Inc.		

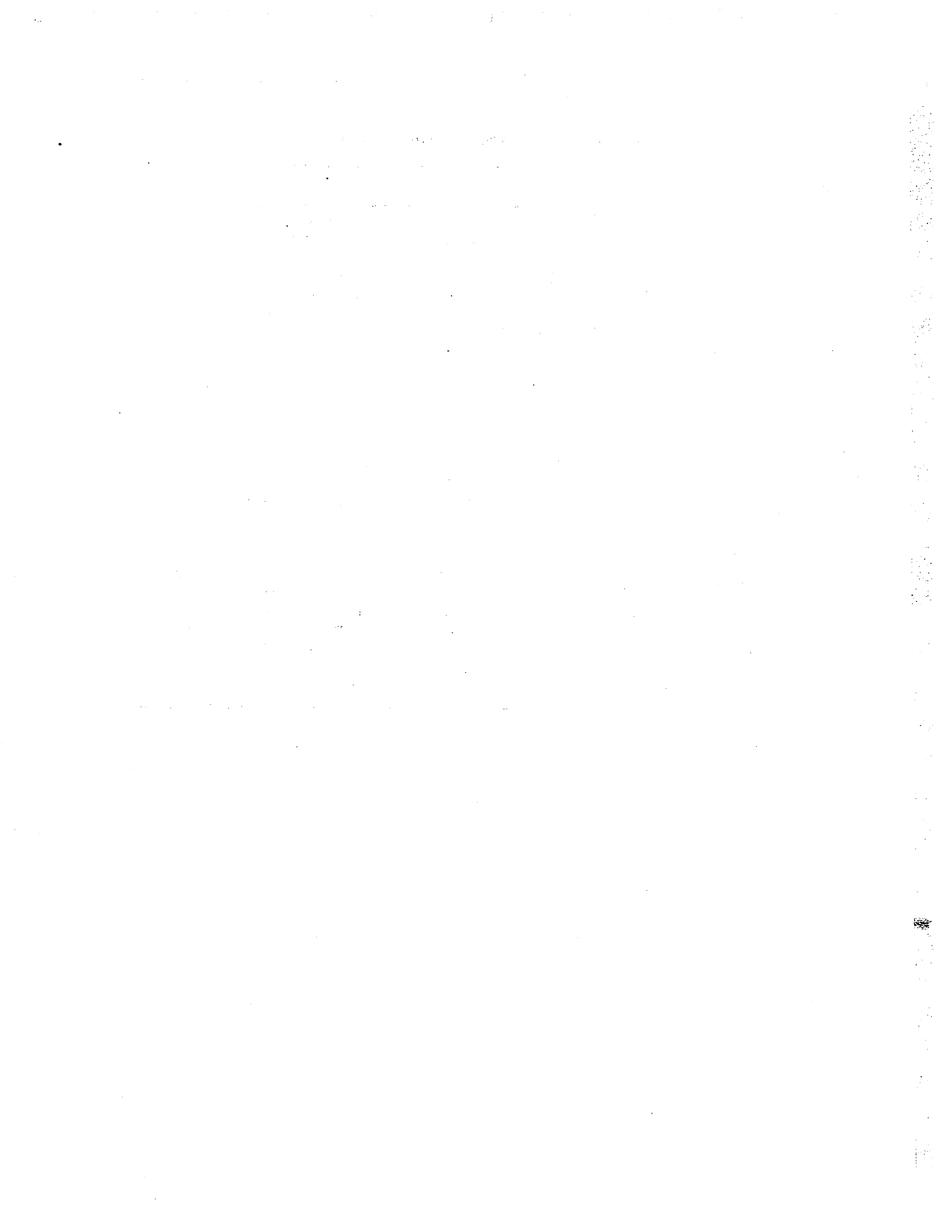
See note at end of table.

Table 12-3—Continued

Surface-active agents: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
PEL	Pelron Corp.	STP	Stepan Chemical Co.
PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.	SVC	Capital City Products Co.
PIL	Pilot Chemical Co.	SYL	Arizona Chemical Co.
PNX	Murphy-Phoenix Co.	TCC	Sybron Chemicals, Inc.
PPG	PPG Industries, Inc.	TEN	Tennessee Chemical Co.
PSP	Georgia-Pacific Corp., Bellingham Div.	TMH	Harcros Chemicals, Inc.
QCP	Quaker Chemical Corp.	TNA	Ethyl Corp.
RAY	Rayonier Chemical Products, Inc.	TNI	Gillette Chemical Co.
RDA	Rhone-Poulenc, Inc.	TX	Texaco Chemical Co.
RH	Rohm & Haas Co.	UCC	Union Carbide Corp., Industrial Chemical Div.
RPC	Colloids, Inc., Lyndal Div	UDI	Desoto, Inc.
RSA	R.S.A. Corp.	UNN	United Aniline Co.
S	Sandoz, Chemical Corp., Colors & Chemicals Div.	UPF	Sloss Industries
SBC	Scher Chemicals, Inc.	USR	Uniroyal Chemical Co., Inc.
SBP	SBS Products Inc.	UTC	Unitex Chemical Corp.
SCP	Henkel Corp.	VKR	Virkler Co.
SDC	Sandoz Chemical Corp.	VND	Van Dyk, Div. of Mallinckrodt, Inc.
SDW	Sterling Drug, Inc., Sterling Organics Div.	VST	Vista Chemical Inc.
SHC	Shell Oil Co., Shell Chemical Co.	WBG	Dryden Oil Co., White and Bagley Div.
SHX	Sherex Chemical Co., Inc.	WHW	Whittemore-Wright Co., Inc.
SLC	Soluol Chemical Co., Inc.	WM	Inolex Chemical Co.
SOS	SSC Industries, Inc.	WPG	West Point-Pepperell, Inc., Grifftex Chemical Co. Sub.
SPA	Scott Paper Co.	WTC	Witco Chemical Corp.
SQA	Sequa Chemicals, Inc.	WVA	Westvaco Corp.

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.



Section 13 Pesticides and Related Products

Pesticides and related products include fungicides, herbicides, insecticides, rodenticides, and related products such as plant growth regulators, seed disinfectants, soil conditioners, soil fumigants, and synergists. The data are given in terms of 100 percent active materials; they exclude such materials as diluents, emulsifiers, and wetting agents.

U.S. production of pesticides and related products in 1990 amounted to 557 million kilograms, 3 percent less than the 572 million kilograms reported for 1989 (table 13-1). Sales in 1990 were 442 million kilograms, a decrease of 4 percent, as compared with 461 million kilograms reported in 1989; the value of sales was \$4,774 million in 1990, compared with \$5,203 million in 1989, a decrease of 8 percent. Data for production of pesticides and related products during 1986-90 are shown in figure 13-1.

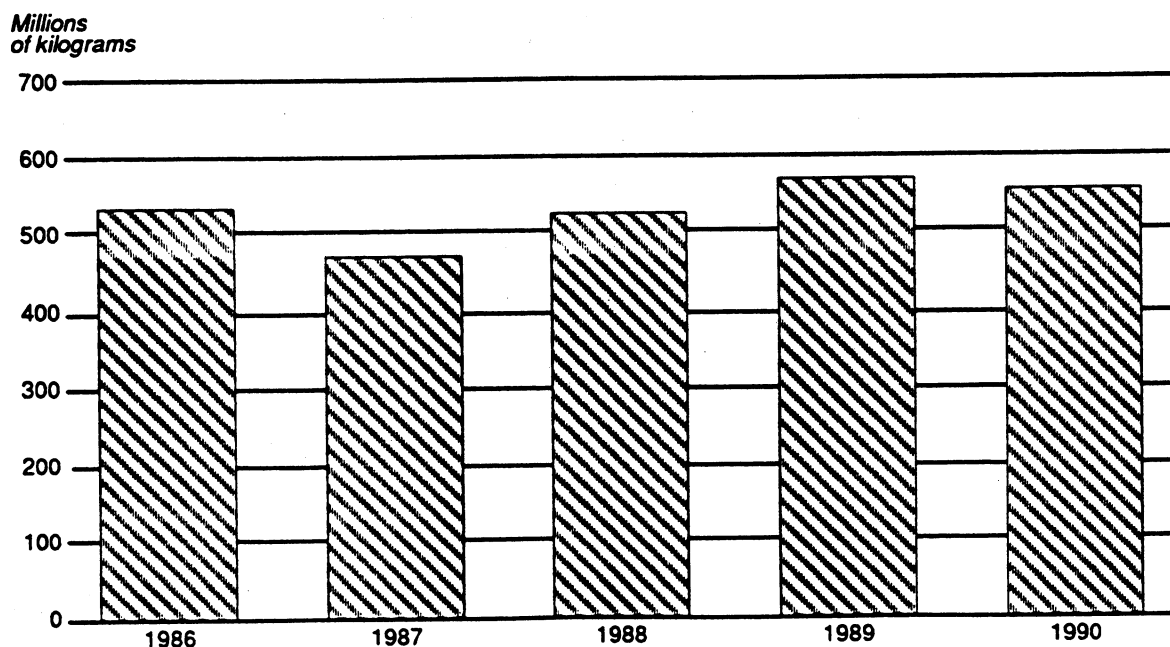
Production of cyclic pesticides and related products amounted to 361 million kilograms in 1990, 1 percent less than the 366 million kilograms produced in 1989. Sales in 1990 were 280 million kilograms, valued at \$3,367 million, compared with 287 million kilograms, valued at \$3,639 million, in 1989.

Production of acyclic pesticides and related products in 1990 amounted to 196 million kilograms, compared with 206 million kilograms reported for 1989. Sales in 1990 were 161 million kilograms, compared with 174 million kilograms reported for 1989; the value of sales was \$1,407 million in 1990, compared with \$1,563 million in 1989.

Table 13-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 13-3.

Stephen Wanser
202-205-3363

Figure 13-1
Pesticides and related products: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 13

Table 13-1

Pesticides and related products: U.S. production and sales, 1990

Pesticides and related products	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	556,875	441,565	4,774,345	\$10.81
Cyclic				
Total	361,202	280,112	3,366,910	12.02
Fungicides ²	38,564	32,878	249,780	7.60
Herbicides and plant growth regulators, total	260,092	201,112	2,306,188	11.47
Phenoxyacetic acid derivatives	20,441	17,642	51,343	2.91
All other cyclic herbicides ⁴	239,651	183,470	2,254,845	12.29
Insecticides and rodenticides, total	51,968	42,779	792,426	18.52
Chlorinated insecticides	1,491	1,404	12,028	8.57
Organophosphorus insecticides ⁵	25,462	19,655	332,019	16.89
All other cyclic insecticides and rodenticides ⁶	25,015	21,720	448,379	20.64
All other cyclic pesticides	10,578	3,343	18,516	5.54
Acyclic				
Total	195,673	161,453	1,407,435	8.72
Fungicides ⁷	5,149	5,783	33,611	5.82
Herbicides and plant growth regulators ⁸	56,578	61,223	886,194	14.47
Insecticides, rodenticides, soil conditioners, and fumigants, total	122,938	83,968	425,797	5.07
Organophosphorus insecticides ⁹	28,622	15,802	215,286	13.62
N-Methyldithiocarbamic acid (Metham)	17,308	14,563	19,643	1.35
All other acyclic insecticides, rodenticides, soil conditioners, and fumigants ¹⁰	77,008	53,603	190,868	3.56
All other acyclic pesticides	11,008	10,479	61,833	5.90

¹ Calculated from unrounded figures.² Includes benomyl, captan, chlorothalonil, DMTT, folpet, pipron, and others.³ Reported data were accepted in confidence and may not be published, or no data were reported.⁴ Includes alachlor, atrazine, benefin, bensulide, 2,4-D and other 2,4-D esters and salts, dicamba, dinitrophenol compounds, diuron, DNBP, isopropyl phenylcarbamates (IPC and CIPC), maleic hydrazide, molinate, NPA, picloram, prometon, triazines, trifluralin, plant growth regulators, and others.⁵ Includes diazinon, methyl parathion, and other phosphorothioates and phosphorodithioates.⁶ Includes carbaryl, chlorinated insecticides (chlordan, heptachlor, and others), insect attractants, DEET and other insect repellents, small amounts of rodenticides, and others.⁷ Includes dithiocarbamates.⁸ Includes butylate, EPTC, methanearsonic acid salts, thiocarbamates, and organophosphorus herbicides, and others.⁹ Includes acephate, disulfoton, ethion, malathion, phorate, and other organophosphorus insecticides.¹⁰ Includes, methyl bromide, soil conditioners and fumigants, small quantities of rodenticides, and others.

Note.—Does not include data for the insect fumigant, p-dichlorobenzene, nor the fungicide, o-phenylphenol. These data are included in the section on "Cyclic Intermediates." It also does not include data for the fungicides, dimethyldithiocarbamic acid, sodium salt and dimethyldithiocarbamic acid, zinc salt (i.e., ziram). These data are included in the section on "Rubber-Processing Chemicals." The data for ethylene dibromide, a fumigant, are included in the "Miscellaneous End-Use Chemicals and Chemical Products" section.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 13-2
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Cyclic:	Yes	
Fungicides:	Yes	
2,6-Bis(dimethylaminomethyl)cyclohexanone	No	FER.
2-Bromo-4'-hydroxyacetophenone	No	BKM.
α -(2-Chlorophenyl)- α -(4-chlorophenyl)-5-pyrimidinemethanol	No	LIL.
α -(2-Chlorophenyl)- α -(4-fluorophenyl)-5-pyrimidinemethanol	No	LIL.
2,4-Dichloro-6-(o-chloroanilino)-s-triazine	No	CHG.
1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)	No	CHF.
Hexahydro-1,3,5-triethyl-s-triazine	No	VNC.
Hexahydro-1,3,5-tri(2-hydroxyethyl)-s-triazine	No	(²).
2-Mercaptobenzothiazole, sodium salt	No	(²).
Methyl-1-(butylcarbamoyl)-2-benzimidazolecarbamate (Benomyl)	No	DUP.
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Pipron)	No	LIL, USR.
Naphthenic acid, copper salt	No	CCA, MCI, NOD, TRO.
2-n-Octyl-4-isothiazolin-3-one	No	RH.
Pentachloronitrobenzene (PCNB)	No	AMV.
Pentachlorophenol, sodium salt	No	FRO.
8-Quinolinol, copper salt	No	NOD.
2,4,5,6-Tetrachloroisophthalonitrile	No	SDS.
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (DMTT)	No	BKM, MRK, VCC.
2-(Thiocyanomethylthio)benzothiazole	No	BKM.
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan)	No	ICI, VNC.
All other cyclic fungicides	No	CHD, NOD.
Herbicides and plant growth regulators:	Yes	
3-Amino-2,5-dichlorobenzoic acid, ammonium salt (2,5-Dichloro-3-aminobenzoic acid, ammonium salt) ..	No	RDA.
4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5-(4H)-one	No	CHG, DUP.
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	No	DOW.
S-benzyl thiocarbamate	No	ICI.
4,6-Bis(isopropylamino)-2-methoxy-s-triazine (Prometon)	No	CGY.
2,4-Bis(isopropylamino)-6-(methylthio)-s-triazine (Prometryn)	No	CGY.
5-Bromo-3-sec-butyl-6-methyluracil (Bromacil)	No	DUP.
2-(sec-Butylamino)-4-ethylamino-6-methoxy-s-triazine	No	CGY.
2-(tert-Butylamino)-4-ethylamino-6-(methylthio)-s-triazine	No	CGY.
3-tert-Butyl-5-chloro-6-methyluracil	No	DUP.
N-Butyl-N-ethyl- α,α,α -trifluoro-2,6-dinitro-p-toluidine (Benefin)	No	LIL.
Butyl 2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate	No	(²).
1-(carboethoxy)ethyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoate	No	SOC.
2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine) ..	No	CGY.
2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine)	No	CGY.
2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)-acetanilide (Butachlor)	No	MNA.

See footnotes at end of table.

Section 13

Table 13-2—Continued
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Cyclic-Continued		
Herbicides and plant growth regulators-Continued		
2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor)	No	MNA.
2-Chloro-N-ethoxymethyl-N-(2-ethyl-6-methylphenyl)-acetamide (Acctochlor)	No	MNA.
2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene (Oxyfluorfen)	No	RH.
2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (Atrazine)	No	CGY, DUP.
2-[4-Chloro-6-(ethylamino)-s-triazin-2-ylamino]-2-methylpropionitrile (Cyanazine)	No	DUP.
2-Chloro-N-isopropylacetanilide (Propachlor)	No	MNA.
2-Chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-aminocarbonyl]benzenesulfonamide	No	DUP.
2-(4-Chloro-2-methylphenoxy)propionic acid, dimethylamine salt	No	RIV.
2-(2-Chlorophenyl)methyl-4,4-dimethyl-3-isoxazolinone	No	FMN.
5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-introbenzoic acid, sodium salt	No	BAS.
3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1H,3H)-dione	No	DUP.
3,5-Dibromo-4-hydroxybenzoxynitrile (Bromoxynil)	No	RDA.
3,6-Dichloro-2-anisic acid (Dicamba)	No	ZOC.
2,6-Dichlorobenzoxynitrile	No	USR.
2-(2,4-Dichlorophenoxy)propionic acid, dimethylamine salt	No	RIV.
2-(2,4-Dichlorophenoxy)propionic acid, isooctyl ester	No	RIV.
3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	No	DUP.
3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	No	DUP.
2-(3,4-Dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione (Methazole)	No	ZOC.
1-[(2,4-Dichlorophenyl)4-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole	No	ICI.
3',4'-Dichloropropionanilide (Propanil)	No	CED, CYT, RH.
3,7-Dichloro-8-quinolinic Acid	No	NES.
S-(O,O-Diisopropyl phosphorodithioate) ester of N-(α -mercaptoethyl)benzenesulfonamide (Bensulide)	No	ICI.
1,1'-Dimethyl-4,4'-bipyridinium dichloride	No	(?).
Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	No	SDS.
2,6-Dinitro-N,N-dipropyl cumidine	No	LIL.
2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s-triazine (Ametryne)	No	CGY.
Ethyl 2-(4-chloro-6-methoxypyrimidin-2-yl)-amino carbonyl amino sulfonyl benzoate (Chlorimuron ethyl)	No	DUP.
S-Ethyl cyclohexylmethylthiocarbamate	No	ICI.
S-Ethyl-hexahydro-1H-azepine-1-carbothioate (Molinate)	No	ICI.
(-)-5-Ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)nicotinic acid	No	ACY.
N-[3-(1-Ethyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (Flexidor)	No	LIL.
N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	No	ACY.

See footnotes at end of table.

Table 13-2—Continued
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Cyclic-Continued		
Herbicides and plant growth regulators-Continued		
Imazaquin 2-4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1hidazol-2-ylquinoline-carboxylic acid	No	ACY.
Imazethbenz methyl ester (cl222,293)	No	ACY.
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)	No	SOC.
Methyl 3-	No	DUP.
2-(2-Methyl-4-chlorophenoxy)propionic acid, iso-octyl ester	No	RIV.
1-(2-Methylcyclohexyl)-3-phenylurea(Siduron)	No	ADC, DUP.
Methyl 2-(4,6-dimethoxypyrimidin-2-yl)-amino carbonyl amino sulfonyl methyl benzoate (Bensulfuron) (Londax)	No	DUP.
Methyl 2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]-carbonyl]amino]sulfonyl]benzoate	No	DUP.
methyl 2(4-methoxy-6-methyl-1,3,5-triazin2-yl)-amino carbonyl amino sulfonyl benzorte (Metsulfuron methyl)	No	DUP.
Methyl 2-[[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)thylamino]carbonyl]amino]sulfonyl]benzoate	No	DUP.
1-Methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridone(Fluridone)	No	LIL.
N-1-Naphthylphthalamic acid (NPA)	No	USR.
Nicotinic acid, 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-1)	No	ACY.
7-Oxabicyclo-[2.2.1]-heptane-2,3-dicarboxylic acid, disodium salt (Endothall)	No	PAS.
Phenoxyacetic acid derivatives:	Yes	
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt	No	RIV.
4-Chloro-2-methylphenoxyacetic acid, iso-octyl ester	No	RIV.
2,4-dichlorophenoxyacetic acid, esters and salts:		
2,4-Dichlorophenoxyacetic acid (2,4-D)	No	DOW.
2,4-Dichlorophenoxyacetic acid,2-butoxyethyl ester	No	DOW.
2,4-Dichlorophenoxyacetic acid,sec-butyl ester	No	DOW.
2,4-Dichlorophenoxyacetic acid,dimethylamine salt	No	DOW, PBI, RIV.
2,4-Dichlorophenoxyacetic acid,ethanolamine and isopropanolamine salts	No	DOW.
2,4-Dichlorophenoxyacetic acid,iso-octyl ester	No	DOW, RIV.
2,4-Dichlorophenoxyacetic acid,isopropyl ester	No	AMV.
2,4-Dichlorophenoxyacetic acid,lithium salt	No	GTH.
All other 2,4-dichlorophenoxyacetic acid, esters and salts	No	ICI.
Plant growth regulators:	No	
N-(Acetylamino)methyl]-2-chloro-N-(2,6-diethylphenyl)acetamide	No	MNA.
2-Chloro-N-(2,6-dinitro-4-(trifluoromethyl)phenyl)-N-ethyl-6-fluorobenzenemethanamine	No	CGY.
β-(4-Chlorophenyl)methyl-α-(1,1-dimethylethyl)-1,2,4-triazole-1-ethanol	No	(²).
α-Cyclopropyl-α-(p-methoxyphenyl)-5-pyrimidine methanol (Ancymidol)	No	LIL.
2,3-Dihydro-5,6-dimethyl-1,4-dithiin-1,1,4,4-tetraoxide	No	NES.

See footnotes at end of table.

Section 13

Table 13-2—Continued
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Cyclic-Continued		
Herbicides and plant growth regulators-Continued		
1,2-Dihydro-3,6-pyridazinedione (Maleic hydrazide) (MH)	No	DRX, USR.
1,1-Dimethylpiperidinium chloride	No	BAS.
N-[2,4-dimethyl-5-[[trifluoromethyl]sulfonyl]-amino]phenyl]acetamide, diethanolamine salt	No	MMM.
Gibberellic acid	No	ABB.
α-(1-methylethyl-x-4-trifluore-methoxy phenyl)-5-pyrimidinemethanol (Flurprimidol)	No	LIL.
α, α, α-Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin)	No	LIL.
α,α,α-Trifluoro-2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-p-toluidine (Ethylfluralin)	No	LIL.
All other cyclic herbicides	No	DOW, FRI, ICI, RH, SOC.
Insect attractants and repellents:	No	
N,N-Diethyltoluamide (DEET)	No	TNA, (²).
All other insect attractants	No	(²).
Insecticides:	Yes	
Bacillus thuringiensis	No	ABB, DUP, ZOC.
Bis(pentachloro-2,4-dicyclopentadien-1-yl)	No	ZOC.
2,3,4,5-δ²-Butenylene-tetrahydrofurfural	No	PLC.
2-(p-tert-Butylphenoxy)cyclohexyl-2-propynyl sulfite	No	USR.
Cyano-3-phenoxybenzyl-cis, trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate	No	(²).
Cyano(3-phenoxyphenyl)methyl-4-chloro-α-(1-methylethyl)benzeneacetate	No	DUP.
Cyclic insecticides, all other	No	FMN, ZOC, (²).
N-cyclopropyl-1,3,5-triazine-2,4,6-triamine	No	CGY.
Cypermethrin	No	CED, FMN.
O,O-Diethyl O-(2-diethylamino-6-methyl-4-pyrimidinyl)phosphorothioate	No	(²).
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl[(dibutylamino)thio]methyl carbamate	No	FMN, NES.
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate	No	FMN.
2,3-dihydroxy-2,2-dimethyl-7-benzofuranyl	No	(²).
5,6-Dimethyl-2-dimethylamino-4-pyrimidinyl dimethyl carbamate	No	FSN.
Di-n-propylisocinchomeronate	No	MGK.
Distinnaxane, hexakis(2-methyl-2-phenylpropyl)	No	DUP.
O-ethyl S,s-di-sec-butyl phosphorodithioate	No	FMN.
Methyl 3-(2,2-dichloroethenyl)-2,2-dimethyl-3-cyano-3-phenoxyphenylcyclopropanecarboxylate	No	FMN.
1-Naphthyl N-methylcarbamate (Carbaryl)	No	RDA.
3-(Phenoxyphenyl) methyl-cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethyl cyclopropanecarboxylate	No	FMN, (²).
Tetrahydro-3,5-dimethyl-2(1H)-pyrimidinone[3-[4-(trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrozone	No	ACY.
Chlorinated insecticides:	Yes	
Heptachloro-tetrahydro-endo-methanoindene (Heptachlor)	No	VEL.
Octachlorohexahydro-4,7-methanoindene (Chlordan)	No	VEL.

See footnotes at end of table.

Table 13-2—Continued
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Cyclic-Continued		
Insecticides-Continued		
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor)	No	CHF.
All other chlorinated insecticides, cyclic	No	DUP.
Organophosphorus insecticides:	Yes	
O-(2-(Diethylamino)-6-methyl (4-pyrimidinyl) O,O-dimethyl phosphorothioate	No	(²).
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate (Diazinon)	No	CGY.
O,O-Diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate	No	DOW.
O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(3H)-yl)methyl]phosphorodithioate (Azinphos-methyl)	No	CHG, DUP.
N-(Mercaptomethyl)phthalimide S-(O,O-dimethylphosphorodithioate)	No	ICI.
O,O'-(Thiodi-4,1-phenylene)bis(O,O-dimethyl phosphorothioate (Temphos)	No	ICI.
All other organophosphorus insecticides, cyclic, ..	No	(²).
Rodenticides:	No	
3-(α -Acetonylbenzyl)-4-hydroxycoumarin (Warfarin) .	No	MOT.
3-[3-(4'-Bromo[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one	No	(²).
2-Diphenylacetyl-1,3-indandione and sodium salt ...	No	MOT.
2-Isovaleryl-1,3-indandione	No	MOT.
2-Pivaloyl-1,3-indandione (Pindone)	No	MOT.
All other cyclic pesticides:	Yes	
α -[2-(2-n-Butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide)	No	ALP, TNA.
N,N-diallyl-2,2-dichloroacetamide	No	ICI.
N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3-dicarboximide	No	MGK.
1-Methyl-3,5,7-triaza-1-azonia tricyclodecane chloride	No	BKM.
2,2,5-Trimethyl-3-(dichloroacetyl)-1,3-oxazolidine ...	No	ICI.
All other pesticides and related products, cyclic	No	GTL, (²).
Acyclic:	Yes	
Fungicides:	Yes	
Bis-1,4-bromoacetoxy-2-butene	No	VIN.
Disodium cyanodithioimidocarbonate	No	BKM.
n-Dodecylguanidine acetate (Dodine)	No	ACY, MRK.
Methylenebis(thiocyanate)	No	VIN.
Poly[oxyethylene(dimethylimino)-ethylene(dimethylimino)ethylene dichloride]	No	BKM.
Dithiocarbamic acid fungicides:		
Dimethyldithiocarbamic acid, manganese salt	No	ALC.
Dimethyldithiocarbamic acid, potassium salt	No	BKM.
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	No	ALC, VCC.
Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions	No	DUP.
Hydroxymethyl(methyl)dithiocarbamic acid, potassium salt	No	BKM.
N-Methyldithiocarbamic acid, potassium salt	No	BKM.
All other fungicides	No	MRK.

See footnotes at end of table.

Section 13

Table 13-2—Continued
Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Pesticides and related products	Separate statistics ¹	Manufacturers' identification codes (according to list in table 13-3)
Acyclic:	Yes	
Herbicides and plant growth regulators:	Yes	
S-Ethyl diisobutylthiocarbamate (Butylate)	No	ICI.
S-Ethyl dipropylthiocarbamate (EPTC)	No	ICI.
Methanearsonic acid, disodium salt (DSMA)	No	VIN.
Fungicides:	Yes	
Methanearsonic acid, dodecyl- and octyl- ammonium salts	No	VIN.
Methanearsonic acid, monosodium salt (MSMA)	No	SDS, VIN.
N-(Phosphonomethyl)glycine, isopropylamine salt	No	MNA.
S-Propyl butylethylthiocarbamate (Pebulate)	No	ICI.
S-Propyl dipropylthiocarbamate (Vernolate)	No	ICI.
Thiocyanic acid, methylene ester	No	BKM.
Plant growth regulators:	No	
6-Benzyladenine (bap)	No	ABB.
2-(Chloroethyl)phosphonic acid	No	RDA.
N-(Phosphonomethyl)glycine, sodium sesqui salt	No	MNA.
All other plant growth regulators, acyclic	No	DOW, USR.
Acyclic herbicides	No	DUP, VIN.
Insecticides:	Yes	
Ethyl 3,7,11-trimethyldodeca-2,4-dienoate	No	ZOC, (2).
Isopropyl-11-methoxy-3,7,11-trimethyldodeca-2,4-dienoate	No	ZOC, (2).
Methyl N',N'-dimethyl-N-[(methylcarbamoyl)oxy]-1-thiooxamidate	No	DUP.
S-Methyl-N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl)	No	DUP, RDA.
2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb)	No	RDA.
2-propynyl 3,7,11-trimethyl-(2e,4e)-dodecadienoate	No	(2).
N,N'-thiobis-(methylimino)carbonyloxy bis ethanimidothiate	No	RDA.
Organophosphorus insecticides:	Yes	
S-[1,2-Bis(ethoxycarbonyl)ethyl]O,O-dimethyl phosphorodithioate (Malathion)	No	ACY.
2-Carbomethoxy-1-propen-2-yl dimethyl phosphate	No	AMV.
1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled)	No	AMV.
O,O-Diethyl S-[(ethylthio)methyl] phosphorodithioate (Phorate)	No	ACY.
3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-crotonamide	No	DUP.
O,S-Dimethylacetylphosphoramidothioate (Acephate)	No	SOC.
O,O-Dimethyl-O-2,2-dichlorovinyl phosphate (DDVP)	No	AMV.
S-[[[(1,1-Dimethylethyl)thio]methyl] O,O-diethyl phosphorodithioate (Turfufos)	No	ACY.
Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide	No	DUP.
O,O,O',O'-Tetraethyl S,S'-methylene bisphosphorodithioate (Ethion)	No	FMN.
Rodenticides:	No	
2-Hydroxyethyl n-octyl sulfide	No	PLC.
Sodium fluoroacetate	No	TUL.
Soil conditioners:	No	
Polyacrylonitrile, hydrolyzed, sodium salt	No	ACY.

See footnotes at end of table.

Table 13-2—Continued

Pesticides and related products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Pesticides and related products</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 13-3)</i>
Acyclic:		
Soil fumigants:	No	
1,3-Dichloropropene	No	DOW.
O-Ethyl S,S-dipropyl phosphorodithioate	No	RDA.
Methyl bromide (Bromomethane)	No	GTL.
N-Methyldithiocarbamic acid, sodium salt (Metham)	Yes	BKM, CED, ICI.
Trichloronitromethane (Chloropicrin)	No	LCP, NLO, WCL.
All other soil fumigants, etc	No	AMV, MRT.
All other acyclic pesticides:	Yes	
3-Alkoxy-2-hydroxypropyl trimethyl ammonium chloride	No	(²).
Ammonium oxydiethylenebis (alkyl dimethyl chloride)	No	
Alkyl-40% C ₁₂ , 50% C ₁₄ , 10% C ₁₆	No	BKM.
Bromoacetic acid	No	VIN.
N-Cocoalkyl-1,3-propylenediamine acetate	No	(²).
2-[(Hydroxymethyl)amino]-2-methylpropanol	No	TRO.
2-(Hydroxymethyl)ethanol	No	TRO.
3-Iodo-2-propynyl butylcarbamate	No	TRO.
All other pesticides and related products, acyclic	No	DOW, USR, ZOC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 13-3

Pesticides and related products: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories	LIL	Eli Lilly & Co.
ACY	American Cyanamid Co.	MCI	Mooney Chemicals, Inc.
ADC	Anderson Development Co.	MGK	McLaughlin Gormley King Co.
ALC	Alco Chemical Corp.	MMM	Minnesota Mining & Manufacturing Co.
ALP	Alpha Laboratories, Inc.	MNA	Monsanto Agricultural Co.
AMV	Amvac Chemical Corp.	MOT	Motomco, Ltd.
BAS	BASF Corp.	MRK	Merck & Co., Inc.
BKM	Buckman Laboratories, Inc.	MRT	Morton International, Inc., Morton Chemical Div.
CCA	Akzo Chemicals, Inc.	NES	Ruetgers-Nease Chemical Co.
CED	Cedar Chemical Co.	NLO	Niklor Chemical Co., Inc.
CGY	Ciba-Geigy Corp.	NOD	Huls America, Inc.
CHD	Chemdesign Corp.	PAS	Atochem North America, Inc.
CHF	Kincaid Enterprises, Inc.	PBI	PBI-Gordon Corp.
CHG	Mobay Chemical Corp., Agricultural Chemicals Div.	PLC	Phillips 66 Co.
CYT	Cumberland International Corp.	RDA	Rhone-Poulenc, Inc.
DOW	Dow Chemical Co.	RH	Rohm & Haas Co.
DRX	Drexel Chemical Corp.	RIV	Riverdale Chemical Co.
DUP	E. I. duPont de Nemours & Co., Inc. Agricultural Products	SDS	Fermenta, ASC Corp.
FER	Ferro Corp., Bedford Chemical Div.	SOC	Chevron Corp., Chevron Chemical Co.
FMN	FMC Corp., Agricultural Chemical Group	TNA	Ethyl Corp.
FRI	Farmland Industries, Inc.	TRO	Troy Chemical Corp.
FRO	Vulcan Materials Co., Chemicals Div.	TUL	Tull Chemical Co., Inc.
FSN	Nor-am Chemical Co.	USR	Uniroyal Chemical Co., Inc.
GTH	Guth Corp.	VCC	Vinings Chemical Co.
GTL	Great Lakes Chemical Corp.	VEL	Velsicol Chemical Corp.
ICI	ICI Americas, Inc., Agricultural Chemicals Div.	VIN	Vineland Chemical Co., Inc.
LCP	LCP Chemicals-Maine	VNC	Vanderbilt Chemical Corp.
		WCL	Wright Corp.
		ZOC	Sandoz Crop Protection

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 14 Miscellaneous End-Use Chemicals and Chemical Products

This section incorporates those end-use groups which are not readily classifiable within the prior sections of this report. Both cyclic and acyclic chemicals fall within this section. Production and sales of the end-use chemicals contained within this section continue to follow a general increase since 1986.

In 1990, the production of miscellaneous end-use chemicals amounted to 14,992 million kilograms, an increase of 11 percent from the calculated 13,503 million kilograms of production for 1989 (table 14-1). Production of these chemicals steadily increased throughout 1986-90 (figure 14-1). Sales in 1990 totaled 10,737 million kilograms, valued at \$9,711 million (table 14-1). The sales quantity increased 16 percent from that of 1989 with the value of sales decreasing by 0.5 percent. Polymers for fibers and end uses of urea collectively

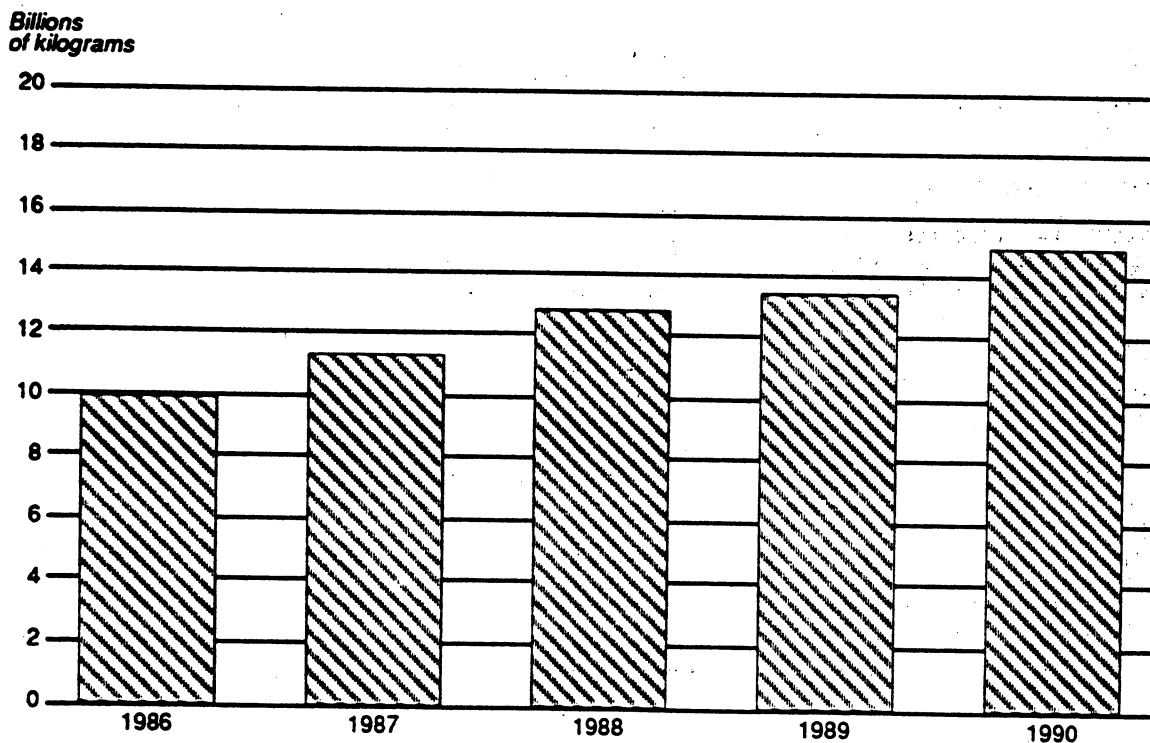
accounted for 52 percent of the 1990 production of these miscellaneous end-use chemicals. The total published end-uses for urea accounted for 49 percent of the 1990 sales quantity of these chemicals.

Production of end-use chemicals used in the auto and motor fuels market indicated continued upward trends. Production of fuel additives for 1990 totaled 4,224 million kilograms, an increase of 5.9 percent from the previous year. Approximately 95.4 percent of production in this category was methyl t-butyl ether. The increase of 147 percent in reported production from 1987 is due to the increasing demand for this chemical as an octane enhancer as well as adjustments to production data for companies that had failed legal reporting requirements.

Table 14-2 lists the products reported in this section and indicates the manufacturer(s) of each by code. These codes are identified by company name in table 14-3.

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202-205-3352

Figure 14-1
Miscellaneous End-Use Chemicals and Chemical Products: U.S. production, 1986-90



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 14-1

Miscellaneous end-use chemicals and chemical products: U.S. production and sales, 1990

Miscellaneous end-use chemicals and chemical products	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	14,992,023	10,736,749	9,711,364	\$1.05
Chelating agents, nitriloacids and salts, total	137,248	101,448	151,392	1.49
(Ethylenedinitrilo)tetraacetic acid (EDTA)	2,824	1,889	3,473	1.84
(Ethylenedinitrilo)tetraacetic acid, disodium salt	879	781	3,123	3.95
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	45,984	24,542	41,837	1.71
(N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt	4,005	1,230	2,890	1.35
All other chelating agents, nitriloacids and salts	83,556	73,006	100,069	1.37
Chemical indicators	5	3	435	145.00
Chemical reagents and fine chemicals	609	558	34,564	61.94
Enzymes:				
Bacterial amylase	(²)	(²)	19,930	(²)
Other hydrolytic enzymes	(²)	(²)	3,326	(²)
Rennin	(²)	(²)	21,408	(²)
Fuel additives, total ³	4,224,660	1,935,600	1,200,813	.62
Methyl t-butyl ether ^{4,5}	4,029,748	1,800,089	826,640	.46
All other fuel additives	194,912	135,511	374,173	2.76
Lubricating oil and grease additives, total	387,172	343,627	548,318	1.60
Oil soluble petroleum sulfonate, barium salt	4,175	3,658	7,592	2.08
Oil soluble petroleum sulfonate, calcium salt	96,647	95,044	141,129	1.48
All other lubricating oil and grease additives	286,350	244,925	399,597	1.63
Paint driers, naphthenic acid salts, total ^{6,7}	3,650	3,401	13,192	3.88
Cobalt naphthenate	1,105	1,001	5,476	5.47
All other paint driers	2,545	2,400	7,716	3.88
Photographic chemicals	8,399	4,601	71,312	15.50
Polymers for fibers, total ⁸	2,358,523	1,379,071	4,817,834	3.44
Nylon 6 and 6/6 ⁴	1,090,301	(²)	(²)	(²)
Polyacrylonitrile and acrylonitrile copolymers ⁵	220,703	(²)	(²)	(²)
All other polymers for fibers	1,047,519	1,379,071	4,817,834	3.49

See footnotes at end of table.

Table 14-1—Continued

Miscellaneous end-use chemicals and chemical products: U.S. production and sales, 1990

Miscellaneous end-use chemicals and chemical products	Production	Sales		Average Unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Polymers for fibers—Continued				
Polymers, water soluble, total	309,661	264,719	768,531	\$2.90
Hydroxethylcellulose	15,456	(²)	(²)	(²)
Polyacrylic acid salts, total	136,928	115,966	271,433	2.34
Sodium ammonium polyacrylate and copolymers	61,027	55,840	121,231	2.17
All other polyacrylic acid salts	75,901	60,126	150,202	2.50
All other water soluble polymers	157,277	148,753	497,098	2.43
Poly- α -olefins	69,427	50,228	88,246	1.76
Tanning materials synthetic	23,215	10,796	20,239	1.87
Textile chemicals, other than surface-active agents	22,442	19,798	30,314	1.53
Urea in compounds or mixtures:				
In feed compounds	573,631	551,155	62,441	.11
In liquid fertilizer	1,140,976	1,037,209	178,832	.17
In solid fertilizer	3,740,966	3,682,092	499,162	.14
All other miscellaneous end-use chemicals and chemical products ⁸	1,991,439	1,352,443	1,181,075	.87

¹ Calculated from unrounded figures.

² Reported data were accepted in confidence and may not be published, or no data were reported.

³ Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given with the section on "Plasticizers."

⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (including Synthetic Plastics and Resins Materials, 1989)*, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustment, and rounding.

⁵ Production totals shown for this chemical include quarterly production data in instances where companies reported inaccurate annual data or failed to report annual data. Totals also include reporting by companies which failed to report on a quarterly basis.

⁶ Quantities are given on the basis of solid naphthenate.

⁷ Statistics exclude production and sales of copper naphthenate. Statistics for copper naphthenate are given in the section on "Pesticides and Related Products."

⁸ Quarterly production data for polyethylene terephthalate are incorrect reporting. Annual production figures cannot be published because disclosure would result.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 14

Table 14-2
Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Miscellaneous end-use chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 14-3)</i>
Amino acids and their salts:		
N,N-Bis(2,2-acetamido)glycine	No	PIC.
Glutamic acid hydrochloride	No	LEM.
Glycine (Aminoacetic acid), non-medical	No	CHT, HMP.
Phenyl alanine	No	NSW.
Potassium glutamate	No	LEM.
Methionine and its salts:		
Methionine (animal feed grade)	No	DGC.
Methionine, hydroxy analogue, calcium salt	No	MNA.
Protein hydrosylates	No	BRS.
Sarcosine	No	HMP.
Serine	No	VNC.
All other amino acids and salts, acyclic	No	BRS.
All other amino acids and salts, cyclic	No	AJI.
Biological stains:		
Biological stains	No	ALD, EK.
Chelating agents, nitriloacids and salts:		
N-alkylamine bismethylenephosphonic acid	No	DUP, (2).
N-alkylaminobismethylene phosphonic acid salts	No	(2).
(Diethylenetriamine)pentamethylenephosphonic acid	No	MYO, (2).
(Diethylenetriamine)pentamethylenephosphonic acid, sodium salt	No	MYO.
(Diethylenetrinitrilo)pentaacetic acid	No	CGY, DOW, HMP.
(Diethylenetrinitrilo)pentaacetic acid, pentasodium salt	No	CGY, DOW, HMP.
N,N-Dihydroxyethylglycine, sodium salt	No	HMP.
Ethanol diglycine, disodium salt	No	HMP.
(Ethylenedinitrilo)tetraacetic acid (Ethylenediaminetetraacetic acid) (EDTA)	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt	No	DAN, DOW.
(Ethylenedinitrilo)tetraacetic acid, diammonium salt	No	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate	No	DAN, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, disodium salt	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate	No	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, magnesium salt	No	SHC.
(Ethylenedinitrilo)tetraacetic acid, manganese salt	No	CGY, HMP.
(Ethylenedinitrilo)tetraacetic acid, monoammonium ferric salt	No	DOW.
(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt	No	CGY, FER, HMP.
(Ethylenedinitrilo)tetraacetic acid, tetraammonium salt	No	DOW.
(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt	No	HMP, (2).
(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt	Yes	CGY, DOW, HMP.
(Ethylenedinitrilo)tetraacetic acid, trisodium salt	No	HMP.
Glucoheptonic acid, β-isomer, sodium salt	No	BLZ.
Glucoheptonic acid, sodium salt	No	BLZ, PFN.
Hexamethylenediaminetetra(methylenephosphonic acid), potassium salt	No	MYO.
Hydroxyethane-1-diphosphonic acid	No	MYO.
(N-Hydroxyethylethylenedinitrilo) triacetic acid	No	HMP.
(N-Hydroxyethylethylenedinitrilo) triacetic acid, iron salt	No	DOW, HMP.
(N-Hydroxyethylethylenedinitrilo) triacetic acid, magnesium salt	No	DOW.
(N-Hydroxyethylethylenedinitrilo) triacetic acid, trisodium salt	Yes	CGY, DOW, HMP.
Hydroxyethylidene diphosphonic acid, potassium salt	No	(2).

See footnotes at end of table.

Table 14-2—Continued
Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

<i>Miscellaneous end-use chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 14-3)</i>
Chelating agents, nitriloacids and salts—Continued		
Hydroxyethylidene diphosphonic acid, sodium salt	No	MYO, (2).
Nitriloacetic acid, zinc salt	No	HMP.
Nitrilotriacetic acid	No	HMP, MON.
Nitrilotriacetic acid, trisodium salt	No	BKM, HMP.
Nitrilo-tris-methylene triphosphonic acid	No	MYO, (2), (2).
Nitrilo-tris-methylene triphosphonic acid, potas	No	(2).
Nitrilo-tris-methylene triphosphonic acid, sodium salt	No	MYO, (2).
2-Phosphonobutane-1,2,4-tricarboxylic acid, sodium salt	No	(2).
Polyamine polymethane phosphonic acid	No	(2), (2).
All other chelating agents, nitriloacids and salts	No	BKM, CGY, HMP, OMC, RDA, (2), (2), (2).
Chemical indicators:		
Chemical indicators	Yes	ALD, COC, EK, GFS, VNC.
Chemical reagents and fine chemicals:		
Chemical reagents and fine chemicals	Yes	ALD, COC, EK, ENJ, GFS, PAH, PFN, PIC, PLB, REG, RSA, UPM, (2).
Enzymes:		
Hydrolytic enzymes:		
Amylases:		
Bacterial amylase	Yes	GBF, MLS, NBI, PMP, RDA.
Glucoamylase	No	GBF, MLS, NBI, RDA.
All other amylases	No	GBF, RDA.
Proteases:		
Papain	No	GBF, PFZ, RDA.
Pepsin	No	CHH, PFZ, RDA.
Protease (bacterial)	No	NBI.
Rennin	Yes	CHH, MLS, PFZ, RDA.
All other proteases	No	GBF, MLS, RDA, SPR.
Other hydrolytic enzymes:		
Cholesterol esterase	No	BCK.
Hydrolytic enzyme mixtures	No	JFR.
Lipase	No	RDA.
Pectinase	No	GBF.
Other hydrolytic enzymes	No	GBF, PMP, RDA, (2).
Non-hydrolytic enzymes:		
Cholesterol oxidase	No	BCK.
Glucose oxidase	No	BCK.
Glucose-6-phosphate dehydrogenase	No	BCK.
Glycerol kinase	No	BCK.
Urease	No	BCK.
Uricase	No	BCK.
Flotation reagents:		
Phosphorodithioates, used as flotation reagents:		
Dicresylphosphorodithioic acid	No	ACY.
Dicresylphosphorodithioic acid, ammonium salt	No	ACY.
Dicresylphosphorodithioic acid, sodium salt	No	(2).
Rosin amines	No	ACY, HPC, SHX.
Xanthates and sulfides, used as flotation reagent:		
Sodium n-butylxanthate	No	USR.
All other flotation reagents	No	DAN.
Fuel additives:		
Diesel fuel additives:		
Hexyl nitrate	No	DUP.
All other diesel fuel additives, acyclic	No	TNA.
All other diesel fuel additives, cyclic	No	SM.
Fuel oil additives:		
Adipic acid-diethylenetriamine-epichlorohydrin polymer	No	(2).
Di-tert-amyl-phenyl acid phosphate	No	ALW.

See footnotes at end of table.

Section 14

Table 14-2—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Miscellaneous end-use chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14-3)
Fuel additives-Continued		
Fuel oil additives-Continued		
4,4'-Di-sec-butylaminodiphenylmethane	No	UPM.
N,N-Dimethyl-1,3-propanediamine polymer with epichlorohydrin, sulfate	No	(²).
N,N'-Disalicylidene-1,2-propanediamine	No	DUP, FER, SM, TNA.
Imidazoline from tall oil fatty acids and diethylenetriamine	No	(²).
Polybutylether carbamate	No	SOC.
Poly(dimethylimino(2-hydroxytrimethylene)chloride)	No	(²).
Polyethylenepolyamine polymer with 1,4-dihydroxy-2-butyne	No	(²).
Rust preventing additives	No	ALX.
Tetrahydropyrimidine from tall oil fatty acids and propylenediamine	No	(²).
All other fuel additives, acyclic	No	DUP, PAH, SM, UPM.
Gasoline additives:		
N,N'-Di-sec-butyl-p-phenylenediamine	No	TNA, UPM.
N,N'-Diisopropyl-p-phenylenediamine	No	DUP, TNA.
Ethylene dibromide	No	GTL.
Methyl-t-butyl ether	Yes	AMO, ATR, CGO, CO, CSD, CSP, DA, ENJ, GRS, LYP, MOC, PLC, SM, SOG, SUN, TPC, TX, VLR.
Methylcyclopentadienylmanganese tricarbonyl	No	AMO, TNA.
N-(1-Methylheptyl)ethanolamine	No	UPM.
Tetraethyl lead	No	DUP.
All other gasoline additives, acyclic	No	ATR, TNA, TX, UPM, (²).
All other gasoline additives, cyclic	No	VNC.
Lubricating oil and grease additives:		
Alkyl imidazoline	No	QCP.
Alkyl succinic anhydride	No	(²).
Alkyl terephthalamate	No	SOC.
Bornyl phenylamine	No	SOC.
Chlorosulfurizer and sulfurized compounds:		
Sulfurized lard oil	No	CCW, QCP.
Sulfurized sperm oil substitutes	No	CCW, ELC.
Di-2-ethylhexylphosphorodithioic acid	No	ELC.
Diisopropyl hydrogen phosphite	No	ALW.
Di-N-propylphosphorodithioic acid	No	ELC.
Dodecylphenyl- α -naphthylamine	No	SM.
Ethylene-propylene copolymer	No	TX.
Fatty acid polyamine condensate	No	SOC.
Hydrocarbon carboxylic acid derivatives (specify)	No	FER, QCP, SCP, (²), (²).
Hydrocarbon phosphorous acid, barium salt	No	(²).
Hydrocarbon phosphoryl derivatives	No	(²).
Methylene-bridged polyalkyl phenols	No	TX.
Oxidized hydrocarbon mixture	No	ALX, FER, (²).
Oil-soluble petroleum sulfonates:		
Oil-soluble petroleum sulfonate, barium salt	Yes	PAR, TNA, TX, WTC, (²).
Oil-soluble petroleum sulfonate, calcium salt	Yes	PAR, SOC, TX, WTC, (²).
Oil-soluble petroleum sulfonate, magnesium salt	No	WTC.
Oil-soluble petroleum sulfonate, mixed salts	No	(²).
Oil-soluble petroleum sulfonate, sodium salt	No	PAR, WTC.
All other oil-soluble petroleum sulfonate	No	DUP, MON, SOC, TX.
Phenol salts:		
Alkylphenol, calcium salt	No	SOC, TX.
Alkyl phenols	No	(²).
Dodecylphenol, sulfurized, calcium salt	No	SOC, TX.
Nonylphenol, barium salt	No	CCA, FER, WTC.
All other phenol salts	No	TNA.

See footnotes at end of table.

Table 14-2—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Miscellaneous end-use chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14-3)
Lubricating oil and grease additives-Continued		
Phosphorodithioates (dithiophosphates):		
Polyisobutenyl succinic anhydride	No	TX.
Succinimides:		
Alkenyl succinimide	No	SOC, TNA, TX, (2).
Dodecenylic-acetic succinimide	No	SM.
Modified succinimides	No	CXI.
All other succinimides	No	FER, SM, (2).
Sulfur compounds:		
Aliphatic hydrocarbon sulfides	No	ELC, FER, (2).
Di-tertiary nonylpolysulfide	No	PAS.
All other sulfur compounds	No	CHD, FER, QCP, TNA, (2), (2).
1,3,4-Thiadiazole, 2,5-bis(dialkyldithio) derivatives	No	ELC.
Tributyl phosphite	No	ALW.
Trimethylol propane ester	No	QCP, SCP, SM.
Very high molecular weight (>1000) hydrocarbons	No	(2).
Zinc dialkyldithiophosphate	No	ELC, SOC, TNA.
Zinc dialkylphenol dithiophosphate	No	SOC.
Zinc dibutyl phosphorodithioate	No	ELC.
Zinc hydrocarbon dithiophosphate	No	(2).
All other phosphorodithioates used as lubricating oil and grease additives	No	ELC, FER, (2).
All other lubricating oil and grease additives, acyclic ..	No	TX, (2).
All other lubricating oil and grease additives, cyclic	No	ALW, CGY, DCC, DUP, QCP, SCP, SM, TNA, TX, (2).
All other lubricating oil and grease additives, cyclic	No	ENJ, FER, HMY, SM, TNA, (2), (2), (2).
Paint driers, naphthenic acid salts:		
Barium naphthenate	No	QCP.
Cadmium naphthenate	No	CCA.
Calcium naphthenate	No	CCA, MCI, NOD, TRO.
Chromium naphthenate	No	MCI.
Cobalt naphthenate	Yes	MCI, NOD, SHP, TRO.
Iron naphthenate	No	MCI, NOD.
Lead naphthenate	No	CCA, MCI.
Manganese naphthenate	No	MCI, NOD.
Naphthenate driers, mixed salts	No	MCI.
Rare earths naphthenate	No	NOD.
Zinc naphthenate	No	MCI, NOD, TRO.
Photographic chemicals:		
N-2-(4-Amino-N-ethyl-m-toluidino)ethyl methane-sulfonamide	No	WAY.
Aryl alkyl polyether alcohol	No	DIX.
5-Chlorobenzotriazole	No	FMT.
4-Diazo-2,5-diethoxymorpholinobenzene	No	All.
2,5-Diethoxy-4-morpholinobenzenediazonium chloride	No	All.
p-Diethylaminobenzenediazonium chloride (p-Diazo-N, N-diethylaniline zinc chloride)	No	All.
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N, N-dimethylaniline zinc chloride)	No	All.
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride -diazo-n-hydroxyethylaniline zinc chloride)	No	All.
(N-Ethyl-N-(2-hydroxyethyl)-3-methyldehydrogen sulfate)p-phenylenediamine	No	(2).
Hydroquinone (Hydroquinol)	No	EKT.
5-Methyl-1,7-dihydroxy-1,3,4-triazaindolizine	No	FMT.
3-Methyl-N-[2(methylsulfonamidoethyl)-N-ethyl-p-phenylenediamine] sequisulfate monohydrate	No	(2).
4-Methyl-1-phenyl-3-pyrazolidione	No	CWN.
p-Morpholinyl-2,5-dibutoxybenzene diazonium chloride	No	All.
Phenyl-5-mercaptotetrazole	No	FMT.

See footnotes at end of table.

Section 14

Table 14-2—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Miscellaneous end-use chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14-3)
Photographic chemicals-Continued		
1-Phenyl-3-pyrazolidone	No	CWN.
Poly(vinyl-O-sulfobenzal)	No	DUP.
4-N-(1-Pyrrolidyl)-m-toluenediazonium chloride	No	All.
All other photographic chemicals	No	CHD, DAN, DUP, EK, FMT, WAY, (2), (2).
Polymers for fibers:		
Cellulose acetate	No	EKT.
Nylon 6 and 6/6:		
Nylon 6 (Polymer for fiber, only)	No	ACS, BLY, CNP.
Nylon 6/6	No	DUP, MON.
Polyacrylonitrile and acrylonitrile copolymers	Yes	ACY, BKM, DUP, MON.
Polyethylene terephthalate	No	DUP, EKT, FRF, GYR.
Poly-m-phenylene isophthalamide	No	DUP.
Poly-p-phenylene terephthalamide	No	DUP.
All other polymers for fibers	No	DUP, HCL.
Polymers, water soluble:		
Acrylamide polymers and co-polymers:		
Acrylamide-2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	No	ENJ, (2).
Acrylamide-acrylic acid copolymer	No	CHP.
Acrylamide-acrylic acid copolymer, sodium salt	No	BKM, (2).
Acrylamide-trimethylaminoethyl acrylate chloride polymer	No	(2).
Acrylamide-trimethylaminoethyl methacrylate chloride	No	(2).
Adipic acid-crosslinked polyacrylamide	No	ACY, BKM, ENJ, SCP, (2), (2).
Polyacrylamide	No	ACY, ENJ, MRK, (2).
All other polyacrylamide copolymers	No	HCL, (2).
Cellulose esters and ethers:		
Hydroxyethylcellulose	No	AQU, DOW, UCC.
Hydroxyethyl hydroxypropyl cellulose	No	(2).
2-Hydroxypropyl cellulose	No	AQU.
Methylcellulose	No	DOW, UPJ.
Sodium carboxymethylcellulose (100%)	No	AQU, CBC, MAK, (2).
All other cellulose ethers and esters	No	AQU, DIX, S.
Dimethylamine epichlorohydrin ethylenediamine copolymer	No	(2).
Ethyl acrylate methacrylic acid copolymer	No	ALC.
Hydroxypropyl guar gum	No	AQU.
Poly(acrylic acid, ethyl ester)	No	DUP.
Poly(acrylic acid, methyl ester/ethylene/1,1-dichlorosuccinic acid, methylene-)	No	DUP.
Poly(acrylic acid, methyl ester/ethylene/1,1-dichlorosuccinic acid, methylene-) with ethyl acrylate	No	DUP.
Polyacrylic acid salts:		
Ammonium polyacrylate	No	CCL, RH, (2), (2).
Polyacrylate methacrylate copolymers	No	RH, (2).
Polyacrylate poly(hydroxypropylacrylate) copolymer	No	(2).
Polyacrylic acid	No	MYO, (2), (2).
Sodium ammonium polyacrylate and copolymers	No	ALC, BAS, BFG, DIX, RH, SCP, (2), (2).
Sodium carboxymethyl amylose	No	CCL.
Sodium carboxymethyl starch	No	(2).
Sodium polyacrylate	No	BKM, EFH, MYO, SYT.
Sodium polyacrylate, grafted	No	(2).
All other polyacrylic acid salts	No	BAS, BFG, DOW, ENJ, (2), (2).
Polyacrylonitrile, hydrolyzed	No	BKM, GPC.
Polyacrylonitrile, starch hydrolyzed polymer	No	GPC.
Polyamines	No	ENJ, QCP.
Polydextrose	No	PFZ.
Poly(diallyldimethylammonium chloride)	No	CPS, MRK, (2).

See footnotes at end of table.

Table 14-2—Continued

Miscellaneous end-use chemicals and chemical products for which U.S. production and/or sales were reported, identified by manufacturer, 1990

Miscellaneous end-use chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 14-3)
Polymers, water soluble—Continued		
Polyethyleneimine	No	DAN.
All other polymers, water soluble	No	BKM, DAN, EFH, PRA, RDA, RH, SCP, SYT, (2), (2), (2), (2), (2).
Polymethacrylic acid, sodium salt	No	ALC.
Poly(1,1'-(methylimino)bis(3-chloro-2-propanol)-tetramethylethylenediamine	No	BKM.
1-Vinyl-2-pyrrolidinone, copolymers with vinyl acetate	No	DAN.
1-Vinyl-2-pyrrolidinone, polymers	No	DAN, GAF.
Xanthan gum	No	PFZ.
Poly-α-olefins:		
Poly- α -olefins	No	SM, SOC.
Poly- α -olefins, sulfurized	No	QCP, SM.
Rare sugars:		
D-Arabinose	No	PFN.
D-Galactose	No	PFN.
D-Maltose	No	PFN.
Silicone greases:		
Silicone greases	No	SPD, SWS.
Tanning materials, synthetic:		
1-Naphthalenesulfonic acid, formaldehyde condensate and salt	No	RH, S.
2-Naphthalenesulfonic acid, formaldehyde condensate and salt	No	GRD.
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated)	No	BAS, RH.
Polyoxyalkylated cyclic amines	No	MIL.
All other tanning materials, synthetic	No	BAS, SCP.
Textile chemicals, other than surface active agents:		
Alkylphenol/formaldehyde polymer	No	(2).
N,N-bis-(2-Hydroxyethyl)octadecanamide	No	CCC.
N,N-Dibenzylhydroxylamine	No	CCC.
Dicyanodiamide formaldehyde ammonium chloride polymer	No	CCC, DAN, PCI, S, SYT.
Dimethyloldihydroxyethylene urea	No	ACY, CCC, CHP, DAN, SYT.
Formaldehyde polymer with carbamate esters	No	SYT.
Hydrogenated tallow fatty acid aminoethylethanolamine condensation products	No	CCC.
Lauryl alkyl dimethylamine acetate	No	(2).
Lauryl alkyl dimethylamine phosphate	No	(2).
Melamine formaldehyde methanol polymer	No	ACY, CCC.
Melamine formaldehyde copolymer	No	ENJ.
Melamine stearyl alcohol polymer	No	SYT.
Propoxylated starches	No	SYT.
2,2',4,4'-Tetrahydroxybenzophenone	No	BAS.
Tri(behenoyloxymethyl)trimethoxymethylmelamine	No	SYT.
Urea polymers with formaldehyde and methanol	No	ACY, CCC.
Textile chemicals, other than surface active agents	No	BAS, CCC, DUP, ENJ, PAT.
Urea, by end-use markets:		
Urea, primary solution (Report on 100% urea-content basis)	Yes	ARM, BCP, CAC, CFI, CHN, FRI, GCC, HKY, MSC, SOC, SOH, TER, TRI, TVA, UOC, WLC, WYC, (2).
Urea in compounds or mixtures (100% basis):		
Urea in feed compounds (100% basis)	Yes	CAC, HKY, SOH, TER, TRI, WYC.
Urea in liquid fertilizer (100% basis)	Yes	CFI, CHN, FRI, HKY, MSC, SMP, SOC, SOH, TER, TVA, UOC.
Urea in plastics (100% basis)	No	BCP, SOH, TRI.
Urea in solid fertilizer (100% basis)	Yes	BCP, CAC, CFI, FRI, GCC, HKY, MSC, SOH, TER, TRI, TVA, UOC, WLC, WYC.

¹ Chemicals for which separate statistics are reported in this section are indicated by 'yes.' Chemicals for which data are accepted in confidence and may not be published are indicated by 'no.'

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 14-3

Miscellaneous end-use chemicals and chemical products: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ACS	Allied Signal, Inc. Engineered Materials Sector	DAN	Dan River, Inc., Chemical Products Div.
ACY	American Cyanamid Co.	DCC	Dow Corning Corp.
AJI	Ajinomoto USA, Inc.	DGC	Degussa Corp.
ALC	Alco Chemical Corp.	DIX	Dixie Chemical Co., Inc.
ALD	Aldrich Chemical Co., Inc.	DOW	Dow Chemical Co
ALL	Alliance Chemical, Inc.	DUP	E. I. duPont de Nemours & Co., Inc. Chemicals and Pigments Dept. ED/IMG Dept. Fibers Dept.
ALW	Albright & Wilson Americas, Inc.	EFH	E.F. Houghton Co.
ALX	Alox Corp.	EK	Eastman Kodak Co.:
AMO	Amoco Corp.	EKT	Tennessee Eastman Co. Div.
AQU	Aqualon	ELC	Elco Corp. Sub. of Detrex Chemical Industries, Inc.
ARM	LaRoche Industries, Inc.	ENJ	Exxon Chemical Americas
ATR	Atlantic Richfield Co., Arco Chemical Co.	FER	Ferro Corp.: Bedford Chemical Div. Keil Chemical Div.
BAS	BASF Corp.	FMT	Fairmount Chemical Co., Inc.
BCK	Beckman Instruments, Inc., Diagnostics System Group	FRF	Firestone Tire & Rubber Co., Firestone Fibers & Textiles Co.
BCP	Borden Chemical & Plastics Delaware Limited	FRI	Farmland Industries, Inc.
BFG	B. F. Goodrich Co.	GAF	GAF Chemical Corp.
BKM	Buckman Laboratories, Inc.	GBF	International Bio-Synthetics, Inc.
BLY	Berkley & Co., Inc.	GCC	Arcadian Corp.
BLZ	Belzak Corp.	GFS	GFS Chemicals, Inc.
BRS	Bristol-Myers Co.	GPC	Grain Processing Corp.
CAC	Cominco Fertilizers, Inc.	GRD	W. R. Grace & Co., Organic Chemicals Div. Polymers & Chemical Div.
CBC	Carbose Corp.	GRS	Champlin Refining Co.
CCA	Akzo Chemicals, Inc.	GTL	Great Lakes Chemical Corp.
CCC	C.N.C. International, Inc.	GYR	Goodyear Tire & Rubber Co.
CCL	Catawba-Charlab, Inc.	HCL	Hoechst Celanese Corp: Fibers Industrial Div. Sou-TEX Works.
CCW	Morton International, Inc., Specialty Chemicals Group	HKY	Arcadian Corp.
CFI	CF Industries, Inc.	HMP	W. R. Grace & Co., Organic Chemicals Div. Hampshire Chemical Div.
CGO	Citgo Petroleum, Corp.	HMY	Humphrey Chemical Co.
CGY	Ciba-Geigy Corp.	HPC	Hercules, Inc.
CHD	Chemdesign, Corp.	JFR	George A. Jeffreys & Co., Inc.
CHH	Chris Hansen's Laboratory, Inc.	LEM	Napp Chemicals, Inc.
CHN	Wil-Gro Fertilizer, Inc.	LYP	Lyondell Petrochemical Co.
CHP	C. H. Patrick & Co., Inc.	MAK	MAK Chemical Corp.
CHT	Chattem, Inc.	MCI	Mooney Chemicals, Inc.
CNP	DSM Chemicals, North America	MIL	Milliken & Co., Milliken Chemical Div.
CO	Conoco Specialty Products, Inc.		
COC	Columbia Organic Chemical Co., Inc.		
CPS	CPS Chemical, Co., Inc.		
CSD	Fina Oil & Chemical Co., Cosden Chemical Div.		
CSP	Coastal Refining & Marketing, Inc.		
CWN	Upjohn Co., Fine Chemicals		
CXI	Chemical Exchange Industries, Inc.		
DA	Diamond Shamrock Refining & Marketing		

See note at end of table.

Table 14-3—Continued

Miscellaneous end-use chemicals and chemical products: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
MLS	Miles Laboratories, Inc., Biotechnology Group.	SHX	Sherex Chemical Co., Inc.
MNA	Monsanto Agricultural Co.	SM	Mobil Oil Corp., Chemical Product Div. Beaumont Refinery Div.
MOC	Marathon Petroleum Co., Texas Refining Div.	SMP	J. R. Simplot Co.
MON	Monsanto Co.	SOC	Chevron Corp., Chevron Chemical Co.
MRK	Merck & Co., Inc.	SOG	Hill Petroleum Company
MSC	Mississippi Chemical Corp.	SOH	BP Chemicals America, Inc.
MYO	Mayo Chemical Co.	SPD	General Electric Co., Silicone Products Div.
NBI	Novo Biochemical Industries, Inc.	SPR	Scientific Protein Laboratories
NOD	Huls, America, Inc.	SUN	Sun Co., Inc.
NSW	NutraSweet Co.	SWS	Wacker Silicones, Corp.
OMC	Olin Corp.	SYT	Synthron, Inc.
PAH	Parish Chemical Co.	TER	Terra International, Inc.
PAR	Pennzoil Co., Penreco Div.	TNA	Ethyl Corp.
PAS	Atochem North America, Inc.	TPC	Texas Petrochemicals Corp.
PAT	Pat-Chem, Inc.	TRI	Triad Chemical
PCI	Piedmont Chemical Industries, Inc.	TRO	Troy Chemical Corp.
PFN	Pfanstiehl Laboratories, Inc.	TVA	Tennessee Valley Authority, NFDC, TVA, OACD, Div. of Developmental Production
PFZ	Pfizer, Inc.	TX	Texaco, Inc., Texaco Chemical Co.
PIC	Pierce Chemical Co.	UCC	Union Carbide Corp., Industrial Chemical Div.
PLB	Pharmacia P-L Biochemicals, Inc.	UOC	Union Oil Co. of California
PLC	Phillips 66 Co.	UPJ	Upjohn Co.
PMP	PMP Fermentation Products, Inc.	UPM	UOP Inc.
PRA	Para-Chem Southern, Inc.	USR	Uniroyal Chemical Co., Inc.
QCP	Quaker Chemical Corp.	VLR	Valero Refining & Marketing Co.
RDA	Rhone-Poulenc, Inc.	VNC	Vanderbilt Chemical Corp.
REG	Regis Chemical Co.	WAY	Olin Hunt Specialty Products, Inc.
RH	Rohm & Haas Co.	WLC	Freeport-McMoran Resource Partners
RSA	R.S.A. Corp.	WTC	Witco Chemical Corp.
S	Sandoz Chemical Corp., Colors & Chemicals Div.	WYC	Coastal Chem, Inc.
SCP	Henkel Corp.		
SHC	Shell Chemical Co.		
SHP	Shepherd Chemical Co.		

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 15 Miscellaneous Cyclic and Acyclic Chemicals

The term "miscellaneous chemicals" as it is used here comprises those synthetic organic products that are not included in the use groups covered by sections I-XIV of this report. They include products that are employed in a great variety of applications. The number of chemicals used extensively for only one purpose is not large. Among the products covered in this section are those used for refrigerants, aerosols, solvents, catalysts, additives in plastics and food products, and, especially, a wide range of acyclic chemical intermediates.

Figure 15-1 shows the trend of production of miscellaneous chemicals during 1986-90, and shows that the substantial rate of increase after 1985, continued through 1990 albeit at a slower pace.

U.S. production of miscellaneous cyclic and acyclic chemicals in 1990 amounted to 49.9 billion kilograms, an increase of 2.1 percent compared with production in 1989 (Table 15-1). Production of miscellaneous acyclic chemicals comprised 96.6 percent of this section's total production.

Because most of the production of miscellaneous chemicals is used internally by their producers to make more advanced intermediates and other chemical products, their sales are much smaller than their production. In 1990, sales of miscellaneous chemicals were 21.2 billion kilograms, valued at \$14.5 billion, compared with 20.2 billion kilograms, valued at \$16.3 billion, in 1989. The increase in sales quantity in 1990 was 13 percent. However, the surge in prices through 1989 was sharply reversed. The average unit value of sales in 1990, 68.4 cents per kilogram, was 15 percent less than the previous year's 80.6 cents per kilogram. This reflected the effects of the recession as well as a changing production mix, overcapacity for a number of chemicals, and a lower cost of raw materials. Oxygenated hydrocarbons accounted for about 60 percent of the production of all acyclic miscellaneous

chemicals. Production of oxygenated hydrocarbons, which include organic acids, alcohols (the largest group), ketones, esters, ethers, aldehydes, epoxides, and other chemicals, was 28.7 billion kilograms in 1990, a marginal decrease from the 28.8 billion kilograms produced in 1989.

Slightly larger in volume than the alcohols in miscellaneous acyclic chemicals is the chlorinated hydrocarbons group. Production of chlorinated hydrocarbons was about 13.2 billion kilograms in 1990, about 0.5 billion kilograms more than in 1989. While many of these chemicals suffer the opprobrium of the environmental cause, only chloroform and perchlorethylene (among the publishable items) lost ground in production in 1990 (down more than 20 percent from 1989). The remainder (carbon tetrachloride, methylene chloride, ethyl chloride, ethylene dichloride, 1,1,1-trichloroethane, and vinyl chloride) held their own. Production of methyl chloride was 67 percent greater than in 1989.

The second largest category in the miscellaneous chemicals groups is alcohols--both monohydric and polyhydric. Though production of ethylene glycol and other polyhydric alcohols decreased about 8 percent in 1990, that of the monohydric alcohols increased very slightly, to almost 7 billion kilograms.

Virtually in a tie for third place among miscellaneous acyclic chemicals, each with production between 4.5 and 4.9 billion kilograms in 1990, are nitrogenous compounds, acids/anhydrides, and aldehydes. Production of all three groups increased in 1990, by 14, 17, and 12 percent, respectively. Noteworthy for increased production in 1990 were ethanalamines, acrylonitrile, acetic acid, butyraldehyde and formaldehyde.

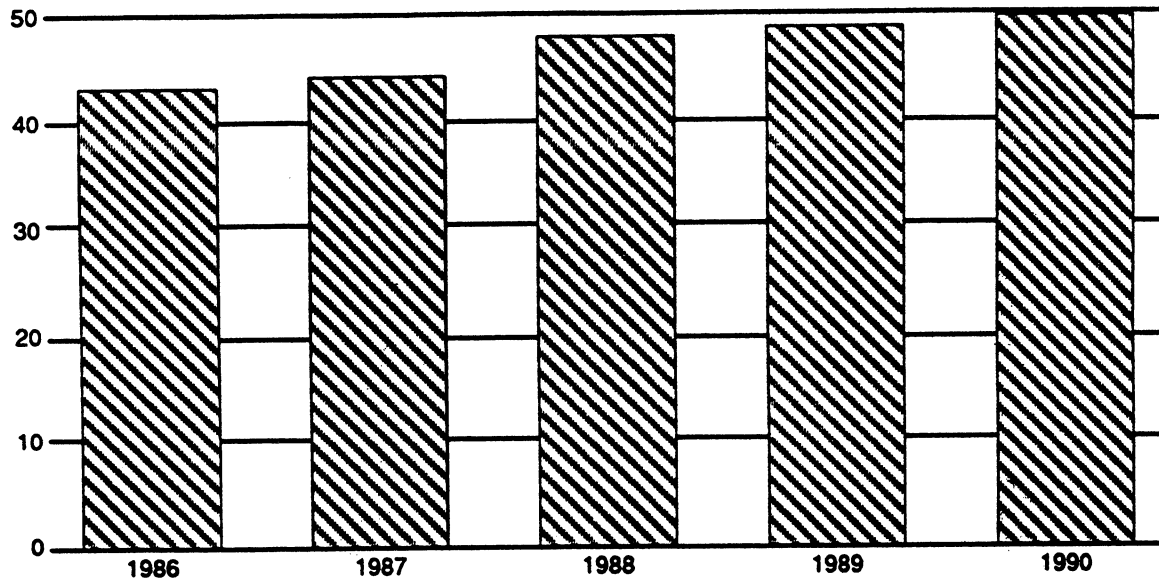
Table 15-2 lists the products in this section individually identified by manufacturer(s) codes. Table 15-3 lists those codes alphabetically and identifies the manufacturer by name.

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202-205-3350

Section 15

Figure 15-1
Miscellaneous cyclic and acyclic chemicals: U.S. production, 1986-90

*Billions
of kilograms*



Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 15-1
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Grand total	49,912,377	21,196,927	14,491,633	\$0.68
Cyclic				
Total	1,700,331	773,429	1,484,576	1.92
Benzoic acid esters	1,683	(²)	(²)	(²)
Benzoyl peroxide	4,701	3,583	21,903	
Butyrolactone	57,103	9,981	26,246	2.63
Tert-butyl peroxybenzoate	1,664	1,623	7,312	4.51
Caprolactam	625,729	(²)	(²)	(²)
2,6-Di-tert-butyl-p-cresol (BHT)	7,067	(²)	(²)	(²)
Hexamethylenetetramine, tech	41,947	(²)	(²)	(²)
Maleic anhydride	192,529	160,228	154,647	.97
Morpholine	(²)	17,288	28,749	1.66
Pinene and derivatives, total	(²)	31,218	36,625	1.17
α-Pinene	55,194	(²)	(²)	(²)
β-Pinene	20,729	(²)	(²)	(²)
Pine oil, natural, sulfate	2,037	1,730	1,303	.75
Pine oil, synthetic	21,073	19,685	26,078	1.32
All other pinene and derivatives	(²)	9,803	9,244	.94
Succinic anhydride derivatives	18,191	8,334	16,999	2.04
Tall oil, chemically modified	8,122	(²)	(²)	(²)
All other miscellaneous cyclic chemicals	642,562	541,174	1,192,095	2.16
Acyclic				
Total	48,212,046	20,423,498	13,007,057	.64
Nitrogenous compounds				
Total	4,726,058	1,814,312	1,642,158	.91
Amides, total				
	138,947	75,847	128,571	1.70
Erucamide	4,616	3,718	17,923	4.82
N,N'-Ethylenebis-oleamide	218	(²)	(²)	(²)
N,N'-Ethylenebis-stearamide	14,577	14,505	20,692	1.43
Oleamide (Octadecene amide)	2,768	2,459	5,679	2.31
All other amides	116,768	55,165	84,277	1.52
Amines, total³				
	897,254	294,665	438,918	1.49
Butylamines	12,949	12,508	25,623	2.05
Diethylamine	9,970	3,475	4,406	1.27

See footnotes at end of table.

Section 15

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Acyclic—Continued				
Nitrogenous compounds—Continued				
Amines—Continued				
Ethylenediamine	36,881	26,070	46,657	\$1.79
Isopropylamine, mono-	(²)	26,872	23,826	.89
Triethylamine	15,619	11,894	14,934	1.26
Trimethylamine	26,367	19,675	14,552	.74
All other amines	795,468	194,171	308,920	1.59
Ethanolamines, total	329,936	230,830	217,645	.94
2,2'-Aminodiethanol (Diethanolamine)	88,378	80,976	70,290	.87
2-Aminoethanol (Monoethanolamine)	150,105	72,910	70,487	.97
2,2',2''-Nitrioltriethanol (Triethanolamine)	91,453	76,944	76,868	1.00
3-Methoxypropylamine	2,270	2,932	6,226	2.12
Methyldiethanolamine	(²)	6,401	20,907	3.27
Nitriles, total	(²)	805,777	527,994	.66
Acetonitrile	17,863	(²)	(²)	(²)
Acrylonitrile	1,213,875	767,440	451,173	.59
2-Methylactonitrile (Acetone cyanohydrin)	610,453	(²)	(²)	(²)
All other nitriles	-	38,337	76,821	2.01
All other nitrogenous compounds	1,515,460	397,860	301,897	.76
Acids, acyl halides and anhydrides				
Total	4,912,173	1,200,816	1,126,617	.94
Acetic acid, synthetic, 100%	1,701,303	405,260	150,138	.37
Acrylic acid ⁴	477,759	125,072	138,286	1.11
Dimer acid (C ₃₆ dibasic acid)	16,776	14,015	15,557	1.11
2-Ethylhexanoyl chloride	1,305	(²)	(²)	(²)
Fatty acids	14,298	13,946	8,671	.62
Fatty acids, hydrogenated ⁵	155,576	125,824	85,656	.68
Fumaric acid	-	12,268	16,368	1.33
Neodecanoyl chloride	821	(²)	(²)	(²)
Pivaloyl chloride	2,878	(²)	(²)	(²)
Propionic acid	46,340	(²)	(²)	(²)
All other acids, acyl halides and anhydrides	2,495,117	504,431	711,941	1.41
Salts of organic acids				
Total	238,037	156,262	259,843	1.66
Acetic acid salts, total	23,962	9,930	19,241	1.94
Potassium acetate	2,535	2,229	3,334	1.50
Sodium acetate	19,521	(²)	(²)	(²)
All other acetic acid salts	1,906	7,701	15,907	2.07

See footnotes at end of table.

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Acyclic—Continued				
Aluminum Octanoate	72	72	275	\$3.83
2-Ethylhexanoic acid (α -Ethylcaproic acid) salts, total	11,451	6,936	22,475	3.24
Cobalt 2-ethylhexanoate	1,878	1,391	6,409	4.61
Zinc 2-ethylhexanoate	(²)	161	572	3.55
All other 2-ethylhexanoic acid salts	9,573	5,384	15,494	2.87
Formic acid salts	7,956	(²)	(²)	(²)
Lauric acid salts	683	(²)	(²)	(²)
Oleic acid salts	99	(²)	(²)	(²)
Oxalic acid salts, total	54	51	344	6.76
Potassium oxalate	13	12	84	7.19
All other oxalic acid salts	41	39	260	6.67
Propionic acid salts, total	(²)	23,008	16,955	.74
Calcium propionate	12,540	(²)	(²)	(²)
Sodium propionate	4,086	4,272	3,351	.78
All other propionic acid salts	(²)	18,736	13,604	.73
Stearic acid salts, total ⁶	111,739	58,966	89,910	1.52
Aluminum stearates, total	2,083	1,990	5,589	2.81
Aluminum tristearate	791	776	2,480	3.20
All other aluminum stearate salts	1,292	1,214	3,109	2.56
Calcium stearate	39,315	38,433	46,933	1.22
Magnesium stearate	3,468	3,394	7,117	2.10
Zinc stearate	64,351	13,266	25,425	1.92
All other stearic acid salts	2,522	1,883	4,846	2.57
All other salts of organic acids	65,395	57,299	110,643	1.93
Aldehydes				
Total	4,552,709	1,395,346	270,759	.19
n-Butyraldehyde	859,744	33,681	16,005	.48
Formaldehyde (37% by weight)	3,048,110	1,216,734	163,810	.13
All other aldehydes	644,855	144,931	90,944	.63
Ketones				
Total	1,381,796	1,095,806	591,601	.54
Acetone	1,056,654	761,192	354,189	.47
Diacetone alcohol (Hydroxymethyl pentanone)	(²)	9,261	10,087	1.09
Methyl ethyl ketone (2-Butanone)	211,048	240,258	124,696	.52
4-Methyl-2-pentanone (Methyl isobutyl ketone)	(²)	48,750	42,070	.86
All other ketones	114,094	36,345	60,559	1.67

See footnotes at end of table.

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Production</i>	<i>Sales</i>		<i>Average unit value¹</i>
		<i>Quantity</i>	<i>Value</i>	
	<i>1,000 kilograms</i>	<i>1,000 kilograms</i>	<i>1,000 dollars</i>	<i>Per kilogram</i>
Acyclic—Continued				
Alcohols, monohydric, unsubstituted				
Total	6,939,676	4,388,982	1,525,491	\$.35
Alcohols, C ₁₁ or lower, unmixed, total	6,275,073	4,087,317	1,219,169	.30
n-Butyl alcohol (n-Propylcarbinol)	575,647	281,575	148,401	.53
Isobutyl alcohol (Isopropylcarbinol) ⁴	69,865	52,432	31,269	.60
Ethyl alcohol, synthetic ⁷	247,644	297,615	186,353	.63
2-Ethyl-1-hexanol	294,671	156,900	106,097	.68
Isopropyl alcohol	660,466	562,836	256,977	.46
Methanol, synthetic	3,784,957	2,372,038	291,635	.12
Propyl alcohol (Propanol)	85,535	52,519	40,196	.77
All other alcohols, C ₁₁ or lower, unmixed	556,288	311,402	158,241	.51
Alcohols, C ₁₂ and higher, unmixed, total	85,639	(²)	(²)	(²)
Hexadecanol (cetyl alcohol)	18,677	(²)	(²)	(²)
All other alcohols, C ₁₂ and higher, unmixed	66,962	(²)	(²)	(²)
Mixtures of alcohols, total	578,964	(²)	(²)	(²)
Containing C ₁₁ and lower	(²)	53,977	44,924	.83
Containing C ₁₂ and higher ⁸	365,210	221,766	218,827	.99
All other mixtures of alcohols	213,754	(²)	(²)	(²)
All other	(²)	25,922	42,571	1.64
Esters of monohydric alcohols				
Total	3,113,090	1,481,937	1,354,300	\$0.91
n-Butyl acetate	114,530	93,242	70,511	.76
Butyl acrylate	280,129	108,684	129,733	1.19
Dilauryl-3,3'-thiodipropionate	694	704	2,684	3.81
Distearyl-3,3'-thiodipropionate	2,519	2,456	8,168	3.33
Ethyl acetate (100% basis)	123,522	113,668	76,296	.67
Ethyl acrylate	136,485	66,442	71,791	1.08
2-Ethylhexyl acrylate	53,348	46,300	55,475	1.20
Fatty acid esters, not included with plasticizers or surface-active agents, total	5,614	2,955	4,904	1.66
Methyl esters of tallow	2,526	(²)	(²)	(²)
Myristyl myristate	(²)	88	607	6.86
All other fatty acid esters not included with plasticizers or surface-active agents	3,088	2,867	4,297	.61
Isopropyl acetate	20,376	19,299	16,970	.88
Methyl methacrylate	536,283	(²)	(²)	(²)
Phosphorus acid esters, not elsewhere specified	129,395	30,027	64,661	2.15
Propyl acetate	32,868	30,612	29,968	.97
Vinyl acetate	1,206,021	674,970	465,772	.69
All other esters of monohydric alcohols	471,306	292,578	357,367	1.22

See footnotes at end of table.

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Acyclic—Continued				
Polyhydric alcohols^a				
Total	3,388,542	2,866,459	1,754,639	.61
1,4-Butanediol	194,623	(²)	(²)	(²)
Ethylene glycol	2,299,942	2,252,303	1,064,352	.47
Pentaerythritol	55,516	52,936	67,284	1.27
Propylene glycol	342,204	258,323	243,171	.94
Sorbitol (70%)	121,886	79,056	59,515	.75
Sorbitol, crystalline	42,382	34,329	37,994	1.11
All other polyhydric alcohols	331,989	189,512	282,323	1.49
Esters and ethers of polyhydric alcohols				
Total	1,179,398	969,029	1,060,738	1.09
Polyhydric alcohol esters, total	145,708	128,357	184,527	1.44
2-(2-Butoxyethoxy)ethylacetate	4,701	2,957	4,476	1.51
2-Butoxyethyl acetate	8,357	6,492	9,709	1.50
Glycerides, mixed (C ₁₄ -C ₁₈ and C ₁₆ -C ₁₈) mono & di	13,863	13,387	16,993	1.27
All other polyhydric alcohol esters	118,787	105,521	153,349	1.45
Polyhydric alcohol ethers, total	1,033,690	840,672	876,211	1.04
2-Butoxyethanol (Ethylene glycol monobutyl ether)	187,491	168,765	123,881	.73
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	41,168	30,907	36,862	1.19
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	12,081	(²)	(²)	(²)
Diethylene glycol	218,777	159,402	81,143	.51
2-Ethoxyethanol (Ethylene glycol ethyl ether) ..	53,471	29,588	32,158	1.09
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	17,289	16,647	18,632	1.12
2-Methoxyethanol (Ethylene glycol methyl ether)	(²)	16,320	13,615	.83
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	21,271	30,638	30,256	.99
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	22,360	(²)	(²)	(²)
Polyethylene glycol	55,993	52,245	79,369	1.52
Polytetramethylene glycol ether	(²)	23,588	80,039	3.39
Tetraethylene glycol	11,574	8,141	10,909	1.34
Triethylene glycol	50,949	46,310	50,823	1.10
Glycol ethers derived from propylene oxide, total	(²)	(²)	(²)	(²)
Dipropylene glycol	35,588	29,415	26,487	.90
Polypropylene glycol	14,859	8,962	13,856	1.55
Sorbitol, ethoxylated	111	(²)	(²)	(²)
2,2'-Thiodiethanol (Tiodiglycol)	773	(²)	(²)	(²)
Tripropylene glycol	10,385	(²)	(²)	(²)
All other polyhydric alcohols ethers	279,550	219,744	278,181	1.27

See footnotes at end of table.

Section 15

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Chlorinated and fluorinated hydrocarbons				
Total	13,592,020	4,068,431	2,080,054	\$.51
Chlorinated hydrocarbons, total	13,175,011	3,760,172	1,312,219	.35
Carbon tetrachloride	187,470	229,020	62,960	.27
Chlorinated paraffins more than 35% chlorine (C ₁₀ -C ₃₀), total	34,818	31,938	34,162	1.07
35%-64% chlorine	28,405	26,349	24,275	.92
65% or more chlorine	6,413	5,589	9,887	1.77
Chloroform	219,687	196,164	92,707	.47
Chloromethane (Methyl chloride) ⁴	350,114	79,476	36,308	.46
Dichloromethane (Methylene chloride)	209,116	128,921	58,938	.46
Ethyl chloride (Chloroethane) ⁴	67,710	(²)	(²)	(²)
Ethylene dichloride (1,2-Dichloroethane) ⁴	6,282,199	1,021,869	126,247	.12
Tetrachloroethylene (Perchloroethylene)	168,844	166,234	55,177	.33
1,1,1-Trichloroethane (Methyl chloroform)	364,073	308,228	182,232	.59
Vinyl chloride, monomer (Chloroethylene) ⁴	4,818,754	1,430,931	573,526	.40
All other chlorinated hydrocarbon	472,226	167,391	89,962	.54
Fluorinated (including other fluorohalogenated) hydrocarbons, total	417,009	308,259	767,835	2.49
Chlorodifluoromethane (F-22)	138,823	107,707	273,360	2.54
Dichlorodifluoromethane (F-12)	94,626	81,697	178,943	2.19
Trichlorofluoromethane (F-11)	60,959	61,883	109,415	1.77
All other fluorinated (including other fluorohalogenated) hydrocarbons	122,601	56,972	206,117	3.62
All other miscellaneous acyclic chemicals				
Total	4,115,985	917,253	1,318,426	1.44
Acyclic peroxides, total	26,642	23,814	119,026	5.00
2-Butanone peroxide (MEK peroxide)	4,424	4,425	21,406	4.84
tert-Butyl peroxy-2-ethylhexanoate	1,563	1,373	8,924	6.50
All other acyclic peroxides	20,655	18,016	88,696	4.92
Expoxides, ethers and acetals, total	3,188,980	(²)	(²)	(²)
Ethylene oxide ⁴	2,428,914	241,851	255,000	1.05
All other expoxides, ethers and acetals	760,066	(²)	(²)	(²)
Fats and oils, chemically modified ¹⁰	19,869	16,604	20,953	1.26
Hydrocarbons	18,937	(²)	(²)	(²)
Hydrogenated tallow glycerides	8,942	(²)	(²)	(²)
All other fats oils, chemically modified	10,927	(²)	(²)	(²)
Organo-boron compounds	(²)	502	3,521	7.01
Chloropropyltrimethoxysilane	530	(²)	(²)	(²)
Hexamethyldisilazane	362			
Silicone fluids	67,922	40,541	220,223	5.43
Phosgene (Carbonyl chloride)	307,584			
All other miscellaneous acyclic chemicals	465,290	593,941	699,703	1.18

See footnotes at end of table.

Table 15-1—Continued
Miscellaneous cyclic and acyclic chemicals: U.S. production and sales, 1990

Miscellaneous cyclic and acyclic chemicals	Production	Sales		Average unit value ¹
		Quantity	Value	
	1,000 kilograms	1,000 kilograms	1,000 dollars	Per kilogram
Mixtures not specifically itemized				
Total	72,562	68,865	22,431	.33
Fatty acid residues	15,562	14,877	1,961	.13
All other mixtures not specifically itemized ¹¹	57,000	53,988	20,470	.38

¹ Calculated from unrounded figures.

² Reported data are accepted in confidence and may not be published, or no data were reported.

³ Statistics limited to compounds of carbon, hydrogen, and nitrogen; and exclude production and sales of fatty amines. Statistics on fatty amines are included in the section on "Surface-Active Agents."

⁴ The difference between the production reported here and that shown on the *Preliminary Report on U.S. Production of Selected Organic Chemicals (including Synthetic Plastics and Resin Materials), 1990*, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustments, and rounding.

⁵ Excludes minor amounts reported as "fatty acids" and "partially hydrogenate".

⁶ Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included in the section on "Surface-Active Agents."

⁷ Synthetic ethyl alcohol is conventionally defined as that portion made from ethylene. Bureau of Alcohol, Tobacco, and Firearms statistics give the production from "natural" sources, mainly grain.

⁸ Includes small amount of mixtures of alcohols on both sides of the C11-C12 dividing line.

⁹ Some polyols which are used as intermediates for urethanes have been included in the section on "Plastics and Resin Materials."

¹⁰ Other than esters, salts, alcohols, acids, or acyl halides, which are tabulated in preceding groups.

¹¹ Products included here are predominately acyclic; however, unspecified amounts of mixtures containing some cyclic chemicals may also be included.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Section 15

Table 15-2
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, cyclic:	Yes	
6-Acetoxy-2,4-dimethyl-1,3-dioxane	No	GIV.
Acetylcyclohexane sulfonyl peroxide	No	ART, CKC.
Alkylated arylamine	No	SM.
Alkylated naphthylamine/dioctylphenylamine copolymer	No	SM.
Alkylphenol formaldehyde condensate, alkoxyated	No	(²).
Alkylphenol formaldehyde copolymer	No	(²).
1-(2-Aminoethyl)piperazine	No	DOW.
1-(3-Aminopropyl)morpholine	No	TX.
Amyl ortho- and para-dimethylaminobenzoates	No	VND.
t-Amyl peroxybenzoate	No	WTL.
p-Amylphenol	No	(²).
Anisaldehyde bisulfite	No	EKT.
α -Aspartyl-phenylalanane methyl ester (α -Amino succinic etc.)	No	HXL.
Benzenephosphinic acid	No	FER.
Benzothiazole	No	CGY.
Benzotriazole, polychlorinated	No	EVN.
Benzotriazole, potassium & sodium salts	No	(²).
Benzoyl peroxide	Yes	AZT, CAD, NOC, RCI, WTL.
Benzyl alcohol	No	KLM.
Benzyl chloroformate	No	HCC, VCM.
Benzyl 4-hydroxy benzoate	No	CHD.
Benzoic acid esters:	Yes	
Benzoic acid, 2-butoxyethanol ester	No	PCI.
Benzoic acid, butyl ester (Butyl benzoate)	No	UTC.
Benzoic acid, C ₁₂ -C ₁₅ ester	No	FTX.
Benzoic acid, isodecyl ester	No	VEL.
2-Ethylhexyl benzoate	No	BRI.
Resorcinol monobenzoate	No	EKT.
Sucrose benzoate	No	VEL.
Benzoic acid salts:		
Ammonium benzoate	No	WTK.
Barium benzoate	No	CCA, FER.
Potassium benzoate	No	KLM, PFZ.
Sodium benzoate	No	HCP, JRC, KLM, PFZ.
α, α -Bis(1-butylperoxy)diisopropylbenzene	No	WTL.
Bis[p-chlorobenzoyl]peroxide	No	CAD.
Bis(2,4-dichlorobenzoyl) peroxide	No	CAD.
Bis(α, α -dimethylbenzyl)peroxide	No	WTL.
1,3-Bis(hydroxymethyl)-5,5-dimethyl hydantoin	No	BRD.
2,2-Bis(4-hydroxyphenyl)4-methylpentane	No	ASL.
Bis(perfluoroalkyl)bis(alpha-monochlorohydril)-pyromellitate	No	HCL.
Bis(triphenylsilyl)chromate	No	(²).
Bromochloro-5,5'-dimethyl hydantoin	No	BRD.
β -Bromo- β -nitrostyrene	No	GIV.
2-Butoxyethyl benzoate (Butyl cellosolve benzoate)	No	(²).
tert-Butylhydroquinone	No	EKT.
2 (and 3)-tert-Butyl-4-methoxyphenol (Butylated hydroxyanisole, or, BHA)	No	EKT, UPM.
Butylmorpholine	No	TX.
tert-Butyl peroxybenzoate	Yes	AZT, FRE, NOC, WTL.
Camphene	No	SCM.
Campholenic aldehyde	No	SCM.
Caprolactam (2-Oxohexamethylenimine)	Yes	ACS, BAS, CNP.
Caprolactam magnesium bromide	No	FER.
Cellulose acetate hexahydrophthalate	No	(²).
Cellulose acetate phthalate	No	EVN.
Chlorothiaxanthone	No	PSG.
Cumene hydroperoxide	No	BTL, FRE, WTL.
α -Cumyl peroxyneodecanoate	No	WTC, WTL.

See footnotes at end of table.

Table 15-2—Continued
 Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, cyclic-Continued		
α-Cumyl peroxyneohexanoate	No	WTL.
Cyanuric acid	No	MON.
Cyclic silizane	No	(²).
Cyclohexane carbonitrile	No	DUP.
1,4-Cyclohexane dimethanol dibenzoate	No	VEL.
Cyclohexanethiol	No	PAS.
All other cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid), disubstituted, polyester salts	No	ART.
2-Cyclohexene-1-octanoic acid, 5 (and 6)-carboxy-4-hexyl, C ₂₁ H ₃₆ O ₄	No	WVA.
1,4-Cyclohexylenedimethanol	No	EKT.
Cyclohexyl methacrylate	No	CPS.
Decabromodiphenyl ether (DBDP)	No	GTL.
4,4-Diaminodiphenyl ether	No	MAL.
1,1-Di(t-amyloxy)cyclohexane	No	WTL.
1,8-Diazabicyclo(5.4.0)undecane	No	AIP.
1,4-Diazobicyclo(2.2.2)octane	No	(²).
Dibenzylglycerol	No	DIX.
2,6-Di-tert-butyl-p-cresol (BHT, or, Butylated hydroxytoluene)	Yes	RDA, UCC, USR.
Di-t-butyl diperoxyphthalate	No	WTL.
2,5-Di-tert-butylhydroquinone	No	EKT.
2,6-Di-t-butyl-4-nonylphenol	No	RDA.
1,1-Di(t-butyl peroxy) cyclohexane	No	AZT, WTL.
1,1-Di(t-butyl peroxy)-3,3,5-trimethyl cyclohexane	No	WTL.
1,3-Dichloro-5,5-dimethylhydantoin	No	BRD.
Dicumyl peroxide	No	FRE, WTC.
Dicyclopentadienyl acrylate	No	RDA.
Dicyclopentadienylchromium (Chromocene)	No	(²).
Dicyclopentadienyl methacrylate	No	RDA.
3-Diethylamino-6-methyl-7-(2,4-dimethylanilino) fluoran	No	ESA.
N,N'-Diethyl-N,N'-diphenylurea	No	VCM.
Di(2-ethylhexyl)chlorendate	No	VEL.
o,o-Diethyl-o-phenyl phosphorothioate	No	ICI.
2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)	No	PLC.
2,4-Dihydroxybenzophenone	No	BAS.
2,2'-Dihydroxy-4,4'-dimethoxybenzophenone	No	BAS.
4,4-Dihydroxymethyl-2-oxazoline	No	ANG.
Diiodomethyl-p-tolylsulfone	No	ANG.
Diisopropylbenzene hydroperoxide	No	HPC.
Diisopropyl/naphthalene sulf. acid amine salts	No	(²).
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	No	ASL.
Dimethyl-1,4-cyclohexane dicarboxylate	No	EKT.
4,4-Dimethyl oxazolidene	No	ANG, EFH.
N,N-Dimethylphenyl urea	No	AC.
Dimethyl piperazine	No	TX.
Dimorpholine diethyl ether	No	TX.
Di-tert-octyl hydroquinone	No	EKT.
Dioxane (1,4-Diethylene oxide)	No	FER.
1,3-Dioxolane	No	FER.
Dioxolanone	No	(²).
1,2-Diphenoxyethane	No	CHD.
Diphenyl-t-butylhexyl phosphite	No	WTC.
Diphenylisodecyl phosphite	No	WTC.
Diphenylisooctyl phosphite	No	WTC.
Dipropylene glycol salicylate	No	SBC.
Dodecyl pyridinium chloride	No	TLC.
6-Ethoxy-12-dihydro-2,2,4-trimethyl quinoline	No	MON.
Ethyl cyclohexylamine	No	AIP.

See footnotes at end of table.

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Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, cyclic—Continued		
2-Ethylhexyl-1-p-dimethylaminobenzoate	No	VND.
2-Ethylhexyl-p-methoxy cinnamate	No	VND.
2-Ethylhexyl salicylate	No	VND.
4-(N-Ethyl-N-2-hydroxyethyl)-2-methylphenylene-diamine sulfate	No	WAY.
4-Ethyl-4-hydroxymethyloxazoline	No	ANG.
2,2'-Ethylidene-bis(4,6-di-tert-butylphenol) (Isonox 129)	No	SCN.
Ethylidene norbornene	No	UCC.
4-Ethylmorpholine	No	TX.
N-Ethyl pyrrolidone	No	GAF.
Hexabromocyclodecane	No	GTL.
Hexahydro-1,3,5-tris(2-hydroxyethyl)-s-triazine	No	ANG.
Hexamethylenetetramine, tech	Yes	BOR, HMP, PLS, WCL.
Homomenthol salicylate	No	WTC.
Hydrindantin	No	PIC.
Hydroquinone, di(α-hydroxyethyl) ether	No	EKT.
p-Hydroxybenzoic acid, butyl ester	No	KLM, UPJ.
p-Hydroxybenzoic acid, ethyl ester (Ethyl paraben)	No	KLM.
p-Hydroxybenzoic acid, methyl ester	No	KLM, LEM.
p-Hydroxybenzoic acid, propyl ester	No	KLM, LEM.
N-(Hydroxyethyl)piperazine	No	SCP.
2-Hydroxy-4-methoxybenzophenone	No	VND.
Hydroxymethyl-bis-oxazoline	No	ANG.
Hydroxymethyl-5,5-hydantoin	No	BRD.
α-D-p-Hydroxyphenylglycine methyl ester K	No	BOC.
1,2,3-Indantrione monohydrate (Ninhydrin)	No	PIC.
Isobornyl acrylate	No	RDA.
Isobornyl methacrylate	No	RDA.
Isooctyl-3,5-di-t-butyl-4-hydroxyhydrocinnamate	No	ASL.
Isophorone	No	ENJ.
Lead/iron resorcyate salicylate	No	SHP.
Maleic anhydride	Yes	AMO, ART, ASH, DKA, MON.
Methoxyethyl morpholine	No	TX.
4-Methoxyphenol	No	ASL, EKT.
Methylbenzene sulfonate	No	EVN.
Methyl-p-benzoquinone	No	EVN.
2-Methylcyclohexylamine	No	AIP.
3-(N-Methyl-N-cyclohexylamino)-6-methyl-7-anilino fluoran	No	GTL.
4-Methylmorpholine	No	TX.
1-Methyl-2-pyrrolidone, monomer	No	ATR, BAS, GAF, (2).
Methyltetrahydrophthalic anhydride	No	DIX.
Methyl thiopinacolone oxime	No	CED.
Methylvinyl cyclic siloxane	No	(²).
Morpholine	Yes	AIP, BAS, DOW, TX, (2).
Morpholine salt of gluconic acid	No	(²).
Morpholine salt of p-toluene sulfonic acid	No	AMB.
Naphthenic acid/polyamine condensates	No	(²).
4-(2-Nitrobutyl) morpholine	No	ANG.
N-Nitrosophenylhydroxylamine, ethanolamine salt	No	MAL.
Furan derivatives:		
2-Furaldehyde (Furfural)	No	OKO.
Furfuryl amine	No	OKO.
Furoic acid	No	OKO.
Tetrahydrofurfuryl alcohol	No	OKO.
All other furan derivatives	No	OKO.
Lactones:		
Butyrolactone	Yes	BAS, GAF, UCC.
Diketene	No	EKT.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, cyclic-Continued		
Lactones-Continued		
Glucono- δ -lactone	No	BRD.
Octabromodiphenyl oxide	No	GTL.
Oxoaluminum benzoate/2-ethylhexanoate	No	KCH.
Pentaerythritol tribenzoate	No	VEL.
Phenol-sulfonated formaldehyde rosin	No	HCL.
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	No	SCP, UCC.
Phenoxyethyl acrylate	No	CPS.
Phenyl acid phosphate	No	ALW.
Phenyldiisodecyl phosphite	No	WTC.
α -D-Phenylglycine methyl ester K	No	BOC.
Phenylpropanolamine	No	ORT.
Phosphonate ester, cyclic	No	ALW.
Phthalic acid, lead salt, (Dibasic)	No	ALI.
Picramic acid, sodium salt	No	SDC.
Pinene and derivatives:	Yes	
Pinane	No	SCM.
Pinane hydroperoxide	No	SCM.
2-Pinanol (cis and trans)	No	SCM.
Pinanols/plinol mixtures	No	SCM.
α -Pinene	Yes	ARZ, NCI, SCM.
β -Pinene	Yes	ARZ, NCI, SCM.
α -Pinene oxide	No	SCM.
Pinene, sulfate	No	ARZ, HPC.
Pinene, wood	No	HPC.
Pine oil, natural, sulfate	Yes	ARZ, NCI, SCM.
Pine oil, synthetic	Yes	ARZ, NCI, SCM.
Polyethylene glycol ditallate	No	RDA.
Polyglycols-toluene diisocyanate reaction product	No	(²).
Polypropylene glycol ditallate/distearate	No	RDA.
Propylene glycol dibenzoate	No	VEL.
Propyl gallate	No	EKT.
2,4(1H,3H)-Pyrimidinedione (Uracil)	No	PCR.
p-Quinone	No	EKT.
Rosin acid salts:		
All other rosin acid salts	No	GP.
Salicylic acid, ammonium salt	No	WTK.
Salicylic acid magnesium salt	No	KLM, WTK.
Styrene oxide	No	UCC.
Succinic anhydride	No	BCC, MIL.
Succinic anhydride derivatives:	Yes	
Dodecenylsuccinic anhydride	No	DIX, HMY.
Dodecylsuccinic anhydride	No	MIL.
Iso-hexadecenyl succinic anhydride	No	DIX.
Iso-octadecenylsuccinic anhydride	No	DIX, HMY.
Nonenylsuccinic anhydride	No	HMY.
Octadecenyl succinic anhydride	No	HMY.
Octenylsuccinic anhydride	No	HMY, MIL.
Polyisobutenyl succinic anhydride	No	SM.
All other succinic anhydride derivatives	No	HMY, (²).
Tall oil acyl chloride	No	CCC.
Tall oil, chemically modified	Yes	FOC, RDA, SHX, WVA, (²), (²).
Tall oil, diethanolamine salt	No	QCP.
Tall oil fatty acids, polymerized	No	SHX, WVA.
Tall oil monomer	No	WTC.
Tall oil: Neopentyl glycol tallate	No	QCP.
Tall oil: Pentaerythritol tallate	No	EFH.
Tall oil, triethanolamine salt	No	QCP.

See footnotes at end of table.

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Table 15-2—Continued
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, cyclic-Continued		
Tall oil salts (linoleic-rosin acid salts):		
Cadmium tallate	No	CCA.
Calcium manganese tallate	No	MCI, SHP.
Calcium tallate	No	(²).
Cobalt manganese tallate	No	MCI, SHP.
Cobalt tallate	No	MCI, SHP.
Copper tallate	No	MCI.
Lead tallate	No	MCI.
Manganese tallate	No	MCI, SHP.
Potassium tallate	No	QCP.
Zinc tallate	No	CCA, MCI, (²).
All other tall oil salts (Linoleic-rosin acid salts)	No	CCA, SHP, (²).
Tannic acid, N.F.	No	MAL.
Terpene hydrocarbons, monocyclic (Solvenol)	No	HPC, NCI, SCM.
Tetrabromobisphenol A	No	GTL, TNA.
1,2,3,4-Tetrahydronaphthalene (Tetralin)	No	DUP.
Tetrahydrothiophene	No	PAS.
Tetrahydrothiophene-1,1-dioxide (Sulfolane)	No	PLC.
Thiophene	No	PAS.
TMPD dibenzoate	No	VEL.
Tolyltriazole/butyl vinyl ether, combined	No	SM.
Tolyltriazole, potassium salt	No	(²).
Triallyl trimellitate	No	RDA.
Triazine	No	QCP.
3,4,4'-Trichlorocarbaniide	No	MON.
Trichloromelamine	No	GFS.
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric acid)	No	MON, OMC.
Tri(2,4-ditertiarybutylphenyl) phosphite	No	WTC.
Tri(methoxymethyl) tri(stearoxymethyl) melamine	No	WPG.
3,3,5-Trimethylcyclohexanol (m-homomenthol)	No	ARS.
3,5,5-Trimethyl-2-cyclohexene-1-one (Isophorone)	No	ENJ, UCC.
Triphenyl phosphite	No	WTC.
Twitchell chemicals (Naphthalene/oleic acid, sulfonated)	No	SCP.
Urea toluenesulfonate	No	NES.
1-Vinyl-2-pyrrolidinone--other copolymers	No	GAF.
1-Vinyl-2-pyrrolidinone-methylacrylic acid, dimethylamine ethyl ester, copolymer	No	GAF.
1-Vinyl-2-pyrrolidinone, monomer	No	GAF.
1-Vinyl-2-pyrrolidinone--vinyl acetate copolymer	No	GAF.
All other cyclic chemicals	No	ALW, ARS, BAS, BRD, CWN, EKT, EVN, EVN, EVN, EVN, EVN, EVN, GAF, HXL, ICI, LYP, MCK, MIL, MNA, PIC, QCP, RDA, REG, REG, RH, RQT, RSA, S, SCM, SCP, SDC, SHP, TNA, TX, UCC, UPJ, (²), (²), (²), (²), (²), (²), (²), (²), (²), (²), (²), (²), (²).
Miscellaneous chemicals, acyclic:	Yes	
Nitrogenous compounds:	Yes	
Acetamidoethanol (N-Acetyl-ethanolamine)	No	SBC.
Allyl ureido monomer	No	RDA.
Amides:	Yes	
Acetamide	No	WTK.
Acrylamide monomer	No	ACY, (²).
1,1'-Azobisformamide	No	USR.
Behenamide	No	ASL, WTC.
Chloromethylene dimethyliminium (Amide chloride)	No	CWN.
Coconut oil amide	No	ARC, FER.
N,N-Diethyldodecanamide	No	EVN.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Nitrogenous compounds-Continued		
Amides-Continued		
N,N-Dimethylacetamide	No	DUP, EKT, MON.
N,N-Dimethylacetoacetamide	No	BRD.
Dimethylaminopropyl methacrylamide	No	TX.
N,N-Dimethylformamide	No	AIP, DUP.
Erucamide	Yes	ARC, SYP, WTC.
Erucyl stearamide	No	WTC.
N-N-Ethylenebiscocoamide	No	WTC.
N,N'-Ethylenebis-oleamide (Oleic acid-ethylene diamine condensate (Amine/acid ratio = 1/2))	Yes	BRD, CCW, WTC.
N,N'-Ethylenebis(stearamide)	Yes	BRD, CCW, WTC.
Ethylene(12)hydroxystearamide	No	CAS.
Fatty acid amide mixtures	No	ARC.
Methacrylamide	No	DUP.
N-Methylacetamide	No	ARS, EKT.
Oleamide (Octadecane amide)	Yes	ARC, SYP, WTC.
Oleoylpalmitamide	No	HXL, WTC.
Oxamide	No	HML, (²).
Stearamide (Octadecane amide)	No	ARC, SYP, WTC.
Stearyl erucamide	No	HXL, WTC.
Stearyl stearamide	No	WTC.
Tallow amide	No	QCP.
Tallow amide, hydrogenated	No	ARC.
All other amides	No	AC, ARS, CAS, DOW, MIL, QCP, SDC, VCM, (²).
Amines:	Yes	
t-Alkylamines, primary, mixed	No	BRD, RH.
Allylamines:	Yes	
Diallylamine	No	HCL, ICI.
Triallylamine	No	HCL.
N,N'-Bis(2-amino-2-methyl)propyl-1,2-ethane diamine	No	HXL.
Bis-hexamethylenetriamine amine	No	DUP, MON.
Butylamines:	Yes	
n-Butylamine, mono	No	AIP, PAS.
sec-Butylamine, mono	No	FER, PAS.
tert-Butylamine, mono	No	MON, SC.
Di-n-butylamine	No	AIP, PAS.
Diisobutylamine	No	AIP, HCL.
Tri-n-butylamine	No	AIP, PAS.
n-Butylethylamine	No	AIP.
Di-tert-butylethyldiamine	No	HCL.
Diethylaminopropylamine	No	UCC.
Diethylenetriamine	No	ARC, DOW, TX.
Diisopropylamine	No	AIP, PAS, UCC.
2,2-Dimethyl-N-(2-aminoethyl)-1,2-ethane diamine	No	HXL.
Dimethylaminopropylamine	No	AIP, BAS, TX, (²).
Dimethylethyl amine (DMEA)	No	BAS.
Dodecamethylenediamine	No	(²).
Ethylamines:		
Diethylamine	Yes	AIP, HCL, PAS, QTR, UCC.
Ethylamine, mono-	No	AIP, HCL, PAS, QTR, UCC.
Triethylamine	Yes	AIP, PAS, QTR, UCC.
Ethylenediamine	Yes	DOW, TX, UCC.
(2-Ethylhexyl)amine, mono-	No	PAS.
N-Ethyl-2-methylallylamine	No	HCL.
Fatty amines	No	NCI.
1,6-Hexanediamine (Hexamethylenediamine)	No	DUP, MON.

See footnotes at end of table.

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Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Nitrogenous compounds-Continued		
Amines-Continued		
n-Hexamine	No	CXI, PAS.
Isopropylamines:		
Isopropylamine, mono	No	AIP, HCL, PAS, UCC.
Methylamines:		
Dimethylamine	Yes	AIP, DUP, IMC, RDA, UCC.
Methylamine, mono-	No	AIP, DUP, IMC, RDA.
Trimethyl amine	Yes	AIP, DUP, IMC, RDA.
tert-Octylamine	No	RH, (2).
n-Octylamine, mono	No	ELC.
Pentaethylenehexamine	No	DOW, UCC.
Pentylamines (amylamines):		
Dipentylamine	No	PAS.
Pentylamine, mono-	No	PAS.
Tripentylamine	No	PAS.
Propylamines:		
Dipropylamine	No	AIP, HCL, PAS.
Propylamine, mono-	No	AIP, PAS.
Tripropylamine	No	AIP, PAS.
N,N,N',N'-Tetrabutylhexanediamine	No	MON.
Tetraethylenepentamine	No	DOW, UCC.
N,N,N',N'-Tetramethyl-1,3-butanediamine	No	UCC.
Tetramethylethylenediamine	No	BKM.
Triethylenediamine	No	TX.
Triethylenetetramine	No	DOW, TX, UCC.
All other amines	No	ANG, MON, SCP, UCC.
5-Amino-1,3-bis(2-ethylhexyl-5-methyl)-hexahydropyrimidine	No	ANG.
2-Amino-1-butanol	No	CED.
2-Aminoethanol hydrochloride	No	OMC, (2).
2-Aminoethanol (Monoethanol amine) sulfite	No	EVN.
Aminoethoxyethanol	No	TX.
2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine)	No	DOW, (2).
(2-Aminoethyl)amino ethanol, reaction product with octadecanoic acid	No	BRI.
2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate)	No	EVN.
2-Amino-2-ethyl-1,3-propanediol	No	ANG.
2-Amino-2-(hydroxymethyl)-1,3-propanediol [Tris(hydroxymethyl)aminomethane]	No	ANG, CED, GON, WTK.
2-Amino-2-methyl-1,3-propanediol	No	ANG.
2-Amino-2-methyl-1-propanol	No	ANG, CED, GON.
Bis(dimethylaminoethyl) ether	No	TX.
tert-Butylaminoethyl methacrylate	No	CPS, RDA.
tert-Butyldiethanolamine	No	PAS.
tert-Butyl urea	No	PAS.
Choline	No	RH.
Diallyldimethyl ammonium chloride	No	CPS, (2).
Di-amine derivatives of dimer acids	No	WTC.
2-Dibutylaminoethanol	No	PAS.
Dibutylaminomethanol, condensed with formaldehyde	No	(2).
2-Diethylaminoethanol (N,N-Diethylethanolamine)	No	PAS.
2-(2-Diethylaminoethoxy)ethanol	No	PAS.
Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt	No	CPS.
2-Diethylaminoethyl methacrylate	No	CPS, DUP.
Diethylcarbamoyl chloride	No	GAF.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Nitrogenous compounds-Continued		
Diethylhydroxylamine	No	PAS.
1,3-Diethyl-2-thiourea	No	PAS.
2-Diisopropylaminoethanol (N,N-Diisopropylethanolamine)	No	PAS.
Dimethylamine epichlorohydrin copolymer	No	CPS.
2-Dimethylaminoethanol (N,N-Dimethylethanolamine)	No	AIP, PAS.
Dimethylaminoethyl acrylate	No	CPS.
Dimethylaminoethyl acrylate, dimethyl sulfate, quaternary salt	No	CPS.
Dimethylaminoethylacrylate, methyl chloride, quaternary salt	No	CPS, RDA.
Dimethylaminoethyl chloride	No	SK.
Dimethylaminoethyl methacrylate	No	CPS, RDA.
Dimethylaminoethylmethacrylate, dimethyl sulfate, quaternary salt	No	CPS, RDA.
Dimethylaminoethylmethacrylate, methyl chloride, quaternary salt	No	CPS, RDA, UCC.
Dimethylaminoethylmethacrylate sulfate	No	RDA.
Dimethylaminomethanol	No	(²).
1-(Dimethylamino)-2-propanol	No	PAS.
Dimethylaminopropyl chloride	No	SK.
Dimethyl soy amine	No	(²).
Ethanolamines:	Yes	
Diethanolamine	Yes	CNE, DOW, OMC, TX, UCC.
Monoethanolamine	Yes	CNE, DOW, OMC, TX, UCC.
Triethanolamine	Yes	CNE, DOW, OMC, TX, UCC.
2-Ethylaminoethanol (Ethylmonoethanolamine)	No	PAS.
2-Ethylhexyl nitrate ethyl ester	No	BUC.
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	No	SDW.
2-Ethyl-2-nitro-1,3-propanediol	No	SDW.
Fatty acid, alkanolamine ester	No	(²).
Fatty acid/polyamine condensates	No	(²).
Hexamethylenediamine adipate (Nylon salt)	No	DUP, MON, (²).
Hexamethylene-1,6-diisocyanate (HDI)	No	MOB.
Hexylamine ethoxylate	No	CXI.
N-(2-Hydroxyethyl)-12-hydroxystearamide	No	CAS.
2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris-(hydroxymethyl)nitromethane)	No	ANG, CED.
Iminodiacetic acid	No	HMP.
Isopropanolamines:		
Diisopropanolamine	No	DOW.
Dimethyl isopropanolamine	No	PEL.
Monoisopropanolamine	No	DOW.
Triisopropanolamine	No	DOW.
2-Isopropylaminoethanol	No	PAS, UCC.
Ketimine, tetrafunctional	No	SM.
3-Methoxypropylamine	Yes	BAS, PAS, TX.
Methylaminoacetaldehyde dimethyl acetal (MAADMA)	No	ASL.
2-Methylaminoethanol (N-Methylethanolamine)	No	UCC.
Methyl ammonium chloride	No	NOD.
2,2'-(Methylimino)diethanol (Methyldiethanolamine)	Yes	DOW, PAS, TX, UCC.
Methyl isocyanate	No	RDA.
2-Methyl-2-nitro-1-propanol	No	ANG, CED.
Mixed higher glycol amine (MHGA)	No	AIP.
Nitrated lard oil	No	SM.
Nitriles:	Yes	
Acetonitrile	Yes	BKC, DUP, SOH, (²).
Acrylonitrile, monomer	Yes	ACY, DUP, MON, SC, SOH.

See footnotes at end of table.

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Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Nitrogenous compounds-Continued		
Nitriles-Continued		
Adiponitrile	No	DUP, MON, (2).
Aminodimethyl butyronitrile	No	NOD.
2,2-Azobis(dimethyl pentane nitrile)	No	DUP.
2,2-Azobis(2-methyl butane nitrile)	No	DUP.
2,2'-Azobis[2-methylpropionitrile] (Azobisisobutyronitrile)	No	DUP, EKX.
Cyanoacetic acid (Malonic nitrile)	No	NOD.
1-(2-Cyanoethyl)ethyl urea	No	GAF.
Ethyl cyanoacetate	No	NOD.
Isobutyronitrile	No	EKX.
Methyl cyanoacetate	No	NOD.
4-Methyl-5-hydroxymethyl imidazole	No	SK.
2-Methylactonitrile (Acetone cyanohydrin)	Yes	CYR, DUP, RH, SOH.
Octadecenenitrile (Oleonitrile)	No	ARC.
Propionitrile	No	MON.
Tallow nitrile	No	SHX.
3,3'-Thiodipropionitrile	No	EVN.
Trichloroacetoneitrile	No	OMC.
All other nitriles	No	AC, EKT, HMP, HXL, RSA, TNA, WTC.
2-Nitro-1-butanol	No	CED.
Nitroethane	No	ANG, GON.
Nitromethane	No	ANG, GON.
1-Nitropropane	No	ANG, GON.
2-Nitropropane	No	ANG, GON.
Polyoxypropylene triamine	No	TX.
n-Propylaminoethanol	No	PAS.
Semicarbazide hydrochloride	No	OMC.
Tetraethyl ammonium bromide	No	RSA.
Tetramethylammonium chloride	No	RSA.
Thiosemicarbazide	No	FMT.
Triethanolamine hydrochloride	No	WPG.
Triethanolamine, sulfuric & phosphoric acid salts	No	(2).
Triethylamine, nitric acid salt	No	(2).
Triethylenetetramine, propoxylated	No	HXL.
All other nitrogenous compounds, acyclic	No	AIP, ANG, CCC, EVN, HXL, OMC, PAH, RDA, REG, RSA, SCM, SK, TX, UCC, WTL, (2),(2).
Acids, acid anhydrides, and acyl halides:	Yes	
Acetic acid, synthetic (100%)	Yes	AIP, ARC, EKT, HCL, SC, UCC, USI, (2).
Acetic anhydride, other than recovered acetic anhydride	No	EKT, HCL.
D-(-)-3(Acetylthio)-2-methylpropanoyl chloride	No	BRS.
Acrylic acid	Yes	BAS, HCL, RH, UCC.
Adipic acid	No	DUP, MON.
Anhydride-acid mixture	No	HCL.
Azelaic acid	No	SCP.
2,2-Bis(hydroxymethyl)propionic acid	No	IMC.
2-Bromohexanoic acid	No	EKT.
Butyric acid	No	EKT, HCL, PEN.
Butyric anhydride	No	EKT.
Butyryl chloride	No	TLC.
Castor oil fatty acids, dehydrated	No	CAS.
Chloroacetic acid, mono	No	NCC, PFZ.
Citric acid	No	HAR, PFZ.
Crotonic acid (2-Butenoic acid)	No	EKT.
Decanoic acid (Capric acid)	No	ARC.
Decanoyl chloride	No	WTL.
2,2-Dichloroacetyl chloride	No	RDA.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Acids, acid anhydrides, and acyl halides-Continued		
Dimer acid (C ₃₆ aliphatic dibasic acid)	Yes	SCP, SYL, WTC.
Dimethylpropionic acid (Neopentanoic acid)	No	QTR.
Dithiodiglycolic acid	No	EVN.
Dithiodipropionic acid	No	EVN.
Dodecanedioic acid	No	DUP.
Dodecanoic acid (Lauric acid)	No	ARC.
2-Ethylhexanoic acid (α -Ethylcaproic acid)	No	EKT, UCC.
2-Ethylhexanoyl chloride	Yes	DUP, PPG, WTC, WTL.
Etidronic acid ((1-Hydroxyethylidene)biphosphonic acid)	No	BRD.
Fatty acids	Yes	ARC, CAS, DRL, PG, SHX, WTC.
Fatty acids, hydrogenated	Yes	BRD, CAS, DRL, SHX, SYP, WTC, (?).
Fatty acids, partially hydrogenated	No	SYP, WTC.
Formic acid, 90%	No	HCL.
Fumaric acid	Yes	HAR, MON, PFZ.
Gluconic acid, technical	No	PFZ, PMP.
Glutaric acid	No	DUP.
Glycolic acid (Hydroxyacetic acid)	No	DUP.
Heptanoic acid	No	HCL.
Hexadecanoic acid (Palmitic acid)	No	ARC.
Isoascorbic acid (Erythorbic acid)	No	PFZ, RDA.
Isobutyric acid	No	EKX.
Isobutyric anhydride	No	EKT.
Itaconic acid (Methylenesuccinic acid)	No	PFZ.
Lactic acid, 100%	No	SC.
Lauroyl chloride	No	WTL.
Malic acid	No	HAR.
Mercaptoacetic acid (Thioglycolic acid)	No	EVN.
3-Mercaptopropionic acid	No	EVN, WTC.
Mercaptosuccinic acid (Thiomalic acid)	No	EVN.
Methacrylic acid	No	DUP, RH.
Methanesulfonic acid	No	PAS.
Methanesulfonyl chloride	No	PAS.
Neo-C ₉ -C ₁₂ acids	No	ENJ.
Neodecanoic acid	No	ENJ.
Neodecanoyl chloride	Yes	PPG, WTC, WTL.
Neoheptanoyl chloride	No	WTC, WTL.
Neopentanoic/neoheptanoic acids	No	ENJ.
Nonanoic acid (Pelargonic acid)	No	HCL, SCP.
Octanoic acid (Caprylic acid)	No	ARC.
Oleic acid	No	ARC, DRL, WTC.
Oxidized Fischer-Tropsch wax	No	SQA.
Pivaloyl chloride	Yes	PPG, WTC, WTL.
Polyacrylic acid	No	BFG, BKM, RH.
Propionic acid	Yes	EKT, HCL, UCC.
Propionic anhydride	No	EKT.
Sebacic acid	No	WTH.
Sorbic acid (2,4-Hexadienoic acid)	No	EKT, MNA.
Stearic acid (Octadecanoic acid)	No	ARC.
Tetradecanoic acid (Myristic acid)	No	ARC.
3,3'-Thiodipropionic acid	No	EVN.
Thiodisuccinic acid	No	EVN.
Trifluoroacetic acid	No	HOC.
Trifluoroacetic anhydride	No	HOC.
Trifluoroacetyl chloride	No	HOC.
Trimer dibasic acids	No	WTC.
Undecylenic acid	No	WTL.
Valeric acid	No	UCC.

See footnotes at end of table.

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Table 15-2—Continued
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Acids, acid anhydrides, and acyl halides-Continued		
All other acids, acid anhydrides, and acyl halides . . .	No	ARC, DUP, ENJ, HOC, MAL, SK, UCC, WTL.
Salts of organic acids:		
Acetic acid salts:	Yes	
Aluminum acetate	No	NCC.
Ammonium acetate	No	ARC, BKC, WTK.
Barium acetate	No	BKC.
Calcium acetate	No	HFT, NCC.
Cobalt acetate	No	SHP.
Cobalt manganese acetate	No	SHP.
Copper acetate	No	BKC.
Hydrazine acetate	No	FMT.
Lead acetate	No	BKC.
Lead subacetate	No	BKC.
Magnesium acetate	No	BKC, EKT, SHP.
Nickel acetate	No	SHP.
Potassium acetate	Yes	BKC, HCP, JRC, NCC, PEL.
Sodium acetate	Yes	ATL, BKC, HCP, JRC, MAL, NCC, UCC, (2).
Sodium diacetate	No	HCP, JRC, NCC.
Zinc acetate	No	BKC, SHP, WTK.
Zirconium acetate	No	TZC.
Adipic acid, ammonium salt	No	ACS.
Adipic dihydrazide	No	FMT.
3-Allyloxy-2-hydroxypropane sulfonic acid, sodium salt	No	RDA.
Citric acid salts:		
Ammonium citrate	No	WTK.
Calcium citrate	No	PFZ.
Potassium citrate	No	HAR, HXL, PFZ.
Sodium citrate	No	BRI, HAR, HXL, PFZ.
Diammonium dithiodiglycolate	No	EVN.
2-Ethylhexanoic acid (alpha-ethylcaproic acid) salts . . .	Yes	
Barium 2-ethylhexanoate	No	WTC.
Bismuth 2-ethylhexanoate	No	SHP.
Cadmium 2-ethylhexanoate	No	WTC.
Calcium 2-ethylhexanoate	No	CCA, FER, MCI, NOD, TRO, WTC.
Cerium 2-ethylhexanoate	No	CCA, SHP.
Chromium 2-ethylhexanoate	No	MCI, SHP.
Cobalt 2-ethylhexanoate	Yes	CCA, MCI, NOD, SHP, TRO.
Copper 2-ethylhexanoate	No	CCA, MCI, NOD.
Ferrous 2-ethylhexanoate	No	CCA.
Iron 2-ethylhexanoate	No	NOD.
Lead 2-ethylhexanoate	No	CCA, NOD, SHP.
Manganese 2-ethylhexanoate	No	CCA, MCI, NOD, SHP, TRO.
Nickel 2-ethylhexanoate	No	MCI, SHP.
Potassium 2-ethylhexanoate	No	CCA, MCI, PEL, WTC.
Rare earths 2-ethylhexanoate	No	MCI.
Stannous 2-ethylhexanoate	No	FER.
Zinc 2-ethylhexanoate	Yes	CCA, FER, MCI, NOD, SHP, TRO, VNC
Zirconium 2-ethylhexanoate	No	WTC.
All other 2-ethylhexanoic acid salts	No	CCA, MCI, TRO.
Fish oil, C ₁₄ -C ₂₂ menhaden, lead salts	No	FER, NOD.
Formic acid salts:	No	ELC.
Formic acid salts:		
Aluminum formate	Yes	WTK.
Calcium formate	No	IMC, QTR, RDA.
Sodium formate, technical	No	BKC, PST.
Gluconic acid salts:		
Sodium gluconate	No	PFN, PFZ, PMP.
Glycolic acid, potassium salt	No	HCP, JRC.
Glycolic acid, sodium salt	No	HCP, JRC.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Salts of organic acids-Continued		
2-Hydroxyethanesulfonic acid, sodium salt	No	RDA.
Isoascorbic acid, sodium salt (Sodium erythorbate)	No	PFZ.
Tertiary- α -alkylcarboxylic acid salts (isocarboxylic acid salts):		
Calcium t- α -alkylcarboxylate	No	MCI.
Cobalt t- α -alkylcarboxylate	No	MCI.
Cobalt/zirconium t- α -alkylcarboxylate	No	MCI.
Copper t- α -alkylcarboxylate	No	MCI.
Iron t- α -alkylcarboxylate	No	MCI.
Lead t- α -alkylcarboxylate	No	MCI.
Manganese t- α -alkylcarboxylate	No	MCI.
Mixed t- α -alkylcarboxylic acid salts	No	MCI.
Zinc t- α -alkylcarboxylate	No	MCI.
Zirconium t- α -alkylcarboxylate	No	MCI.
Lactic acid salts:		
Potassium lactate	No	PFN.
Sodium lactate (Nalac)	No	BFP, PFN.
Lauric acid salts:		
Barium cadmium laurate	No	FER, WTC.
Barium laurate	No	SYP.
Cadmium laurate	No	SYP.
Lauric acid, zinc salt	No	SYP.
Tin laurate	No	FER.
Maleic acid salts:		
Dibutyltin maleate	No	WTC.
All other maleic acid salts	No	ALI.
Mercaptoacetic acid (thioglycolic acid) salts:		
Ammonium mercaptoacetate	No	EVN, WTC.
Sodium mercaptoacetate	No	EVN.
All other mercaptoacetic acid (Thioglycolic acids) salt	No	(²).
N-Methyl taurine, sodium salt (2-Methyl-2-aminoethanesulfonic acid, sodium salt)	No	RDA.
Neodecanoic acid, diethanolamine salt	No	OCP.
Neodecanoic acid salts:		
Bismuth neodecanoate	No	SHP.
Calcium neodecanoate	No	FER, MCI.
Cobalt neodecanoate	No	MCI, SHP.
Lead-cobalt neodecanoate	No	MCI.
Lead neodecanoate	No	MCI.
Lithium neodecanoate	No	MCI.
Manganese neodecanoate	No	MCI, SHP.
Neodecanoic acid, potassium salt	No	OCP.
Neodecanoic acid, sodium salt	No	OCP.
Rare earths neodecanoate	No	MCI.
Zinc neodecanoate	No	SHP.
Zirconium neodecanoate	No	MCI, SHP.
Octanoic acid (caprylic acid) salts:		
Aluminum octanoate	Yes	NOC, SYP, WTC.
All other octanoic acid (Caprylic acid) salts	No	WTC.
Oleic acid salts:		
Calcium oleate	No	(²).
Copper oleate	No	MCI.
Sodium oleate	No	OCP, WTC.
Oxalic acid salts:		
Ammonium oxalate	No	BKC, HML, WTK.
Potassium oxalate	Yes	BKC, HML, WTK.
Sodium oxalate	No	BKC, HML.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Salts of organic acids-Continued		
Oxalic acid salts-Continued		
All other oxalic acid salts	No	WTK.
Pelargonic acid, calcium salt (Calcium nonoate)	No	SYP.
Phosphorodithioic acid salts (dithiophosphates):		
Potassium dihexyl phosphorodithioate	No	ACY.
Sodium di-sec-butyl/diethyl phosphorodithioate	No	ACY.
Sodium di-sec-butyl phosphorodithioate	No	ACY, ELC.
Sodium diethyl phosphorodithioate	No	ACY, ELC.
Sodium dihexyl phosphorodithioate	No	ACY.
Sodium diisobutyl phosphorodithioate	No	ELC.
Sodium diisopropyl phosphorodithioate	No	ACY.
Propionic acid salts:		
Ammonium propionate	No	KMI.
Calcium propionate	Yes	DVR, HFT, NCC.
Sodium propionate	Yes	HFT, KMI, NCC.
All other propionic acid salts	No	MCK.
Ricinoleic acid salts:		
Calcium ricinoleate	No	CAS.
Lithium ricinoleate	No	CAS.
Ricinoleic acid, magnesium salt	No	CAS.
Sorbic acid, potassium salt	No	EKT.
Stearic acid salts:		
Aluminum stearates:	Yes	
Aluminum distearate	No	MAL, NOC, NOD, SYP.
Aluminum monostearate	No	MAL, NOD, SYP.
Aluminum tristearate	Yes	MAL, NOD, SYP, WTC, (²).
Barium stearate	No	NOD, SYP, WTC.
Cadmium stearate	No	SYP, WTC.
Calcium stearate	Yes	FER, MAL, NOD, SCP, SQA, SYP, WTC.
Cobalt stearate	No	SHP.
Lead stearate, dibasic	No	ALI.
Lithium stearate	No	WTC.
Magnesium stearate	Yes	MAL, NOD, SYP, WTC.
Manganese stearate	No	SHP.
Potassium stearate	No	WTC.
Silver stearate	No	WTC.
Sodium stearate	No	WTC.
Zinc stearate	Yes	MAL, NOC, NOD, PLS, SYP, WTC.
Tartaric acid salts:		
Potassium sodium tartrate	No	PFZ.
Thioacetic acid, potassium salt	No	RSA.
All other salts of organic acids	No	EVN, SDC, SK, (²).
Aldehydes:		
Acetaldehyde	No	EKX, HCL.
Acrolein (Acrylaldehyde)	No	UCC.
Butyraldehyde	Yes	BAS, EKX, HCL, UCC.
Crotonaldehyde	No	EKT.
2-Ethylhexanal (2-Ethylcaproaldehyde)	No	EKX, UCC.
Formaldehyde (37% HCHO by weight)	Yes	AQU, BCP, BOR, CBD, DGC, DUP, GAF, GP, HCL, IMC, MON, QTR, UCC, WCL.
Glyoxal	No	ACY, BAS.
Isobutyraldehyde	No	BAS, EKX, UCC.
Propionaldehyde	No	EKX, HCL, UCC.
Valeraldehyde (Pentanal)	No	UCC.
All other aldehydes, acyclic	No	ASL, UCC.
Ketones:		
Acetone	Yes	ACS, ART, ATR, BTL, DOW, ENJ, GE, GGC, SHC, UCC, (²).

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Ketones-Continued		
5-Chloro-2-pentanone	No	SDW.
1-Chloro-1-penten-3-one (β -Chlorovinyl ethyl ketone)	No	ASL.
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)	No	EKX.
2-Heptanone (Methyl amyl ketone)	No	EKT, (2).
3-Heptanone (Ethyl butyl ketone)	No	UCC.
4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	Yes	HCL, SHC, UCC.
Isovalerone (Diisobutyl ketone)	No	EKT, UCC.
Methyl ethyl ketone	Yes	ATR, ENJ, HCL, LYP, SHC, UCC.
5-Methyl-2-hexanone (Methyl isoamyl ketone)	No	EKT, (2).
Methyl isobutyl ketone	Yes	EKT, ENJ, SHC, (2).
Methylisopropyl ketone	No	EKX.
4-Methyl-3-penten-2-one (Mesityl oxide)	No	UCC.
Methylpropyl ketone	No	EKT.
Methylpseudoionone	No	NCI.
2-Octanone (Hexyl methyl ketone)	No	UPM, WTH.
2,4-Pentanedione (Acetylacetone)	No	SCP, UCC.
3-Pentanone (Diethyl ketone)	No	UCC.
Pseudoionone	No	NCI, SCM.
2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	No	UCC.
All other ketones	No	ASL, EKT.
Alcohols, monohydric, unsubstituted:	Yes	
Alcohols, C ₁₁ or lower, unmixed (95% or more pure):	Yes	
Allyl alcohol	No	ATR, FMB.
Amyl alcohols:		
2-Methyl-1-butanol	No	UCC.
3-Methyl-1-butanol	No	CPS.
1-Pentanol	No	UCC.
Butyl alcohols:		
n-Butyl alcohol (n-Propylcarbinol)	Yes	BAS, CXI, EKX, GAF, HCL, SHC, UCC, VST, (2).
sec-Butyl alcohol (Methylethylcarbinol)	No	ENJ, SHC.
tert-Butyl alcohol (Trimethylcarbinol)	No	ATR, (2).
Isobutyl alcohol (Isopropylcarbinol)	Yes	BAS, CPS, EKX, HCL, SHC, UCC.
1-Decanol	No	TNA, VST.
Ethyl alcohol, synthetic	Yes	DOW, EKX, HCL, SHC, UCC, USI, VST.
2-Ethyl-1-hexanol	Yes	ART, BAS, EKX, SHC, UCC.
n-Hexyl alcohol	No	TNA, VST.
Isodecyl alcohol	No	ENJ.
Isoheptyl alcohol	No	ENJ.
Isononyl alcohol	No	ENJ.
Iso-octyl alcohol	No	ENJ.
Isopropyl alcohol	Yes	ATR, ENJ, LYP, SHC, UCC.
Methanol, synthetic	Yes	AIP, ATR, BCP, DUP, EKT, GGC, HCL, LYP, PLC, TOC, USI, (2).
2-Methyl-3-butyn-2-ol	No	(2).
2-Methyl-1-pentanol	No	UCC.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	No	ENJ, UCC.
1-Octanol	No	TNA, VST.
2-Octanol (sec-Capryl alcohol)	No	WTH.
Propyl alcohol (Propanol)	Yes	ATR, EKX, HCL, UCC.
2-Propyn-1-ol (Propargyl alcohol)	No	GAF.
Undecanol (Linear C ₁₁ alcohol)	No	BAS.
All other alcohols, unmixed C ₁₁ or lower	No	TX, UCC, WTK.
Alcohols C ₁₂ or higher, unmixed (95% or more pure):	Yes	
Dodecyl alcohol (Lauryl alcohol)	No	PG, TNA, VST, (2).
1-Hexadecanol (Cetyl alcohol)	Yes	PG, TNA, VST, (2).
Isooctadecanol	No	SHX.
1-Octadecanol (Stearyl alcohol)	No	PG, TNA, VST, (2).
cis-9-Octadecen-1-ol (Oleyl alcohol)	No	SHX.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Alcohols, monohydric, unsubstituted-Continued		
Alcohols C₁₂ or higher, unmixed (95% or more pure)		
-Continued		
1-Tetradecanol (Myristyl alcohol)	No	PG, VST, (2).
Mixtures of alcohols:	Yes	
Alcohol mixtures, C ₁₁ or lower only	Yes	BAS, PG, SHC, TNA, UCC, VST.
Mixtures of alcohols, C ₁₂ and higher	Yes	PG, SHC, TNA, VST, (2).
All other alcohol mixtures	No	VST.
Esters of monohydric alcohols:	Yes	
C ₁₂ -C ₁₅ alcohol-lactates	No	VND.
Allyl methacrylate	No	CPS.
Amyl acetates:		
Amyl acetate (n-Pentyl acetate)	No	UCC.
Butyl acetates:		
n-Butyl acetate	Yes	BAS, EKT, HCL, UCC.
Isobutyl acetate	No	BAS, EKT, HCL, UCC.
Butyl acrylate	Yes	BAS, HCL, RH, UCC.
sec-Butyl chloroformate	No	PPG, VCM, WTL.
Butyl formate	No	AMB.
Butyl lactate	No	CPS.
Butyl maleate	No	SCP.
Butyl mercaptopropionate	No	EVN.
Butyl methacrylate	No	DUP, RH.
Butyl oleate	No	ELC.
n-Butyl perchlorocrotonate	No	MAL.
Carboxyethyl acrylate	No	RDA.
Cetyleicosyl methacrylate	No	RH.
Cetyl lactate	No	VND.
Diallyl maleate	No	RDA.
Dibutyl maleate	No	ART, NOD.
Didecyl adipate	No	QCP.
Diethyl carbonate (Ethyl carbonate)	No	PPG.
Di(2-ethyl-1-hexyl) maleate	No	CHP, SHX.
Diethyl maleate	No	ACY.
Diethyl oxalate (Ethyl oxalate)	No	(2).
Dilauryl-3,3'-thiodipropionate	Yes	CCW, EVN, WTC.
Dimethyl carbonate	No	PPG.
Dioctyl maleate	No	ART, NOD.
Distearyl-3,3'-thiodipropionate	Yes	ACY, CCW, EVN, WTC.
Dithiobis(stearyl propionate)	No	EVN.
Ditridecyl maleate	No	DUP, EFH.
Di(tridecyl)-3,3'-thiodipropionate	No	EVN, WTC.
Dodecenyl succinic acid	No	HMY.
Dodecenylsuccinic lactate	No	SM.
Dodecylpentadecyl methacrylate	No	RH.
2-Ethoxyethyl acetate	No	CNE, UCC.
Ethyl acetate (100% basis)	Yes	EKT, EKX, HCL, MON, UCC.
Ethyl acetoacetate	No	BRD, EKT.
Ethyl acrylate	Yes	HCL, RH, UCC.
Ethyl chloroformate	No	PPG.
Ethyl chlorothioformate	No	ICI.
Ethyl 3-ethoxy propionate	No	EKT, TX.
2-Ethyl-1-hexyl acetate	No	EKT.
2-Ethyl-1-hexyl acrylate	Yes	BAS, HCL, PPG, UCC, VCM.
2-Ethylhexyl chloroformate	No	HCL, WTL.
2-Ethyl-1-hexyl methacrylate	No	DUP.
Ethyl maleate, mono	No	RDA.
Ethyl methacrylate	No	DUP.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Esters of monohydric alcohols-Continued		
Ethyl sulfate (Diethyl sulfate)	No	ICI, UCC.
Fatty acid esters, not included with plasticizers or surface active agents:	Yes	
Diisopropyl dimerate	No	SBC.
Diisostearyl dimerate	No	SBC.
Dioctyl dimerate	No	WTC.
Docosanyl docosenoate	No	SBC.
2-Ethylhexyl stearate	No	BRI.
Isocetyl stearate	No	VND, WTC.
Isopropyl linoleate	No	VND.
Isostearyl isostearate	No	SBC.
Methyl behenate	No	WTC.
Methyl esters of coconut oil	No	PG.
Methyl esters of lard oil	No	FER.
Methyl esters of tallow	Yes	CHL, FER, WTC. (2).
Methyl 12-hydroxystearate	No	CAS.
Methyl iso-octadecenoate	No	SYL.
Methyl linoleate	No	HRT.
Methyl oleate	No	CHL.
Methyl pentachlorostearate	No	VCM.
Methyl stearate	No	CHL, WTC.
Myristyl myristate	Yes	RDA, SBC, VND.
Myristyl stearate	No	WTC.
Stearyl stearate	No	RDA.
Tridecyl stearate	No	HCL, RDA, WTC.
Fatty acid esters, not included with plasticizers surface-active agents	No	BRD, SCP, SHX, WTC.
Hexyl acetate	No	ENJ.
Hexyl acrylate	No	CPS.
Hexyl neopentanoate	No	SBC.
Isobutyl acrylate	No	BAS.
Isobutyl chloroformate	No	PPG, VCM.
Isobutyl isobutyrate	No	EKX.
Isobutyl methacrylate	No	RH.
Isodecyl acrylate	No	CPS, RDA.
Isodecyl methacrylate	No	RH.
Isooctyl acrylate	No	RDA.
Iso-octyl mercaptoacetate	No	CCW, EVN.
Iso-octyl-3-mercaptopropionate	No	EVN.
Isopropyl acetate	Yes	EKT, HCL, UCC.
Isopropyl chloroformate	No	PPG, VCM.
Isostearyl neopentanoate	No	SBC, VND.
Lauryl acrylate	No	CPS.
Lauryl lactate	No	VND.
Lauryl methacrylate	No	CPS, RH.
1-Methoxy-2-ethyl acetate	No	EKX.
2-Methoxyethyl acrylate	No	CPS.
Methyl acetoacetate	No	BRD, EKT.
Methyl acrylate, monomer	No	HCL.
Methyl butyrate	No	PD.
Methyl chloroformate	No	PPG.
Methyl 3,3-dimethyl-4-pentenoate	No	FMN.
Methyl formate	No	HCL.
Methyl methacrylate, monomer	Yes	CYR, DUP, RH.
Methyl pivaloylacetate	No	EKT.
Methyl sulfate (Dimethyl sulfate)	No	DUP, NOD.
Myristyl lactate	No	CAS, SBC, VND.
Octadecyl-3-mercaptopropionate	No	EVN.

See footnotes at end of table.

Section 15

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Esters of monohydric alcohols-Continued		
Phosphorus acid esters:	Yes	
Alkoxylated acid phosphate	No	ALW.
Amyl hydrogen phosphate	No	HK.
Bis-(2-chloroethyl)-2-chloroethylphosphonate	No	ALW.
Bis(2-ethylhexyl)hydrogen phosphite	No	ALW.
Butyl acid phosphate	No	ALW, HK.
Chloroalkyl diphosphate ester, neutral	No	ALW.
Chloroalkyl phosphate ester	No	ALW.
Dibutyl butylphosphonate	No	ALW.
Dibutyl hydrogen phosphite	No	ALW.
Dibutyl pyrophosphate	No	ALW.
Diethylhexyl phosphoric acid	No	ALW.
Diethyl hydrogen phosphite	No	ALW.
Diethyl phosphorochloridothionate	No	TNA.
Dimethyl hydrogen phosphite	No	ALW.
Dimethyl methylphosphonate	No	ALW.
2-Ethylhexyl hydrogen phosphate	No	ALW.
Iso-octyl hydrogen phosphate	No	ALW.
Methyl dihydrogen phosphate	No	HK.
Mixed dialkyl hydrogen phosphates, amine salts	No	ELC.
mono(2-Ethylhexyl)-2-ethylhexyl-phosphonic acid	No	ALW.
Stearyl acid phosphate	No	HK.
Tetraisopropylmethylene diphosphonate	No	ALW.
Tetrakis(2-chloroethyl)ethylene diphosphate	No	OMC.
Tetrakis(2-chloroisopropyl)ethylene diphosphate (T-RDT)	No	OMC.
Trialkyl thiophosphite	No	GE.
Triethyl phosphite	No	ALW, ICI.
Triethyl phosphonacetate	No	AMV.
Triisodecylphosphite	No	WTC.
Triisooctyl phosphite	No	ALW, GE.
Triisopropyl phosphite	No	ALW.
Trimethyl phosphite	No	ALW, ICI.
Tris(2-chloroethyl)phosphate	No	PEL.
Tris(2-chloroethyl) phosphite	No	ALW.
Tris-2-chloropropyl phosphate	No	ALW, PEL.
Tris(1,3-dichloro-2-propyl) phosphate	No	ALW.
Tris(2-ethylhexyl)phosphite	No	ALW.
All other phosphorus acid esters	No	ALW, (2).
Propyl acetate	Yes	BAS, EKT, HCL, UCC.
n-Propyl chloroformate	No	WTL.
Propyl chlorothioformate	No	TX.
Stearyl methacrylate	No	CPS, RH, TX.
Tetraethyl orthosilicate (Tetraethyl silicate)	No	UCC.
Tetrapropyl silicate	No	UCC.
Titanic acid esters:		
Bis[2-(bis(2-hydroxyethyl)amino)ethyl] diisopropyl titanate	No	DUP.
Bis(ethyl-3-oxobutanato)bis(2-propanolato) titanium	No	DUP.
Di(hydroxy)bis(ammoniumlactato)titanium	No	DUP.
Tetrabutyl titanate	No	DUP.
Tetraisopropyl titanate	No	DUP.
Tetrakis(2-ethylhexyl)titanate	No	DUP, NOD.
Triethanolamine titanate	No	NOD.
All other titanic acid esters	No	DUP.
Triethyl orthoacetate	No	NOD.
Triethyl orthoformate	No	NOD.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic—Continued		
Esters of monohydric alcohols—Continued		
Triethyl orthopropionate	No	NOD.
Trimethyl orthoacetate	No	NOD.
Trimethyl orthoformate	No	NOD.
Vinyl acetate, monomer	Yes	DUP, HCL, UCC, USI.
All other monohydric alcohol esters	No	BAS, COC, DUP, ENJ, MON, RDA, SBC, SCP, SDC, VND, (?), (?).
Polyhydric alcohols:		
2-Bromo-2-nitropropanediol	No	ANG.
1,2(and 1,3)-Butanediol	No	HCL.
1,4-Butanediol	Yes	ATR, BAS, DUP, GAF.
2-Butene-1,4-diol	No	GAF.
2-Butyne-1,4-diol	No	BAS, GAF.
3-Chloro-1,2-propanediol (Glycerol α -chlorohydrin)	No	DIX, EVN.
2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	No	BAS, EKX.
Ethylene glycol	Yes	BAS, CNE, CXI, DOW, EKT, EKX, HCL, OMC, PDG, PLC, SCP, SHC, TX, UCC, USI, (?).
2-Ethyl-1,3-hexanediol	No	SCP, UCC.
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane)	No	HCL.
Glycerol, synthetic only	No	BRD, DOW, SYP, (?).
1,6-Hexanediol	No	BAS, CXI.
2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylolmethane)	No	IMC, QTR.
Mannitol	No	ICI.
3-Mercapto-1,2-propanediol (Thioglycerol)	No	EVN.
2-Methyl-2,4-pentanediol (Hexylene glycol)	No	ATR, SHC, UCC.
Pentaerythritol	Yes	AQU, HCL, PST, RDA.
Propylene glycol (1,2-Propanediol)	Yes	ATR, DOW, OMC, TX, UCC.
Sorbitol (70% by weight)	Yes	BRD, HOF, ICI, PFZ, RQT.
Sorbitol, crystalline	Yes	BRD, EHC, PFZ, RQT.
Starch, hydrolyzed and hydrogenated	No	BRD.
2,2,4-Trimethyl-1,3-pentanediol	No	EKX.
Xylitol (1,2,3,4,5-Pentane(OH) ₅)	No	BRD.
All other polyhydric alcohols	No	ICI, OKO.
Esters and ethers of polyhydric alcohols:		
Polyhydric alcohol esters:	Yes	
2-(2-Butoxyethoxy)ethyl acetate	Yes	CNE, EKT, UCC.
2-Butoxyethyl acetate	Yes	CNE, EKT, UCC.
1,3-Butylene glycol diborate/hexylene glycol boric anhydride	No	USB.
1,3-Butylene glycol dimethacrylate	No	CPS.
Diethylene glycol adipate	No	HAL.
Diethylene glycol, borated	No	OMC.
Diethylene glycol dimethacrylate	No	CPS.
Dipropylene glycol monomethyl ether acetate	No	(2).
2-(2-Ethoxyethoxy)ethyl acetate	No	EKT.
Ethylene glycol diacetate	No	EKT.
Ethylene glycol dimercaptoacetate	No	EVN.
Ethylene glycol dimethacrylate	No	CPS.
Glycerides, mixed C ₁₄ -18 and C ₁₆ -18, mono- and di-	Yes	BRD, SHX, WTC.
Glyceryl diacetate (Diacetin)	No	HAL.
Glyceryl monoacetate (Monoacetin)	No	HAL.
Glyceryl monothioglycolate	No	EVN, WTC.
Glyceryl triacetate (Triacetin)	No	EKT.
Hydroxyethyl acrylate	No	DOW, RH.
Hydroxyethyl methacrylate	No	RDA, RH.
Hydroxypropyl acrylate	No	DOW, RH.
Hydroxypropyl methacrylate	No	RH.

See footnotes at end of table.

Table 15-2—Continued
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Esters and ethers of polyhydric alcohols-Continued		
Polyhydric alcohol esters-Continued		
2-Methoxyethyl acetate	No	UCC.
2-Methoxyethyl carbonate	No	EKT.
1-Methoxy-2-propyl acetate	No	(2).
Neopentyl glycol oleate	No	QCP.
Neopentyl glycol vegetable oil ester	No	QCP.
Pentaerythritol tetrakis (3-Mercaptopropionate)	No	EVN.
Pentaerythritol tetrastearate	No	HPC.
Polyethylene glycol oleate	No	SM.
Polypropylene glycol ester	No	SM.
Propylene glycol dicaprylatecaprate	No	ATR.
Sucrose octa-acetate	No	HFT.
Trimethylolpropane decanoic acid ester	No	SM.
Trimethylolpropane tallowate (TMP tallowate)	No	QCP.
Trimethylolpropane triacrylate	No	CPS.
Trimethylolpropane trimethacrylate	No	CPS.
Trimethylolpropane trioleate (TMP trioleate)	No	EFH.
Trimethylolpropane tris-3-mercaptopropionate	No	EVN.
2,2,3-Trimethyl-1,3-pentanediol monoisobutyrate	No	EKX.
Tripropylene glycol diacrylate	No	CPS.
All other polyhydric alcohol esters	No	DUP, EVN, GPI, SQA, TX, UCC.
Polyhydric alcohol ethers:	Yes	
Bis(2-butoxyethyl)ether (Diethylene glycol di-n-butyl ether)	No	FER.
Bis(2-ethoxyethyl)ether (Diethylene glycol diethyl ether)	No	FER.
Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether)	No	FER.
Bis(2-methoxyethyl)ether (Diethylene glycol dimethyl ether)	No	FER.
2-Butoxyethanol (Ethylene glycol monobutyl ether)	Yes	CNE, DOW, EKX, SHC, UCC.
2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	Yes	CNE, EKX, SHC, UCC.
2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	Yes	CNE, DOW, UCC.
1-Butoxyethoxy-2-propanol	No	UCC.
i-Butyraldehyde trimer	No	(?).
Diethylene glycol	Yes	BAS, CNE, DOW, EKX, HCL, OMC, PDG, SHC, TX, UCC.
Diethylene glycol mono-n-propyl ether	No	EKX, SQA.
Dimethoxyethane (Ethylene glycol dimethyl ether)	No	FER.
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	Yes	CNE, EKX, OMC, UCC.
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	Yes	CNE, EKX, OMC, UCC.
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	Yes	CNE, OMC, UCC.
Ethylene glycol di-tributyl ether	No	EKX, FER.
Ethylene glycol di-triethyl ether	No	EKX.
Ethyl ethers of tetra and higher ethylene glycols (high boiling)	No	OMC.
Glycerol monoallyl ether	No	RDA.
Glycol ethers derived from propylene oxide:		
Dipropylene glycol	Yes	ATR, DOW, OMC, UCC, (2).
Dipropylene glycol monomethyl ether (3-(3-methoxypropoxy)propanol)	No	OMC, (2).
Ethylene glycol di-tri-propyl ether	No	EKX.
Propylene glycol monomethyl ether (1-Methoxy-2-propanol)	No	OMC, (2).
Tripropylene glycol	Yes	ATR, DOW, UCC, (2).

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Esters and ethers of polyhydric alcohols-Continued		
Polyhydric alcohol ethers-Continued		
Glycol ethers derived from propylene oxide-Continued		
Tripropylene glycol monomethyl ether (3-(3-[3-methoxypropoxy]propoxy)propanol)	No	OMC, (2).
All other propylene glycol ethers	No	ATR.
2-[2-(Hexyloxy)ethoxy]ethanol	No	UCC.
2-Methoxyethanol (Ethylene glycol monomethyl ether)	Yes	CNE, OMC, UCC.
2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	Yes	CNE, DOW, OMC, UCC.
2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	Yes	CNE, DOW, OMC, TX, UCC.
2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Triethylene glycol dimethyl ether)	No	FER, OMC.
Methoxypolyethylene glycol	Yes	PPG, RDA, UCC.
Paraformaldehyde	No	HCL.
Polyether polyols based on propylene oxide:		
Polypropylene glycol	Yes	BAS, DOW, OMC, PPG, RDA, TX, (2), (2).
Polypropylene glycol butyl ether (Polypropoxy butyl ether)	No	PPG.
Polypropylene glycol butyl ether, ethoxylated (Polypropoxy butyl ether, ethoxylated)	No	BAS, PPG.
Polypropylene glycol glycerol triether (Polypropoxyglyceryl triether)	No	PPG, RDA.
All other polyether polyols based on propylene oxide	No	ATR.
Polyethoxy propoxy diethylene glycol ether	No	RDA.
Polyethylene glycol	No	ABB, BAS, DOW, OMC, PPG, RDA, SHX, UCC.
Polyethylene glycol butyl ether, propoxylated	No	ICI.
Polyethylene glycol dimethyl ether	No	DAN, SHX.
Polyglycols, ethylene glycol and glycol ether, mixed	No	HCL, UCC, (2).
Polyoxyalkylene glycol	No	(2), (2).
Polyoxypropylene polyoxyethylene glycol, mixed	No	OMC.
Polytetramethylene glycol ether	Yes	UCC.
Propoxyethanol (Ethylene glycol monopropyl ether)	No	BAS, DUP, QKO.
Propylene glycol, alkoxyated	No	EKX.
Sorbitol, alkoxyated	No	(2).
Sorbitol, ethoxylated	Yes	(2).
Sorbitol monooleate	No	ICI, PPG, (2).
Sorbitol monostearate	No	WTC.
Tetraethylene glycol	Yes	WTC.
Tetra/penta glycols, mixed	No	DOW, EKX, UCC, (2).
2,2'-Thiodiethanol (Thiodiglycol)	Yes	CNE, CXI.
Triethylene glycol	No	MRT, OMC, PLC, RDA.
All other polyhydric alcohol ethers	No	CNE, CXI, DOW, EKX, HCL, OMC, PDG, SHC, TX, UCC, (2).
Brominated, chlorinated and fluorinated hydrocarbons:		
Brominated (including bromochlorinated) hydrocarbons:		
1-Bromobutane (n-Butyl bromide)	No	DOW, DUP, MIL, SCP, UCC.
Bromochloromethane	No	DAZ, GTL.
Bromodocosane	No	TNA.
1-Bromododecane	No	HMY.
Bromoethane (Ethyl bromide)	No	HMY.
1-Bromohexadecane	No	GTL.
1-Bromohexane (n-Hexyl bromide)	No	HMY.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Brominated, chlorinated and fluorinated hydrocarbons		
-Continued		
Brominated (including bromochlorinated) hydrocarbons-Continued		
1-Bromo-3-methyl-2-butene	No	SD.
1-Bromo-octadecane	No	HMY.
1-Bromopropane (n-Propyl bromide)	No	DAZ, GTL.
1,4-Dibromobutane	No	HMY.
Dibromomethane (Methylene bromide)	No	TNA.
Vinyl bromide (Bromoethylene)	No	TNA.
All other brominated (Including bromochlorinated) hydrocarbons	No	FER, HMY, TNA.
Chlorinated (not otherwise halogenated) hydrocarbons:		
Carbon tetrachloride	Yes	AKZ, DOW, FRO, HK, LCP.
Chlorinated paraffins (C ₁₀ -C ₃₀):	No	
Chlorinated paraffins, 35-64% chlorine	Yes	DVC, FER, HK.
Chlorinated paraffins, less than 35% chlorine	No	DVC, SHC.
Chlorinated paraffins, 65% or more chlorine	Yes	DVC, FER, HK.
1-Chlorobutane (n-Butyl chloride)	No	ALW.
Chloroform	Yes	DOW, FRO, HK.
Chloromethane (Methyl chloride)	Yes	DCC, DOW, FRO, HK, LCP, SPD, VST.
3-Chloropropene (Allyl chloride)	No	DOW, SHC.
1,2-Dichloroethane (Ethylene dichloride)	Yes	ALW, BFG, DOW, FOR, FRO, GGC, HK, OMC, PLC, PPG, SHC, VST.
2,3-Dichloropropene	No	DOW, SHC.
Ethyl chloride (Chloroethane)	Yes	DOW, DUP, LCP, PPG, TNA.
Lauryl chlorides	No	BRD.
Methylene chloride (Dichloromethane)	Yes	DOW, FRO, HK, LCP.
Octyl chloride	No	BRD.
Perchloroethylene (Tetrachloroethane)	Yes	DOW, FRO, HK, MIL, PPG.
Tetrahydroalocimanyl hydrochloride (Tetrahydro-dimethylatriene hydrochloride)	No	NCI.
1,1,1-Trichloroethane (Methyl chloroform)	Yes	DOW, FRO, PPG.
1,1,2-Trichloroethane (Vinyl trichloride)	No	DOW.
Trichloroethylene	No	DOW, PPG.
1,2,3-Trichloropropane	No	DOW.
Vinyl chloride, monomer (Chloroethylene)	Yes	BCP, BFG, DOW, FOR, GGC, HK, PPG, VST.
Vinylidene chloride, monomer (1,1-Dichloroethylene)	No	DOW, PPG.
All other chlorinated (Not otherwise halogenated) hydrocarbons	No	BRD, TNA.
Fluorinated (including other fluorohalogenated) hydrocarbons:		
Bromochlorodifluoromethane	No	GTL.
2-Bromo-1-chloro-1,2,2-trifluoroethane	No	HOC.
2-Bromo-2-chloro-1,1,1-trifluoroethane (Halothane)	No	HOC.
Bromotrifluoromethane	No	DUP, GTL.
1-Chloro-1,1-difluoroethane (F-142b)	No	PAS.
Chlorodifluoromethane (F-22)	Yes	ACS, DUP, LRO, PAS, RCN.
2-Chloro-1,1,1,2-tetrafluoroethane (F-124)	No	(²).
Chlorotrifluoroethylene (Trifluorovinyl chloride)	No	ACS.
2-Chloro-1,1,2-trifluoroethyl methyl ether	No	OH.
Chlorotrifluoromethane (F-13)	No	DUP, GTL.
Dibromodifluoromethane	No	GTL.
1,2-Dibromo-1,1,2,2-tetrafluoroethane	No	(²).
Dichlorodifluoromethane (F-12)	Yes	ACS, DUP, LRO, PAS, RCN.
Dichlorotetrafluoroethane (F-114)	No	ACS, DUP.
Dichloro-trifluoroethane (F-123)	No	DIX, HOC.

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Brominated, chlorinated and fluorinated hydrocarbons		
-Continued		
Fluorinated (including other fluorohalogenated) hydrocarbons-Continued		
1,1-Difluoroethane	No	DUP, (2).
Hexafluoropropylene, monomer	No	DUP.
1-Iodoperfluorohexane	No	DUP.
1,2,2,2-Tetrafluoroethane (F-134a)	No	HOC.
Tetrafluoroethylene (F-1114)	No	DUP.
Tetrafluoromethane (F-14)	No	DUP.
Trichlorofluoromethane (F-11)	Yes	ACS, DUP, LRO, PAS, RCN.
Trichlorotrifluoroethane (F-113)	No	ACS, DIX, DUP.
Trifluoropropene	No	HOC.
Vinyl fluoride, monomer	No	DUP.
Vinylidene fluoride, monomer	No	PAS.
All other fluorinated (Including other fluoro-halogenated) hydrocarbons	No	DUP, HOC, REG, (2).
Other miscellaneous acyclic chemicals:	Yes	
Iodinated (not otherwise halogenated) hydrocarbons:		
Diiodomethane (Methylene iodide)	No	DPW.
Iodoethane (Ethyl iodide), non-medical	No	DPW, RSA.
Iodomethane (Methyl iodide)	No	RSA.
All other iodinated (Not otherwise halogenated) hydrocarbons	No	DPW, RSA.
Acetylacetonates:		
Aluminum acetylacetonate	No	MCK.
Titanium acetylacetonate	No	NOD.
All other acetylacetonates	No	MCK.
Acyclic peroxides:		
Acetylacetone peroxide	No	CAD.
tert-Amyl hydroperoxide	No	WTC, WTL.
t-Amylperoxy acetate	No	WTL.
t-Amylperoxy neodecanoate	No	WTL.
t-Amylperoxy pivalate	No	WTL.
2-Butanone peroxide (MEK peroxide)	Yes	CAD, FRE, NOC, WTC, WTL.
n-Butyl-4,4-bis(t-butylperoxy)valerate	No	WTL.
t-Butyl-2-ethylhexyl monoperoxy carbonate	No	WTL.
tert-Butyl hydroperoxide	No	ATR, FRE, WTC, WTL.
tert-Butyl peroxide (Di-tert-butyl peroxide)	No	WTC, WTL.
tert-Butyl peroxyacetate	No	AZT, WTL.
tert-Butyl peroxy-2-ethylhexanoate	Yes	AZT, WTC, WTL.
tert-Butyl peroxyisobutyrate	No	WTL.
tert-Butyl peroxyisopropyl carbonate	No	WTL.
tert-Butylperoxy maleic acid	No	WTC, WTL.
tert-Butyl peroxyneodecanoate	No	WTC, WTL.
tert-Butyl peroxyneohexanoate	No	WTC.
tert-Butyl peroxy pivalate	No	AZT, WTC.
Decanoyl peroxide	No	WTL.
Di(sec-butyl)peroxydicarbonate	No	WTL.
Di-(2-ethylhexyl) peroxydicarbonate	No	WTC, WTL.
2,5-Dihydroperoxy-2,5-dimethylhexane	No	WTL.
Diisononanoyl peroxide	No	WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	No	AZT, WTL.
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	No	AZT, WTL.
2,5-Dimethyl-2,5-di(2-ethylhexanoyl peroxy)hexane	No	WTC, WTL.
1,1-Dimethyl-3-hydroxybutyl-peroxyneohexanoate	No	WTL.
Di-n-propyl peroxydicarbonate	No	WTL.
Ethyl 3,3-di(t-butyl peroxy) butyrate	No	WTL.
Lauroyl peroxide	No	WTL.
2,4-Pentanedione peroxide	No	WTL.

See footnotes at end of table.

Table 15-2—Continued
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Other miscellaneous acyclic chemicals-Continued		
Acyclic peroxides-Continued		
Peroxyacetic acid (Peracetic acid)	No	FMB.
Succinyl peroxide	No	WTL.
Tertiary amyl per-2-ethylhexanoate	No	WTC, WTL.
n-Butanol, ethoxylated	No	WTL.
Carbon disulfide	No	PAS.
Carboxylic acid alkoxylates	No	(²).
Epoxides, ethers, and acetals:	Yes	
Ethyl-3,3-di(t-amylperoxy)butyrate	No	WTL.
Bis(2-chloroethyl)ether (Dichlorodiethyl ether)	No	BKM.
Butylene oxide	No	DOW.
Butyl vinyl ether	No	GAF.
Chloromethyl methyl ether	No	RH.
2,2-Dichloro-1,1-difluoroethyl methyl ether	No	OH.
Diethoxyethane	No	WPG.
Dimethyl sulfone	No	CRZ.
Epichlorohydrin	No	DOW, SHC.
Ethylene oxide	Yes	BAS, CNE, DOW, EKX, HCL, OMC, SHC, SUN, TX, UCC, USI, VST.
Ethyl ether	No	EKX, USI.
Ethyl vinyl ether	No	GAF.
Glycidol (2,3-Epoxy-1-propanol)	No	DIX.
Glycidyl ethers:		
Alkyl glycidyl ether, C ₁₂ -C ₁₄ and C ₁₂ -C ₁₆	No	RDA.
Alkyl glycidyl ethers, C ₈ -C ₁₀	No	RDA.
1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether)	No	CPS, RDA.
1,4-Butanediol diglycidyl ether	No	RDA.
1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	No	CPS, RDA.
tert-Butyl glycidyl ether	No	CPS.
Glycerol polyglycidyl ether	No	RDA.
Polyol glycidyl ether	No	RDA.
Isopropyl ether	No	SHC.
Methylal (Dimethoxymethane)	No	HCL.
Methyl vinyl ether	No	GAF, UCC.
Propylene oxide	No	ATR.
1,1,3,3-Tetramethoxypropane	No	NOD.
All other epoxides, ethers, acetals	No	GAF, UCC.
Ethyl succinyl chloride	No	CWN.
Ethylthioacetate	No	CAS.
Fats and oils, chemically modified:	Yes	
Brominated vegetable oil	No	DOM.
Castor oil, hydrogenated	No	CAS.
Castor oil, polymerized	No	CAS.
Chlorinated fatty materials	No	FER.
Hydrogenated menhaden fish oil	No	CHL, WTC.
Hydrogenated tallow glycerides	Yes	BRD, CHL, WTC.
Tallow, partially hydrogenated	No	CHL.
Vegetable glycerides, hydrogenated	No	WTC.
All other fats and oils, chemically modified	No	ARC, BRD, CJO, EVN, SCP, SM.
Glutaraldehyde bis(sodium bisulfite)	No	FMT.
Hydrocarbons:	Yes	
n-Decane	No	HMY, PLC.
Diisobutylene isomers	No	NCI.
3,3-Dimethylbutene	No	PLC.
n-Dodecane	No	HMY, PLC.
Hexadecane	No	HMY.
Hexadecene	No	(²).

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

Miscellaneous cyclic and acyclic chemicals	Separate statistics ¹	Manufacturers' identification codes (according to list in table 15-3)
Miscellaneous chemicals, acyclic-Continued		
Other miscellaneous acyclic chemicals-Continued		
Hydrocarbons-Continued		
Myrcene	No	SCM, (2).
n-Octadecane	No	HMY.
n-Octane	No	HMY, PLC.
n-Tetradecane	No	HMY.
Tetradecene	No	(2).
Tetrahydroalloocimene	No	NCI.
All other hydrocarbons	No	DUP, HMY, WTK.
2-Mercaptoethanol	No	MRT, PLC, RDA.
Methyl sulfide (Dimethyl sulfide)	No	PLC.
Methyl sulfoxide (Dimethyl sulfoxide)	No	GAY.
Octadecanoic acid, 2-(1-carboxyethoxy)-1-methyl-2-oxoethyl ester, sodium salt	No	WTC.
Organo-aluminum compounds:		
Aluminum di-sec-butoxide acetoacetic ester chelate	No	CHT.
Aluminum diisopropoxide acetoacetic ester chelate	No	CHT, KCH.
Aluminum ethyl-3-oxobutanoate-O ¹ , O ³ -dihydroxy T-4	No	KCH.
Aluminum [1,3-butanediolato(2)-O, O](ethyl-3-oxobutanoate-O ¹ , O ³ -hydroxy T-4	No	CHT.
Aluminum isooxide, diisopropoxide	No	KCH.
Aluminum isopropoxide (Aluminum isopropylate)	No	CHT, KCH.
Aluminum tri-sec-butoxide	No	CHT.
Diethylaluminum chloride	No	TNA, TSA.
Diethyl aluminum ethoxide	No	TSA.
Diethylaluminum iodide	No	TNA, TSA.
Diisobutylaluminum chloride	No	TNA, TSA.
Diisobutylaluminum hydride	No	TNA, TSA.
Di-n-propylaluminum chloride	No	TSA.
Ethylaluminum dichloride	No	TNA(E), TSA.
Ethylaluminum sesquichloride	No	TNA(E), TSA.
Isobutylaluminum chloride	No	TNA, TSA.
Isopropenylaluminum	No	TSA.
Oxoaluminum isopropoxide	No	KCH.
Oxoaluminum stearate	No	CHT, KCH.
Oxyaluminum octanoate	No	CHT, KCH.
Polyol aluminum chelate	No	SQA.
Tri-n-butylaluminum	No	TNA, TSA.
Triethylaluminum	No	TNA(E), TSA.
Tri-n-hexyl aluminum	No	TNA(E), TSA.
Triisobutylaluminum	No	TNA(E), TSA.
Trimethylaluminum	No	TNA(E), TSA.
Tri-n-octylaluminum	No	TNA, TSA.
Tri-oxyaluminum tri-isopropoxide	No	CHT.
All other organo-aluminum compounds	No	CHT, KCH, TNA(E), TSA.
Organo-boron compounds:		
Boric acid-amine adducts	No	FER.
N-Methyl-methanamine with borane (1:1)	No	(2).
2-Methyl-2-propanamine with borane(1:1)	No	(2).
Mixed alcohol borates	No	(2).
Triethylborane	No	(2).
Trimethoxyboroxine	No	(2).
Trimethyl borate	No	MHI.
N,N,N-Trimethyl methanaminium octahydrotriborate	No	(2).
All other organo-boron compounds	No	ADC, HCL, HXL, RDA, TSA, (2).
Organo-lithium compounds:		
n-Butyllithium	No	FTE.
sec-Butyllithium	No	FTE.
Lithium hydroxystearate	No	WTC.
Organo-magnesium compounds:		
Butyl ethyl magnesium	No	TSA.

See footnotes at end of table.

Table 15-2—Continued
Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic-Continued		
Other miscellaneous acyclic chemicals-Continued		
Di-n-hexyl magnesium	No	TSA.
Magnesium methylate	No	SOI.
Organo-silicon compounds:		
N-Aminoethylaminopropyl trimethoxysilane	No	DCC, NOD.
α-Chloropropyltrichlorosilane	No	DCC.
Di-n-butylmagnesium	No	TSA.
Chloropropyltrimethoxysilane	Yes	DCC, NOD, UCC.
Chlorotrimethylsilane	No	DCC.
Dichlorodimethylsilane	No	DCC.
Dichloromethylsilane	No	DCC.
Dichloromethylvinylsilane	No	DCC, (²).
Diisobutyl dimethoxychloro silane	No	NOD.
Divinyl tetramethyldisiloxane	No	NOD, (²).
α-Glycidoxypropyltrimethoxysilane	No	NOD, UCC.
Hexamethyldisilazane	Yes	DCC, NOD, PCR.
Hexyltrichlorosilane	No	(²).
Isobutyltrimethoxysilane	No	DCC, NOD.
Mercaptopropyltrimethoxysilane	No	NOD, UCC.
α-Methacryloxypropyltrimethoxysilane	No	UCC.
Methyltrimethoxysilane and polymethyltrisiloxane	No	DCC, UCC.
N-Octyltriethoxy silane	No	(²).
Polyoxyalkene silicones	No	UCC.
Silicone fluids	Yes	DCC, SPD, SWS, UCC.
Tetramethyldisiloxane	No	(²).
Trichloromethylsilane	No	DCC.
Trichloropropylsilane	No	DCC.
Trichlorovinylsilane	No	DCC, UCC.
Tris(2-methoxyethoxy)vinyl silane	No	NOD.
Tris(pentamethyldisiloxanyl)-3-methacrylatopropylsilane	No	ARA.
Vinyl dimethylchlorosilane	No	(²).
Vinyltriethoxysilane	No	NOD, UCC.
Vinyl trimethoxy silane	No	NOD.
All other organo-silicone compounds	No	NOD, SCP, UCC, (²), (²), (²).
Organo-tin compounds:		
Dibutyltin bis(butylmaleate)	No	CCA.
Dibutyltin bis(isooctylmercaptoacetate)	No	WTC.
Dibutyltin dichloride	No	CCA, WTC.
Dimethyltin dichloride	No	WTC.
Dimethyltin-IOTG	No	WTC.
Ester tin dilaurate	No	CCA.
Monomethyl tin	No	'
Organotin mercaptides	No	CCW.
All other organo-tin compounds	No).
Organo-zinc compounds:		
Diethylzinc	No	TSA.
All other organo-zinc compounds	No	TSA.
Perfluoroalkyl polyether	No	DUP.
Phosgene (Carbonyl chloride)	Yes	DUP, ICI, OMC, PPG, VDM.
Polyalphaolefins	No	USI.
Polyhexafluoropropylene oxide	No	DUP.
Polymethacrylic acid esters	No	DUP, WTL.
Potassium 2-methyl-2-butanol	No	(²).
Potassium 2-methyl-2-propanol	No	(²).
Sodium methoxide (Sodium methylate)	No	HK, OMC.
Trifluoroethanol	No	HOC.
Zirconium compounds	No	KCH.
All other miscellaneous acyclic chemicals	No	ASL, BRS, COC, CWN, EKT, ENO, EVN, HXL, MCK, MIL, PAH, PFZ, PIC, QCP, RSA, SCP, SHX, TCC, TNA, TSA, USR, WTL, (²).

See footnotes at end of table.

Table 15-2—Continued

Miscellaneous chemicals for which U.S. production and/or sales were either reported or estimated, identified by manufacturer, 1990

<i>Miscellaneous cyclic and acyclic chemicals</i>	<i>Separate statistics¹</i>	<i>Manufacturers' identification codes (according to list in table 15-3)</i>
Miscellaneous chemicals, acyclic—Continued		
Other miscellaneous acyclic chemicals—Continued		
Mixtures not specifically itemized:	Yes	
Alcohols, monohydric, and their esters, C ₈ and higher	No	EKX.
Butyl formcel	No	HCL.
Cetone	No	HCL.
Fatty acid residues	Yes	BRD, DRL, SHX, SYP, WTC.
Gluconic acid and salts, mixed	No	PMP.
Glycol residues	No	OMC.
Methyl formcel	No	HCL, NOD.
Oxidate light ends	No	HCF.
Oxo process bottoms	No	CXI.
Propionic blends	No	HCL.
All other mixtures not specifically itemized	No	AIP, DUP, HCL, LYP, MON, NES, UCC, WAY.

¹ Chemicals for which separate statistics are reported in this section are indicated by "Yes." Chemicals for which data are accepted in confidence and may not be published are indicated by "No."

² The manufacturer did not consent to his identification with the designated products.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

Table 15-3

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
ABB	Abbott Laboratories AC AC & S, Inc.	CHD	Chemdesign Corp.
ACS	Allied Signal Inc., Engineered Material Sector	CHL	Chemol, Inc.
ACY	American Cyanamid Co.	CHP	C. H. Patrick & Co., Inc.
ADC	Anderson Development Co.	CHT	Chattem, Inc.
AIP	Air Products & Chemicals, Inc.	CJO	C. J. Osborn Chemical, Inc.
AKZ	Akzo Chemical, Inc.	CKC	Cook Composites and Polymers Company
ALI	Anzon, Inc.	CNE	Oxy Petrochemicals, Inc.
ALW	Albright & Wilson, Inc.	CNP	DSM Chemicals, North America
AMB	American Bio-Synthetics Corp.	COC	Columbia Organic Chemicals Co., Inc.
AMO	Amoco Corp.	CPS	CPS Chemical Co., Inc.
AMV	Amvac Chemical Corp.	CRZ	James River II Corp.
ANG	Angus Chemical Co.	CWN	Upjohn Co., Fine Chemicals
AQU	Aqualon Co.	CXI	Chemical Exchange Industries, Inc.
ARA	Syntex Chemicals, Inc.	CYR	CYRO Industries
ARC	Akzo Chemicals, Inc.	DAN	Dan River Inc., Chemical Products Div.
ARS	Arsynco, Inc., Sub. Div of Aceto Corp.	DAZ	Diaz Chemical Corp.
ART	Aristech Chemical Corp.	DCC	Dow Corning Corp.
ARZ	Arizona Chemical Co.	DIX	Dixie Chemical Co., Inc.
ASH	Ashland Oil, Inc.	DKA	Mobay Synthetics Corporation
ASL	Specialtychem Products Corp.	DOM	Dominion Products, Inc.
ATL	Atlantic Industries, Inc.	DOW	Dow Chemical Co.
ATR	Atlantic Richfield Co., Arco Chemical Co.	DPW	Deepwater, Inc.
AZT	Catalyst Resources, Inc.	DRL	Unichema North America
BAS	BASF Corp.	DUP	E. I. duPont de Nemours & Co., Inc. Automotives Products Dept. Chemicals & Pigments Dept. Petrochemicals Dept. Polymer Products Dept.
BCC	Buffalo Color Corp.	DVC	Dover Chemical Corp. Sub. of ICC Industries, Inc.
BCP	Borden Chemical & Plastics Delaware . Limited	DVR	Diversified Technology, Inc.
BFG	B.F. Goodrich Co.	EFH	E. F. Houghton & Co.
BFP	American Ingredients Company	EHC	Ethichem Corp.
BKC	J. T. Baker Chemical Co.		Eastman Kodak Co.:
BKM	Buckman Laboratories, Inc.	EKT	Tennessee Eastman Co. Div.
BOC	Biocraft Laboratories, Inc.	EKX	Texas Eastman Co. Div.
BOR	Borden, Inc., Packaging & Indus. Prod. Div.	ELC	Elco Corp. Sub. of Detrex Chemical Industries, Inc.
BRD	Lonza, Inc.	ENJ	Exxon Chemical Americas
BRI	Sedgefield Specialities	ENO	Enenco, Inc.
BTL	BTL Specialty Resin Corp.	ESA	East Shore Chemical Co.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	EVN	W. R. Grace & Co., Organic Chemicals Div. Evans Chemetics
CAD	Akzo Chemicals, Inc.	FER	Ferro Corp.:
CAS	Caschem, Inc.		Bedford Chemical Div. Grant Chemical Div. Keil Chemical Div.
CBD	Chembond Corp.	FMB	FMC Corp., Chemical Products Group
CCA	Akzo Chemicals, Inc.		
CCC	C.N.C. International, Inc.		
CCW	Morton International, Inc., Speciality Chemicals Group		
CED	Cedar Chemical Co.		
CGY	Ciba-Geigy Corp.		

See note at end of table.

Table 15-3—Continued

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1990

Code	Name of company	Code	Name of company
FMN	FMC Corp., Agricultural Chemical Group		Rubicon, Inc. Specialty Chem Div.
FMT	Fairmount Chemical Co., Inc.	IMC	IMC Pitman-Moore Industrial Chemicals Div.
FOC	Handschy Industries, Inc., Ink and Chemical Div.	JRC	Jarchem Industries, Inc.
FOR	Formosa Plastics Corporation Louisiana	KCH	Rhone Poulenc, Manchem, Inc.
FRE	Freeman Chemical Corp.	KLM	Kalama Chemical, Inc.
FRO	Vulcan Materials Co., Chemicals Div.	KMI	Kemin Industries, Inc.
FTE	Cyprus Foote Mineral Company	LCP	LCP Chemicals - West Virginia, Inc.
FTX	Finetex, Inc.	LEM	Napp Chemicals, Inc.
GAF	GAF Corp., Chemical Group	LRO	Laroche Chemicals, Inc.
GAY	Gaylord Chemical Corp.	LYP	Lyondell Petrochemical Co.
GE	General Electric Co., Specialty Chemical Group	MAL	Mallinckrodt, Inc.
GFS	GFS Chemical, Inc.	MCI	Mooney Chemicals, Inc.
GGC	Georgia-Gulf Corp.: Plaquemine Div.	MCK	MacKenzie Chemical Works, Inc.
GIV	Givaudan Corp.	MHI	Morton International, Inc., Ventron Division
GON	W.R. Grace & Co., Organic Chemicals Div., Nitroparaffins	MIL	Milliken & Co., Milliken Chemical Div.
GP	Georgia-Pacific Corp., Resins Operations	MNA	Monsanto Agricultural Co.
GPI	Grindsted Products, Inc.	MOB	Mobay Chemical Corp., Pittsburgh Div.
GTL	Great Lakes Chemical Corp.	MON	Monsanto Co.
HAL	C. P. Hall Co.	MRT	Morton International, Inc., Specialty Chemical
HAR	Haarman Reimer Corp., Food Ingredients Div.	NCC	Niacet Corp.
HCC	Hatco Chemical Corp.	NCI	Union Camp Corp., BBA Div.
HCF	Cape Industries	NCI	Union Camp Corp.
HCL	Hoechst Celanese Corp.: Chemical Group Inc. Fibers Industrial Division Fine Chemicals Division Sou-Tex Works	NES	Ruetgers-Nease Chemical Co.
HCP	Honig Chemical & Processing Corp.	NOC	Norac Co., Inc. Mathe Div.
HFT	Syntex Agribusiness, Inc.	NOD	Huls America, Inc.
HK	Occidental Chemical Corp., ED & S Div.	OH	Anaquest
HML	Hummel Crofton, Inc.	OMC	Olin Corp.
HMP	W. R. Grace & Co., Hampshire Chemicals Div. & Organic Chemicals Div.	ORT	Roehr Chemicals, Inc., Div. of Aceto Corp.
HMY	Humphrey Chemical Co.	PAH	Parish Chemical Co.
HOC	Halocarbon Products Corp.	PAS	Atochem North America, Inc.
HOF	Hoffman-LaRoche, Inc.	PCI	Piedmont Chemical Industries, Inc.
HPC	Hercules, Inc.	PCR	PCR, Inc.
HRT	Hart Products Corp.	PD	Parke-Davis, Div. of Warner-Lambert Co.
HXL	Hexcel Corp., Hexcel Chemical Products	PDG	P.D. Glycol
ICI	ICI Americas, Inc.: Agricultural Chemical Div.	PEL	Pelron Corp.
		PEN	Penick Corp.
		PFN	Pfanstiehl Laboratories, Inc.
		PFZ	Pfizer Pharmaceuticals, Inc.
		PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.
		PIC	Pierce Chemical Co.
		PLC	Phillips 66 Co.
		PLS	Plastics Engineering Co.

See note at end of table.

Table 15-3—Continued

Miscellaneous cyclic and acyclic chemicals: Directory of manufacturers, alphabetical by code, 1990

<i>Code</i>	<i>Name of company</i>	<i>Code</i>	<i>Name of company</i>
PMP	PMP Fermentation Products, Inc.	SUN	Sun Co., Inc.
PPG	PPG Industries, Inc.	SWS	Wacker Silicones
PSG	PMC, Inc., PMC Specialities Group, Inc.	SYL	Arizona Chemical Co.
PST	Perstorp Polyols, Inc.	SYP	Synthetic Products Co.
QKO	QO Chemicals, Inc.	TCC	Sybron Chemicals, Inc.
QTR	Questra Chemical, Corp.	TLC	Twin Lake Chemical, Inc.
RCI	Reichhold Chemicals, Corp.	TNA	Ethyl Corp.
RCN	Racon, Inc.	TOC	Tenneco Oil Co.
RDA	Rhone-Poulenc, Inc.	TRO	Troy Chemical Corp.
REG	Regis Chemical Co.	TSA	Texas Alkyls, Inc.
RH	Rohm & Haas Co.	TX	Texaco Chemical Co.
RQT	Roquette Corporation	TZC	Magnesium Elektron, Inc.
RSA	R.S.A. Corp.	UCC	Union Carbide Corp.
S	Sandoz Chemical Corp.	UPJ	Upjohn Co.
SBC	Scher Chemicals, Inc.	UPM	UOP, Inc.
SC	Sterling Chemicals, Inc.	USB	U. S. Borax & Chemical Corp.
SCM	SCM Corp., PCR, Inc., & Glidco Organics	USI	Quantum Chemical Corp., USI Div.
SCN	Schenectady Chemicals, Inc.	USR	Uniroyal, Inc., Uniroyal Chemical Div.
SCP	Henkel Corp.	UTC	Unitex Chemical Corp.
SD	Sterling Drug, Inc.: Sterling Pharmaceuticals, Inc.	VCM	Vanchem, Inc.
SDC	Sandoz Chemicals Corp.	VDM	Van De Mark Chemical Co., Inc.
SDW	Sterling Drug, Inc., Sterling Organics Div.	VEL	Velsicol Chemical Corp.
SHC	Shell Chemical Co. Div.	VNC	Vanderbilt Chemical Corp.
SHP	Shepherd Chemical Co.	VND	Van Dyk, Div. of Mallinckrodt, Inc.
SHX	Sherex Chemical Co., Inc.	VST	Vista Chemical Co.
SK	Smithkline Beecham Chemicals	WAY	Olin Hunt Specialty Products, Inc.
SM	Mobil Oil Corp.: Chemical Products Div.	WCL	Wright Chemical Corp.
SOH	BP Chemicals, Inc.	WPG	West Point-Pepperell, Inc., Grifftex Chemical Co. Sub.
SOI	Speciality Organics, Inc.	WTC	Witco Chemical Corp.
SPD	General Electric Co., Silicone Products Div.	WTH	Union Camp Corp., Chemical Division
SQA	Sequa Chemicals, Inc.	WTK	Heico Chemicals, Inc.
		WTL	Atochem North America, Inc., Organic Peroxides Div.
		WVA	Westvaco Corp.

Note.—Complete names, telephone number, and addresses of the above reporting companies are listed in app. A.
Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

APPENDIX A
DIRECTORY OF MANUFACTURERS

Table A-1
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

<i>Identification code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
AEP	A & E Plastic Inc	818-968-3801	14505 Proctor Ave. Industry, CA 91749.
AC	AC & S, Inc.	304-755-9275	West 19th St., Nitro, WV 25143.
ABB	Abbott Laboratories	708-937-8343	1401 Sheridan Rd., N. Chicago, IL 60064.
ILI	Acme Steel Company	708-849-2500	13500 S. Perry Ave., Riverdale, IL 60627.
ACO	Adco Chemical Co	201-589-0880	49 Rutherford St., Newark, NJ 07105.
CCS	Advanced Resins, Inc	303-245-8148	569 24 1/4 Rd., Grand Junction, CO. 81505.
AIP	Air Products & Chemicals, Inc	215-481-4911	7201 Hamilton Blvd, Allentown, PA 18195-1501
AJY	Ajay Chemicals, Inc	404-943-6202	1400 Industry Rd., Powder Springs, GA 30073.
AJI	Ajinomoto USA, Inc	201-488-1212	4020 Ajinomoto Dr., Raleigh, NC 27610.
ARC	Akzo Chemicals, Inc.	312-906-7500	P.O. Box 100, Axis, AL 36505.
ARC	Akzo Chemicals, Inc.	312-906-7500	300 S. Riverside Plaza, Chicago, IL 60606.
CCA	Akzo Chemicals, Inc	312-906-7500	500 Jersey Ave, New Brunswick, NJ 08903.
CAD	Akzo Chemicals, Inc	312-906-7500	2153 Lockport-Olcott Rd., Burt, NY 14028.
FRP	Akzo Coatings, Inc	912-367-3616	P.O. Box 349, Baxley, GA 31513.
REL	Akzo Coatings, Inc	502-459-9110	4730 Crittenden Dr., Louisville, KY 40233.
AKZ	Akzo Coatings, Inc	502-459-9110	1313 Windsor Ave., Columbus, OH 43211.
IOV	Akzo/Resins & Vehicles	708-481-8900	21625 Oak St., Matteson, IL 60443.
ALW	Albright & Wilson, Americas, Inc	804-550-4476	100 Lakeridge Pkwy., Ashland, VA 23005.
ALC	Alco Chemical Corp	615-629-1405	909 Mueller Dr., Chattanooga, TN 37406.
ALD	Aldrich Chemical Co., Inc	414-273-3850	1001 W. St. Paul Ave., Milwaukee, WI 53233.
ACH	Allico Chemical Corp	214-733-6841	17304 N. Preston Dr., Dallas, TX 75252.
ALG	Allegheny Chemical Corp	814-772-3965	Gillis Ave., Ridgway, PA 15853.
ALL	Alliance Chemical, Inc	201-945-5400	Linden Ave., Ridgefield, NJ 07657.
BME	Allied Signal-Bendix, Corp.,	518-270-0200	P.O. Box 238, Troy, NY 12180.
ACS	Allied Signal Inc:		
	Engineered Materials Sector	201-455-4911	P.O. Box 1087 R, Morristown, NJ 07962.
	Engineered Plastic Div	201-455-2000	100 Columbia Rd., Morristown, NY 07962.
	High Density Polyethylene Business	201-455-2000	12875 Scenic Hwy, Baton Rouge, LA 70892.
ALX	Alox Corp	716-282-1295	3943 Buffalo Ave., Niagara Falls, NY 14303.
APH	Alpha Corporation of Tennessee	901-853-2450	423 Highway 57 East, Collierville, TN 38017.
ALP	Alpha Laboratories, Inc	303-756-1338	1685 S. Fairfax St., Denver, CO 80222.
HES	Amerada Hess Corp. (Hess Oil Virgin Island Corp.)	201-750-6000	1 Hess Plaza, Woodbridge, NJ 07095-0961.
AMB	American Bio-Synthetics Corp	414-384-7017	710 W. National Ave., Milwaukee, WI 53204.
ACY	American Cyanamid Co	201-831-2768	One Cyanamid Plaza, Wayne, NJ 07470.
BFP	American Ingredients, Co	816-561-9050	3947 Broadway, Kansas City, MO 64111.
API	American Polymers, Inc	508-987-0144	Old Webster Rd., Oxford, MA 01801.
ASY	American Synthetic Rubber Corp	502-449-8300	4500 Campground Rd., Louisville, KY 40232.
SPO	Ameripol Synpol Co., Div. of	216-762-4442	146 South High St. Akron, OH 44308-1493.
	Uniroyal Goodrich Tire Co.		
HVG	Ametek, Inc., Haveg Div	302-995-0400	900 Greenbank Rd., Wilmington, DE 19808.
AMO	Amoco Corporation	312-856-6111	200 E. Randolph Dr., Chicago, IL 60680-0703.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

Identification code	Name of company	Telephone number	Office address
AMV	Amvac Chemical Corp	213-264-3910	4100 E. Washington Blvd., Los Angeles, CA 90023.
OH	Anaquest	608-273-0019	2005 W. Beltline Hwy., Madison, WI 53713.
ADC	Anderson Development Co	517-263-2121	1415 E. Michigan St., Adrian, MI 49221.
ANG	Angus Chemical Co	708-498-6700	2211 Sanders Rd., Northbrook, IL 60085.
ALI	Anzon, Inc	215-531-6010	2545 Aramingo Ave., Philadelphia, PA 19125.
APX	Apex Chemical Co	908-354-5420	200 S. First St., Elizabeth, NJ 07206.
APC	Apollo Chemical Corp	919-226-1161	1105 Southerland St., Graham, NC 27253.
APO	Apollo Colors, Inc	708-564-9190	3000 W. Dundee Rd., Suite 415, Northbrook, IL 60062.
AQU	Aqualon Co	302-996-2000	2711 Centerville Rd., Wilmington, DE 19850.
HKY	Arcadian Corp	901-351-6500	6750 Poplar Ave., Suite 600, Memphis, TN 38138-7419.
GCC	Arcadian Corp	901-351-3314	P.O. Box 27147, Memphis, TN 38127.
ARD	Ardmore, Inc	201-481-2406	29 Riverside Ave., Newark, NJ 07104.
ARN	Arenol Chemical Corp	201-526-5900	189 Meister Ave., Somerville, NJ 08876.
ART	Aristech Chemical Corp	412-433-2747	600 Grant St., Pittsburgh, PA 15230-0250.
ARZ	Arizona Chemical Co	904-785-6700	1001 E. Business Hwy. 98, Panama City, FL 32401.
SYL	Arizona Chemical Co	904-785-6700	P.O. Box 947, Port St. Joe, FL 32456.
ALS	Armco, Steel Co.	513-425-5000	703 Curtis St., Middletown, OH 45043.
ARP	Armour Pharmaceutical Co	815-932-6771	P.O. Box 511, Kankakee, IL 60901.
ARO	ARNCO	213-567-0587	5141 Firestone Place, Southgate, CA 90280.
ARL	Arol Chemical Products Co	201-344-1510	649 Ferry St., Newark, NJ 07105.
ARS	Arsynco, Inc., Sub Div. of Aceto Corp.	516-627-6000	One Hollow Lane, Lake Success, NY 11042-1215.
ASH	Ashland Oil, Inc	614-889-3333	P.O. Box 2219, Columbus, OH 43216.
	Ashland Petroleum Co	606-329-3333	P.O. Box 391, Ashland, KY 41114.
BLA	Astor Products, Inc., Blue Arrow Div	904-783-5352	5244 Edgewood Ct., Jacksonville, FL 32205.
ATL	Atlantic Industries, Div. Crompton Knowles Corp.	201-235-1800	10 Kingsland Rd., Nutley, NJ 07110.
ATR	Atlantic Richfield Co., Arco Chemical Co	215-359-2000	3801 West Chester Pike, Newtown Square, PA 19073.
ARI	Atlas Refinery, Inc	201-589-2002	142 Lockwood St., Newark, NJ 07105.
RSN	Atochem North America, Inc	215-587-7000	1112 Lincoln Rd., Birdsboro, PA 19508.
PAS	Atochem North America, Inc	215-587-7452	Three Parkway, Philadelphia, PA 19102.
WTL	Atochem North America, Inc., Organic Peroxides Div.	716-877-1740	1740 Military Rd., Buffalo, NY 14240.
AUX	Auralux Corp	203-886-2616	29 Scott Ave., Norwich, CT 06360.
AUS	Ausimont N.V	201-292-6250	44 Whippany Rd., Morristown, NJ 07962.
AZT	Aztec Catalyst Co.	713-957-6818	2190 N. Loop West, Suite 400 Houston, TX 77018.
BAS	BASF Corp. Chemicals Div	201-316-2937	100 Cherry Hill Rd., Parsippany, NJ 07054.
ICF	Coating & Colorants	201-365-3400	1255 Broad St., Clifton, NJ 07015.
SOH	BP Chemicals, Inc	216-586-4141	200 Public Square 31-N-4105, Cleveland, OH 44114 - 2375.
SIF	Commerical Composites	213-757-5141	12333 South Van Ness Ave., Hawthorne, CA 90250.
SIC	Commerical	213-757-1801	12333 South Van Ness Ave., Hawthorne, CA 90250.
SIO	BP Oil Co	419-226-2300	1150 South Metcalf St., Lima, OH 45804.
BTL	BTL Speciality Resin Corp	419-244-5856	2112 Sylvon Ave., Toledo, OH 43606.

Table A-1—Continued
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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<i>Identification code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
BKC	J. T. Baker Chemical Co	908-859-2151	222 Red School Lane, Phillipsburg, NJ 08865.
BFC	Barker Fine Color, Inc.	606-261-0200	38 Elm St., Lodlov, KY 41016.
BIB	Beckman Instruments, Inc	415-859-1510	1050 Page Mill Rd., Palo Alto, CA 94304.
BCK	Diagnostic Systems Group	619-438-6433	2470 Faraday Ave., Carlsbad, CA 92008. NJ 07424.
BCM	Belding Heminway Co	212-944-6040	P.O. Box 130, Hendersonville, NC 28793.
BLZ	Belzak Corp	201-773-0602	850 Bloomfield Ave., Clifton, NJ 07012.
BLY	Berkley & Co., Inc.	712-336-1520	One Berkley Dr., Spirit Lake, IA 51360.
BTS	Bethlehem Steel Corp	215-694-4522	866 Martin Tower - 8th Fl., Bethlehem, PA 18016.
BNS	Binney & Smith, Inc	215-253-6271	1100 Church Lane, Easton, PA 18044-0431.
BOC	Biocraft Laboratories, Inc	201-703-0400	12 Industrial Park, Waldwick, NJ 07463.
NUT	Bioproducts, Inc	502-968-3321	4820 Jennings Lane, Louisville, KY 40218.
BOE	Boehme Filatex, Inc	919-342-6631	Rt. 11 Box 5, Reidsville, NC 27320.
BOT	Boots Pharmaceuticals, Inc.	708-405-7400	300 Tristate Int'l Ctr., Suite 200, Lincolnshire, IL 60015
BOR	Borden, Inc.: Packaging & Industrial Products Div.	614-225-4000	180 E. Broad St., Columbus. OH 43209.
BCP	Borden Chemical & Plastics Delaware Limited Partnership	504-673-6121	Box 427, Geismar, LA 70734.
BMC	Brin-Mont Chemicals, Inc	919-292-0566	3921 Spring Garden St., Greensboro, NC 27407.
BRS	Bristol-Myers Squibb Co	212-546-4000	345 Park Ave., New York, NY 10154.
BRU	M. A. Bruder & Sons, Inc	215-353-5100	52nd & Grays Ave., Philadelphia, PA 19143.
BKM	Buckman Laboratories, Inc	901-278-0330	1256 N. McLean Blvd., Memphis, TN 38108.
BCC	Buffalo Color Corp	716-827-4500	P.O. Box 7027., Buffalo, NY 14240.
BRI	Burlington Industries, Inc.	919-379-2000	3330 W. Friendly Ave., Greensboro, NC 27406.
BUR	Burroughs Wellcome Co	919-248-3000	3030 Cornwallis Rd., Research Triangle Park, NC 27709.
CDR	CDR Pigments & Dispersions	502-737-1700	305 Ring Rd., Elizabethtown, KY 42701.
CFI	CF Industries, Inc	708-438-9500	Salem Lake Dr., Long Grove, IL 60047.
CLU	CL Industries, Inc	217-662-2136	P.O. Box 218, Georgetown, IL 61846.
CCC	C.N.C. International, Inc	401-769-6100	20 Priviledge St., Woonsocket, RI 02895.
PS	CPS Corp	716-366-6010	3257 Middle Rd., Dunkirk, NY 14048.
CPS	CPS Chemical Co., Inc	908-727-3100	Old Water works, Rd., Old Bridge, NJ 08857.
CYR	CYRO Industries	201-770-3000	100 Valley Rd., MT. Arlington, NJ 07856.
GRL	Calgon Corp., Calgon Vestal Laboratories Div.	314-862-2000	5035 Manchester Ave., St. Louis, MO 63110.
CMB	Cambridge Industries Co	201-465-4565	7-33 Amsterdam St., Newark, NJ 07103.
HCF	Cape Industries	919-341-5500	P.O. Box 327, Wilmington, NC 28402.
CBC	Carbose Corp	814-443-1611	100 Maple St., Somerset, PA 15501.
CGL	Cargill, Inc	612-475-7634	P.O. Box 5630, Minneapolis, MN 55428.
CHC	Carpenter Chemical Co	804-359-0800	5016 Monument Ave., Richmond, VA 23230.
BSC	Cascade Resins, Inc	503-343-2111	W. 1st & Bertleson Rd., Eugene, OR 97440.
CAS	Caschem, Inc	201-858-7900	40 Avenue A, Bayonne, NJ 07002.
CCL	Catawba-Charlab, Inc	704-523-4242	5046 Old Pineville Rd., Charlotte, NC 28217.
CED	Cedar Chemical Corp	501-572-3701	Highway 242 South, West Helena, AR 72390.
CNT	Certainteed Corp	215-341-7000	P.O. Box 860, Valley Forge, PA 19482.
CPR	Certified Processing Corp	201-923-5200	U.S. Highway #22, Hillside, NJ 07205.

Table A-1—Continued
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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<i>Identifi- cation code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
GRS	Champlin Refining, Co	512-882-8871	1801 Nueces Bay Blvd., Corpus Christi, TX 78469.
CHT	Chattem, Inc	615-821-4571	1715 W. 38th St., Chattanooga, TN 37409.
CHD	Chemdesign Corp	508-345-9999	99 Development Rd., Fitchburg, MA 01420.
CFX	Chemfax, Inc	601-863-6511	10045 Three River Rd., Gulfport, MS 39502.
CXI	Chemical Exchange Industries, Inc	713-526-8291	3813 Buffalo Speedway, Houston, TX 77098.
CMT	Chemithon Corp	206-937-9954	5430 W. Marginal Way, SW., Seattle, WA 98106.
CHL	Chemol Co	919-333-3050	2410 Randolph Ave., Greensboro, NC 27406.
SOC	Chevron Corp., Chevron Chemical	415-842-5500	6001 Bollinger Canyon Rd., San Co. Ramon, 94583.
CHH	Chris Hansen's Laboratory, Inc	414-476-3630	9015 W. Maple St., West Allis, WI 53214.
CGY	Ciba-Geigy Corp	914-478-3131	444 Saw Mill River Rd., Ardsley, NY 10502.
CGO	Citgo Petroleum Corp	918-495-4000	P.O. Box 1562, Lake Charles, LA 70602.
CGU	Citizens Gas & Coke Utility	317-264-8802	3133 Southeastern Ave., Indianapolis, IN 46203.
CCG	Clark Colors H.K. Color Group	908-757-4500	155 Helen St., South Plainfield, NJ 07080.
ACT	Climax Performance Materials Corp	708-458-8450	7666 W. 63rd St., Summit, IL 60501.
WYC	Coastal Chem, Inc	307-637-2700	P.O. Box 1287, Cheyenne, WY 82003.
CSP	Coastal Refining & Marketing Inc	713-877-1400	Nine Greenway Plaza, Houston, TX 77046.
CP	Colgate-Palmolive Co	212-310-2536	300 Park Ave., New York, NY 10022.
CLD	Colloids, Inc	404-422-1250	P.O. Box 769, Marietta, GA 30061.
CIC	Color Chem International Corp	404-396-1230	5145 Meadow Creek Dr., Atlanta, GA 30338.
COC	Columbia Organic Chemical Co., Inc	803-425-1786	1424 Mt. Zion Road, Cassatt SC 29032.
CAC	Cominco Fertilizers Inc	509-747-6111	W. 601 Riverside Ave., Spokane, WA 99201.
CMP	Commercial Products Co., Inc	201-427-6887	117 Ethel Ave., Hawthorne, NJ 07506.
CNI	Conap, Inc	716-372-9650	1405 Buffalo St., Olean, NY 14760.
CON	Concord Chemical Co., Inc	609-966-1526	17th & Federal Sts., Camden, NJ 08105.
CO	Conoco Specialty Products, Inc	713-293-1000	P.O. Box 2197, Houston, TX 77079.
CTL	Continental Chemical Co	201-472-5000	270 Clifton Blvd., Clifton, NJ 07011-3686.
CTP	Continental Polymers, Inc	901-942-0787	2225 E. Del Amo Blvd., Compton, P.O. Box 419389, Kansas City, MO 64141.
CPV	Cook Paint & Varnish Co	816-391-6000	
CKC	Cook Composites and Polymers Co.	816-391-6000	919 East 14th Ave., N. Kansas City, MO, 64141-6389.
HEU	Cookson Pigments, Inc	201-242-1800	256 Vanderpool St., Newark, NJ 07114.
COP	Coopers Creek Chemical Corp	215-828-0375	River Rd., West Conshohocken, PA 19428.
CPY	Copolymer Rubber & Chemical Corp.	504-355-5655	P.O. Box 2591, Baton Rouge, LA 70821.
CMS	Cosmic Plastics, Inc	818-365-3249	12314 Gladstone Ave., San Fernando, CA 91311.
CRD	Croda, Inc	212-683-3089	183 Madison Ave., New York, NY 10016.
CK	Crompton & Knowles Corp	215-775-8000	P.O. Box 341, Reading, PA 19603.
CCP	Crown Central Petroleum Corp	301-539-7400	1 N. Charles St., Baltimore, MD 21203.
USM	Crown Metro, Inc	803-299-1331	Echelon Road, Donaldson Centre, Greenville, SC 29606.
CYT	Cumberland International Corp	713-682-1221	1523 N. Post Oak Rd., Houston, TX 77055.
CTR	Customs Resins Div. of Bemis Co., Inc.	502-826-7641	P.O. Box 933, Henderson, KY 42420.

Table A-1—Continued
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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AMD	Cyclo Products, Inc	213-582-6411	1922 E. 64th St., Los Angeles, CA 90001.
FTE	Cyprus Foote Mineral Co	215-889-9605	301 Lindenwood Dr., Suite 301, Malvern, PA 19355.
CNP	DSM Chemicals North America, Inc	404-823-4240	P.O. Box 2451, Augusta, GA 30903.
POP	Daicolor Pope, Inc	201-279-2702	33 Sixth Ave., Paterson, NJ 07524.
MAR	Daishowa Chemical, Inc	203-625-0701	81 Holly Hill Lane Greenwich, CT 06830.
DPI	Dart Polymers, Inc., Sub. of Dart Container Corp.	717-656-2236	60 E. Main St., Leola, PA 17540.
DGO	Day-Glo Color Corp	216-391-7070	4515 St. Clair Ave., Cleveland, OH 44103.
DPW	Deepwater, Inc	714-751-3522	P.O. Box 17599, Irvine, CA 92713.
DGC	Degussa Corp	201-641-6100	65 Challenger Rd., Ridgefield Park, NJ 07660.
DRR	Delta Resins & Refractories, Inc	414-462-1200	6263 N. Teutonia Ave., Milwaukee, WI 53209.
DNS	Dennis Chemical Co	314-771-1800	2700 Papin St., St. Louis, MO 63103.
UDI	DeSoto, Inc	708-391-9000	3950 Fossil Creek Blvd., Fort Worth, TX 76137.
PLX	Union City	312-391-9000	1700 So. Mt. Prospect Rd., Des Plaines, IL 60018
DTR	Detroit Coke Corp	313-842-6222	7819 West Jefferson Ave., Detroit, MI 48209.
	Dexter Corp:		
HYA	Dexter Adhesive & Structural Material Div.	415-687-4201	2850 Willow Pass Road, Pittsburgh, CA 94565.
HYC	Dexter Electronic Material Div	818-968-6511	211 Franklin St., Olean, NY 14760.
DEX	Dexter Chemical Corp	212-542-7700	845 Edgewater Rd., Bronx, NY 10474.
MID	Dexter Speciality Coatings	708-623-4200	E. Water St., Waukegan, IL 60085.
AGP	Dial Corp	602-248-2800	2000 Aucutt Rd., Montgomery, AL 60538.
DA	Diamond Shamrock Refining & Marketing.	512-641-6800	P.O. Box 696000, San Antonio, TX 78269-6000.
DAZ	Diaz Chemical Corp	716-638-6321	40 Jackson St., Holley, NY 14470. NH 03103.
DVR	Diversified Technology, Inc.	904-673-4136	1625 State Ave., Holly Hill, FL 32117.
DIX	Dixie Chemical Co., Inc	713-863-1947	300 Jackson Hill, Houston, TX 77007.
DRC	Dock Resins Corp	908-862-2351.	1512 W. Elizabeth Ave., Linden, NJ 07036.
DOM	Dominion Products, Inc	718-499-3050	882 - 3rd Ave., Brooklyn, NY 11232.
DVC	Dover Chemical Corp. Sub. of ICC Industries, Inc.	216-343-7711	W. 15th & Davis Sts., Dover, OH 44622.
DOW	Dow Chemical Co	517-636-6125	2020 Willard H. Dow Center, Midland, MI 48674.
DCC	Dow Corning Corp	517-496-4000	P.O. Box 994, Midland, MI 48686-0994.
DRX	Drexel Chemical Corp	901-774-4370	2487 Pennsylvania St., Memphis, TN 38109.
ABP	Drummond Co., Inc	205-945-6301	P.O. Box 10246, Birmingham, AL 35202.
WBG	Dryden Oil Co.	508-791-3201	694 Millbury St., Worcester, MA 01607.
CHO	Ducon	618-654-2070	115 Executive Dr., Highland, IL 62249.
DUP	E. I. duPont de Nemours & Co., Inc	302-774-1000	1007 Market St., Wilmington, DE 19898.
DSC	Dye Specialties, Inc	201-866-9504	100 Plaza Center, Secaucus, NJ 07096.
AGI	EMS-American Grilon, Inc	803-418-9172	P.O. Box 1717, Sumter, SC 29151.
EPC	EPC Partners, Ltd	713-880-6500	P.O. Box 4324, Houston, TX 77210.
EPI	Eagle Pitcher Industries Inc., Orthane Div.	817-387-0585	P.O. Box 1389, Denton, TX 76202.
ECC	Eastern Color & Chemical Co	401-331-9000	35 Livingston St., Providence, RI 02904.
EK	Eastman Kodak Co	716-724-4000	343 State St., Rochester, NY 14650.
EKT	Tennessee Eastman Co. Div	615-229-2000	P.O. Box 511, Kingsport, TN 37662.
EKX	Texas Eastman Co. Div	903-237-5122	P.O. Box 7444, Longview, TX 75607.
ESA	East Shore Chemical Co,	616-726-3106	1221 E. Barney Ave., Muskegon, MI 49443.
ELN	Elan Chemical Co	201-344-8014	268 Doremus Ave., Newark, NJ 07105.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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Identification code	Name of company	Telephone number	Office address
ELC	Elco Corp. Sub. of Detrex Chemical Industries, Inc.	216-749-2605	1000 Bettline Rd., Cleveland OH 44109.
USM	Emhart Corp., Bostik Div	508-777-0100	Boston St., Middleton, MA 01949.
EMK	Emkay Chemical Co	201-352-7053	319-325 Second St., Elizabeth, NJ 07206.
EKO	Empire Coke Co	205-323-2400	1927 1st Ave., N., Suite 900, Birmingham, AL 35203.
ENO	Enenco, Inc	901-328-5800	755 Crossover Lane, Suite 216, Memphis, TN 38117.
HSH	Engelhard Corp	201-632-6000	3400 Band Street, Louisville, KY 40212.
SAR	Esschem, Inc	215-521-3800	Governor Printz Blvd., Essington, PA 19029.
ESS	Essential Industries, Inc	414-538-1122	28391 Essential Rd., Merton, WI 53056.
EHC	Ethichem Corp	201-933-7880	150 Grand St., Carlstadt, NJ 07072.
ETC	Ethox Chemicals, Inc	803-277-1620	P.O. Box 5094, Station B, Greenville, SC 29606.
TNA	Ethyl Corp	804-788-5537	330 S. 4th St., Richmond, VA 23217.
EVL	Eval Company of America	708-719-4610	1001 Warrenville Rd., Suite 201, Lisle, IL 60532.
ENJ	Exxon Chemical Americas	713-870-6000	P.O. Box 3272, Houston, TX 77253-3272.
FMN	FMC Corp: Agricultural Chemical Group	215-299-6000	2000 Market St., Philadelphia, PA 19103.
FMB	Chemical Products Group	215-299-6000	2000 Market St., Philadelphia, PA 19103.
FMC	Nitro Div	215-299-6000	2000 Market St., Philadelphia, PA 19103.
FAB	Fabricolor Manufacturing Corp	201-742-3900	24-1/2 Van Houten St., Paterson, NJ 07509.
FMT	Fairmount Chemical Co., Inc	201-344-5790	117 Blanchard St., Newark, NJ 07105.
FRI	Farmland Industries, Inc	816-459-6000 816-238-8111	P.O. Box 308, Lawrence, KS 66044. 1417 Lower Lake Rd., St. Joseph, MO 64502.
FEL	Felton Worldwide, Inc	718-497-4664	599 Johnson Ave., Brooklyn, NY 11237.
SDS	Fermenta ASC Corp	216-357-4100	5966 Heisley Rd., Mentor, OH 44060.
FER	Ferro Corp.: Bedford Chemical Div	216-641-8580	7050 Krick Rd., Bedford, OH 44146.
	Grant Chemical Div	504-654-6801	P.O. Box 263, Baton Rouge, LA 70821.
	Keil Chemical Div	219-931-2630	3000 Sheffield Ave., Hammond, IN 46320.
FBI	Fiber Industries, Inc	704-357-2000	5146 Parkway Plaza Blvd., Charlotte, NC 28217.
CSD	Fina Oil & Chemical Co.,	214-750-2400	8350 N. Central Expressway, Dallas, TX 75206.
	Cosden Chemical Div.		
FTX	Finetex, Inc	201-797-4686	P.O. Box 216, Elmwood Park, NJ 07407.
	Firestone Tire & Rubber Co.: Firestone Fibers & Textile Co	216-379-7000	P.O. Box 450, Hopewell, VA 23860.
FRF	Firestone Synthetic Rubber & Latex Co. Div.	216-379-7495	P.O. Box 26611, Akron, OH 44319-0006.
CI	Firmenich, Inc	609-452-1000	P.O. Box 5880, Princeton, NJ 08543.
FST	First Chemical Corp	601-762-0870	P.O. Box 1427, Pascagoula, MS 39567.
FPC	Flambeau Paper Corp	715-762-5235	200 N. First Ave., Park Falls, WI 54552.
FLM	Fleming Laboratories, Inc	704-372-5613	2215 Thrift Rd., Charlotte, NC 28234.
FOR	Formosa Plastics Corp-Louisiana	504-356-3341	P.O. Box 271, Baton Rouge, LA 70821.
	Formosa Plastics Corp-USA	201-992-2090	9 Peach Tree Hill Rd., Livingston, NJ 07932.
BDS	Fragrance Resources, Inc	908-264-6767	275 Clark St., Keyport, NJ 07735.
FLN	Franklin International, Inc	614-443-0241	2020 Bruck St., Columbus, OH 43207.
FRE	Freeman Chemical Corp	414-284-5541	217 Freeman Dr., Port Washington, WI 53074.
WLC	Freeport McMoran Resource Partners.	504-582-4000	1615 Poydras St., New Orleans, LA 70112.
COO	H.B. Fuller Co	612-481-1588	820 Woburn St., Wilmington, MA 01887.

Table A-1—Continued
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FLH	H.B. Fuller Co	612-645-3401	4450 Malsbary Rd., Blue Ash, OH 45242.
EEP	Furon Co	714-831-5350	Main & Orchard Sts., Mantua, OH 44255.
GAF	GAF Chemical Corp	201-628-3000	1361 Alps Rd., Linden, NJ 07036.
GFS	GFS Chemicals, Inc	614-881-5501	P.O. Box 245, Columbus, OH 43065.
GLX	Galaxie Chemical Corp	201-279-0558	26 Piercy St., Paterson, NJ 07524.
GAN	Ganes Chemicals, Inc	201-507-4300	630 Broad St., Carlstadt, NJ 07072
GAY	Gaylord Chemical Corp	504-649-5464	P.O. Box 1209, Slidell, LA 70459-1209
GNT	Gencorp Polymers Products	216-869-4200	165 S. Cleveland Ave., Mogadore, OH 44260.
GNR	Genencor, International Inc	415-742-7500	180 Kimball Way, S. San Francisco, CA 94080.
GE	General Electric Co.: Electromaterials Div	614-622-5310	1350 S. Second St., Coshocton, OH 43812.
GEP	Plastics Div	413-448-6681	1 Plastics Ave., Pittsfield, MA 01201.
SPD	Silicone Products Div	518-233-3377	260 Hudson River Rd., Waterford, NY 12188.
GE	Speciality Chemicals Group	413-448-6681	One Plastic Ave., Pittsfield, MA 01201.
GLC	General Latex and Chemical Corp	617-576-8000	P.O. Box 498, Ashland, OH 44805.
GRG	P.D. George Co	314-621-5700	5200 N. Second St., St. Louis, MO 63147.
GGC	Georgia Gulf Corp: Houston Div	404-395-4500	3503 Pasadena Freeway, Pasadena, TX 77503.
	Plaquemine Div	404-395-4500	400 Perimeter Center Terrace, Suite 595, Atlanta, GA 30348.
	PVC Compound Div	404-395-4500	P.O. Box 629, Plaquemine, LA 70765-0629.
PSP	Georgia-Pacific Corp.: Bellingham Div	206-733-4410	P.O. Box 1236, Bellingham, WA 98227.
GP	Resins, Inc	404-521-4000	133 Peachtree St. NE., Atlanta, GA 30303.
TNI	Gillette Chemical Co	617-421-7000	3500 W. 16th St., N. Chicago, IL 60064.
GIV	Givaudan Corp	201-365-8000	100 Delawanna Ave., Clifton, NJ 07014.
GLD	Glidden Company	216-344-8000	925 Euclid Ave., Cleveland OH 44115.
BFG	B. F. Goodrich Co	216-447-7802	6100 Oak Tree Blvd., Cleveland, OH 44131.
GYR	Goodyear Tire & Rubber Co	216-796-2121	1144 E. Market St., Akron, OH 44316.
EVN	W. R. Grace & Co.: Organic Chemicals Div., Evans	617-861-6600	55 Hayden Ave., Lexington, MA 02173.
GRD	Chemetics. Organic Chemicals Div., Chemicals & Polymers Div.	617-861-6600	55 Hayden Ave., Lexington, MA 02173.
HMP	Organic Chemicals Div.,	617-861-6600	55 Hayden Ave., Lexington, MA 02173.
GON	Hampshire Chemicals Div. Organic Chemicals Div.,	617-861-6600	55 Hayden Ave., Lexington, MA 02173.
GPC	Nitroparafins. Grain Processing Corp	319-264-4211	1600 Oregon Street, Muscatine, IA 52761-0349.
CPC	Grant Industries, Inc	201-791-6700	P.O. Box 360, Elmwood Park, NJ 07407.
GTL	Great Lakes Chemical Corp	317-497-6100	U.S. Hwy. 52 NW., Lafayette, IN 47906.
GDC	Gresco, Mfg. Inc	919-475-8101	216 E. Holly Hill Rd., Thomasville, NC 27360.
GPI	Grinstead Products, Inc	913-764-8100	200 Industrial Parkway Industrial Airport, KS 66031.
GGI	Grow Group, Inc	301-939-1234	1354 Old Post Rd., Havre De Grace, MD 21078.
GRV	Cello Corp Div. Guardsman Products, Inc	616-452-5181	1350 Steele Ave. SW., Grand Rapids, MI 49507.
GSS	Gulf States Steel, Inc	205-543-6201	174 South 26th St., Gadsden AL 35904-1935.
GTH	Guth Corp	414-644-6461	P.O. Box 347, Slinger, WI 53086.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

Identification code	Name of company	Telephone number	Office address
HAR	Haarmann & Reimer Corp	201-467-5600	70 Diamond Rd., Springfield, NJ 07081.
	Food Ingredients Div.	219-262-6916	1127 Myrtle St., Elkhart, IN 46515.
HAL	C. P. Hall Co	312-767-4600	7300 S. Central Ave., Chicago, IL 60638.
HOC	Halocarbon Products Corp	201-262-8899	82 Burlews Ct., Hackensack, NJ 07601.
FOC	Handschy Industries, Inc	708-597-7990	13601 S. Ashland Ave., Riverdale, IL 60627-1099.
	Ink and Chemical Div.		
TMH	Harcros Chemicals, Inc	913-321-3131	5200 Speaker Rd., Kansas City, KS 66110.
HRT	Hart Products Corp	201-433-6665	173 Sussex St., Jersey City, NJ 07302.
HCC	Hatco Chemical Co	908-738-3000	King George Post Rd., Fords, NJ 08863.
WTK	Heico Chemicals, Inc	717-476-0353	Route 611, Delaware Water Gap, PA 18327.
HAP	Helmerich & Payne, Inc., Natural Gas Odorizing Div.	713-424-5568	3601 Decker Dr., Baytown, TX 77520.
SCP	Henkel Corp	215-270-8100	2200 Renaissance Blvd., Gulph Mills, DE 19894.
HPC	Hercules, Inc	302-594-5000	Hercules Plaza, Wilmington, DE 19894.
HER	Heresite Protective Coating, Inc	414-684-6646	822 S. 14th St., Manitowoc, WI 54221-0250.
HTN	Heterene Chemical Corp	201-278-2000	790 - 21st Ave., Paterson, NJ 07513.
HEC	Hewchem	601-863-6600	P.O. Box 188, Gulfport, MS 39502.
HEW	Hewitt Soap Co., Inc	513-253-1151	333 Linden Ave., Dayton, OH 45403.
HXL	Hexcel Corp:		
	Chemical Products Div	805-498-1399	4505 Las Virgenes Rd., Calabasas, CA 91302.
	Chemical Products Div	616-772-2193	215 N. Centennial St., Zeeland, MI 49464.
DAN	Hickson Danchem Corp.	804-797-8105	P.O. Box 400, Danville, VA 24543.
HIP	High Point Chemical Corp	919-884-2214	243 Woodbine St., High Point, NC 27261.
SOG	Hill Petroleum Company	203-661-4770	P.O. Box 5038, Houston, TX 77262-5038.
HIL	Hilton Davis Chemical Co	513-841-4000	2335 Langdon Farm Rd., Cincinnati, OH 45237.
HIM	Himont, USA, Inc	302-996-6000	P.O. Box 15439, Wilmington, DE 19894.
HDG	Hodag Chemical Corp	312-675-3950	7247 N. Central Park Ave., Skokie, IL 60076.
HCL	Hoechst Celanese Corp:		
	Bayport Works, SP & W Div	713-474-6737	P.O. Box 58160, Houston, TX 77258.
	Chemical Group Div	214-689-4000	1250 W. Mockingbird Lane, Dallas, TX 75247.
	Engineering Plastics Div	201-635-2600	26 Main St., Chatham, NJ 07928.
	Fibers Industrial Div	201-231-2000	P.O. Box 5887, Spartanburg, SC 29304-5887.
	Fine Chemical Div	804-393-3100	1250 W. Mockingbird Lane, Dallas, TX 75247.
	SpecialityChem Group Coventry Plant.	201-231-2000	500 Washington St., Coventry, RI 02816.
	Sou-Tex	201-231-2000	P.O. Box 866, Mt. Holly, NC 28120.
HOF	Hoffmann-LaRoche, Inc	201-235-5000	340 Kingsland St., Nutley, NJ 07110.
HCP	Honig Chemical & Processing Corp	201-344-0881	414 Wilson Ave., Newark, NJ 07105.
EFH	E. F. Houghton & Co	215-666-4100	P.O. Box 930, Valley Forge, PA 19482.
NOD	Huls America, Inc	201-981-5000	80 Centennial Ave., Piscataway, NJ 08855-0456.
HML	Hummel Croton, Inc	201-754-1800	10 Harmich Rd., S. Plainfield, NJ 07080.
HMY	Humphrey Chemical Co	203-281-0012	45 Divine St., N. Haven, CT 06473-0325.
HNT	Huntington Laboratories, Inc	219-356-8100	970 E. Tipton St., Huntington, IN 46750.
HMN	Huntsman Chemical Corp	801-532-5200	2000 Eagle Gate Tower, Salt City, UT 84111.
ICI	ICI Americas, Inc:		
	Agricultural Products Div	302-886-8000	Delaware Corp. Center, Wilmington, DE 19897.
	Films Group Div	302-886-3793	Concord Pike & Murphy Rd., Wilmington, DE 19897.

Table A-1—Continued
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

<i>Identification code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
ICI	ICI Americas, Inc—Continued		
	Polyurethanes Group	609-423-8300	286 Mantua Grove Rd., W. Deptford, NJ 08066-1732.
	Resin Div	508-658-6600	730 Main St., Wilmington, MA 01887.
	Speciality Chemicals Div	302-886-3000	Concord Pike & Murphy Rd., Wilmington, DE 19897.
IMC	IMC Pittman-Moore, Inc:		
	Industrial Chemical Div.	708-615-3700	421 E. Hawley St., Mundelein, IL 60060.
ISP	INDSPEC Chemical Corp	412-765-1200	411 Seventh Ave., Pittsburgh, PA 15219
IND	Indol Color Co., Inc	201-242-1300	1029 Newark Ave., Elizabeth, NJ 07201.
IDC	Industrial Color, Inc	815-722-7402	50 Industry Ave., Joliet, IL 60435.
INL	Inland Steel Co	312-346-0300	3210 Watling, St., E. Chicago, IL 46312.
WM	Inolex Chemical Co	215-271-0800	Jackson & Swanson Sts., Philadelphia, PA 19148.
SPC	Insilco Corp., Sinclair Paint Co. Div	213-888-8888	6100 South Garfield Ave., Los Angeles, CA 90040.
IMI	Insulating Materials, Inc	518-395-3300	1 Campbell Rd., Schenectady, NY 12306.
GBF	International Bio-Synthetics Inc	704-527-9000	8720 Red Oak Blvd., Charlotte, NC 28224-1068.
IFF	International Flavor & Fragrances Inc	908-264-4500	1515 Highway #36, Union Beach, NJ 07735.
IPC	Interplastic Corp	612-331-6850	2015 NE Broadway, Minneapolis, MN 55413.
CRZ	James River II, Inc	804-644-5411	4th & Adams Sts., Camas, WA 98607.
JRC	Jarchem Industries, Inc	201-344-0600	40 Ball St., Newark, NJ 07105.
JFR	George A. Jeffreys & Co., Inc	703-389-8220	P.O. Box 909, Salem, VA 24153.
JRG	Andrew Jergens Co	513-421-1400	2535 Spring Grove Ave., Cincinnati, OH 45214.
JTO	Jetco Chemicals, Inc	214-872-3011	P.O. Box 1898, Corsicana, TX 75110.
MRX	Johnson Matthey, Inc	609-853-8000	2001 Nolte Dr., W. Deptford, NJ 08066.
JNS	S. C. Johnson & Son, Inc	414-631-3388	1525 Howe St., Racine, WI 53403.
JOB	Jones-Blair Co	214-353-1600	2728 Empire Central, Dallas, TX 75235
KLM	Kalama Chemical, Inc	206-682-7890	Bank of California Center, Suite 1110, Seattle, WA 98164.
KTP	Kama Corp	717-455-2022	666 Dietrich Ave., Hazelton, PA 18201.
KAN	Kanasco, Ltd	301-789-7800	6118 Robinwood Road, Baltimore, MD 21225.
SVC	Kartshamns LDP Specialities, USA	608-752-9007	525 W. First St., Janesville, WI 53547.
KMP	Kelly-Moore Paint Co., Inc	415-592-8337	987 Commercial St., San Carlos, CA 94070.
KMI	Kemin Industries, Inc	515-266-2111	2100 Maury St., Des Moines, IA 50301.
KPI	Kenrich Petrochemicals, Inc	201-823-9000	140 E. 22nd St., Bayonne, NJ 07002-0032.
KYS	Keycor Century Corp	805-259-2360	P.O. Box 308, Saugus, CA 91350.
KCW	Keystone Color Works, Inc	717-854-9541	151 W. Gay Ave., York, PA 17403.
CHF	Kincaid Enterprises, Inc	304-755-3377	P.O. Box 549, Nitro, WV 25143.
KHI	Koch Refining Co	316-832-5813	P.O. Box 2256, Wichita, KS 67201.
KPT	Koppers Industries, Inc	412-227-2001	436 Seventh Ave., Pittsburgh, PA 15219-1800.
LCP	LCP Chemicals:		
	Maine Div. of Hanlin Group, Inc	201-225-4840	P.O. Box 149, Orrington, ME 04474.
	West Virginia, Inc	304-843-1310	P.O. Box Box J, Moundsville, WV 26041.
LTV	LTV Steel Co., Inc	216-622-5000	LTV Steel Bldg., 25 W. Prospect Ave., Cleveland, OH 44115.
LKY	Lake States Div. of Rhineland Paper Co.	715-369-4217	515 W. Davenport St., Rhineland, WI 54501.
LRO	LaRoche Chemical, Inc	504-356-8406	P.O. Box 1031, Baton Rouge, LA 70821.
ARM	LaRoche Industries Inc	404-851-0475	1100 Johnson Ferry Rd., Atlanta GA 30342.
LII	Lawter International, Inc	708-498-4700	990 Skokie Blvd., Northbrook, IL 60062.

Table A-1—Continued
Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

<i>Identification code</i>	<i>Name of company</i>	<i>Telephone number</i>	<i>Office address</i>
LEA	Leatex Chemical Co	215-739-6324	2722 N. Hancock St., Philadelphia, PA 19133.
LLI	Lee Laboratories, Inc	804-862-2534	2820 N. Normandy Dr., Petersburg, VA 23805.
LVR	C. Lever Co., Inc	215-639-8640	736 Dunks Ferry Rd., Bensalem, PA 19020.
LEV	Lever Brothers Co	212-688-6000	390 Park Ave., New York, NY 10022.
LIL	Eli Lilly & Co	317-276-6448	Lilly Corporate Center, Indianapolis, IN 46285.
	Eli Lilly Industries, Inc	809-257-5555	Call Box 1198 - Pueblo Station, Carolina, PR 00630-1198.
MAR	Lignotech (U.S.), Inc.	203-625-0701	81 Holly Hill Lane, Greenwich, CT 06830.
LIC	Lilly Industrial Coatings, Inc	317-634-8512	P.O. Box 946, Indianapolis, IN 46206.
LMC	Lomac, Inc	616-788-2341	5025 Evanston Ave., Muskegon, MI 49443.
BRD	Lonza, Inc	201-794-2400	17-17 Route 208, Fair Lawn, NJ 07410.
LC	Lord Corp., Chemical Products Group	814-868-3611	2000 W. Grandview Blvd., Erie, PA 16514-0038.
LCS	Louisiana Chemical Polymers, Inc	504-775-1801	12537 Scenic Hwy., Baton Rouge, LA 70807.
LYP	Lyondell Petrochemical Co	713-652-7200	1221 McKinney, Suite 1600, Houston, TX 77253-3646.
STG	McCormick & Co., Inc.	301-771-7401	230 Schilling Circle S., Hunt Valley, MD 21031.
MGK	McLaughlin Gormley King Co	612-544-0341	8810 - 10th Ave. N., Minneapolis, MN 55427-4372.
MNP	McWhorter, Inc	312-428-2657	400 E. Cottage Place, Carpentersville, IL 60110.
RIK	3M Pharmaceuticals	818-341-1300	19901 Nordhoff St., Northridge, CA, 91324.
MAK	MAK Chemical Corp	317-288-4464	1200 Rochester Ave., Muncie, IN 47302.
SOR	MW Manufacturers, Inc., Southern Resin Div.	919-475-1348	P.O. Box 68, Thomasville, NC 27360.
MCK	Mackenzie Chemical Works Of LA	504-886-2173	.78015 Chemical Rd., Bush, LA 70431.
TZC	Magnesium Elektron, Inc	908-782-5800	500 Point Breeze Road, Flemington, NJ 08822.
MGR	Magruder Color Co., Inc	201-242-1300	1029 Newark Ave., Elizabeth, NJ 07208.
MAL	Mallinckrodt, Inc	314-895-2000	675 McDonnell Blvd., St. Louis MO 63042.
MOC	Marathon Oil Co.	419-422-2121	539 S. Main St., Findlay, OH 45840.
MRV	Marlowe-Van Loan Corp	919-886-7126	1511 Joshua Circle, High Point, NC 27260.
MCA	Masonite Corp., Alpine Resin Div	601-649-6000	P.O. Box 1048, Laurel, MS 39440.
MAX	Max Marx Color Corp	201-373-7801	1200 Grove St., Irvington, NJ 07111.
MYO	Mayo Chemical Co	404-696-6711	5544 Oakdale Rd., Smyrna, GA 30082.
MLC	Melamine Chemicals, Inc	504-473-3121	P.O. Box 748, Donaldsonville, LA 70346.
MRK	Merck & Co., Inc	201-574-4000	P.O. Box 2000, Rahway, NJ 07065.
MER	Merichem Co	713-455-1311	1914 Haden Rd., Houston, TX 77015.
MLS	Miles Inc., Biotechnology Products Div.	219-262-6916	1127 Myrtle St., Elkhart, IN 46515.
MIL	Milliken & Co., Milliken Chemical Div	803-472-9041	P.O. Box 817, Inman, SC 29349.
MMM	Minnesota Mining & Manufacturing Co.	612-733-3647	3M Center 224-6S, St. Paul, MN 55144.
MSC	Mississippi Chemical Corp	601-746-4131	P.O. Box 388, Yazoo City, MS 39194.
DKA	Mobay Corp	713-477-8821	8701 Park Place Blvd., Houston TX 77017.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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Identification code	Name of company	Telephone number	Office address
	Mobay Chemical Corp.:		
CHG	Agricultural Chemicals Div	816-242-2345	Hawthorne Rd., Kansas City, MO 64120.
VPC	Dyes & Pigments Div	412-777-2000	Mobay Road, Pittsburgh, PA 15205-9741.
MOB	Pittsburgh Div	412-777-2000	Mobay Road, Pittsburgh, PA 15205-9741.
	Mobil Oil Corp.:		
SM	Beaumont Refinery Div	703-846-3000	3225 Gallows Rd., Fairfax, VA 22037.
	Chemical Products Div	201-321-6000	P.O. Box 250, Edison, NJ 08818.
	Gas Liquids Dept	703-849-3000	P.O. Box 900, Dallas, TX 75221.
	Petrochemicals Div	713-590-7700	World Towers One, 15600 Kennedy Blvd., Houston, TX 77032.
	Polystyrene Business Group	201-321-6000	P.O. Box 3029, Edison, NJ 08818.
MOA	Mona Industries, Inc	201-345-8220	76 E. 24th St., Paterson, NJ 07544.
MON	Monsanto Co	314-694-1000	800 N. Lindbergh Blvd., St. Louis, MO 63167.
MNA	Monsanto Agricultural Co	314-694-1000	800 N. Lindbergh Blvd., St. Louis, MO 63167.
MCI	Mooney Chemicals, Inc	216-781-8383	2301 Scranton Rd., Cleveland, OH 44113.
MCP	Moretex Chemical Products, Inc	803-583-8441	314 W. Henry St., Spartanburg, SC 29301.
MRF	Morfex, Inc	919-292-1781	2110 High Point Road, Greensboro, NC 27403.
MHI	Morton International, Inc.	508-774-3100	150 Andover St., Danvers, MA 01923.
PYI	Morton Chemical Div	312-807-2000	130 Montain Creek Church Rd., Greenville, SC 29602.
MRT	Morton Chemical Div.	312-807-2000	100 N. Riverside Plaza
CCW	Industrial Chemical & Additives	513-733-2100	2000 West St., Reading, OH 45215.
MOT	Motomco, Ltd	608-244-2904	3699 Kinsman Blvd., Madison, WI 53704.
RTC	Mount Vernon Mills, Inc	803-233-4151	P.O. Box 2478, Greenville, SC 29602.
PNX	The Murphy-Phoenix Co	216-349-7179	6550 Davis International Pkwy, Solon, OH 44139.
NMC	NAMICO, Inc	215-482-6600	4601 Flat Rock Rd., Philadelphia, PA 19127.
LEM	Napp Chemicals, Inc	201-773-3900	199 Main St., Lodi, NJ 07644.
NTC	National Casein Co	312-846-7300	601 W. 80th St., Chicago, IL 60620.
NCJ	National Casein of New Jersey	312-846-7300	601 W. 80th St., Chicago, IL 60620.
NSC	National Starch & Chemical Corp	201-685-5000	10 Finderne Ave., Bridgewater, NJ 08807.
NTS	National Steel Corp., Great Lakes Div.	313-297-2100	1 Quality Dr., Ecorse, MI 48229.
NEP	Nepera, Inc	914-782-1200	Route #17, Harriman, NY 10926.
CBD	Neste Resins Corp.	503-687-8840	1600 Valley River, Eugene, OR 97401.
NEV	Neville Chemical Co	412-331-4200	2800 Neville Rd., Pittsburgh, PA 15225.
NBC	New Boston Coke Corp	614-456-4154	600 River Ave., New Boston, OH 45662.
NCC	Niacet Corp	716-285-1474	400 - 47th St., Niagara Falls, NY 14304.
NLO	Niklor Chemical Co., Inc	213-830-2253	2060 E. 220th St., Long Beach, CA 90810.
NCP	Niles Chemical Paint Co	616-683-3377	P.O. Box 307, Niles, MI 49120.
NOC	The Norac Co., Inc	818-334-2908	405 S. Motor Ave., Azusa, CA 91702.
	Mathe Div	818-334-2908	169 Kennedy Dr., Lodi, NJ 07644-0230.
FSN	NOR-AM Chemical Co	302-575-2000	3509 Silverside Road, Wilmington, DE 19810.
NW	Northwestern Flavors, Inc.	312-231-6111	120 N. Aurora St., W. Chicago, IL 60185.
NOR	Norwich Eaton Pharmaceutical, Inc	607-335-2049	17 Eaton Ave., Norwich, NY 13815.
NBI	Novo Nordisk Biochem, Inc.	919-494-2014	State Road 1003, Franklinton, NC 27525.
NSW	The Nutrasweet Co	708-940-9800	1751 Lake Cook Rd., Deerfield, IL 60015.
OBC	The O'Brien Corp	415-871-2300	450 E. Grand Ave., S. San Francisco, CA 94080.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

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	Occidental Chemical Corp.:		
HKD	Durez Div	716-696-6000	Walck Rd., N. Tonawanda, NY 14120.
HK	ED & S Div	214-404-3300	5005 LBJ Freeway, Dallas, TX 75244.
HKP	Vinyls Div.	215-251-1000	P.O. Box 1772, Berwyn, PA 19312.
OMC	Olin Corp	203-356-2000	120 Long Ridge Rd., Stamford, CT 06904.
WAY	Olin Hunt Speciality Products, Inc	201-972-6000	One Wellington Rd., Lincoln, RI 02865.
OC	Omega Chemicals, Inc	803-582-5346	P.O. Box 1723, Spartanburg, SC 29304
ORG	Organics/LaGrange, Inc	312-764-6700	7125 N. Clark St., Chicago, IL 60626.
OCC	Orient Chemical Corp	908-355-4010	121 Tyler St., Port Newark, NJ 07114.
BSW	Original Bradford Soap Works, Inc	401-821-2141	200 Providence St., W. Warwick, RI 02893.
CJO	C. J. Osborn Chemicals, Inc	609-662-0128	820 Sherman Ave., Pennsauken, NJ 08110.
OCF	Owens-Corning Fiberglas Corp	419-248-8000	Fiberglas Tower, Toledo, OH 43659.
CNE	Oxy Petrochemicals, Inc	713-623-2246	5 Greenway Plaza, Suite 2500, Houston, TX 77046.
PBI	PBI-Gordon Corp	816-421-4070	1217 W. 12th St., Kansas City, MO 64101-1407.
PCR	PCR, Inc	904-376-8246	P.O. Box 1466, Gainsville, FL 32609.
PDG	PD Glycol	409-838-4521	P.O. Box 3785, Beaumont, TX 77704.
PSG	PMC Inc., PMC Specialities Group, Inc.	216-356-0700	20525 Center Ridge Rd, Rocky River, OH 44116.
PMP	PMP Fermentation Products, Inc	414-352-3001	7670 N. Port Washington Rd., Milwaukee, WI 53217.
PPG	PPG Industries, Inc	412-434-3131	One PPG Place, Pittsburgh, PA 15272.
PRA	Para-Chem. Southern Inc	803-967-7691	P.O. Box 127, Simpsonville, SC 29681.
PAH	Parish Chemical Co	801-226-2018	145 N. Geneva Rd., Orem, UT 84057.
PD	Parke-Davis Div., of Warner Lambert, Inc.	616-392-2375	188 Howard Ave., Holland, MI 49424.
PSC	Passaic Color & Chemical Co	201-279-0400	28-36 Paterson St., Paterson, NJ 07501.
CHP	C. H. Patrick & Co., Inc	803-244-4831	P.O. Box 2526, Greenville, SC 29602.
PEL	Peiron Corp	708-442-9100	7847 W. 47th St., Lyons, IL 60534.
PEN	Penick Corp	201-621-2804	158 Mount Olive Ave., Newark NJ 07714
PAR	Pennzoil Products Co., Penreco Div	713-337-1534	4401 Park Ave., Dickinson, TX 77539.
BPT	Permethane Coatings, Inc	508-531-1880	13 Corwin St., Peabody, MA 01960.
PST	Perstorp Compounds, Inc	413-584-2472	238 Nonotuck St., Florence, MA 01060.
PST	Perstorp Polyols, Inc	419-729-5448	600 Matzinger Rd., Toledo, OH 43612.
PFN	Pfanstiehl Laboratories, Inc	708-623-0370	1219 Glen Rock Ave., Waukegan, IL 60085.
PCW	Pfister Chemical, Inc	201-945-5400	Linden Ave., Ridgefield, NJ 07657.
PFZ	Pfizer, Inc	212-573-2323	235 E. 42nd St., New York, NY 10017.
	Pfizer Pharmaceuticals, Inc	809-846-4300	P.O. Box 628, Barceloneta, PR 00617.
PHR	Pharmachem Corp	215-867-4654	719 Stefko Blvd., Bethlehem, PA 18016.
PLB	Pharmacia P-L Biochemicals, Inc	414-227-3600	2202 N. Bartlett Ave., Milwaukee, WI 53202.
PDI	Phelps Dodge Industries, Inc	219-456-4444	4300 New Haven Ave., Fort Wayne, IN 46803.
	Phelps Dodge Magnet Wire Co.		
PLC	Phillips 66 Co	918-661-6600	Phillips Bldg., Bartlesville, OK 74004.
PPX	Phillips Paraxylene, Inc	809-864-1515	P.O. Box 1162, Guayama, PR 00655.
PPR	Phillips Puerto Rico Core, Inc	809-864-1515	P.O. Box 1166, Guayama, PR 00655.
PHC	Phthalchem, Inc	513-681-0099	266 W. Mitchell Ave., Cincinnati, OH 45232.
PCI	Piedmont Chemical Industries, Inc	919-885-5131	331 Burton Ave., High Point, NC 27261.
PIC	Pierce Chemical Co	815-968-0747	3747 N. Meridan Rd., Rockford, IL 61103.
PIL	Pilot Chemical Co	213-723-0036	11756 Burke St., Santa Fe Springs, CA 90670.
PPL	Pioneer Plastics Corp	207-784-9111	1 Pionite Rd., Auburn, ME 04210.
IMC	Pittman-Moore, Inc	812-232-0121	1401 S. 3rd St., Terre Haute, IN 47808.
PKL	Plaskolite, Inc	614-294-3281	P.O. Box 1497, Columbus, OH 43216.
PSL	Plaskok Corp	716-681-7755	3155 Broadway, Buffalo, NY 14227.

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PLS	Plastics Engineering Co	414-458-2121	3518 Lakeshore Rd., Sheboygan, WI 53081.
PMC	Plastics Manufacturing Co	214-330-8671	2700 S. Westmoreland, Dallas, TX 75233.
RCD	Polysar, Inc	203-934-6315	345 Morgan LA, West Haven, CT 06516.
PLR	Polysar, Inc Plastic Div	508-537-1111	690 Mechanic St., Leominster, MA 01453.
PRT	Pratt & Lambert, Inc	716-873-6000	P.O. Box 22, Buffalo, NY 14240.
JLP	J. L. Prescott Co	708-331-8800	27 - 8th St., Passaic, NJ 07055.
PG	Procter & Gamble Co., Procter & Gamble Mfg. Co.	513-627-6386	Spring Grove & June St., St. Bernard, OH 45217.
PRC	Products Research & Chemical Corp.	818-702-8900	5430 San Fernando Rd., Glendale, CA 91209.
QKO	QO Chemicals, Inc	317-497-6110	2801 Kent Ave., W. Lafayette, IN 47906.
QCP	Quaker Chemical Corp	215-828-4250	Elm & Lee Sts., Conshohocken, PA 19428-0809.
USI	Quantum Chemical Corp., USI Div	513-530-6500	11500 Northlake Dr., Cincinnati, OH 45249.
QTR	Questa Chemicals Corp	404-434-1333	2859 Paces Ferry Rd., Atlanta, GA 30339.
QUN	K. J. Quinn & Co., Inc	603-474-7177	135 Folly Mill Rd., Seabrook, NH 03874.
AMU	RPM American Emulsions Co., Inc	404-226-7028	1202 Dozier St., Dalton, GA 30721.
RSA	RSA Corp	914-693-1818	690 Saw Mill River Rd., Ardsley, NY 10502.
RCN	Racon, Inc	316-524-3245	6040 S. Ridge Rd., Wichita, KS 67201.
BLC	Ranbar Technology, Inc	412-486-1111	1114 William Flinn Highway, Glenshaw, PA 15116.
RAY	Rayonier Chemical Products, Inc	203-348-7000	P.O. Box 68967, Seattle, WA 98188.
REG	Regis Chemical Co	708-967-6000	8210 Austin Ave., Morton Grove, IL 60053.
RCI	Reichhold Chemicals, Inc	914-682-5700	800 Calitola Dr., Research Triangle Park, Durham, NC 27713.
RIL	Reilly Industries, Inc	317-247-8141	1510 Market Square Center, Indianapolis, IN 46204.
CRT	Reilly-Whiteman, Inc	215-423-5300	801 Washington St., Conshohocken, PA 19428.
LUR	Reilly-Whiteman, Inc	215-423-5300	2600 E. Tioga St., Philadelphia, PA 19134.
ELP	Rexene Products Co	214-450-9000	5005 LBJ Freeway, Occidental Tower, Dallas, TX 75244.
RDA	Rhone-Poulenc, Inc	201-821-1000	CN 5266, Princeton, NJ 08543-5266.
KCH	Manchem, Inc	609-297-0100	275 Keystone Dr., Bethlehem, PA 18017.
AMS	Ridgway Color Co	513-771-1900	410 Glendale-Milford Rd., Cincinnati, OH 45215.
RIK	Riker Laboratories, Inc., Sub. of 3M Co.	818-341-1300	19901 Nordhoff St., Northridge, CA 91324.
RIV	Riverdale Chemical Co	708-754-3330	220 E. 17th St., Chicago Heights, IL 60411-3699.
ROB	Robeco Chemicals, Inc	212-986-6410	99 Park Ave., New York, NY 10016.
ORT	Roehr Chemicals, Inc, Div. of Aceto Corp	718-784-8473	52-20 37th St., Long Island City, NY 11101.
RH	Rohm & Haas Co	215-592-3000	Independence Mall West., Philadelphia, PA 19105.
DRB	Rohm Tech, Inc	508-342-5831	119 Authority Dr., Fitchburg, MA 01420.
ROM	Roma Color, Inc	617-676-3481	749 Quequechan St., Fall River, MA 02723.
RQT	Roquette Corp	708-249-5950	1550 Northwestern Ave., Gurnee, IL 60031-2392.
RUC	Rubicon, Inc	504-673-6141	P.O. Box 517, Geismar, LA 70734.
RUO	Ruco Polymer Corp	516-931-8100	New South Rd., Hicksville, NY 11802.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

Identification code	Name of company	Telephone number	Office address
NES	Ruetgers-Nease Chemical Co	814-238-2424	201 Struble Rd., State College, PA 16801.
SBP	SBS Products Inc	517-799-4941	302 Waller St., Saginaw, MI 48602.
SCM	SCM Corp.:		
	Glidco Organics	904-768-5800	P.O. Box 389, Jacksonville, FL 32201.
SOS	SSC Industries, Inc	404-762-9651	1550 E. Taylor Ave., East Point, GA 30344.
NPR	Safeway, Inc	415-632-7373	1100 77th Ave., Oakland, CA 94621.
STX	St. Croix Petrochemical Corp	809-778-6450	P.O. Box 6801, Sunny Isle, St. Croix, U.S. VI 00823-6801.
SLM	Salem Oil & Grease Co	508-745-0585	60 Grove St., Salem, MA 01970.
	Sandoz Chemical Corp.:		
S	Sandoz Chemical Corp	704-331-7016	4000 Monroe Rd., Charlotte, NC 28205.
SDC	Sandoz Chemical Corp	704-331-7016	4000 Monroe Rd., Charlotte, NC 28205.
ZOC	Sandoz Corp. Protection	312-699-1616	1300 E. Touity Ave., Des Plaines, IL 60018.
SCN	Schenectady Chemicals, Inc	518-370-4200	Congress & 10th Ave., Schenectady, NY 12306.
SBC	Scher Chemicals, Inc	201-471-1300	Industrial West, Clifton, NJ 07012.
SCH	Schering Corp	201-298-4000	1011 Morris Ave., Union, NJ 07081.
SPR	Scientific Protein Laboratories	608-849-5944	700 E. Main St., Waunakee, WI 53597.
SPA	Scott Paper Co	206-259-7409	P.O. Box 925, Everett, WA 98206.
TXS	Scott Polymers, Inc	817-831-3541	3607 N. Sylvania Ave., Fort Worth, TX 76111.
SRL	G. D. Searle & Co	708-982-7000	5200 Old Orchard Rd., Skokie, IL 60077.
SQA	Sequa Chemicals, Inc	803-385-5181	P.O. Box 70, Chester, SC 29706.
SKP	Shakespeare Monofilament Div	803-754-7011	6111 Shakespeare Rd., Columbia, SC 29223.
SHO	Shell Oil Co	713-241-9548	P.O. Box 3105, Houston, TX 77253.
SHC	Shell Chemical Co	713-241-9548	P.O. Box 3105, Houston, TX 77253.
SGO	Shenango, Inc	412-771-4400	200 Neville Rd., Pittsburgh, PA 15225-1690.
SHP	Shepherd Chemical Co	513-731-1110	4900 Beech St., Cincinnati, OH 45212.
SHX	Sherex Chemical Co., Inc	614-764-6500	5777 Frantz Rd., Dublin, OH 43017.
SHT	Shintech, Inc	713-965-0713	24 Greenway Plaza, Suite 811, Houston, TX 77046.
SMP	J. R. Simplot Co	208-336-2110	P.O. Box 912 Pocatello, ID 83204.
UPF	Sloss Industries Inc	205-254-7801	3500 - 35th Ave., Birmingham, AL 35207.
SK	SmithKline Beechman Chemicals	215-751-4000	One Franklin Plaza, Philadelphia, PA 19101.
SMO	Smooth-On, Inc	908-647-5800	1000 Valley Rd., Gillette, NJ 07933.
SLC	Soluol Chemical Co., Inc	401-821-8100	Green Hill & Market Sts., W. Warwick, RI 02886.
SAL	Solvay Animal Health, Inc	515-257-2422	2000 Rockford Rd., Charles City, IA 50616.
SLT	Solvay Polymers Inc.	713-522-1781	P.O. Box 1000, Deer Park, TX 77536.
SAC	Southeastern Adhesives	704-754-3493	815-D Virginia St., SW., Lenoir, NC 28645.
SWR	Southwestern Refining Co., Inc	512-884-8863	P.O. Box 9217, Corpus Christi, TX 78469.
SPL	Spaulding Composites Co	716-692-2000	310 Wheeler St., Tonawanda, NY 14150.
ASL	SpecialtyChem Products Corp	715-735-9033	2 Stanton St., Marinette, WI 54143.
SOI	Specialty Organics, Inc	818-962-2008	5623 N. 4th St., Irwindale, CA 91706.
IPP	Spectrachem Corp	201-595-8181	200 Sheridan Ave., Paterson, NJ 07512.
SCC	Standard Chlorine of Delaware, Inc	201-997-1700	1035 Belleville Turnpike, Kearny, NJ 07032.
STP	Stepan Co	815-727-4944	22 West Frontage Rd., Northfield, IL 60093.
SC	Sterling Chemicals, Inc	409-942-3360	1200 Smith, Texas City, TX 77592-1311.
SD	Sterling Drug, Inc	212-907-2000	2144 E. State St., Trenton, NJ 08619.
		212-907-2000	P.O. Box 11247, Barcelonita, PR 00617.
SDW	Sterling Organics Div	212-907-2000	90 Park Ave., New York, NY 10016.
CIN	Stockhausen, Inc	919-333-3500	2408 Doyle St., Greensboro, NC 27406.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

Identification code	Name of company	Telephone number	Office address
IRI	Stuart-Ironside, Inc	708-655-4595	7575 Plaza Court, Willowbrook, IL 60521
SUN	Sun Company, Inc	215-977-6358	1801 Market St., Philadelphia, PA 19103.
SNA	Sun Chemical Corp., Pigments Div	212-986-5500	411 Sun Ave., Cincinnati, OH 45232.
RAS	Surface Coatings, Inc	617-933-4200	100 Eames St., Wilmington, MA 01887.
TCC	Sybron Chemical, Inc	609-893-1100	P.O. Box 66, Birmingham Rd., Birmingham, NJ 08011.
INP	Synair Corp	615-698-8801	2003 Amnicola Hwy., Chattanooga, TN 37406.
BUC	Synalloy Corp., Blackman Uhler Chemical Div.	803-585-3661	Croft Industrial Park, Spartanburg, SC 29304.
SRY	Synray Corp	201-245-2600	209 N. Michigan Ave., Kenilworth, NJ 07033.
HFT	Syntex Agribusiness, Inc	417-866-7291	P.O. Box 1246, Springfield, MO 65810.
SYP	Synthetic Products Co	216-531-6010	1000 Wayside Rd., Cleveland, OH 44110.
SYT	Synthron, Inc	704-437-8611	P.O. Box 1111, Morganton, NC 28655.
TKD	Takeda Chemical Products USA, Inc	919-762-8666	P.O. Box 2577, Wilmington, NC 28402.
TEK	Teknor Apex Co	401-725-8000	505 Central Ave., Pawtucket, RI 02861.
TLI	Teledyne Industries, Inc., Teledyne McCormick Selph.	408-637-3731	3601 Union Rd., Hollister, CA 95024-0006.
TOC	Tenneco Methanol Co	713-757-2131	1010 Milan St., Houston, TX 77252.
TEN	Tennessee Chemical Co	615-496-3331	1 Ocoee St., Copperhill, TN 37317.
TVA	Tennessee Valley Authority, NFDC, TVA, OACD, Div. of Developmental Production.	205-386-3521	Muscle Shoals, AL 35660.
TER	Terra International, Inc	712-277-1340	Terra Centre, 600 - 4th St., Sioux City, IA 51101.
TER	Terra International, Inc	712-277-1340	1000 Terra Dr., Woodward, OK 73801.
TX	Texaco Chemical Co	713-432-3734	3040 Post Oak Rd., Houston, TX 77056.
TSA	Texas Alkyls, Inc	713-479-8411	P.O. Box 600, Deer Park, TX 77536.
TPC	Texas Petrochemicals Corp	713-477-9211	8600 Park Place Blvd., Houston, TX 77017.
TWD	Tonawanda Coke Corp	716-876-6222	P.O. Box 5007, Tonawanda, NY 14151-5007.
TRI	Triad Chemical	504-473-9231	P.O. Box 310, Donaldsonville, LA 70346.
TRO	Troy Chemical Corp	201-589-2500	One Avenue L, Newark, NJ 07105.
TUL	Tull Chemical Co., Inc	205-831-1154	P.O. Box 3246, Oxford, AL 36203.
TLC	Twin Lake Chemical, Inc	716-433-3824	520 Mill St., Lockport, NY 14095.
UPM	UOP, Inc	312-391-2000	25 E. Algonquin Road, Des Plaines, 1 Railroad Ave., Hastings-on-Hudson, NY 10706.
UHL	Paul Uhlich & Co., Inc	914-478-2000	
DRL	Unichema North America	312-376-9000	4650 S. Racine Ave., Chicago, IL 60609.
NCI	Union Camp Corp	201-628-2000	1600 Valley Rd., Wayne, NJ 07470.
NCI	BBA Div	201-628-2000	2051 N. Lane Ave., Jacksonville, FL 32236.
WTH	Chemical Div	201-628-9000	875 Harger St., Dover, OH 44622. IL 60017-5017.
UCC	Union Carbide Corp.,	304-747-3825	P.O. Box 8361, Charleston, WV 25303.
UOC	Union Oil Co. of California	213-977-5131	1201 W. Fifth St., Los Angeles, CA 90017.
UTP	Union Texas Products Corp	713-623-6544	1330 Post Oak Blvd. Houston TX 77252-2120.
USR	Uniroyal Chemical Co., Inc	203-573-3886	World Headquarters, Middlebury, CT 06749
UNN	United Aniline Co	617-762-4057	Endicott St., Norwood, MA 02062.
UCM	United Color Manufacturing, Inc.	215-860-2165	638 Newtown-Yardley Rd., Newton, PA 18940.
UNO	United Erie, Inc	814-456-7561	438 Huron St., Erie, PA 16502.
USB	U.S. Borax & Chemical Corp	213-251-5400	3075 Wilshire Blvd., Los Angeles, CA 90010.

Table A-1—Continued

Synthetic organic chemicals alphabetical directory of manufacturers, by company, 1990

(Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1990 are listed below alphabetically, together with their identification codes as used in the 15 individual sections of this report)

Identification code	Name of company	Telephone number	Office address
USX	U.S. Steel, Div. Of USX: Clairton Plant	412-433-4980	600 Grant St., Pittsburgh, PA 15219.
	Gary Works	219-888-4657	1 N Broadway, Gary, IN 46402.
UTC	Unitex Chemical Corp	919-378-0965	520 Broome Rd., Greensboro, NC 27406.
UPJ	The Upjohn Co	616-323-4000	7000 Portage Rd., Kalamazoo, MI 49001.
CWN	Fine Chemicals	203-281-2700	410 Sackett Point Rd., North Haven, CT 06473.
VSV	Valentine Sugars, Inc	504-532-2541	Rt 2, Box 625, Lockport, LA 70374.
VLR	Valero Refining & Marketing Co	512-246-2000	530 McCullough, San Antonio, TX 78292.
VCM	Vanchem, Inc	716-434-2624	1 N. Transit Rd., Lockport, NY 14094.
VDM	Van De Mark Chemical Co., Inc	716-433-6764	1 N. Transit Rd., Lockport, NY 14094.
VNC	Vanderbilt Chemical Corp	203-744-3900	31 Taylor Ave., Bethel, CT 06801.
		203-853-1400	and Rt. #2, Box 54, Murray, KY 42071.
VND	Van Dyk, Div. of Mallinckrodt, Inc	201-450-3206	Main & William Sts., Belleville, NJ 07109.
VEL	Velsicol Chemical Corp	708-698-9700	5600 N. River Rd., Rosemont, IL 60018.
VIN	Vineland Chemical Co., Inc	609-691-3535	1611 Wheat Rd., Vineland, NJ 08360.
VCC	Vinings Industries, Inc	404-436-1542	3950 Cumberland Pkwy., Atlanta, GA 30101.
VKR	Virkler Co	704-527-2350	1022 Pressley Rd., Charlotte, NC 28273.
VST	Vista Chemical Co	713-588-3000	15990 N. Barker's Landing Rd., Houston, TX 77224.
VTM	Vitamins, Inc	312-861-0700	200 E. Randolph Dr., Chicago, IL 60601.
FRO	Vulcan Materials Co., Chemicals Div	205-877-3000	P.O. Box 7689, Birmingham, AL 35233.
VYN	Vygen Corporation	216-998-1120	Middle Road, Ashtabula, OH 44004.
SWS	Wacker Silicones Corp	517-264-8500	3301 Sutton Rd., Adrian, MI 49221.
WJ	Warner-Jenkinson Co	314-658-7342	2526 Baldwin St., St. Louis, MO 63106.
EW	Westinghouse Electric Corp., Electrical Materials Div.	412-864-8200	Route 993, Manor, PA 15665.
WPG	WestPoint Pepperell, Inc	404-645-4753	1900 Cunningham Dr., Opelika, AL 36801.
	Grifftex Chemical Co. Sub.		
WVA	Westvaco Corp	212-688-5000	299 Park Ave., NY, NY 10171.
WRD	Weyerhaeuser Co	715-384-2141	118 S. Palmetto Ave., Marshfield, WI 54449.
WPS	Wheeling-Pittsburgh Steel Corp	304-234-2400	1134 Market St., Wheeling, WV 26003.
WHW	Whittemore-Wright Co., Inc	617-242-1180	62 Alford St., Boston, MA 02129.
CHN	Wil-Gro Fertilizer, Inc	918-825-3383	P.O. Box 429, Pryor, OK 74362.
WTC	Witco Corp	201-573-2800	155 Tice Blvd., Woodcliff Lake, NJ 07675.
WCL	Wright Corp	919-251-0234	102 Orange St., Wilmington, NC 28403.
WYK	Wyckoff Chemical Co., Inc	616-637-8474	1421 Kalamazoo St., S. Haven, MI 49090.
WYT	Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.	215-341-3867	P.O. Box 13745, Philadelphia,
PAT	Yorkshire Pat-Chem, Inc.	803-233-3941	11 Worley Road, Greenville, SC 29602.

Source: Compiled from data received in response to questionnaires of the U.S. International Trade Commission.

APPENDIX B
CYCLIC INTERMEDIATES;
GLOSSARY OF SYNONYMOUS NAMES

Appendix B

Table B-1
Cyclic Intermediates: Glossary of synonymous names

<i>Common name</i>	<i>Standard (chemical abstracts) name</i>
A acid	3,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
Acetyl-p-phenylenediamine	4'-Aminoacetanilide.
1,2,4-acid	4-Amino-3-hydroxy-1-naphthalenesulfonic acid (1-Amino-2-naphthol-4-sulfonic acid).
Acid yellow 9	6-Amino-3,4'-azodibenzenesulfonic acid.
p-Aminobenzenesulfonic acid	Sulfanilic acid and salt.
m-Aminobenzoyl J acid	4-Hydroxy-7-(m-aminobenzamido)- 2-naphthalenesulfonic acid.
Aminoepsilon acid	8-Amino-1,6-naphthalenedisulfonic acid.
Amino G acid	7-Amino-1,3-naphthalenedisulfonic acid.
Amino J acid	6-Amino-1,3-naphthalenedisulfonic acid.
Amino R salt	3-Amino-2,7-naphthalenedisulfonic acid.
Aniline oil	Aniline.
Anthraflavic acid	2,6-Dihydroxyanthraquinone.
Anthraflavin	1,5-Dihydroxyanthraquinone.
Armstrong & Wynne's acid	4-Hydroxy-2-naphthalenesulfonic acid.
B acid	5-Amino-4-hydroxy-1,7-naphthalenedisulfonic acid.
2B acid	6-Amino-4-chloro-m-toluenesulfonic acid.
4B acid	6-Amino-m-toluenesulfonic acid.
Benzal chloride	a,a-Dichlorotoluene.
Benzanthrone	7H-Benz[de]anthracen-7-one.
Benzotrichloride	a,a,a-Trichlorotoluene.
Bisphenol A	4,4'-Isopropylidenediphenol.
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.
Bromobenzanthrone	3-Bromo-7H-benz[de]anthracen-7-one.
C acid	3-Amino-1,5-naphthalenedisulfonic acid.
C.A. acid	3-Amino-6-chloro-4-sulfobenzoic acid.
C-Amine (Lake Red C acid)	2-Amino-5-chloro-p-toluenesulfonic acid.
Cassella acid	5-Hydroxy-1-naphthalenesulfonic acid.
Chicago Acid (SS acid)	4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid.
Chlorobenzanthrone	Chloro-7H-benz[de]anthracen-7-one.
Chromotropic acid	4,5-Dihydroxy-2,7-naphthalenedisulfonic acid.
Chrysazin	1,8-Dihydroxyanthraquinone.
1,6-Cleve's acid	5-Amino-2-naphthalenesulfonic acid.
1,7-Cleve's acid	8-Amino-2-naphthalenesulfonic acid.
Crocein acid	7-Hydroxy-1-naphthalenesulfonic acid.
2-Cyanopyridine	Picolinonitrile.
3-Cyanopyridine	Nicotinonitrile.
Cyanuric chloride	2,4,6-Trichloro-s-triazine.
D acid	6-Amino-1-naphthalenesulfonic acid.
DADI	Dianisidine diisocyanate.
DDB	p-Dibutoxybenzene.
Decacyclene	Diacenaphtho[1,2-j:1',2'-i]fluoranthene.
Dehydrothio-p-toluidine	2-(p-Aminophenyl)-6-methylbenzothiazole.
Developer Z	3-Methyl-1-phenyl-2-pyrazolin-5-one.
o-Dianisidine	3,3'-Dimethoxybenzidine.
1,1'-Dianthrimide	1,1'-Iminodianthraquinone.
Dibenzanthrone	Violanthrone.
Dichlone	2,3-Dichloro-1,4-naphthoquinone.
4,4'-Dihydrocydiphenylsulfone	4,4'-Sulfonyldiphenol.
Dimethyl POPOP	1,4-Bis[2-(4-methyl-5-phenyloxazolyl)]benzene.
4,5-Dinitrochrysazin	1,8-Dihydroxy-4,5-dinitroanthraquinone.
Dioxy S acid	4,5-Dihydroxy-1-naphthalenesulfonic acid.
Diphenyl epsilon acid	6,8-Dianilino-1-naphthalenesulfonic acid.
Durene	1,2,4,5-Tetramethylbenzene.
Epsilon acid (Andresen's acid)	8-Hydroxy-1,6-naphthalenedisulfonic acid.

Table B-1—Continued

Cyclic Intermediates: Glossary of synonymous names

Common name	Standard (chemical abstracts) name
F acid	7-Hydroxy-2-naphthalenesulfonic acid.
Fast Red G base	2-Nitro-p-toluidine [N2=1].
Fast Scarlet R base	5-Nitro-o-anisidine [NH2=1].
Fischer's aldehyde	1,3,3-Trimethyl-w@,a-indolineacetaldehyde.
Fischer's base	1,3,3-Trimethyl-2-methyleneindoline.
Freund's acid	4-Amino-2,7-naphthalenedisulfonic acid.
G salt	7-Hydroxy-1,3-naphthalenesulfonic acid, sodium salt.
Gamma acid	6-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt.
Gold salt	9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt.
H acid	4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, (8-Amino-1-naphthol-3,6-disulfonic acid).
Hellimellitene	1,2,3-Trimethylbenzene.
Indoxyl	3(2H)-Indolone.
Isodurene	1,2,3,5-Tetramethylbenzene.
J acid	7-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt.
J acid urea	7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid]
K acid	4-Amino-5-hydroxy-1,7-naphthalenedisulfonic acid.
Koch's acid	8-Amino-1,3,6-naphthalenetrisulfonic acid.
L acid	5-Hydroxy-1-naphthalenesulfonic acid.
Lake Red C amine	2-Amino-5-chloro-p-toluenesulfonic acid.
Laurent's acid	5-Amino-1-naphthalenesulfonic acid.
M acid	8-Amino-4-hydroxy-2-naphthalenesulfonic acid.
MEP	5-Ethyl-2-picoline (2-Methyl-5-ethylpyridine).
Mesitylene	1,3,5-Trimethylbenzene.
Methane base	4,4'-Methylenebis[N,N-dimethylaniline].
Michler's hydrol	4,4'-Bis(dimethylamino)benzhydrol.
Michler's ketone	4,4'-Bis(dimethylamino)benzophenone.
MOCA	3,3'-Dichloro-4,4'-diaminodiphenylmethane.
MVP	5-Vinyl-2-picoline.
Naphthionic acid	4-Amino-1-naphthalenesulfonic acid.
o-Naphthionic acid	1-Amino-2-naphthalenesulfonic acid.
b-Naphthol	2-Naphthol, tech
Naphthol AS	3-Hydroxy-2-naphthanilide.
a-Naphthylamine	1-Naphthylamine.
Neville & Winther's acid	4-Hydroxy-1-naphthalenesulfonic acid.
m-Nitrobenzoyl J acid	4-Hydroxy-7-(m-nitrobenzamido)-2-naphthalenesulfonic acid.
Oxy Koch's acid	1-Naphthol-3,6,8-trisulfonic acid.
Pentaanthrimide	1,4,5,8-Tetrakis(1-anthraquinonylamino)anthraquinone.
Peri acid	8-Amino-1-naphthalenesulfonic acid.
Phenylbiphenyl	Terphenyl.
N-Phenyldiethanolamine	2,2'-((Phenyl)imino)diethanol.
Phenyl gamma acid	6-Anilino-4-hydroxy-2-naphthalenesulfonic acid.
Phenyl J acid	7-Anilino-4-hydroxy-2-naphthalenesulfonic acid.
Phenyl peri acid	8-Anilino-1-naphthalenesulfonic acid.
Picric acid	2,4,6-Trinitrophenol.
POPOP	1,4-Bis[2-(5-phenyloxazolyl)]benzene.
Pseudocumene	1,2,4-Trimethylbenzene.
Pyrazoleanthrone	Anthra[1,9-cd]pyrazol-6(2H)-one.

Table B-1—Continued
Cyclic Intermediates: Glossary of synonymous names

<i>Common name</i>	<i>Standard (chemical abstracts) name</i>
Pyrazoleanthrone yellow	[3,3'-Blanthral[1,9-cd]-pyrazole]-6,6'-(2H,2'H)dione
Pyrazolone T	5-Oxo-1-(p-sulfophenyl)-2-pyrazoline-3-carboxylic acid.
Quinizarin	1,4-Dihydroxyanthraquinone.
2-Quinizarinsulfonic acid	9,10-Dihydro-1,4-dihydroxy-9,10-dioxo-2-anthracenesulfonic acid.
Quinoline yellow base	Quinophthalone.
R salt	3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt.
RG acid (Violet acid)	4-Hydroxy-2,7-naphthalenedisulfonic acid.
Rhoduline acid (J Acid Imide)	7,7'-Iminobis[4-hydroxy-2-naphthalenesulfonic acid].
RR acid	3-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid.
S acid	4-Amino-5-hydroxy-1-naphthalenesulfonic acid.
Schaffer's acid	6-Hydroxy-2-naphthalenesulfonic acid.
Silver salt	9,10-Dihydro-9,10-dioxo-2-anthracenesulfonic acid and salt.
Solvent Yellow 1	p-Phenylazoaniline and hydrochloride.
Solvent Yellow 3	4-(o-Tolylazo)-o-toluidine.
SS acid (Chicago acid)	4-Amino-5-hydroxy-1,3-naphthalenedisulfonic acid.
Sulfanilic acid	p-Aminobenzenesulfonic acid.
o-Sulfobenzaldehyde	o-Formylbenzenesulfonic acid.
Tetralin	1,2,3,4-Tetrahydronaphthalene.
Thiolindoxyl	3(2H)-Thianaphthenone.
Thiosalicylic acid	o-Mercaptobenzoic acid.
Tobias acid	2-Amino-1-naphthalenesulfonic acid.
TODI	Bitolylene diisocyanate.
o-Tolidine	3,3'-Dimethylbenzidine.
a-Toluic acid	Phenylacetic acid.
a-Tolunitrile	Phenylacetoneitrile.
4-m-Tolylendiamine	Toluene-2,4-diamine.
Trimellitic anhydride	1,2,4-Benzenetricarboxylic acid, 1,2-anhydride.
Trimethyl base	1,3,3-Trimethyl-2-methyleneindoline.
Trinitrophenol	Picric acid.
Urea J acid (J acid urea)	7,7'Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid].
Veratraldehyde	3,4-Dimethoxybenzaldehyde.
Veratrole	o-Dimethoxybenzene.
Vinytoluene	ar-Methylstyrene.
Violet acid (RG acid)	4-Hydroxy-2,7-naphthalenedisulfonic acid.

APPENDIX C
SYNTHETIC ORGANIC CHEMICALS,
U.S. PRODUCTION AND SALES, 1990,
HARMONIZED SYSTEM BASIS

Synthetic Organic Chemicals, U.S. Production and Sales, 1990, Harmonized System Basis

The following table contains 1990 U.S. production and sales data for synthetic organic chemicals in the 6-digit Harmonized System (HS) format. The Commission decided to compile such data in this format in response to the decision by the U.S. Bureau of the Census to publish Standard Industrial Classification (SIC) data which will be convertible to the HS beginning with the 1987 *Census of Manufactures*. The U.S. Bureau of the Census has historically referred to the *Synthetic Organic Chemicals, United States Production and Sales (SOC)* report in the chemicals section of the Census of Manufactures, which permits them to omit collecting synthetic organic chemicals production and shipments data from its respondents. Because of this situation, the SOC data will now also be compiled on an HS basis to provide comparability with the new SIC format.

The table provides production and sales data on a 6-digit HS basis only where publication would not violate the statutory provisions relating to unlawful disclosure of information accepted in confidence by the Commission. It includes only the 6-digit item numbers with publishable data from a number of HS chapters in which these chemicals are classified, but does not provide totals by chapter or overall total figures.

Table C-1—Continued
Synthetic organic chemicals: U.S. production and sales, 1990, harmonized system basis

HS/ number	Description	Production	Sales	
		Quantity 1,000 Kilograms	Quantity 1,000 Kilograms	Value 1,000 Dollars
271113	Butanes, liquefied	551,077	407,545	93,689
290121	Ethylene	16,541,341	7,576,647	3,691,112
290122	Propene (Propylene)	10,103,338	5,868,351	2,145,641
290124	Buta-1,3-diene and isoprene	1,592,760	1,482,909	816,473
290211	Cyclohexane	1,116,204	988,338	496,770
290220	Benzene	5,653,490	3,579,641	1,596,254
290230	Toluene	2,816,418	1,587,293	557,575
290244	Mixed xylene isomers	2,815,656	1,315,531	429,503
290250	Styrene	3,223,064	1,603,377	1,224,211
290260	Ethylbenzene	2,802,658	467,093	177,034
290270	Cumene	1,913,422	1,257,751	636,823
290311	Chloromethane (Methyl chloride) and chloroethane (Ethyl chloride)	417,825	145,999	62,002
290312	Dichloromethane (Methylene chloride)	209,116	128,921	58,938
290313	Chloroform (Trichloromethane)	219,687	-	-
290315	1,2-Dichloroethane (Ethylene dichloride)	6,282,199	1,021,869	126,247
290321	Vinyl chloride (Chloroethylene)	4,818,754	1,430,931	573,526
290340	Halogenated derivs of acyclic hydrocarbons containing two or more different halogens	455,110	331,783	768,451
290511	Methanol (Methyl alcohol)	3,786,391	2,373,688	297,843
290512	Propan-1-ol (Propyl alcohol) and propan-2-ol (Isopropyl alcohol)	746,000	615,354	297,172
290513	Butan-1-ol (n-Butyl alcohol)	575,647	281,574	148,401
290514	Other butanols nspf	307,383	243,034	71,407
290531	Ethylene glycol (Ethanediol)	1,747,744	2,252,303	1,064,352
290532	Propylene glycol (Propane-1,2-diol)	342,204	258,323	243,171
290542	Pentaerythritol	55,516	52,936	67,284
290544	D-glucitol (Sorbitol)	164,268	113,385	97,510
290711	Phenol (Hydroxybenzene) and its salts	1,606,072	682,349	521,465
290713	Octylphenol, nonylphenol and their isomers; salts thereof	95,922	47,375	53,494
290723	4,4'-Isopropylidenediphenol (Bisphenol A, Diphenylpropane) and its salts	521,258	194,589	226,036
290941	2,2'-Oxydiethanol (Diethylene glycol, Digol)	218,777	159,402	81,143
290942	Monomethyl ethers of ethylene glycol or of diethylene glycol	50,026	46,957	43,870
290943	Monobutyl ethers of ethylene glycol or of diethylene glycol	228,659	199,672	160,743
291010	Oxirane (Ethylene oxide)	2,482,914	241,851	255,000
291211	Methanal (Formaldehyde)	3,048,110	1,216,734	163,810
291213	Butanal (Butyraldehyde, normal isomer)	859,744	33,681	16,005
291411	Acetone	1,056,654	761,192	354,189
291412	Butanone (Methyl ethyl ketone)	211,048	240,258	124,696
291413	4-Methylpentan-2-one (Methyl isobutyl ketone) ...	58,603	55,189	49,235
291422	Cyclohexanone and methylcyclohexanones	473,736	51,302	53,722
291441	4-hydroxy-4-methylpentan-2-one (Diacetone alcohol)	-	9,261	10,087
291521	Acetic acid	1,701,303	405,260	150,138
291522	Sodium acetate	19,521	-	-
291531	Ethyl acetate	123,522	113,668	76,296
291532	Vinyl acetate	1,206,021	674,970	465,772
291533	n-Butyl acetate	114,530	93,242	70,511
291731	Dibutyl orthophthalates	7,925	7,721	8,063

Table C-1—Continued
Synthetic organic chemicals: U.S. production and sales, 1990, harmonized system basis

HS/ number	Description	Production	Sales	
		Quantity 1,000 Kilograms	Quantity 1,000 Kilograms	Value 1,000 Dollars
310210	Urea, whether or not in aqueous solution	11,604,331	5,724,772	795,515
291732	Diocetyl orthophthalates	140,649	149,805	119,159
291735	Phthalic anhydride	291,372	189,704	115,269
291822	O-Acetylsalicylic acid (Aspirin), its salts and esters	10,230	-	-
292141	Aniline and its salts	448,620	254,260	180,807
293211	Tetrahydrofuran	84,980	35,603	71,638
293371	Caprolactam	625,729	-	-
310210	Urea, whether or not in aqueous solution	11,604,331	5,724,772	795,515
320411	Disperse dyes and preparations based thereon ..	17,776	15,152	112,153
320412	Acid dyes, premetallized or not, mordant dyes and preparations based thereon	7,396	6,395	83,940
320413	Basic dyes and preparations based thereon	5,896	4,846	72,168
320414	Direct dyes and preparations based thereon	20,225	18,654	119,963
320416	Reactive dyes and preparations based thereon ..	-	9,474	110,355
320417	Pigments and preparations based thereon	55,990	48,278	737,826
390110	Polyethylene having a specific gravity of less than 0.94	4,675,026	4,310,109	4,005,592
390120	Polyethylene having a specific gravity of 0.94 or more	4,058,037	3,489,544	3,297,785
390210	Polypropylene	3,385,208	3,066,363	2,441,522
390311	Polystyrene, expandable	679,661	364,259	419,692
390319	Polystyrene, other than expandable	2,748,267	2,172,364	2,017,808
390330	Acrylonitrile-butadiene-styrene (ABS) copolymers	521,932	519,157	1,011,673
390610	Polymethyl methacrylate	304,726	189,221	449,571
390730	Epoxide resins	474,178	331,023	714,980
390750	Alkyd resins	349,019	264,323	358,212
390760	Polyethylene terephthalate	1,917,794	1,643,651	2,723,381
390810	Polyamide-6, -11, -12, -6,6, -6,9, -6,10 or -6,12 (nylon type)	1,329,246	-	-
390910	Urea resins; thiourea resins	618,223	742,723	235,898
390920	Melamine resins	109,181	89,639	218,729
390940	Phenolic resins	949,266	626,255	856,678

APPENDIX D
ALPHABETICAL CHEMICAL INDEX

Alphabetical Chemical Index

The alphabetical index of chemicals contained in this appendix table is an outgrowth of the processing of data by the U.S. International Trade Commission for its annual report, *Synthetic Organic Chemicals, United States Production and Sales*. This index will aid those who have an interest in the report, either as users of the published data or as suppliers of individual company data to the Commission, principally by showing the section number and line item number of specific chemicals. This information can be used to assist in locating a chemical in the report and to provide respondents to the Commission's questionnaire with information on where to list their production and sales data. The index shows only those chemicals for which production or sales were reported to the Commission for this edition of the report.

The index, initially designed for Commission use in computer processing of data for the annual report, has certain characteristics that should be noted to increase its usefulness. For example, superior headings for individual entries are not shown in the index. Thus, understanding the contents of the first item in the index, "accelerators, activators, and vulcanizing agents, acyclic, *other*," necessitates that the index user turn to the individual section (in the report) and item number (in the questionnaire) to find those acyclic accelerators, activators, and vulcanizing agents already specified. Similarly, the index entry "specific gravity 0.940 and below" does not by itself identify the chemical product. The index user will need to turn to the indicated section number and item number to determine the chemical referred to—in this case, polyethylene.

The chemical names used in this report and in the questionnaires sent to U.S. producers to obtain the data aggregated in the report are listed alphabetically in the first column of each listing in the index. The second column refers to the section in the report and questionnaire containing the chemical, and the third column shows the appropriate item number in that section in the questionnaire.

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Accelerators, activators, and vulcanizing agents, cyclic, other	09	163.000	Acid Black 63	04	214.063
Accelerators, activators, and vulcanizing agents, cyclic, other	09	49.000	Acid Black 92	04	215.000
Acetaldehyde ethyl phenethyl acetal	15	782.000	Acid Black 107	04	216.000
Acetaldehyde phenethyl propyl acetal	07	1.300	Acid Black 172	04	218.172
Acetal resins	07	1.400	Acid Black 194	04	218.194
Acetamide	08	19.000	Acid Black 210	04	218.210
Acetamidoethanol (N-Acetyl-ethanolamine)	15	227.000	Acid black dyes, all other	04	219.000
Acetaminophen	15	220.000	Acid Blue 9	04	132.000
Acetazolamide	06	392.000	Acid Blue 15	04	133.000
Acetic acid, amides with polyalkylene polyamines, salt	06	736.000	Acid Blue 25	04	136.000
Acetic acid, synthetic (100%)	12	357.900	Acid Blue 29	04	138.000
Acetic anhydride, other than recovered acetic anhydride the vapor-phase process (100%)	15	486.000	Acid Blue 40	04	140.000
Acetoacetanilide	03	9.000	Acid Blue 41	04	141.000
o-Acetoacetanilide	03	10.000	Acid Blue 62	04	145.000
Acetoacetylaldehyde yellow, all others	05	7.000	Acid Blue 67	04	145.067
2,4'-Acetoacetoxylaldehyde	03	11.500	Acid Blue 92	04	153.000
Acetoguanamine	03	115.200	Acid Blue 113	04	157.000
1'-Acetonaphthone	03	12.000	Acid Blue 118	04	158.000
2'-Acetonaphthone (β -Methyl naphthyl ketone)	07	1.500	Acid Blue 231	04	168.000
Acetone	15	806.000	Acid blue 281	04	168.281
Acetone-formaldehyde resins	08	1.000	Acid Blue 283	04	168.283
Acetonitrile	15	432.000	Acid Blue 298	04	168.298
3-(α -Acetonylbenzyl)-4-hydroxycoumarin (Warfarin)	13	169.000	Acid Blue 321	04	168.321
Acetophenone, tech.	03	14.000	Acid Blue 324	04	168.324
p-Acetotoluidide	03	15.000	Acid Blue 330	04	168.330
1-Acetoxy-2-sec-butyl-1-ethenylcyclohexane	07	93.500	Acid blue dyes, all other	04	169.000
6-Acetoxy-2,4-dimethyl-1,3-dioxane	15	1.000	Acid Brown 14	04	189.000
Acetylacetonates, all other	15	1281.700	Acid Brown 19	04	190.000
Acetylacetone peroxide	15	1281.990	Acid Brown 50	04	194.050
N-[(Acetylamino)methyl]-2-chloro-N-(2,6-diethylphenyl)acetamide	13	168.995	Acid Brown 96	04	195.000
Acetyl cedrene (Vertolifex)	07	93.550	Acid Brown 97	04	196.000
Acetylcyclohexane sulfonyl peroxide	15	2.000	Acid Brown 98	04	197.000
Acetylene (For chemical use only)	02	38.000	Acid Brown 147	04	197.147
N-Acetyl methyl anthranilate	07	93.555	Acid Brown 159	04	199.159
2-Acetylpyridine	03	19.450	Acid Brown 160	04	199.160
D-(-)-3-(Acetylthio)-2-methylpropanoyl chloride	15	490.700	Acid Brown 161	04	199.161
Acid Black 1	04	203.000	Acid Brown 165	04	199.165
Acid Black 2	04	204.000	Acid Brown 188	04	199.188
Acid Black 52	04	211.000	Acid Brown 189	04	199.189
Acid Black 60	04	214.000	Acid Brown 227	04	200.227
			Acid Brown 239	04	200.239
			Acid Brown 264	04	200.264
			Acid Brown 439	04	200.439
			Acid brown dyes, all other	04	202.000
			Acid Green 1	04	170.000
			Acid Green 16	04	175.000
			Acid Green 20	04	177.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Acid Green 25	04	179,000	(Acid Yellow 23)	05	204,023
Acid green dyes, all other	04	186,000	Acid Yellow 3	04	3,000
Acid Orange 7	04	43,000	Acid Yellow 17	04	6,000
Acid Orange 8	04	44,000	Acid Yellow 19	04	7,000
Acid Orange 10	04	45,000	Acid Yellow 23	04	8,000
Acid Orange 24	04	47,000	Acid Yellow 34	04	11,000
Acid Orange 60	04	54,000	Acid Yellow 36	04	12,000
Acid Orange 64	04	57,000	Acid Yellow 49	04	17,000
Acid Orange 89	04	61,089	Acid Yellow 59	04	19,000
Acid Orange 116	04	62,000	Acid Yellow 65	04	21,000
Acid Orange 128	04	64,000	Acid Yellow 73	04	22,000
Acid Orange 152	04	65,152	Acid Yellow 114	04	26,000
Acid Orange 156	04	65,156	Acid Yellow 135	04	32,000
Acid Orange 161	04	65,161	Acid yellow 137	04	32,137
Acid orange dyes, all other	04	66,000	Acid Yellow 151	04	33,000
(Acid Red 26)	05	214,000	Acid Yellow 159	04	34,000
Acid Red 1	04	67,000	Acid Yellow 174	04	35,000
Acid Red 4	04	68,000	Acid Yellow 198	04	37,000
Acid Red 14	04	69,000	Acid Yellow 200	04	37,200
Acid Red 57	04	79,000	Acid Yellow 219	04	37,219
Acid Red 73	04	81,000	Acid Yellow 226	04	24,096
Acid Red 87	04	84,000	Acid yellow dyes, all other	04	38,000
Acid Red 88	04	85,000	Acromethasone	06	648,100
Acid Red 119	04	94,000	Acrolein (Acrylaldehyde)	15	783,000
Acid Red 137	04	97,000	Acrylamide-2-acrylamido-2-methylpropanesulfonic acid, sodium salt polymer	14	395,000
Acid Red 151	04	99,000	Acrylamide-acrylic acid copolymer	14	396,000
Acid Red 166	04	99,166	Acrylamide-acrylic acid copolymer, sodium salt	14	397,000
Acid Red 182	04	103,000	Acrylamide monomer	15	228,000
Acid Red 226	04	110,226	Acrylamide-trimethylaminoethyl acrylate chloride polymer	14	399,500
Acid Red 266	04	111,000	Acrylamide-trimethylaminoethyl methacrylate chloride	14	400,000
Acid Red 278	04	111,278	Acrylate-alkyd copolymer resins	08	1,900
Acid Red 296	04	111,296	Acrylic acid	15	491,000
Acid Red 299	04	112,000	Acrylic-styrene-acrylonitrile	08	44,050
Acid Red 337	04	114,000	Acrylonitrile-butadiene-styrene (ABS) terpolymer resins	08	42,000
Acid Red 364	04	115,364	Acrylonitrile, monomer	15	433,000
Acid Red 384	04	115,384	Acyclic amphoteric surface-active agents, all other	12	19,000
Acid Red 388	04	115,388	Acyclic fungicides, all other	13	195,000
Acid Red 400	04	115,400	Acyclic herbicides	13	212,000
Acid Red 410	04	115,410	Acyclic plasticizers, all other	11	130,000
Acid red 418	04	115,418	Acyclovir	06	186,800
Acid red 419	04	115,419	Acyclic elastomers, all other	10	22,000
Acid red dyes, all other	04	116,000	Adamantane	03	151,500
Acids, acid anhydrides, and acyl halides, all other	15	586,000	Adipic acid	15	492,000
Acid Violet 3	04	118,000	Adipic acid, ammonium salt	15	613,000
Acid Violet 7	04	119,000	Adipic acid-crosslinked polycrylamide	14	405,000
Acid Violet 12	04	120,000	Adipic acid-diethylenetriamine-epichlorohydrin polymer	14	153,000
Acid Violet 17	04	121,000			
Acid Violet 49	04	126,000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Adipic acid esters, all others	11	66.000	Alkylbenzene straight-chain (Except dodecyl and tridecyl)	03	22.000
Adipic acid type complex linear polyesters and polymeric plasticizers	11	131.100	Alkyl glycidyl ether, C ₁₂ -C ₁₄ and C ₁₂ -C ₁₆	151317.320	
Adipic dihydrazide	15	613.300	Alkyl glycidyl ethers, C ₈ -C ₁₀	151317.300	
Adiponitrile	15	434.000	Alkyl imidazoline	14	267.000
β-Alanine-N-(2-hydroxyethyl)-N-2,1-oxococoyl amino ethyl, sodium salt	12	447.800	3-(C12-15 alkoxy)-1-propanamine	12	321.045
Albumin	06	574.800	Alkylphenol, calcium salt	14	221.000
albuterol sulfate	06	323.000	Alkylphenol formaldehyde condensate, alkoxyated	15	3.450
C ₁₂₋₁₅ Alcohol, ethoxyated, propoxyated and phosphated	12	76.150	Alkylphenol-formaldehyde condensates, alkoxyated, all other	12	726.000
C ₁₂ -C ₁₅ alcohol-lactates	15	911.300	Alkylphenol formaldehyde copolymer	15	3.510
Alcohol mixtures, other	15	883.400	Alkylphenol/formaldehyde polymer	14	473.000
Alcohol mixtures, C-11 or lower only	15	883.100	Alkyl phenols	14	219.000
Alcohol mixtures, C-12 through C-18 only	15	883.200	Alkylphenols, mixed	03	23.100
Alcohols, monohydric, and their esters, C ₈ and higher	15	1425.000	Alkylpyridines, mixed	03	23.350
Alcohols and phenols, alkoxyated and phosphated or polyphosphated, all other	12	91.000	Alkyl succinic anhydride	14	268.000
Alcohols and phenols, sulfated, all other	12	247.000	Alkyl terephthalamate	14	269.000
Alcohols, unmixed C ₁₁ or lower, all other	15	870.000	All other (specify)	14	252.000
Aldiene	03	21.400	All other acyclic flavor and perfume materials	07	172.000
Aldehyde and acetone-amine reaction products, cyclic, other	09	55.000	All other benzenoid or naphthalenoid chemicals	07	93.000
Aldehyde-amine reaction products, cyclic, other	09	8.000	All other dyes	04	1215.000
Aldehydes, acyclic, all other	15	805.000	Allo-ocimene	07	126.800
Aliphatic hydrocarbon sulfides	14	253.000	Allopurinol	06	829.000
Alkanolamine condensates, all other	12	575.000	All other products from petroleum and natural gas, cyclic	02	36.000
Alkenyl succinimide	14	245.000	All other succinic anhydride derivatives	15	165.950
3-Alkoxy-2-hydroxypropyl trimethyl ammonium chloride	13	245.021	All other terpenoid, heterocyclic, or alicyclic flavor and perfume chemicals	07	126.000
Alkoxyated acid phosphate	15	1016.200	Allyl alcohol	15	840.000
Alkoxy triacryl titanate	12	51.500	p-Allylanisole	07	2.600
Alkoyl phenol	08	1.905	Allyl cyclohexyl propionate	07	93.560
Alkyd copolymers, all other	08	3.900	4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole)	07	4.000
Alkylalcohol ethoxyated and carbonated, sodium salt	12	318.600	Allyl disulfide	07	126.900
2-(C ₁₃₋₁₇ Alkyl)-1-(C ₁₄₋₁₈ amidoethyl)(4,5-dimydro-3-methylimidazolium, methyl sulfate	12	455.950	Allyl heptanoate	07	127.000
N-alkylamine bismethylenephosphonic acid	14	27.000	Allyl hexanoate	07	127.000
N-alkylamines, primary, mixed	15	292.900	Allyl methacrylate	15	885.000
N-alkylaminobismethylene phosphonic acid salts	14	28.000	4-Allyl-2-methoxyphenol (Eugenol)	07	5.000
Alkyl aromatics all other	02	4.000	1-Allyloxy-2,3-epoxypropane (Allyl glycidyl ether)	151317.330	
Alkylaryl-p-phenylenediamines	09	55.100	3-Allyloxy-2-hydroxypropane sulfonic acid, sodium salt	15613.700	
Alkylaryl phosphites mixed	09	84.800	Allyl resins	08	4.000
Alkylated anilamine	15	3.200	Allyl sulfonate, sodium salt	12	209.500
Alkylated naphthylamine/dicylphenylamine copolymer	15	3.250	Allyl ureido monomer	15	226.100
Alkylbenzene all other (Except dodecyl, tridecyl and straight-chain)	03	23.000	Alpha olefins, C ₈ -C ₁₁	02	62.100
			Aprazolam	06	466.500
			Aprostadil	06	679.100

Appendix D

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Aluminum acetate	15	587,000	3-Amino-2,5-dichlorobenzoic acid, ammonium salt (2,5-	13	40,500
Aluminum acetylacetonate	15	1281,450	Dichloro-3-aminobenzoic acid, ammonium salt)	03	91,503
Aluminum di-sec-butoxide acetoacetic ester chelate	15	1355,560	4-Amino-N,N-di(β-hydroxyethyl)aniline sulfate	15	434,400
Aluminum diisopropoxide acetoacetic ester chelate	15	1355,580	Aminodimethyl butyronitrile	13	40,600
Aluminum distearate	15	746,000	4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-	15	309,900
Aluminum ethyl-3-oxobutanoato-0',0'-dihydroxy T-4	15	1355,600	triazin-5-(4H)-one	15	310,000
Aluminum [1,3-butanediolato(2)-O,O'][(ethyl-3-	15	1355,530	2-Aminoethanol hydrochloride	15	311,000
oxobutanoato-01,03-hydroxy T-4	15	647,000	2-Aminoethanol (Monoethanol amine) sulfite	15	312,000
Aluminum formate	15	1355,630	Aminoethoxyethanol	15	312,500
Aluminum isooctoxide, diisopropoxide	15	1355,650	2-(2-Aminoethylamino)ethanol (Aminoethyl ethanolamine)	15	1378,450
Aluminum isopropoxide (Aluminum isopropylate)	15	747,000	2-(2-Aminoethylamino)ethanol, reaction product with	12	448,000
Aluminum monostearate	15	713,000	octadecanoic acid	15	313,000
Aluminum octanoate	15	1355,750	N-Aminoethylaminopropyl trimethoxysilane	12	404,450
Aluminum tri-sec-butoxide	15	748,000	(2-Aminoethyl)ethyl(hydrogenated tallow alkyl)	12	406,000
Aluminum tristearate	15	257,000	(2-hydroxyethyl)ammonium ethyl sulfate	15	4,000
Amides, all other	06	736,500	2-Aminoethyl mercaptoacetate (Monoethanolamine	15	314,000
Amiloride hydrochloride	12	341,000	thioglycolate)	14	318,000
Amine oxides and oxygen-containing amines (Except	12	357,000	1-(2-Aminoethyl)-2-naphthyl-2-imidazole	15	316,000
those with amide linkages), acyclic, all other	12	307,000	1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazole	03	116,803
Amine oxides and oxygen-containing amines (Except	15	403,000	1-(2-Aminoethyl)piperazine	03	118,000
those having amine linkages), cyclic, all other	12	35,000	2-Amino-2-ethyl-1,3-propanediol	03	317,000
Amines, all other	15	37,000	2-Amino-2-methyl-1,3-propanediol	15	319,000
Amine salts (Not containing oxygen), all other	12	35,000	N-2-(4-Amino-N-ethyl-m-toluidino)ethyl methane	03	130,100
Amine salts of fatty, rosin, and tall oil acids, all	12	27,000	sulfonamide	03	133,550
other	03	27,100	2-Amino-2-(hydroxymethyl)-1,3-propanediol	03	133,600
4-Aminoacetamide (Acetyl-p-phenylenediamine)	14	22,000	[Tris(hydroxymethyl)aminomethane]	03	133,600
3'-Amino-p-acetaniside	14	23,000	4-Amino-5-methoxy-2-methylbenzenesulfonic acid	03	134,000
Amino acids and salts, acyclic, all other	03	35,000	(5-methyl-o-anisidinesulfonic acid)	03	145,000
Amino acids and salts, cyclic, all other	03	37,000	m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid	03	169,800
3-Amino-p-anisamide	09	84,000	2-Amino-2-methyl-1,3-propanediol	03	178,000
1-Aminoanthraquinone and salt	03	45,100	2-Amino-2-methylpropyl 8-bromothioephylinate	03	182,000
Amino antioxidants, antiozonants, and stabilizers, other	06	829,500	2-Amino-3-methylpyridine	03	186,000
p-Aminobenzamide	03	53,000	2-Amino-4-methylpyridine	03	188,000
o-Aminobenzeneethiol	03	56,000	2-Amino-5-methylpyridine	03	193,802
Aminobenzoic acid, potassium salt	03	58,090	2-Amino-6-methylpyridine	15	6,000
p-Aminobenzoic acid, tech.	15	307,990	3-Amino-2,7-naphthalenedisulfonic acid	03	194,000
2-Aminobenzothiazole	03	59,000	2-Amino-4-nitroacetamide	03	142,000
2-Amino-6-benzothiazolesulfonic acid	03	308,000	2-Amino-5-nitrothiazole	03	197,000
5-Amino-1,3-bis(2-ethylhexyl-5-methyl)	03	64,500	5-Amino-2-[(2-oxo-5-benzimidazolyl)]	03	
hexahydropyrimidine	03	70,500	aminobenzenesulfonic acid	03	
2-Amino-1-bromo-3-chloroanthraquinone	03	71,500	p-Aminophenol	03	
2-Amino-1-butanol	03	79,000	p-[(p-Aminophenyl)azo]benzenesulfonic acid	03	
7-Aminocephalosporanic acid	03	83,000	3-Aminophenylphosphonic acid	03	
1-Amino-2-chlorobenzene	03		1-(3-Aminopropyl)morpholine	15	
5-Amino-2-chlorobenzene	03		2-Aminopyridine	03	
3-Amino-5-chloro-2-hydroxybenzenesulfonic acid	03		Aminosalicic acid	06	
6-Amino-5-chloro-m-toluenesulfonic acid [SO ³ H=1]	03		5-Aminosalicic acid	03	
(2B Acid)					

Chemical Name	Item No.	Sect. No.	Chemical Name	Item No.	Sect. No.
4-Amino-m-toluenesulfonic acid [SO ₂ H=1]	202.000	03	Anhydrosorbitol monoester of tall oil acids	590.000	12
6-Amino-m-toluenesulfonic acid [SO ₂ H=1]	203.000	03	Anhydrosorbitol monolaurate	591.000	12
4-Amino-3,5,6-trichlorophenolic acid (Picloram)	41.000	13	Anhydrosorbitol mono-oleate	592.000	12
Amiripyrilone hydrochloride	525.000	06	Anhydrosorbitol monopalmitate	593.000	12
Ammonium acetate	586.000	15	Anhydrosorbitol monostearate	594.000	12
Ammonium benzoate	9.100	15	Anhydrosorbitol sesquiboleate	596.000	12
Ammonium citrate	621.000	15	Anhydrosorbitol triester of tall oil acids	599.000	12
Ammonium heparin	623.000	06	Anhydrosorbitol trioleate	600.000	12
Ammonium isovalerate	127.300	07	Anhydrosorbitol tristearate	602.000	12
Ammonium mercaptoacetate	691.000	15	Aniline (Aniline oil)	212.000	03
Ammonium oxalate	722.000	15	Aniline, ethoxylated	342.200	12
Ammonium oxydiethylenebis (alkyl dimethyl chloride)			2-Anilinoethanol	215.000	03
Alkyl-40% C ₁₂ , 50% C ₁₄ , 10% C ₁₆	245.022	13	Anilinoethanesulfonic acid and salt	219.000	03
Ammonium phenolsulfonate	553.000	06	p-Anilinophenol	66.000	09
Ammonium propionate	426.000	14	Anionic surface-active agents, all other	320.000	12
Ammonium propanoate	736.500	15	p-Anisaldehyde	6.000	07
Amobarbital, sodium	444.000	06	Anisaldehyde bisulfite	9.000	15
Amoxicillin (trihydrate)	9.600	06	o-Anisidinomethanesulfonic acid	228.000	03
Amoxicillin (anhydrous)	9.500	06	Anisole, tech.	230.000	03
Amphetamine	512.000	06	Anisoyl chloride	230.090	03
Amphetamine sulfate	513.000	06	Anisyl acetate	7.000	07
Amphotericin B	1.000	06	Anthelmintic agents, all other	133.000	06
Ampicillin (trihydrate)	10.100	06	Anthranilic acid (o-Aminobenzoic acid)	232.000	03
Ampicillin, sodium	11.000	06	Anthralin 1,9-pyrazol-6(2H)-one (Pyrazoleanthrone)	233.000	03
Amprolium	166.000	06	N,N'-(1,5-Antraquinonylene)dianthranilic acid	237.000	03
Amyl acetate (n-Perityl acetate)	886.000	15	Antibiotics, for medicinal use, all other	62.000	06
Amylases, all other	98.000	14	Antifungal agents, all other	141.000	06
α-Amyl cinnamic aldehyde	5.550	07	Antihypertensive agents, other than rauwolfia and veratrum alkaloids, all other	360.000	06
Amyl cinnamyl alcohol	5.650	07	Antineoplastic agents, all other	283.000	06
Amyl cyclohexyl acetate	93.900	07	i-Arabinose	455.000	14
Amylenes	58.080	02	Arachidylbehenylalkyl amine	417.900	12
Amyl hydrogen phosphate	1016.500	15	Arsanilic acid	151.000	06
tert-Amyl hydroperoxide	1283.100	15	Aryl alkyl polyether alcohol	324.000	14
Amyl ortho- and para-dimethylaminobenzoates	8.002	15	Ascorbic acid	807.000	06
i-Amylperoxy acetate	1283.130	15	α-Aspartyl-phenylalanane methyl ester (α-Amino succinic.)	9.005	15
i-Amyl peroxybenzoate	8.050	15	Aspirin	385.000	06
i-Amylperoxy neodecanoate	1283.300	15	Atracurium besylate	745.200	06
i-Amylperoxy pivalate	1283.350	15	Auranolfin	397.000	06
p-Amylphenol	8.080	15	Aurantol	7.100	07
i-Amylphenol, ethoxylated	742.050	12	Aurothioglucoase	398.000	06
Amylphenol-formaldehyde, alkoxylated	721.500	12	Azathioprine	277.000	06
p-tert-Amylphenol sulfide (Tactiflor)	124.000	09	Azelaic acid	493.000	15
Amyris acetate	93.650	07	Azelaic acid esters, all others	70.000	11
Anabolic agents and androgens, all other	644.000	06	Azidothymidine	188.300	06
Anhydride-acid mixture	492.500	15	2,2-Azobis(dimethyl pentane nitrile)	434.600	15
Anhydrosorbitol dioleate	589.000	12			
Anhydrosorbitol esters, all other	603.000	12			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
1,1'-Azobisformamide	15	229,000	Basic black dyes, all other	04	359,999
2,2'-Azobis(2-methyl butane nitrile)	15	434,700	Basic black dyes, all other, modified	04	420,000
2,2'-Azobis(2-methylpropanitrile) (Azobisisobutyronitrile)	15	435,000	Basic Blue 1	04	343,000
Azolic Black 4	04	251,000	Basic Blue 3	04	400,000
Azolic black compositions, all other	04	253,000	Basic Blue 7	04	347,000
Azolic Blue 3	04	238,000	basic blue 10	04	350,000
Azolic Brown 9	04	246,000	Basic Blue 21	04	401,000
Azolic Coupling Component 2	04	297,000	Basic Blue 41	04	404,000
Azolic Coupling Component 12	04	305,000	Basic Blue 60	04	408,000
Azolic Coupling Component 14	04	307,000	Basic Blue 77	04	412,000
Azolic Coupling Component 18	04	311,000	Basic Blue 94 and 94:1	04	414,094
Azolic Coupling Component 20	04	313,000	Basic Blue 140	04	414,140
Azolic Coupling Component 29	04	316,000	Basic Blue 152	04	350,152
Azolic Diazo Component 5, base	04	257,000	Basic blue dyes, all other	04	351,000
Azolic Diazo Component 13, base	04	262,000	Basic blue dyes, all other, modified	04	415,000
Azolic Diazo Component 32, base	04	265,000	(Basic Blue 14, PMA)	05	227,014
Azolic Diazo Component 1, salt	04	271,000	Basic Brown 1	04	355,000
Azolic Diazo Component 3, salt	04	273,000	Basic Brown 4	04	357,000
Azolic Diazo Component 5, salt	04	275,000	Basic brown dyes, all other	04	358,000
Azolic Diazo Component 8, salt	04	277,000	Basic Green 1	04	352,000
Azolic Diazo Component 9, salt	04	279,000	Basic Green 4	04	354,000
Azolic Diazo Component 10, salt	04	279,000	Basic green dyes, all other	04	354,100
Azolic Diazo Component 12, salt	04	281,000	(Basic Green 1, PMA)	05	230,101
Azolic Diazo Component 13, salt	04	282,000	Basic Orange 1	04	326,000
Azolic Diazo Component 32, salt	04	285,000	Basic Orange 2	04	327,000
Azolic Diazo Component 48, salt	04	293,000	Basic Orange 21	04	372,000
Azolic diazo components, base, all other	04	270,000	Basic Orange 26	04	376,000
Azolic diazo components, salt, all other	04	296,000	Basic orange dyes, all other	04	329,000
Azolic Red 1	04	227,000	(Basic Red 1)	05	215,001
Azolic Red 2	04	228,000	Basic Red 12	04	333,000
Azolic Red 6	04	229,000	Basic Red 14	04	383,000
Azolic red compositions, all other	04	229,000	Basic Red 15	04	384,000
Azolic Violet 1	04	234,000	Basic Red 17	04	386,000
Azolic violet compositions, all other	04	236,000	Basic Red 29	04	390,000
Azolic Yellow 1	04	220,000	Basic Red 46	04	391,046
Aztreonam	06	38,700	Basic Red 49	04	392,000
Bacillus thuringiensis	13	166,010	Basic Red 54	04	392,000
Bacitracin (animal feed grade)	06	63,000	Basic Red 73	04	392,054
Bacterial amylase	14	93,000	Basic Red 104	04	392,073
Barium acetate	15	589,000	Basic Red 111	04	392,111
Barium benzoate	15	9,260	Basic red dyes, all other	04	334,000
Barium cadmium laurate	15	677,000	(Basic Red 81, PMA)	05	210,050
Barium 2-ethylhexanoate	15	630,000	(Basic Violet 1)	05	221,001
Barium laurate	15	676,900	(Basic Violet 4)	05	221,004
Barium naphthenate	14	296,000	Basic Violet 1	04	335,000
Barium stearate	15	750,000	Basic Violet 3	04	337,000
Basic Black 1	04	359,000	Basic Violet 4	04	338,000
			Basic Violet 10	04	339,000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Basic Violet 16	04	396.000	Benzoic acid, methyl ester	03	274.903
Basic Violet 35	04	398.035	Benzoic acid, tech.	03	275.000
Basic violet dyes, all other	04	342.000	Benzoinoxime	03	277.700
Basic Yellow 11	04	360.000	Benzonate	06	425.000
Basic Yellow 15	04	362.000	Benzonitrile	03	278.000
Basic Yellow 28	04	367.000	Benzophenone	07	8.000
Basic Yellow 29	04	368.000	Benzophenone	03	278.100
Basic Yellow 53	04	370.053	Benzothiazole	15	15.000
Basic Yellow 58	04	370.058	2-Benzothiazolethiol, sodium salt	03	278.200
Basic Yellow 65	04	370.065	1H-Benzotriazole	03	281.000
Basic Yellow 78	04	370.078	Benzotriazole, polychlorinated	15	15.300
Basic Yellow 79	04	370.079	Benzotriazole, potassium & sodium salts	15	15.400
Basic Yellow 83	04	370.083	2-Benzoxazolethiol	03	283.200
Basic Yellow 94	04	370.094	Benzoyl chloride	03	286.000
Basic Yellow 96	04	370.096	Benzoyl peroxide	15	16.000
Basic Yellow 98	04	370.098	Benzphetamine hydrochloride	06	535.000
Basic yellow 102	04	370.102	Benzyl acetate	07	9.000
Basic yellow dyes, all other	04	325.000	Benzyl alcohol	15	17.000
Basic yellow dyes, all other, modified	04	371.000	Benzyl(alkylpyridinium)chloride	12	508.190
(Basic Yellow 2), fugitive	05	15.000	Benzylamine	03	289.000
Behenamide	15	229.200	2-(Benzylamino)ethanol	03	290.000
Benactyzine hydrochloride	06	525.400	Benzyl benzoate	07	11.000
Benzaldehyde glyceryl acetal	07	7.500	Benzyl butyrate	07	12.000
Benzaldehyde, tech.	03	247.000	Benzyl chloroformate	15	17.115
Benzalkonium heparin	06	624.500	Benzyl(cocoonut oil alkyl)dimethyl ammonium chloride	12	508.800
Benzanilide	03	259.000	Benzyl(chocoonut oil alkyl)bis(2-hydroxyethyl)ammonium chloride	12	449.000
Benzene, cumene-, toluene-, and xylenesulfonates, all other	12	151.000	Benzyl(cocoonut oil alkyl)dimethylammonium chloride	12	509.000
Benzene High purity (98-100%)	02	5.500	Benzyl(mixed alkyl)ammonium chloride	12	510.000
Benzene Other	02	6.500	Benzyl(mixed alkyl)ammonium chloride	12	511.000
Benzenephosphinic acid	15	9.250	Benzyl(mixed alkyl)ammonium chloride	12	512.000
Benzene phosphorus chloride	03	261.500	Benzyl(mixed alkyl)ammonium chloride	12	512.800
Benzenesulfonic acid	03	264.000	Benzyl(mixed alkyl)ammonium chloride	12	513.000
Benzenesulfonic acid	12	137.710	Benzyl(mixed alkyl)ammonium chloride	12	514.000
Benzenesulfonyl chloride	03	266.000	6-benzylidene (bap)	13	231.251
1,2,4,5-Benzenetetra-carboxylic acid	03	267.000	1-Benzyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium chloride	12	451.000
Benzene, toluene, xylene, mixtures	02	33.000	Benzylhexadecyl(mixed alkyl)ammonium chloride	12	515.000
1,2,4-Benzenetricarboxylic acid, 1,2-dianhydride (Trimellitic anhydride)	03	268.100	Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride	12	516.000
Benzhydrol (Diphenylmethanol)	03	269.000	chloride	15	9.035
Benzimidazole	03	273.100	2-Benzyl-2-hydroxy-5,9-dimethyl-6,7-benzomorphanhydrobromide	03	294.950
Benzocaine	06	704.000	1-Benzyl-1-(2-hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazolium	12	453.000
1,3-Benzodioxole	03	273.500	chloride	07	15.400
Benzolic acid	06	134.000	Benzyl isobutyrate	07	15.600
Benzolic acid, 2-butoxyethanol ester	15	9.015	Benzyl isovalerate	07	15.700
Benzolic acid, butyl ester (Butyl benzoate)	15	9.020			
Benzolic acid, C ₁₂ -C ₁₈ ester	15	9.030			
Benzolic acid, isodecyl ester	15	9.050			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Benzyl-methyl-bis(hydrogenated tallow)ammonium chloride	12	516.500	2,6-Bis(dimethylaminomethyl)cyclohexanone	13	1.000
Benzyl(mixed alkyl)pyridinium chloride	12	516.670	Bis(α,α-dimethylbenzyl)peroxide	15	19.000
1-(Benzoyloxy)-2-methoxy-4-propenylbenzene (Benzyl isoenyl ether)	07	16.000	N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine	09	55.551
Benzyl phenylacetate	07	17.000	S-(1,2-Bis(ethoxycarbonyl)ethyl)O,O-dimethyl phosphorodithioate (Malathion)	13	215.000
1-Benzyl-4-phenylisonicotinonitrile	03	298.200	Bis(2-ethoxyethyl)ether (Diethylene glycol diethyl ether)	151143.000	151019.000
Benzyl picolinium chloride	12	517.100	Bis(2-ethylhexyl)hydrogen phosphite	11	16.550
Benzyl propionate	07	18.000	Bis(2-ethylhexyl)terephthalate	09	56.000
1-Benzylpyridinium chloride	12	518.000	N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine	11	16.550
Benzyl salicylate	07	19.000	Bis(ethyl-3-oxobutanato)bis(2-propanolato) titanium	151058.800	151058.800
Benzyl(tallow alkyl)bis(2-hydroxyethyl)ammonium chloride	12	453.500	Bis(N,N,1-ethyl(stearic/arachidic/behenic)amide) cyanoethyl ethylammonium ethosulfate	12	470.400
S-benzyl thiocarbamate	13	118.071	Bis-hexamethylenetriamine amine	15	260.000
Benzyltrimethylammonium chloride	12	519.000	Bis(hydrogenated tallow alkyl)amine	12	432.000
Benzyltrimethylammonium hydroxide	03	300.000	Bis(hydrogenated tallow alkyl)dimethylammonium chloride	12	481.000
Beta carotene (provitamin A)	06	789.000	Bis(hydrogenated tallow alkyl)dimethylammoniummethyl sulfate	12	482.000
Betaine hydrochloride	06	614.000	3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester	03	326.300
Betamethasone	06	649.000	N,N'-Bis(2-hydroxyethyl)(coconut oil alkyl)amine	12	321.100
Betamethasone dipropionate	06	649.500	N,N'-Bis(2-hydroxyethyl)(coconut oil alkyl)amine oxide	12	321.110
Betamethasone sodium phosphate	06	650.000	N,N'-Bis(2-hydroxyethyl)dodecylamine	12	321.500
Betamethasone valerate	06	651.000	Bis(2-hydroxyethyl, ethoxylated)methyloctadecylammonium chloride	12	455.000
Bethanechol chloride	06	314.500	Bis-2-hydroxyethyl-hydrogenated tallow-ethyl sulfate	12	455.500
Biological stains	14	24.000	Bis(2-hydroxyethyl)isocycloxypropylamine oxide	12	321.700
Biotin	06	794.000	Bis(2-hydroxyethyl)methyl(tallow alkyl)ammonium chloride	12	455.540
Biphenyl	03	307.000	N,N-bis-(2-Hydroxyethyl)octadecanamide	14	489.000
N,N-Bis(2,2-acetamido)glycine	14	3.000	N,N-Bis(2-hydroxyethyl)octadecylamine	12	322.000
Bis(N-amidopropyl)-N,N-dimethyl-N-ethylammonium ethyl sulfate, dimer acid	12	467.500	Bis-2-hydroxyethyl-octyl-methyl-p-toluene sulfonate	12	455.600
N,N'-Bis(2-amino-2-methylpropyl)-1,2-ethane diamine	15	259.000	N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine	12	324.000
2,6-Bis(p-azobenzylidene)-4-methylcyclohexanone	03	311.400	N,N-Bis(2-hydroxyethyl)-p-toluidine	03	958.500
Bis[2-(bis[2-hydroxyethylamino]ethyl) diisopropyl titanate]	15	1058.800	1,3-Bis(hydroxymethyl)-5,5-dimethyl hydantoin	15	20.400
Bis-1,4-bromacetoxyl-2-butene	13	178.000	2,2-Bis(4-hydroxyphenyl)proprionic acid	15	494.500
Bis(2-butoxyethyl)ether (Diethylene glycol di-n-butyl ether)	15	17.820	2,2-Bis(4-hydroxyphenyl)4-methylpentane	15	20.550
α,α-Bis(t-butylperoxy)diisopropylbenzene	12	21.500	4,6-Bis(isopropylamino)-2-methoxy-s-triazine (Prometon)	13	118.010
1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolium hydroxide, disodium salt	15	17.900	2,4-Bis(isopropylamino)-6-(methylthio)-s-triazine (Prometryn)	13	41.500
Bis(p-chlorobenzoyl)peroxide	15	1017.000	Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether)	15	1145.000
Bis-(2-chloroethyl)-2-chloroethylphosphonate	15	1300.000	Bis(2-methoxyethyl)ether (Diethylene glycol dimethyl ether)	15	1146.000
Bis(chloroethyl)ether (Dichloroethyl ether)	12	431.000	N,N'-Bis(1-methylheptyl)-p-phenylenediamine	09	60.000
Bis(coconut oil alkyl)amine	12	480.000			
Bis(coconut oil alkyl)dimethylammonium chloride	12	480.000			
Bis-cumylphenyl-oxoethylene titanate	12	775.800			
Bis(dibutylthiocarbamoyl) disulfide	09	144.950			
Bis(2,4-dichlorobenzoyl) peroxide	15	18.000			
Bis(dimethylaminoethyl) ether	15	322.900			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
N,N-Bis(4-methylphenyl)sulfonylamine, potassium salt	03	327.500	β -Bromo β -nitrostyrene	15	22.400
Bis(morpholinohiocarbamoyl) disulfide	09	38.500	1-Bromo-octadecane	151	206.000
Bismuth 2-ethylhexanoate	15	630.500	1-Bromopropane (n-Propyl bromide)	15	1209.000
Bismuth neodecanoate	15	701.900	2-Bromopyridine	03	359.000
Bismuth subgallate	06	554.000	Bromotrifluoromethane	15	1254.000
Bismuth subsalicylate	06	154.000	Brompheniramine maleate	06	85.000
Bis(pentachloro-2,4-dicyclopentadien-1-yl)	06	128.000	Bupropion	06	525.550
Bis(perfluoroalkyl)bis(alpha-monochlorohydrinyl)pyromellitate	13	21.080	Butabarbital	06	447.000
Bisphenol A, ethoxiated and propoxylated	15	742.095	Butadiene and butylene fractions	02	49.000
Bisphenol a, ethoxylated	12	742.090	1,3-Butadiene, grade for rubber (Elastomers)	02	48.000
Bisphenol, hindered	09	88.100	Butalbital	06	449.000
Bis(tallow alkyl)dimethylammonium chloride	12	482.500	Butamben	06	700.000
1,2-Bis(tribromophenoxy)ethane	03	330.218	1,2-(and 1,3)-Butanediol	15	1072.000
Bis(triphenylsilyl)chromate	15	21.400	1,4-Butanediol	15	1073.000
Bitylene diisocyanate (TODI)	03	1017.000	1,4-Butanediol diglycidyl ether	15	1317.400
Blend of fatty acid phosphate esters	12	111.800	Butanoic acid, 1-cyclohexylethyl ester	07	127.470
Boric acid-amine adducts	15	1367.700	n-Butanol, ethoxylated	15	1296.560
Bornyl phenylamine	15	271.000	2-Butanone peroxide (MEK peroxide)	15	1284.000
Brominated (including bromochlorinated) hydrocarbons, all other	14	1216.000	1-Butene	02	45.000
Brominated vegetable oil	15	1327.500	2-Butene	02	46.000
Bromoacetic acid	15	245.017	2-Butene and 2-butene, mixed	02	47.000
3-Bromoacetophenone	03	992.500	2-Butenedioic acid-(5)-diamine - 1-(2-aminoethyl)-2 (tall oil alkyl)-2-imidazoline condensate	12	342.220
p-Bromobenzene, mono	03	335.500	2-Butene-1,4-diol	15	1074.000
o-Bromobenzoic acid	03	336.000	2,3,4,5- δ^2 -Butenylene-tetrahydrofural	13	166.014
3-[3-(4'-Bromo[1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one	13	169.500	Butorphanol tartrate	06	398.500
1-Bromobutane (n-Butyl bromide)	15	1197.000	1-Butoxy-2,3-epoxypropane (Butyl glycidyl ether)	15	1317.460
Bromochlorodifluoromethane	13	42.000	2-Butoxyethanol (Ethylene glycol monobutyl ether)	15	1147.000
Bromochloro-5,5'-dimethyl hydantoin	15	1252.800	2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether)	15	1148.000
Bromochloromethane	15	21.900	2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)	15	1149.000
2-Bromo-1-chloro-1,2,2-trifluoroethane	15	1199.000	α -[2-(2-n-Butoxyethoxy)ethoxy]-4,5-methylenedioxy-2-propyltoluene (Piperonyl butoxide)	13	172.000
2-Bromo-2-chloro-1,1,1-trifluoroethane (Halothane)	15	1253.100	2-(2-Butoxyethoxy)ethyl acetate	15	1098.000
2-Bromo-4,6-dinitroaniline	15	1253.000	1-Butoxyethoxy-2-propanol	15	1150.000
Bromodocosane	03	344.000	2-Butoxyethyl acetate	15	1099.000
1-Bromododecane	15	1200.900	2-Butoxyethyl benzoate	15	22.990
Bromoethane (Ethyl bromide)	15	1201.000	Butoxyethylene oxyacetic acid, sodium salt	12	35.950
Bromoethylbenzene	15	1202.000	2-Butoxyethyl oleate	11	89.900
p-Bromofluorobenzene	03	345.000	n-Butyl acetate	15	89.900
1-Bromohexane (n-Hexyl bromide)	15	1202.990	n-Butyl acetylacetoate	11	106.000
2-Bromohexanoic acid	15	1203.000	Butyl acid phosphate	15	1020.000
2-Bromo-4'-hydroxyacetophenone	15	496.500	Butyl acrylate	15	893.000
1-Bromo-3-methyl-2-butene	13	40.017	Butyl acrylate ethyl acrylate copolymer resins	08	19.950
2-Bromo-2-nitropropanediol	15	1205.001	n-Butyl alcohol (n-Propylcarbinol)	15	845.000
	15	1071.500	sec-Butyl alcohol (Methylethylcarbinol)	15	846.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
tert-Butyl alcohol (Trimethylcarbinol)	15	847.000	Butyl maleate	15	901.000
Butyl alcohol, ethoxylated and phosphated	12	76.100	n-Butyl mercaptan (1-Butanethiol)	02	90.910
Butyl alcohol, propoxylated	12	734.950	sec-Butyl mercaptan (2-Butanethiol)	02	90.915
n-Butylamine, mono	15	261.000	tert-Butyl mercaptan (2-Methyl-2-propanethiol)	02	91.000
sec-Butylamine, mono	15	264.000	Butyl mercaptopropionate	15	901.800
tert-Butylamine, mono	15	265.000	Butyl methacrylate	15	902.000
2-(sec-Butylamino)-4-ethylamino-6-methoxy-s-triazine	13	118.041	Butyl methacrylate-ethyl methacrylate copolymer resins	08	19.960
2-(tert-Butylamino)-4-ethylamino-6-(methylthio)-s-triazine	13	118.017	2 (and 3)-tert-Butyl-4-methoxyphenol (Butylated hydroxyanisole, or, BHA)	15	25.000
tert-Butylaminoethyl methacrylate	15	327.455	p-tert-Butyl- α -methylhydrocinnamalehyde	07	21.900
p-Butylaniline	03	368.000	Butylmorpholine	15	25.500
p-tert-Butylbenzaldehyde	03	370.000	Butyl naphthalenesulfonic acid, sodium salt	12	162.000
n-Butylbenzene	03	371.000	Butyl octyl phthalates	11	23.000
N-n-butyl benzenesulfonamide	11	0.500	Butyl oleate	11	90.000
N-tert-Butyl-2-benzothiazolesulfenamide	09	25.000	Butyl oleate, sulfated, sodium salt	15	909.000
Butyl benzyl phthalate	11	17.000	n-Butyl palmitate	12	257.000
n-Butyl-4,4-bis(t-butylperoxy)valerate	15	1284.200	n-Butyl perchlorocrotonate	11	96.200
Butyl butyl lactate	07	127.500	tert-Butyl peroxide (Di-tert-butyl peroxide)	15	902.500
sec-Butyl chloroformate	15	898.000	tert-Butyl peroxyacetate	15	1286.000
3-tert-Butyl-5-chloro-6-methyluracil	13	118.018	tert-Butyl peroxy-2-ethylhexanoate	15	26.000
2-tert-Butyl-p-cresol	03	377.000	tert-Butyl peroxyisobutyrate	15	1286.250
6-tert-Butyl-m-cresol	03	376.000	tert-Butyl peroxyisopropylcarbonate	15	1286.280
2-tert-Butyl cyclohexanol	07	93.710	tert-Butyl peroxy maleic acid	15	1286.300
2-sec-Butylcyclohexanone	07	93.700	tert-Butyl peroxyneodecanoate	15	1286.320
o-tert-Butylcyclohexyl acetate	07	93.800	tert-Butyl peroxyheptanoate	15	1286.330
p-tert-Butylcyclohexyl acetate (Verbeniax)	07	94.000	tert-Butyl peroxyphenylacetate	15	1286.500
tert-Butyldiethanolamine	15	327.500	o-sec-Butylphenol	15	1287.000
Butylene glycol adipate	11	58.750	o-tert-Butylphenol	03	383.000
1,3-Butylene glycol diborate/hexylene glycol borate anhydride	15	1100.155	p-sec-Butylphenol	03	385.000
1,3-Butylene glycol dimethacrylate	15	1100.200	p-tert-Butylphenol	03	384.000
1,3-Butylene glycol, ethoxylated	12	758.940	p-tert-Butylphenol-formaldehyde, alkoxylated	03	386.000
Butylene oxide	15	1303.000	Butylphenols, mixed	12	721.600
n-Butylethylamine	15	267.000	2-(p-tert-Butylphenoxy)cyclohexyl-2-propynyl sulfite	13	166.017
t-Butyl-2-ethylhexyl monoperoxycarbonate	15	1284.400	Butyl phosphate	12	92.400
Butyl ethyl magnesium	15	1374.800	Butyl phosphate, potassium salt	12	92.400
N-Butyl-N-ethyl- α , α -trifluoro-2,6-dinitro-p-toluidine (Benelfin)	15	1374.800	Butyl phthalyl butyl glycolate	11	92.500
Butyl formate	13	43.000	Butyl picolinium bromide	11	41.400
Butyl formol	15	899.000	Butyl ricinoleate	12	519.500
tert-Butyl glycidyl ether	15	1430.000	n-Butyl stearate	11	107.000
tert-Butyl hydroperoxide	15	1317.470	p-tert-Butyltoluene	11	117.000
tert-Butylhydroquinone	15	1285.000	Butyl 2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy]propanoate	03	388.000
4,4'-Butylidenebis(6-tert-butyl-m-cresol)	15	24.850	tert-Butyl urea	13	43.050
Butyl lactate	09	88.200	Butyl vinyl ether	15	1305.000
n-Butyllithium	15	900.000			
sec-Butyllithium	15	1372.000			
	15	1373.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
6-tert-Butyl-2,4-xyleneol	03	391,000	1-(Carboethoxyethyl) 5-[2-chloro-4-(trifluoromethyl) phenoxy]-2-nitrobenzoate	13	118,068
2-Butyne-1,4-diol	15	1075,000	2-Carbomethoxy-1-propen-2-yl dimethyl phosphate	13	216,000
Butyraldehyde	15	784,000	Carbon black feedstock	02	36,050
i-Butyraldehyde trimer	15	1151,700	Carbon disulfide	15	1296,600
Butyric acid	15	499,000	Carbon tetrachloride	15	1217,000
Butyric anhydride	15	500,000	4,4'-Carbonylbis(phthalic anhydride)	03	400,100
Butyrolactone	15	104,500	Carboplatin	06	278,100
Butyryl chloride	15	501,000	Carboxyethyl acrylate	15	911,500
Cadmium 2-ethylhexanoate	15	631,000	1-Carboxyethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	21,200
Cadmium laurate	15	677,300	1-Carboxyethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	21,250
Cadmium stearate	15	751,000	5(or 6)carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, potassium/sodium salts	12	52,500
Caffeine, natural	06	537,000	5(or 6)-Carboxy-4-hexyl-2-cyclohexene-1-octanoic acid, reaction products with castor oil	12	38,500
Caffeine, synthetic	06	538,000	Carboxylic acid - alkanolamine condensates, all other	12	582,000
Calcifediol (vitamin D3)	06	810,500	Carboxylic acid alkoxylates	15	1296,610
Calcitonin	06	691,500	Carboxylic acid amides, all other	12	588,000
Calcium acetate	15	591,000	Carboxylic acid-diamine and polyamine condensate, all other	12	587,000
Calcium t- α -alkylcarboxylate	15	668,000	Carboxylic acid-diamine and polyamine condensates, all other	12	374,000
Calcium ascorbate	06	808,000	Carboxylic acid-diamine and polyamine condensates, alkoxylated, all other	12	384,000
Calcium citrate	15	622,000	Carboxylic acid esters, all other	12	721,000
Calcium 2-ethylhexanoate	15	632,000	Carboxylic acids, all other	12	75,000
Calcium formate	15	648,000	Carboxylic acids with amide, ester or ether linkage, other	12	51,000
Calcium gluceptate	06	759,000	N-[2-(Carboxymethylamino)ethyl]-N-(2-hydroxyethyl) coconut oil amide, sodium salt	12	3,000
Calcium manganese tallate	15	170,000	N-Carboxy-N-methylanthranilic anhydride	03	351,400
Calcium naphthenate	14	298,000	Carboxymethyl-3-cocoamidopropyl dimethyl ammonium chloride, sodium salt	12	3,980
Calcium neodecanoate	15	703,000	(Carboxymethyl)[3-(coconut oil amido)propyl]dimethylammonium hydroxide, inner salt	12	4,000
Calcium oleate	15	718,500	(Carboxymethyl)dodecyl dimethylammonium hydroxide, inner salt	12	5,000
Calcium polycarboxiphil	06	591,600	1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolium hydroxide, sodium derivative, sodium salt	12	22,000
Calcium propionate	15	737,000	1-Carboxymethyl-1-(2-hydroxyethyl)-2-heptyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	22,600
Calcium ricinoleate	15	740,000			
Calcium stearate	15	752,000			
Calcium tallate	15	171,000			
Calcium undecylenate	06	135,000			
Camphene	15	29,000			
Campholenic aldehyde	15	29,100			
Canrenoate, potassium	06	736,700			
Canrenoate, potassium	07	111,500			
Capreomycin	06	39,150			
Capric acid (Ratio =2/1)	12	530,000			
Capric acid (Ratio 1/1)	12	546,010			
Caprolactam (2-Oxohexamethyliminine)	15	29,500			
Caprolactam magnesium bromide	15	29,505			
Caprylamphopropionate	12	9,800			
Captopril	06	355,400			
Caramiphen	06	425,800			
Caramiphen edisylate	06	426,000			
Carbidopa	06	830,500			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	24.000	Cephalothin, sodium	06	43.000
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	25.000	Cephapirin, sodium	06	43.300
1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolium hydroxide, sodium derivative, sodium salt	12	21.300	Cephredine	06	43.600
(1-Carboxytridecyl)trimethylammonium hydroxide, inner salt	12	8.000	Cerium 2-ethylhexanoate	15	632.200
Cardiovascular agents, all other	06	383.000	Cetylalcohol	15	911.700
Carvacrol	07	23.500	Cetyl lactate	15	912.000
l-Carvone	07	94.300	Cetylpyridinium chloride	06	256.000
β -Caryophyllene	07	94.500	Chelating agents, nitrolic acids and salts, all other	14	90.000
Castor oil acids (Ratio = 2/1)	12	531.000	Chemical indicators	14	91.000
Castor oil acids, potassium salt	12	52.000	Chemically defined linear alcohol, alkoxyated, all other	12	734.000
Castor oil acids, sodium salt	12	53.000	Chemical reagents and fine chemicals	14	92.000
Castor oil, ethoxylated	12	669.000	Chlorinated fatty materials	15	1327.700
Castor oil fatty acids, dehydrated	15	502.000	Chlorinated (Not otherwise halogenated) hydrocarbons, all other	15	1252.000
Castor oil, hydrogenated	15	1327.610	Chlorinated insecticides, cyclic, all other	13	147.000
Castor oil, polymerized	15	1327.620	Chlorinated paraffins, 35-64% chlorine	15	1219.000
Castor oil, sulfated, sodium salt	12	305.000	Chlorinated paraffins, less than 35% chlorine	15	1218.000
Cationic surface-active agents, all other	12	529.000	Chlorinated paraffins, 65% or more chlorine	15	1220.000
α -Cedrene epoxide (Andrane)	07	94.760	Chlorinated rubber, natural and synthetic	10	9.050
Cedrenol	07	94.780	Chloroacetic acid, mono	15	503.000
Cedrol	07	94.790	2-Chloroacetophenone	03	411.100
Cedryl acetate	07	94.800	Chloroalkyl diphosphate ester, neutral	15	1021.700
Cefaclor	06	39.300	Chloroalkyl phosphate ester	15	1021.702
Cefamandole	06	39.500	1-(3-Chloro-allyl)-D-3,5,7-triaza-1-azaoniaadamante chlori	03	413.300
Cefazolin, sodium	06	40.000	2-Chloro-4-aminotoluene	03	412.500
Cefonicid	06	40.100	o-Chloroaniline	03	414.000
Cefoxitin	06	40.200	p-Chloroaniline	03	415.000
Ceftazidime	06	40.500	Chlorobenzene, mono	03	427.000
Ceftazidime dihydrochloride	06	40.600	p-Chlorobenzenesulfonic acid	03	430.000
Ceftiofur	06	40.650	5-Chlorobenzotriazole	14	329.000
Cefuroxime	06	40.700	2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine)	13	44.050
Cellulose acetate	14	384.000	2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine)	13	44.100
Cellulose acetate butyrate	08	20.990	1-Chlorobutane (n-Butyl chloride)	15	1221.000
Cellulose acetate hexahydrophthalate	08	21.000	2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)acetanilide (Butachlor)	13	44.160
Cellulose acetate phthalate	15	29.900	2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor)	13	44.180
Cellulose acetate propionate	15	30.000	1-Chloro-1,1-difluoroethane (F-142b)	13	44.180
Cellulose ethers and esters, all other	08	21.010	Chlorodifluoromethane (F-22)	15	1255.000
Cellulose, oxidized	14	413.000	4'-Chloro-2',5'-dimethoxyacetanilide	15	1256.000
Celtone	06	635.000	2-Chloro-1,4-dimethoxybenzene	03	448.000
Cephalaxin	15	1430.250	1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene)	03	451.200
	06	41.000	4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt	03	453.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
2-Chloro-N-(2,6-dinitro-4-(trifluoromethyl)phenyl)-N-ethyl-6-fluorobenzenemethanamine	13	168.135	α -Chloropropyltrichlorosilane	15	1379.000
2-Chloro-N-ethoxymethyl-N-(2-ethyl-6-methylphenyl)acetamide (Acctocho)	13	44.190	Chloropropyltrimethoxysilane	15	1380.000
2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene (Oxyluorfen)	13	118.044	3-Chloropropyl-2,5-xylol ether	03	530.070
2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (Atrazine)	13	45.000	2-Chloropropidine	03	532.000
2-[4-Chloro-6-(ethylamino)-s-triazin-2-ylamino]-2-methylpropionitrile (Cyanazine)	13	45.100	Chlorosulfonated polyethylene (CSM) type	10	9.100
p-[(2-Chloroethyl)methylamino]benzaldehyde	03	463.000	2-(4-Chlorosulfonylphenyl)ethyltrichlorosilane	03	539.200
2-(Chloroethyl)phosphonic acid	13	231.250	2-Chloro-1,1,2-tetrafluoroethane (F-124)	15	1257.500
Chloroform	15	1224.000	Chlorothiazide	15	34.600
1-Chloro-4-hydroxyanthraquinone	03	467.000	<i>o</i> -Chlorotoluene	06	719.000
2-Chloro-N-isopropylacetanilide (Propachlor)	13	45.200	α -Chlorotoluene (Benzyl chloride)	03	543.000
Chloromethane (Methyl chloride)	13	1226.000	3-Chloro-p-toluidine [NH ₂ =1]	03	545.000
2-Chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]benzenesulfonamide	15	118.054	Chlorotrifluoroethylene (Trifluorovinyl chloride)	03	547.000
Chloromethylene dimethyliminium (Amide chloride)	15	231.700	2-Chloro-1,1,2-trifluoroethyl methyl ether	15	1258.000
Chloromethyl methyl ether	15	1307.000	Chlorotrifluoromethane (F-13)	15	1259.200
4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt	13	109.011	5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-introbenzoic acid, sodium salt	15	1259.000
4-Chloro-2-methylphenoxyacetic acid, iso-octyl ester	13	109.010	Chlorotrimethylsilane	13	118.051
2-(4-Chloro-2-methylphenoxy)propionic acid, dimethylamine salt	13	118.048	4-Chloro-3,5-xyleneol	15	1381.000
1-Chloro-2-nitrobenzene (Chloro- <i>o</i> -nitrobenzene)	03	495.000	Chlorpheniramine	03	565.000
1-Chloro-4-nitrobenzene (Chloro- <i>p</i> -nitrobenzene)	03	498.000	Chlorpheniramine maleate	06	88.500
4-Chloro-3-nitrobenzotrifluoride	03	508.100	Chlorpromazine	06	89.000
2-Chloro-4-nitrotoluene	03	512.000	Chlorpromazine hydrochloride	06	483.800
5-Chloro-2-pentanone	15	811.000	Chlorpropamide	06	484.000
1-Chloro-1-penten-3-one (β -Chlorovinyl ethyl ketone)	15	812.000	Chlorpropixene	06	687.000
2-Chlorophenothiazine	03	519.000	Chlorotracycline	06	497.000
α -(2-Chlorophenyl)- α -(4-chlorophenyl)-5-pyrimidinemethanol	13	40.020	Chlorotracycline (medicinal grade)	06	31.000
N-(4-Chlorophenyl)-N'-(3,4-dichlorophenyl)urea	03	523.100	Chlorotracycline (animal feed grade)	06	64.000
(<i>m</i> -Chlorophenyl)diethanolamine	03	522.600	Cholecalciferol (vitamin D ₃)	06	811.000
4-Chloro- <i>o</i> -phenylenediamine	03	523.000	Cholesterics and hydrocholesterics, all other	06	604.000
α -(2-Chlorophenyl)- α -(4-fluorophenyl)-5-pyrimidinemethanol	13	40.019	Cholesterol esterase	14	110.000
β -(4-Chlorophenyl)methyl- α -(1,1-dimethylethyl)-1,2,4-triazole-1-ethanol	13	168.994	Cholesterol oxidase	14	122.000
2-(2-Chlorophenyl)methyl-4,4-dimethyl-3-isoxazolinone	13	118.067	Choline	15	342.000
4-Chlorophthalic acid	03	528.000	Choline bicarbonate	06	605.000
3-Chloro-1,2-propanediol (Glycerol α -chlorohydrin)	15	1076.000	Choline bitartrate	06	606.000
3-Chloropropene (Allyl chloride)	15	1229.000	Choline chloride (animal feed grade)	06	607.000
1-(3-Chloropropyl)-4-methylpiperazine	03	530.000	Choline chloride (medicinal grade)	06	608.000
			Choline citrate	06	610.000
			Choline dihydrogen citrate	06	611.000
			Choline magnesium salicylate	06	385.300
			Choline salicylate	06	399.300
			Chromium 2-ethylhexanoate	15	632.500
			Chromium naphthenate	14	299.000
			Cimeidine	06	619.400
			Cimetidine hydrochloride	06	619.600
			Cineole [eucalyptol]	07	23.700
			Cinnamyl acetate	07	25.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Cinnamyl nitrile	07	27,500	Coconut oil acids, diethanolamine salt	12	29,100
Cinnamyl propionate	07	28,000	Coconut oil acids-dimethylaminopropylamine condensate (amine/acid ratio = 1/1)	12	586,480
Cisplatin	06	127,700	Coconut oil acids-N,N-dimethyltrimethylenediamine condensate	12	360,000
Citral dimethyl acetal	07	71,000	Coconut oil acids-ethanolamine condensate, ethoxylated	12	576,000
Citric and acetylcitric acid esters, all other	11	505,000	Coconut oil acids-ethanolamine salt, sulfated, potassium salt	12	29,200
Citric acid	15	128,000	Coconut oil acids and oleic acid, potassium salt	12	248,000
Citronellyl acetate	07	130,000	Coconut oil acids, potassium salt	12	55,700
Citronellyl formate	07	131,000	Coconut oil acids, sodium salt	12	54,000
Citronellyl isobutyrate	07	131,500	Coconut oil acids, 2-sulfoethyl ester, sodium salt	12	55,000
Citronellyl nitrile	07	131,300	Coconut oil acids, triethanolamine salt	12	198,000
Citronellyl propionate	07	131,500	N-(Coconut oil acyl)-N-methylaurine, sodium salt	12	29,000
Clindamycin	06	45,000	N-(Coconut oil acyl)sarcosine, sodium salt	12	183,000
Clorazepate dipotassium	06	498,000	Coconut oil alcohol, ethoxylated	12	40,000
Cloxacillin, sodium	06	13,000	3-[(Coconut oil alkyl)amidoethylene-(2-hydroxyethyl) amino]propionic acid	12	735,000
Cobalt acetate	15	593,000	(Coconut oil alkyl)amine	12	10,130
Cobalt t- α -alkylcarboxylate	15	669,000	(Coconut oil alkyl)amine acetate	12	418,000
Cobalt borate neodecanoate complexes	09	180,300	(Coconut oil alkyl)amine, ethoxylated	12	392,000
Cobalt 2-ethylhexanoate	15	633,000	Coconut oil (alkyl)amine, ethoxylated and phosphated	12	326,000
Cobalt manganese acetate	15	593,010	Coconut oil alkyl amine, propoxylated	12	327,100
Cobalt manganese tellate	15	172,010	N-[(Coconut oil alkyl)amino]butyric acid, sodium salt	12	327,550
Cobalt naphthenate	14	301,000	(Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated) methylammonium chloride	12	483,000
Cobalt neodecanoate	15	755,000	N-(Coconut oil alkyl)sulfosuccinamic and disodium salt	12	456,000
Cobalt stearate	15	703,000	N-(Coconut oil alkyl)trimethylenediamine	12	176,950
Cobalt tallate	15	172,000	Coconut oil amide	15	407,000
Cocaine	15	669,015	Coconut oil, ethoxylated	12	232,000
Cocaine/zirconium t- α -alkylcarboxylate	06	701,500	Coconut oil, sulfated, sodium salt	12	669,200
N-Cocoalkyl-1,3-propylenediamine acetate	13	245,011	Coconut oil and tallow acids (Ratio = 2/1)	12	306,000
Cocoamidoamphoglycinate	12	9,250	Codeine	06	533,000
3-Cocoamido-N,N-dimethyl propylamine oxide	12	385,285	Cod oil, sulfated, sodium salt	12	429,000
N-(Cocoamidopropyl, N,N-acetic acid) ammonium salt	12	482,600	Cod oil, sulfated, sodium salt	12	297,250
Cocoamidopropyl betaine	12	9,255	Colestipol hydrochloride	06	298,000
Cocoamidopropyl dimethyl amine	12	328,300	Complex glycerol esters, all other	12	614,500
Cocoamidopropyl dimethyl amine oxide	12	385,280	Complex linear polyesters and polymeric plasticizers, all other	12	651,000
N-Cocoamido-propyl-N,N-dimethylamine oxide	12	9,580	Copper acetate	11	132,000
3-[3-(Cocoamidopropyl)dimethylammonio]-2-hydroxypropane sulfonate	12	9,600	Copper t- α -alkylcarboxylate	15	594,000
3-Cocoamidopropyl-2-hydroxy-3-sulfopropylidimethyl ammonium hydroxide, inner salt	12	9,700	Copper 2-ethylhexanoate	15	669,050
Cocoamphocarboxyglycinate	12	9,260	Copper gluconate	06	762,000
Cocoamphocarboxypropionate	12	9,265	Copper oleate	15	718,000
Cocodimethyl ethyl ammonium ethyl sulfate	12	9,280	Copper tallate	15	173,000
Coconut oil acids	12	482,750	Corn oil acids, potassium salt	12	56,000
Coconut oil acids (Ratio = 1/1)	12	569,000	Corn oil acids, sodium salt	12	57,000
Coconut oil acids (Ratio = 2/1)	12	564,000			
Coconut oil acids (Ratio = 1/1)	12	532,000			
Coconut oil acids (Ratio = 2/1)	12	546,000			
Coconut oil acids	12	556,000			
Coconut oil acids	12	554,000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Corticotropin	06	692.000	3-Cyanopyridine	03	584.550
Cortisone acetate	06	653.000	Cyanuric acid	15	36.000
Coumarin	07	29.000	Cyclic amphoteric surface-active agents, all other	12	218.000
Coumarone-indene resins	08	22.000	Cyclic chemicals, all other	15	28.000
Creosote oil (Dead oil) creosote content in solution (100 Percent basis)	01	21.000	Cyclic fungicides, all other	13	40.000
Creosote oil (Dead oil) creosote in coal tar solution (100 Percent solution basis)	01	20.000	Cyclic herbicides, all other	13	118.000
Creosote oil (Dead oil) distillate as such (100 Percent creosote basis)	01	19.000	Cyclic insecticides, all other	13	166.000
m-Cresol	03	569.000	Cyclic intermediates, all other	03	1554.000
p-Cresol	03	572.000	Cyclic plasticizers, all other	11	58.000
o-Cresol, from petroleum	03	571.000	Cyclic silizane	15	36.250
(m,p)-Cresol, from petroleum	03	574.000	Cyclobenzaprine hydrochloride	06	477.500
Cresylic acid (Less than 75 percent distilling over 215° C)	02	12.000	Cyclohexane	03	586.000
Cresylic acid, refined, from petroleum	03	580.000	Cyclohexane carbonitrile	15	36.280
Crtonaldehyde	15	786.000	1,2-Cyclohexanedicarboxylic acid anhydride	03	588.000
Crtronic acid (2-Butenoic acid)	15	506.000	1,4-Cyclohexane dimethanol dibenzoate	15	36.290
Crude acetate mixture (Linalyl, neryl, geranyl acetates, main components)	07	162.100	Cyclohexanesulfamic acid, sodium salt (Sodium cyclamate)	07	82.000
Crude coal tar	01	0.500	Cyclohexanethiol	07	84.000
Crude coal tar solvent	01	22.030	Cyclohexanol	15	36.800
Crude light oil	01	1.000	Cyclohexanone	03	589.000
Crude tar acid oils having a tar acid content of 5 percent to less than 24 percent	01	15.000	Cyclohexanone oxime	03	590.000
Cumene (isopropyl benzene)	03	581.000	Cyclohexene	03	591.000
Cumene hydrogen peroxide	03	581.100	Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid), disubstituted, polyester salts, all other	03	592.000
Cumene hydroperoxide	15	35.000	4-Cyclohexene-1,2-dicarboxylic anhydride	15	39.500
Cumenesulfonic acid, ammonium salt	12	144.000	2-Cyclohexene-1-octanoic acid, 5 (and 6)-carboxy-4-hexyl, C ₂₀ H ₃₈ O ₄	03	594.100
Cumenesulfonic acid, sodium salt	12	144.100	Cyclohexene oxide	03	594.296
Cuminy acetate	07	29.200	β-(1-Cyclohexenyl)ethylamine	06	65.000
α-Cumyl peroxyneodecanoate	15	35.400	Cycloheximide	03	595.000
α-Cumyl peroxyneohexanoate	15	35.410	Cyclohexylamine	03	26.000
Cumyl phenolate isopropoxy titanium salt	12	776.500	N-Cyclohexyl-2-benzothiazolesulfenamide	09	26.000
Cyanoacetic acid (Malonic nitrile)	15	438.600	3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1H,3H)-dione	13	118.019
4-(Cyanoacetyl)morpholine	03	582.200	1,4-Cyclohexylenedimethanol	15	41.000
Cyanocobalamin (animal feed grade)	06	795.000	Cyclohexyl ethyl acetate	07	95.170
Cyanocobalamin (medicinal grade)	06	796.000	Cyclohexyl methacrylate	15	41.200
N-Cyanoethyl-N-acetoxyethylaniline	03	583.500	Cyclohexyl methanol dimethyl acetate	07	95.190
1-(2-Cyanoethyl)ethyl urea	15	349.000	Cyclohexylmethyl dimethoxysilane	03	597.300
N-Cyano-s-methyl-N-(4-methyl-5-imidazolyl)methylthioethylisothiourea	03	584.213	N-Cyclohexyl-N-phenyl-p-phenylenediamine	09	58.000
Cyano-3-phenoxybenzyl-cis, trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxylate	13	166.049	N-(Cyclohexylthio)phthalimide	09	124.250
Cyano(3-phenoxyphenyl)methyl-4-chloro-α-(1-methylethyl)benzeneacetate	13	166.024	cyclooctadiene	03	597.800
			Cyclopentane	02	11.000
			α-Cyclopropyl-α-(p-methoxyphenyl)-5-pyrimidine methanol (Ancymidol)	13	168.140
			2-Cyclopropylmethylamino-5-chlorobenzophenone	03	601.780

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
2-(N-Cyclopropylmethyl-N-phthalimidoacetyl)-amino-5-chlorobenzophenone	03	601.800	Diallyl maleate	15	913.000
N-cyclopropyl-1,3,5-triazine-2,4,6-triamine	13	166.048	Di-amine derivatives of dimer acids	15	349.300
Cyclosols	02	4.010	Diamines and polyamines, all other	12	417.000
p-Cymene	03	602.000	1,3-Diaminocyclohexane	03	618.100
Cypermethrin	13	166.029	4,4-Diaminodiphenyl ether	15	45.840
Cyproheptadine hydrochloride	06	91.000	2,6-Diaminopyridine	03	634.000
Cytarabine	06	278.300	Diammonium dithiodiglycolate	15	627.400
Decabromodiphenyl ether (DBDP)	06	692.500	1,1-Di(t-amyloperoxy)cyclohexane	15	46.200
trans-Decahydro-β-naphthol	15	43.005	Di-tert-amylo-phenyl acid phosphate	14	157.000
Decanal (Capraldehyde)	07	29.700	2,5-Dianilinoterephthalic acid	03	640.000
n-Decane	07	132.000	Diarylenediamines, mixed	09	59.000
Decanoic acid (Capric acid)	15	1337.000	Diatrizoate, sodium	06	564.000
1-Decanol	15	506.500	1,8-Diazabicyclo (5.4.0)undecane	15	46.600
Decanoyl chloride	15	850.500	1,4-Diazabicyclo(2.2.2)octane	15	47.000
Decanoyl peroxide	15	507.000	4-Diazo-2,5-diethoxymorpholinobenzene	14	336.000
Decyl acetate	07	1291.000	Diazoxide	06	355.500
Decyl alcohol, ethoxylated	12	132.500	Dibenzylamine	09	40.000
Decyl alcohol, ethoxylated and phosphated	12	727.000	Dibenzylidithiocarbamic acid, sodium salt	09	9.000
Decyldiphenyl oxide	03	76.200	Dibenzylidithiocarbamic acid, zinc salt	09	10.000
Decyl mercaptans	02	603.000	Dibenzylglycerol	15	49.400
Decyl and octyl alcohols, ethoxylated	12	92.500	N,N-Dibenzylhydroxylamine	14	476.000
Decyl and octyl alcohols, ethoxylated and propoxylated	12	736.000	m-Dibromobenzene	03	658.000
Decyl and octyl phosphate	12	736.100	p-Dibromobenzene	03	659.000
Decyl and octyl sulfate, sodium salt	12	92.000	1,4-Dibromobutane	03	659.000
Decyl oleate	11	217.000	1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled)	15	1212.500
Decyloxypoly(ethyleneoxy)ethyl chloride	12	90.300	Dibromodifluoromethane	13	217.000
Decyl polyphosphate, sodium salt	12	728.000	(1,2-Dibromoethyl)benzene	15	1260.000
Decyl sulfate, sodium salt	12	95.000	3,5-Dibromo-4-hydroxybenzotrile (Bromoxynil)	03	659.300
Demeccycline	12	218.000	Dibromomethane (Methylene bromide)	13	118.031
Dexamethasone	06	32.000	2,6-Dibromo-4-nitroaniline	15	1213.000
Dexamethasone sodium phosphate	06	654.000	Dibromostyrene	03	660.100
Dexpanthenol	06	655.000	1,2-Dibromo-1,1,2,2-tetrafluoroethane	03	662.500
Dextroamphetamine	06	789.000	Dibucaine	15	1261.000
Dextroamphetamine sulfate	06	637.000	Dibucaine hydrochloride	06	702.000
Diagnostic agents, other than roentgenographic contrast media, all other	06	514.000	p-Dibutoxybenzene (DBB)	06	703.000
Diallylbenzene	06	517.000	Di(2-(2-butoxyethoxy)ethyl) adipate	03	665.100
Diallyldithiocarbamic acid derivative	06	430.000	Di(2-butoxyethyl) phthalate	11	59.000
Di(C5-C6 alkyl)naphthalenesulfonic acid	06	582.000	Di(2-butoxyethyl) phthalate	11	59.200
Diallylamine	03	608.200	2,5-Dibutoxy-4-morpholinobenzene	11	24.000
Diallyldimethyl ammonium chloride	03	127.950	(DBB Sulfate)	03	666.100
Diallyl isophthalate	03	162.500	2,5-Dibutoxy-4-morpholinobenzene	03	666.200
	15	258.100	2,6-Di-tert-butyl-alpha-dimethylamino-p-cresol	03	666.343
	13	175.013	Di-n-butylamine	15	262.000
	15	349.200	4,4'-Di-sec-butylaminodiphenylmethane	15	156.000
	08	4.030	2-Dibutylaminoethanol	14	156.000
			Dibutylaminoethanol, condensed with formaldehyde	15	350.000
				15	350.505

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Dibutyl butylphosphonate	15	1022.000	2,4-Dichloro-6-(o-chloroanilino)-s-triazine	13	3.000
Dibutyl-p-cresol	03	666.600	2,2-Dichloro-1,1-difluoroethyl methyl ether	15	1308.000
2,6-Di-t-butyl-p-cresol	03	865.500	Dichlorodifluoromethane (F-12)	15	1262.000
2,6-Di-tert-butyl-p-cresol (BHT, or, Butylated hydroxytoluene)	15	51.000	1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb)	13	4.000
2,5-Di-sec-butyldecylhydroquinone	09	88.400	1,3-Dichloro-5,5-dimethylhydantoin	15	54.000
Di-t-butyl diperoxyphthalate	15	53.200	Dichlorodimethylsilane	15	1382.000
Di-tert-butyl disulfide	02	92.000	Dichlorodiphenylsilane	03	690.000
Dibutyldithiocarbamic acid, nickel salt	09	128.100	1,2-Dichloroethane (Ethylene dichloride)	15	1233.000
Dibutyldithiocarbamic acid, sodium salt	09	128.000	2,6-Dichloro-3-methylaniline	03	694.050
Dibutyldithiocarbamic acid, zinc salt	09	130.000	Dichloromethylphenylsilane	03	696.000
Di-tert-butylethyldiamine	15	267.800	Dichloromethylsilane	15	1383.000
Dibutyl hydrogen phosphite	15	1023.000	Dichloromethylvinylsilane	15	1384.000
2,5-Di-tert-butylhydroquinone	15	53.000	2,6-Dichloro-4-nitroaniline	03	697.000
Di-n-butylmagnesium	15	1374.200	2,4-Dichloro-4-(2-nitro-4-trifluoromethylphenyl)cinamic ac	03	698.000
Dibutyl maleate	15	916.000	2,4-Dichlorophenoxyacetic acid (2,4-D)	03	701.000
Dibutyl naphthalenesulfonic acid	12	163.000	2,4-Dichlorophenoxyacetic acid, 2-butoxyethyl ester	13	86.000
2,6-Di-t-butyl-4-nonylphenol	15	53.330	2,4-Dichlorophenoxyacetic acid, sec-butyl ester	13	87.000
1,1-Di(t-butyl peroxy) cyclohexane	15	50.530	2,4-Dichlorophenoxyacetic acid, dimethylamine salt	13	90.000
Di(sec-butyl)peroxydicarbonate	15	1291.500	2,4-Dichlorophenoxyacetic acid, esters and salts, all other	13	91.000
1,1-Di(t-butyl peroxy)-3,5-trimethyl cyclohexane	15	50.540	2,4-Dichlorophenoxyacetic acid, ethanalamine and isopropanolamine salts	13	99.000
2,4-Di-tert-butylphenol	03	667.000	2,4-Dichlorophenoxyacetic acid, iso-octyl ester	13	92.000
2,6-Di-tert-butylphenol	03	667.250	2,4-Dichlorophenoxyacetic acid, isopropyl ester	13	95.000
N,N'-Di-sec-butyl-p-phenylenediamine	14	180.000	2,4-Dichlorophenoxyacetic acid, lithium salt	13	96.000
Dibutyl phthalate (including diisobutyl phthalate)	11	25.000	2-(2,4-Dichlorophenoxy)propionic acid, dimethylamine salt	13	97.000
Dibutyl pyrophosphate	15	1023.500	2-(2,4-Dichlorophenoxy)propionic acid, isooctyl ester	13	118.052
Dibutyl sebacate	11	112.000	2,6-Dichlorophenylamidinourea hydrochloride	13	118.060
Dibutyltin bis(isooctylmercaptoacetate)	15	1401.200	3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron)	03	700.500
Dibutyltin dichloride	15	1402.500	3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron)	13	53.000
Dibutyltin maleate	15	687.000	2-(3,4-Dichlorophenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione (Methazole)	13	54.000
Di-n-butylxantho disulfide	09	152.000	1-[-(2,4-Dichlorophenyl)4-propyl-1,3-dioxolan-2-ylmethyl]-1H-1,2,4-triazole	13	118.036
N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt	12	177.000	1,3-Dichloropropene	13	118.065
Dicacetyl borate, di-o-tolylguanidine salt	09	17.000	2,3-Dichloropropene	13	238.000
Dichloralphenazone	06	467.250	3,4'-Dichloropropionanilide (Propanil)	15	1236.000
2,2-Dichloroacetyl chloride	15	507.500	2,6-Dichloropyridine	13	56.000
3,4-Dichloroaniline	03	670.000	3,7-Dichloro-8-quinolinic Acid	03	703.500
3,6-Dichloro-2-anisic acid (Dicamba)	13	50.000	Dichlorotetrafluoroethane (F-114)	13	118.070
Dichlorobenzanthrone	03	675.100	Dichloro-trifluoroethane (F-123)	15	1263.000
o-(and p)-Dichlorobenzene	03	678.000	Dichlorophenamide	06	738.000
o-Dichlorobenzene	03	677.000	Dicloxacillin, sodium	06	14.000
m-Dichlorobenzene	03	676.000	Dicresylphosphorodithioic acid	14	130.000
p-Dichlorobenzene	03	679.000			
3,3'-Dichlorobenzidine base and salts	03	682.000			
2,6-Dichlorobenzonitrile	13	51.100			
3,4-Dichlorobenzotrifluoride	03	683.150			
3,3'-Dichloro-4,4'-biphenyl	03	684.500			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Dicresylphosphorodithioic acid, ammonium salt	14	131.000	N,N-Diethylaniline	03	727.000
Dicresylphosphorodithioic acid, sodium salt	14	132.000	Diethylbenzene	03	729.000
Dicumyl peroxide	15	56.500	Diethylcarbamazine citrate	06	118.000
Dicyandiamide resins	08	4.050	Diethylcarbamoyl chloride	15	359.000
Dicyanodiamide formaldehyde ammonium chloride polymer	14	477.000	Diethyl carbonate (Ethyl carbonate)	15	922.000
Dicyclohexylamine	03	712.000	N,N-Diethylcyclohexylamine	03	730.000
Dicyclohexyl phthalate	11	27.000	O,O-Diethyl O-(2-diehyllamino-6-methyl-4-pyrimidinyl) phosphorothioate	13	166.034
Dicyclopentadiene (includes Cyclopentadiene)	03	714.000	3,5-Diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	03	730.600
Dicyclopentadienyl acrylate	15	57.790	N,N'-Diethyl-N,N'-diphenylurea	15	57.400
Dicyclopentadienylchromium (Chromocene)	15	57.800	Diethyldithiocarbamic acid, cadmium salt and bis(diehythiocarbamoyl)sulfide, mixture	09	132.000
Dicyclopentadienyl methacrylate	15	57.860	Diethyldithiocarbamic acid, tellurium salt	09	136.000
Didecyl adipate	15	917.000	Diethyldithiocarbamic acid, zinc salt	09	137.000
Didecyl dimethyl ammonium chloride	12	483.500	N,N-Diethyldodecanamide	15	235.000
N,N-Didecylmethylamine	12	432.950	Diethylene glycol	15	1153.000
2,5-Di-(1,1-dimethylpropyl)hydroquinone	09	89.000	Diethylene glycol adipate	15	1100.800
Didodecylbenzenesulfonic acid, sodium salt	12	137.000	Diethylene glycol, borated	15	1101.000
Diesel fuel additives, acyclic, all other	14	151.000	Diethylene glycol dibenzoate	11	1.300
Diesel fuel additives, cyclic, all other	14	152.000	Diethylene glycol dimethacrylate	15	1103.000
Diethanolamine	15	380.000	Diethylene glycol esters, all other	12	615.000
Diethanolamine condensate, all other	15	555.000	Diethylene glycol monoester of tall oil acids	12	606.000
Diethanolamine condensates (Amine/acid = 2/1), all other	12	545.000	Diethylene glycol monoester of tallow acids	12	607.000
Diethanolamine condensates, amine/acid ratio=1/1, all other	12	553.000	Diethylene glycol monolaurate	12	608.000
α,α -Diethoxyacetophenone	03	716.200	Diethylene glycol mono- <i>n</i> -propyl ether	15	1154.000
Diethoxyethane	15	1308.500	Diethylene glycol monostearate	12	610.000
2,5-Diethoxy-4-morpholinobenzene diazonium chloride	14	338.000	Diethylene glycol sesquiester of tall oil acids	12	611.000
Diethylaluminum chloride	15	1356.000	Diethylene glycol succinate	11	125.500
Diethyl aluminum ethoxide	15	1356.200	Diethylene glycol terephthalate	12	614.200
Diethylaluminum iodide	15	1357.000	Diethylenetriamine	15	269.800
Diethylamine	15	277.000	Diethylenetriamine, alkoxylated	12	327.680
p-(Diethylamino)benzaldehyde	03	721.000	(Diethylenetriamine)pentamethylenephosphonic acid	14	31.000
4-(Diethylamino)benzaldehyde, 1,1-diphenylhydrazone	03	721.500	(Diethylenetriamine)pentamethylenephosphonic acid, sodium salt	14	32.000
p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline zinc chloride)	14	340.000	(Diethylenetriamino)pentaacetic acid	14	33.000
2-Diethylaminoethanol (N,N-Diethylethanolamine)	15	355.000	O,O-Diethyl S-(ethythio)methyl phosphorodithioate (Phorate)	14	35.000
2-(2-Diethylaminoethoxy)ethanol	15	356.000	Di(2-ethylhexyl) adipate	13	221.000
Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt	15	357.100	Di(2-ethylhexyl) azelate	11	60.000
2-Diethylaminoethyl methacrylate	15	358.000	Di(2-ethylhexyl)chloroendate	11	67.000
N-(3-Diethylamino-1,4-methoxyphenyl)acetamide	03	722.600	Di(2-ethyl-1-hexyl) maleate	15	57.500
3-Diethylamino-6-methyl-7-(2,4-dimethylanilino) fluoran	15	57.280	Di-(2-ethylhexyl) peroxydicarbonate	15	928.000
o-(2-(Diethylamino)-6-methyl (4-pyrimidinyl) o,o dimethyl phosphorothioate	13	152.600	Diethylhexyl phosphoric acid	15	1292.000
Diethylaminopropylamine	15	269.000	Di-2-ethylhexyl phosphorodithioic acid	15	1024.200
			Di(2-ethylhexyl) phthalate	14	233.000
				11	34.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Di(2-ethylhexyl) sebacate	11	113.000	Dihydrondicyclopentadienyl propionate (Cyclaprop)	07	95.470
Diethyl hydrogen phosphite	15	1026.000	(Verdyl propionate extra)	07	134.200
Diethylhydroxylamine	15	360.000	Dihydro pentamethyl indanone	15	1293.530
Diethyl isophthalate	11	27.900	2,5-Dihydroperoxy-2,5-dimethylhexane		
O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate (Diazinon)	13	155.000	1,2-Dihydro-3,6-pyridazinone (Maleic hydrazide) (MH)	13	168.300
Diethyl maleate	15	930.000	Dihydrostreptomycin	06	6.000
Diethyl oxalate (Ethyl oxalate)	15	934.000	Dihydro terpineol	07	95.490
o,o-Diethyl-o-phenyl phosphorothioate	15	57.600	Dihydraterpineyl acetate	07	166.367
Diethyl phosphorochloridothionate	15	1027.000	2,5-Dihydrothiophene-1,1-dioxide (Sulfolene)	15	58.000
Diethyl phthalate	11	28.000	1,2-Dihydro-2,4-trimethylquinoline	09	69.000
Diethylpropion hydrochloride	06	544.000	Dihydroxyaluminum aminoacetate	06	620.000
Diethyl sebacate	07	133.000	2,4-Dihydroxybenzaldehyde	03	768.200
Diethyl succinate	07	134.000	2,4-Dihydroxybenzophenone	15	58.500
Diethyl sulfide (Ethyl sulfide)	02	92.810	Di(hydroxy)bis(ammoniumlactato)titanium	15	1059.500
1,3-Diethyl-2-thiourea	15	361.000	2,2'-Dihydroxy-4,4'-dimethoxybenzophenone	15	59.000
N,N-Diethyltoluamide (DEET)	13	148.000	2,3-dihydroxy-2,2-dimethyl-7-benzofuranyl	13	166.052
N,N-Diethyl-m-toluidine	03	739.000	N,N-di(hydroxyethyl)-n-carboxymethyl tallow ammonium quat, inner salt	12	10.320
N,N-Diethyl-p-toluidine	03	739.500	N,N-Dihydroxyethylglycine, sodium salt	14	39.000
O,O-Diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate	13	156.100	N,N-Dihydroxyethyl tallow glycinate	12	10.325
3,9-Diethyl-6-iridecyl sulfate, sodium salt	12	242.000	4,4-Dihydroxymethyl-2-oxazoline	15	62.050
Diethylzinc	15	1408.000	6,7-Dihydroxy-2-naphthalenesulfonic acid	03	774.000
Diflorasone diacetate	06	655.400	16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone)	03	776.000
Diflunisal	06	385.500	m-Diiodobenzene	03	777.000
1,1-Difluoroethane	15	1264.000	Diiodomethane (Methylene iodide)	15	1277.000
Di-(n-heptyl-n-nonyl) phthalate	11	28.900	Diiodomethyl-p-tolylsulfone	15	72.500
Di-(n-heptyl-n-nonyl) undecyl phthalate	11	28.925	Diisobutyl adipate	11	61.000
Di-n-hexyl adipate	11	60.600	Diisobutylaluminum chloride	15	1358.000
Di-n-hexyl magnesium	15	1374.500	Diisobutylaluminum hydride	15	1359.000
Dihydrocarvone	07	134.050	Diisobutylamine	15	263.000
Dihydrocoumarin	07	29.780	Diisobutyl dimethoxychloro silane	15	1385.200
6,11-Dihydrodibenz(b,e)oxepin-11-one	03	740.500	Di-isobutylene (Di-isobutene)	02	74.000
2,3-Dihydro-2,2-dimethyl-7-benzofuranol	03	744.100	Diisobutylene isomers	15	1337.200
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl(dibutylamino)thio]methyl carbamate	13	148.300	Diisobutylene maleate	12	707.000
2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methyl carbamate	13	148.400	Diisodecyl adipate	11	62.000
2,3-Dihydro-5,6-dimethyl-1,4-dithiin-1,1,4,4-tetraoxide	13	168.996	Diisodecyl phthalate	11	30.000
2-(2,3-Dihydro-1,3-dioxo-1H-inden-2-yl)-(quinolinyl)-6-methylbenzothiazole-7-sulfonic acid	03	752.600	Diisononanoyl peroxide	15	1293.570
1,2-Dihydro-6-ethoxy-2,4-trimethylquinoline (Ethoxyquin)	09	68.000	Diisononyl adipate	11	62.500
Dihydrolinalool	07	136.500	Diiso-octyl adipate	11	30.100
1,3-Dihydro-4(or 5)-methyl-2H-benzimidazole-2-thione	09	41.450	Diiso-octyl phthalate	11	63.000
Dihydro myrcenol	07	134.100	Diisopropanolamine	15	408.000
Dihydrondicyclopentadienyl acetate (Cyclacet)	07	95.330	m-Diisopropenybenzene	03	777.500
			Diisopropyl adipate	11	63.200
			Diisopropylamine	15	286.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
2-Diisopropylaminoethanol (N,N	15	362.000	Dimethylaminoethyl acrylate, dimethyl sulfate,	15	367.800
Diisopropylethanolamine)			quaternary salt		
Diisopropylbenzene hydroperoxide	15	64.000	Dimethylaminoethyl acrylate, methyl chloride, quaternary	15	367.900
Diisopropyl dimerate	15	968.980	salt	15	367.930
Diisopropyl hydrogen phosphite	14	272.000	Dimethylaminoethyl chloride	15	272.500
Diisopropyl ketone (2,4-Dimethyl-3-pentanone)	15	817.000	2,2-Dimethyl-N-(2-aminoethyl)-1,2-ethane diamine	15	368.000
Diisopropyl/naphthalene sulf. acid amine salts	15	65.500	Dimethylaminoethyl methacrylate	15	
Diisopropyl/naphthalenesulfonic acid, sodium salt	12	166.000	Dimethylaminoethylmethacrylate, dimethyl sulfate,	15	368.200
N,N'-Diisopropyl-p-phenylenediamine	14	181.000	quaternary salt		
S-(O,O-Diisopropyl phosphorodithioate) ester of N-(α	13	58.000	Dimethylaminoethylmethacrylate, methyl chloride,	15	369.000
mercaptoethyl)benzenesulfonamide (Bensulcide)			quaternary salt	15	369.010
Diisopropyl sebacate	11	114.100	Dimethylaminoethylmethacrylate sulfate	15	369.500
Disostearyl dimerate	15	968.985	Dimethylaminomethanol	03	802.000
Diketene	15	104.620	m-Dimethylaminophenol	15	369.700
Dilauryl-3,3'-thiodipropionate	15	940.000	1-(Dimethylamino)-2-propanol	15	274.000
Dilevalol hydrochloride	06	355.650	Dimethylaminopropylamine	15	370.000
Dimenhydrinate	06	80.000	Dimethylaminopropyl chloride	15	236.780
Dimer acid (C ₃₆ aliphatic dibasic acid)	15	509.000	Dimethylaminonium hydrogen isophthalate	09	41.725
Dimeric dialkyl amine	12	419.300	N,N-Dimethylaniline	03	805.000
N-(Dimeric dialkyl)trimethylenediamine	12	407.700	N,N-Dimethylbenzylamine	03	809.000
Dimer diamine	12	407.710	1,1'-Dimethyl-4,4'-bipyridinium dichloride	13	118.049
Dimethindene maleate	06	94.000	3,3-Dimethylbutene	15	1337.400
2,5-Dimethoxyaniline, ethoxylated	12	342.250	N(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine	09	59.310
2,5-Dimethoxybenzaldehyde	03	783.000	N,N-Dimethyl capramide	12	40.350
m-Dimethoxybenzene	03	784.000	Dimethyl carbonate	15	941.000
p-Dimethoxybenzene (Dimethyl ether of hydroquinone)	15	67.000	N,N-Dimethyl(coconut oil alkyl)amine	12	433.000
Dimethoxyethane (Ethylene glycol dimethyl ether)	15	1155.000	N,N-Dimethyl(coconut oil alkyl)amine oxide	12	328.360
1,1-Dimethoxy octane	07	129.690	Dimethyl-1,4-cyclohexane dicarboxylate	15	67.730
3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-	13	222.000	Dimethyl cyclohexane methanol	07	95.580
crotonamide			β,4-Dimethyl-3-cyclohexene-1-propanal	07	30.501
1,2-Dimethoxy-4-propenylbenzene	07	30.000	γ,4-Dimethyl-3-cyclohexene-1-propanol	07	30.500
(4-Propenylveratrole)			N,N-Dimethylcyclohexylamine	03	813.000
N,N-Dimethylacetamide	15	236.000	N,N-Dimethyldecylamine oxide	12	327.800
N,N-Dimethylacetoacetamide	15	236.500	Dimethyldi(C12-18)ammonium chloride (mixed straight		
O,S-Dimethylacetylphosphoramidothioate (Acephate)	13	222.500	and branched chains)	12	485.780
2,4-Dimethyl-5-acetylthiazole	07	30.050	2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane	15	1295.000
Dimethyl adipate	11	63.225	2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane-3	15	1296.000
N,N-Dimethyl-N-alkylamine phosphate	12	393.200	O,O-Dimethyl-O-2,2-dichlorovinyl phosphate (DDVP)	13	223.000
Dimethylamine	15	288.000	2,5-Dimethyl-2,5-di(2-ethylhexanoyl peroxy)hexane	15	1294.000
Dimethylamine epichlorohydrin copolymer	15	364.750	5,6-Dimethyl-2-dimethylamino-4-pyrimidinyl dimethyl		
Dimethylamine epichlorohydrin ethylenediamine	14	417.000	carbamate	13	166.026
copolymer			Dimethyldiiodocyclammonium chloride	12	486.000
p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N	14	346.000	Dimethyldithiocarbamic acid, bismuth salt	09	138.000
dimethylaniline zinc chloride)			Dimethyldithiocarbamic acid, copper salt	09	139.000
m-(Dimethylamino)benzoic acid	03	796.000	Dimethyldithiocarbamic acid, lead salt	09	140.000
2-[4-(Dimethylamino)benzoyl]benzoic acid	03	796.500	Dimethyldithiocarbamic acid, manganese salt	13	181.000
2-Dimethylaminoethanol (N,N-Dimethylethanolamine)	15	366.000			
Dimethylaminoethyl acrylate	15	367.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Dimethyldithiocarbamic acid, potassium salt	13	181.100	Dimethyloctanal	07	140.100
Dimethyldithiocarbamic acid, potassium salt	09	174.000	3,7-Dimethyloctanol-1 (Tetrahydrogeraniol)	07	140.450
Dimethyldithiocarbamic acid, selenium salt	09	141.000	3,7-Dimethyl-3-octanol	07	140.500
Dimethyldithiocarbamic acid, sodium salt	09	175.000	Dimethyloctanyl acetate	07	140.600
Dimethyldithiocarbamic acid, zinc salt	09	143.000	3,7-Dimethyl-6-octen-1-ol (Citronellal)	07	141.000
N,N-Dimethyldodecylamine	12	434.000	3,7-Dimethyl-6-octen-1-ol (Citronellol)	07	142.000
N,N-Dimethyldodecylamine oxide	12	327.910	3,7-Dimethyl-7-octenol 70%, 6-octenol isomer 30%	07	142.100
Dimethyl dodecyl ethyl ammonium ether sulfate	12	456.500	Dimethylidihydroxyethylene urea	14	479.000
Dimethylethyl amine (DMEA)	15	289.600	4,4-Dimethyl oxazolidene	15	67.900
S-[[[1,1-Dimethylethyl]thio]methyl] O,O-diethyl phosphorodithioate (Turbutos)	13	223.500	O,O-Dimethyl S-(4-oxo-1,2,3-benzotriazin-3(3H)-yl) methylphosphorodithioate (Azirphos-methyl)	13	159.000
N,N-Dimethylformamide	15	237.000	Dimethyl-3-oxo-2-pentylcyclopentane propanedioate	07	95.635
2,6-Dimethylheptan-2-ol	07	95.610	N,N'-Dimethyl-3,4,9,10-perylene-tetracarboxylic acid 3,4:9,10-dimide	03	821.500
N,N-Dimethylhexadecylamine	12	435.000	α,α -Dimethylphenethyl acetate	07	32.000
N,N-Dimethylhexadecylamine oxide	12	328.000	N,N-Dimethylphenyl urea	15	68.220
5,5-Dimethylhydantoin	03	816.000	Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide	13	225.000
N,N-Dimethyl(hydrogenated tallow alkyl)amine	12	436.000	Dimethyl phthalate	11	32.000
Dimethyl hydrogen phosphite	15	1028.000	Dimethyl piperazine	15	68.250
1,1-Dimethyl-3-hydroxybutyl-peroxyneohexanoate	15	1296.100	3,5-Dimethylpiperidine	03	825.500
Dimethyl isophthalate	11	31.500	1,1-Dimethylpiperidinium chloride	13	168.350
Dimethyl isopropanolamine	15	408.100	N,N-Dimethyl-1,3-propanediamine polymer with epichlorohydrin, sulfate	14	160.000
Dimethyl methyl phosphonate	15	1029.000	2,2-Dimethyl-1,3-propanediol (Neopentyl glycol)	15	1080.000
N,N-Dimethyl(mixed alkyl)amine	12	437.000	Dimethylpropionic acid (Neopentanoic acid)	15	510.000
N,N-Dimethyl(mixed alkyl)amine oxide	12	328.100	Dimethyl sebacate	11	114.900
2,6-Dimethylnaphthalene	03	819.750	Dimethyl soy amine	15	375.000
Dimethyl-2,6-naphthalenedicarboxylate	03	819.500	N,N-Dimethyl(soybean oil alkyl)amine	12	439.000
N,N-Dimethyl(9-octadecenyl-alkyl)amine	12	437.500	Dimethyl sulfide	02	92.820
N,N-Dimethyloctadecylamine	12	433.450	Dimethyl sulfone	15	1309.150
N,N-Dimethyloctadecylamine	12	438.000	Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA)	13	62.000
3,7-Dimethyl-cis-2,6-octadienal (Citral B) (Neral)	07	134.800	N,N-Dimethyltetradecylamine	12	440.000
3,7-Dimethyl-trans-2,6-octadienal (Citral A, geranial)	07	134.850	Dimethyltin dichloride	15	1404.200
3,7-Dimethyl-2,6-octadienal (citral a&b)	07	134.900	Dimethyltin-IOG	15	1404.210
3,7-Dimethyl-2,6-octadienenitrile	07	140.350	N,N-Dimethyl-o-toluidine	03	827.800
3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol)	07	135.000	N,N-Dimethyl-p-toluidine	03	828.000
3,7-Dimethyl-trans-2,6-octadien-1-ol (Geranol)	07	138.000	N-12,4-dimethyl-5-[[trifluoromethyl]sulfonyl]amino]phenylacetamide, diethanolamine salt	13	168.375
3,7-Dimethyl-1,6-octadien-3-ol (Linalool) (Linalyl alcohol)	07	136.000	Dimorpholine diethyl ether	15	68.279
3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)	07	135.100	N,N'-Di-2-naphthyl-p-phenylenediamine	09	61.000
3,7-Dimethyl-1,6-octadien-3-ol,acetate (Linalyl acetate)	07	137.000	Dinitolmide	06	171.000
3,7-Dimethyl-1,6-octadien-3-yl formate	07	30.900	3,5-Dinitro-N,N'-dipropylsulfanilamide	03	841.500
3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate)	07	139.000	2,4-Dinitroacetanilide	03	828.100
3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate)	07	31.000	m-Dinitrobenzene	03	834.000
3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate)	07	140.000	2,4-Dinitrobenzenesulfonic acid, sodium salt	03	835.100

Appendix D

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
3,5-Dinitrobenzoic acid	03	836.000	N,N'-Diphenyl-p-phenylenediamine	09	62.000
2,6-Dinitro-N,N-dipropyl cumidine	13	118.038	Diphenyl phosphorous chloride	03	858.500
2,4-Dinitrophenol, tech.	03	840.000	Diphenyl phthalate	03	857.400
3,5-Dinitrosalicylic acid, methyl ester	03	842.200	Diphenylpyraline	06	95.400
p-Dinitrosobenzene	03	842.800	Diphenylpyraline hydrochloride	06	95.500
2,4-Dinitrotoluene	03	844.000	Diphenylsulfone	12	210.700
2,4 (and 2,6)-Dinitrotoluene	03	845.000	Di-2-picoylamine	03	858.600
Dinitrodimethyleneglycol-di-p-aminobenzoate	03	846.300	1,3-Di-4-piperidylpropane	03	858.313
Dinonylphenol	03	846.700	Dipropandiol dibenzoate (Dipropylene glycol dibenzoate)	11	4.000
Dinonylphenol, ethoxylated	12	76.300	Di-n-propylaluminum chloride	15	1359.400
Dinonylphenol, ethoxylated and phosphated	11	33.000	Dipropylamine	15	300.000
Dinonyl phthalate	11	33.500	Dipropylene glycol	15	1187.280
Dinonyl undecyl phthalate	06	679.200	Dipropylene glycol monomethyl ether acetate	15	1104.500
Dinoprostone	11	63.300	Dipropylene glycol monomethyl ether (3-(3-Methoxypropoxy)propanol)	15	1187.300
Di-n-octyl adipate	15	969.020	Dipropylene glycol salicylate	15	74.000
Diocyl dimerate	12	487.150	Di-n-propylisocinchomeronate	13	148.500
N,N-Dioctyl-N,N-dimethyl ammonium chloride	15	71.200	Di-n-propyl peroxycarbonate	15	1296.300
Di-tert-octyl hydroquinone	15	947.000	Di-N-propylphosphorodithioic acid	14	234.000
Diocyl maleate	11	36.000	Di(pyrrolidonyl ethyl)imine	12	328.435
Di-n-octyl phthalate	11	37.000	Direct Black 22	04	613.000
Diocyl phthalates, all other	11	37.000	Direct Black 80	04	623.000
Dioleic acid (Ratio = 1/2)	12	555.100	Direct Black 163	04	623.163
Dioxane (1,4-Diethylene oxide)	15	72.000	Direct Black 165	04	623.165
2,4-Dioxo-3-azaspiro[5,5]undecane-1,5-dicarbonitrile monoonium salt	03	846.500	Direct Black 170	04	623.170
1,3-Dioxolane	15	73.000	Direct Black 179	04	623.179
Dioxolanone	03	847.100	Direct black dyes, all other	04	625.000
Di-para-benzoquinone dioxime	09	42.000	Direct Blue 15	04	539.000
Di-N,N'-pentamethylenethiuram tetrasulfide	15	295.000	Direct Blue 25	04	542.000
Dipentylamine	03	847.000	Direct Blue 75	04	547.000
2,4-Di-tert-pentylphenol	06	115.002	Direct Blue 76	04	548.000
Diphenylhydramine citrate	06	95.000	Direct Blue 80	04	550.000
Diphenylhydramine hydrochloride	06	80.400	Direct Blue 86	04	552.000
Diphenidol	06	80.500	Direct Blue 98	04	555.000
Diphenidol hydrochloride	15	73.200	Direct Blue 100	04	556.000
1,2-Diphenoxyethane	06	620.300	Direct Blue 108	04	557.108
Diphenoxylate	13	171.010	Direct Blue 120, 120:1, 120:2, and 120:3	04	558.000
2-Diphenylacetyl-1,3-indandione and sodium salt	03	853.000	Direct Blue 160	04	564.000
Diphenylamine	09	52.700	Direct Blue 189	04	565.000
Diphenylamine-acetone aldehyde	09	53.000	Direct Blue 191	04	566.000
Diphenylamine-acetone condensate	15	73.220	Direct Blue 199	04	567.000
Diphenyl-t-butylhexyl phosphite	09	124.350	Direct Blue 218	04	568.000
Diphenyldimethoxysilane	03	855.500	Direct Blue 269	04	570.269
Diphenyl-4,4'-diphenylmethylenedicarbamate	09	855.250	Direct Blue 279	04	570.279
Diphenyldisulfide	03	73.300	Direct Blue 281	04	570.281
Diphenylisodecyl phosphite	15	73.340	Direct Blue 283	04	570.283
Diphenylisooctyl phosphite	15	1020.000	Direct Blue 285	04	570.285
Diphenylmethane-4,4'-diisocyanate (MDI)	03				

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Direct Blue 286	04	570,286	Direct Yellow 107	04	447,000
Direct blue dyes, all other	04	571,000	Direct Yellow 118	04	450,000
Direct Brown 44	04	597,000	Direct Yellow 119	04	451,000
Direct Brown 231	04	606,231	Direct Yellow 127	04	453,000
Direct Brown 232	04	606,232	Direct Yellow 131	04	454,000
Direct brown dyes, all other	04	607,000	Direct Yellow 132	04	454,132
Direct Green 92	04	586,092	Direct Yellow 133	04	454,133
Direct green dyes, all other	04	587,000	Direct Yellow 137	04	454,137
Direct Orange 15	04	461,000	Direct Yellow 147	04	454,147
Direct Orange 26	04	462,000	Direct Yellow 148	04	454,148
Direct Orange 34	04	464,000	Direct Yellow 154	04	454,154
Direct Orange 39	04	466,000	Direct yellow dyes, all other	04	455,000
Direct Orange 72	04	470,000	N,N'-Disalicylidene-1,2-propanediamine	14	161,000
Direct Orange 80	04	475,000	Sodium cyanodithiolimidocarbonate	13	179,000
Direct Orange 102	04	479,000	Disopyramide phosphate	06	378,500
Direct Orange 118	04	479,118	Disperse Black 9	04	751,000
Direct orange dyes, all other	04	480,000	Disperse black dyes, all other	04	753,000
Direct Red 9	04	483,009	Disperse Blue 1	04	715,000
Direct Red 16	04	488,000	Disperse Blue 3	04	716,000
Direct Red 24	04	491,000	Disperse blue 14	04	718,014
Direct Red 26	04	492,000	Disperse Blue 27	04	719,000
Direct Red 72	04	499,000	Disperse Blue 60	04	723,000
Direct Red 73	04	500,000	Disperse Blue 62	04	725,000
Direct Red 80	04	504,000	Disperse Blue 64	04	727,000
Direct Red 81	04	505,000	Disperse Blue 73	04	729,000
Direct Red 83	04	506,000	Disperse Blue 79	04	731,000
Direct red 224	04	521,224	Disperse Blue 95	04	734,000
Direct Red 227	04	521,227	Disperse Blue 102	04	735,000
Direct Red 236	04	521,236	Disperse blue 106	04	735,106
Direct Red 238	04	521,238	Disperse Blue 118	04	739,000
Direct Red 239	04	521,239	Disperse Blue 148	04	742,148
Direct Red 254	04	521,254	Disperse Blue 175	04	743,175
Direct red dyes, all other	04	522,000	Disperse Blue 183	04	743,183
Direct Violet 9	04	525,000	Disperse Blue 200	04	743,200
Direct Violet 66	04	531,000	Disperse Blue 281	04	743,281
Direct Violet 99	04	532,099	Disperse Blue 284	04	743,284
Direct violet 195	04	532,104	Disperse Blue 291	04	743,291
Direct violet dyes, all other	04	533,000	Disperse Blue 333	04	743,333
Direct Yellow 4	04	421,000	Disperse Blue 337	04	743,337
Direct Yellow 5	04	422,000	Disperse Blue 359	04	743,359
Direct Yellow 6	04	423,000	Disperse blue dyes, all other	04	744,000
Direct Yellow 11	04	427,000	Disperse Brown 1	04	746,000
Direct Yellow 28	04	433,000	Disperse Brown 18	04	747,018
Direct Yellow 34	04	435,000	Disperse Brown 22	04	747,022
Direct Yellow 44	04	438,000	Disperse Brown 26	04	747,026
Direct Yellow 51	04	439,051	Disperse Brown 27	04	747,027
Direct Yellow 105	04	445,000	Disperse Green 9	04	745,009
Direct Yellow 106	04	446,000	Disperse Orange 3	04	653,000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Disperse Orange 25 and 25:1	04	658,000	Disperse Red 340	04	703,340
Disperse Orange 29	04	659,000	Disperse Red 345	04	703,345
Disperse Orange 30	04	660,000	Disperse Red 358	04	703,358
Disperse Orange 37	04	661,000	Disperse red dyes, all other	04	704,000
Disperse Orange 41	04	662,000	Disperse Violet 1	04	705,000
Disperse Orange 44 and 44:1	04	663,000	Disperse Violet 17	04	707,017
Disperse Orange 73	04	667,073	Disperse Violet 28	04	710,000
Disperse Orange 89	04	668,089	Disperse Violet 33	04	710,033
Disperse Orange 94	04	668,094	Disperse Violet 36	04	710,036
Disperse Orange 138	04	668,138	Disperse Violet 48	04	713,048
Disperse orangee 153	04	668,153	Disperse Violet 60	04	713,060
Disperse Red 1	04	670,000	Disperse violet dyes, all other	04	714,000
Disperse Red 5	04	672,000	Disperse Yellow 3	04	628,000
Disperse Red 13	04	676,000	Disperse Yellow 23	04	631,000
Disperse Red 17	04	678,000	Disperse Yellow 34	04	635,000
Disperse Red 22	04	679,022	Disperse Yellow 42	04	636,000
Disperse Red 30	04	680,000	Disperse Yellow 54	04	638,000
Disperse Red 50	04	683,000	Disperse Yellow 64	04	639,064
Disperse Red 55	04	684,000	Disperse Yellow 77	04	642,000
Disperse Red 60	04	686,000	Disperse Yellow 86	04	644,000
Disperse Red 65	04	687,000	Disperse Yellow 88	04	646,000
Disperse Red 73	04	688,000	Disperse Yellow 108	04	650,108
Disperse Red 74	04	688,074	Disperse Yellow 114	04	650,114
Disperse Red 86	04	690,000	Disperse Yellow 126	04	651,126
Disperse Red 88	04	691,000	Disperse Yellow 198	04	651,198
Disperse Red 91	04	692,091	Disperse Yellow 219	04	651,219
Disperse Red 117	04	694,000	Disperse Yellow 238	04	651,238
Disperse Red 135	04	695,135	Disperse Yellow 239	04	651,239
Disperse Red 136	04	696,000	Disperse yellow dyes, all other	04	652,000
Disperse Red 137	04	697,000	Distearyl dimethyl ammonium methosulfate	12	456,550
Disperse Red 145	04	699,145	Distearyl-3'-thiodipropionate	15	949,000
Disperse Red 153	04	699,153	Distearyl-3'-thiodipropionate	13	166,011
Disperse Red 159	04	700,000	N,N'-(Di-tail oil acid)amidoethylamine	12	385,500
Disperse Red 167 and 167:1	04	700,167	Di-tertiary nonylpolsulfide	14	257,000
Disperse Red 177	04	701,000	2,2'-Dithiobis(benzothiazole)	09	29,000
Disperse Red 179	04	702,000	Dithiobis(stearyl propionate)	15	950,000
Disperse Red 263	04	703,263	Dithiocarbamic acid derivatives, acyclic, other	09	144,000
Disperse Red 273	04	703,273	Dithiodiglycolic acid	15	513,080
Disperse Red 274	04	703,274	4,4'-Dithiodimorpholine	09	43,000
Disperse Red 278	04	703,278	Dithiodipropionic acid	15	513,100
Disperse Red 307	04	703,307	2,5-Di-p-toluidinoterephthalic acid	03	865,100
Disperse Red 311	04	703,311	Di-tridecyl adipate	11	63,400
Disperse Red 313	04	703,313	Ditridecyl maleate	15	951,000
Disperse Red 316	04	703,316	Di-tridecyl phthalate	11	39,000
Disperse Red 325	04	703,325	Di(tridecyl)-3,3'-thiodipropionate	15	952,000
Disperse Red 333	04	703,333	Diundecyl phthalate	11	39,300
Disperse Red 338	04	703,338	1,5-diureidonaphthalene	03	865,800
Disperse Red 339	04	703,339	Divinylbenzene	03	866,000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Divinyl tetramethyldisiloxane	15	1385.500	p-Dodecylphenol	03	873.000
1,1-Di-3,4-xyleneethane	03	1553.200	Dodecylphenol, ethoxylated	12	744.000
Dobutamine	06	326.200	Dodecylphenol, ethoxylated and phosphated	12	79.000
Docosanyl docosenoate	15	969.050	Dodecylphenol, sulfurized, calcium salt	14	228.000
Docusate, calcium	06	591.700	Dodecylphenyl- α -naphthylamine	14	277.000
Docusate, sodium	06	591.720	Dodecyl pyridinium chloride	15	74.460
Dodecylmethylenediamine	06	591.740	1-Dodecylpyridinium chloride	12	526.000
n-Dodecane	15	1398.000	Dodecylsuccinic anhydride	15	165.620
Dodecanedioic acid	15	514.000	Dodecyl sulfate, 2-amino-2-methylpropanol salt	12	220.000
Dodecanoic acid (Lauric acid)	15	515.000	Dodecyl sulfate, ammonium salt	12	221.000
Dodecene	02	78.000	Dodecyl sulfate, diethanolamine salt	12	222.000
Dodecyl-acetic succinimide	14	247.000	Dodecyl sulfate, N,N-diethylcyclohexylamine salt	12	223.000
Dodecyl succinic acid	15	952.500	Dodecyl sulfate, isopropanolamine salt	12	224.000
Dodecylsuccinic anhydride	15	165.600	Dodecyl sulfate, magnesium salt	12	225.000
Dodecylsuccinic lactate	15	952.810	Dodecyl sulfate, sodium salt	12	227.000
Dodecyl alcohol (Lauryl alcohol)	15	872.000	Dodecyl sulfate, triethanolamine salt	12	228.000
Dodecyl alcohol, ethoxylated	12	729.000	Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt	12	273.000
Dodecyl alcohol, ethoxylated and phosphated salt	12	77.000	Dodecyltrimethylammonium bromide	12	488.000
Dodecyl alcohol, ethoxylated and sulfated, ammonium salt	12	270.000	Dodecyltrimethylammonium chloride	12	489.000
Dodecylamine	12	271.000	Doxapram hydrochloride	06	550.001
Dodecylbenzene	12	420.000	Doxepin	06	426.800
Dodecylbenzene, other	03	870.000	Doxepin hydrochloride	06	527.000
Dodecylbenzene sulfonates, all other	03	869.000	Doxylamine succinate	06	96.000
Dodecylbenzenesulfonic acid	12	128.000	Drug And Cosmetic Red 57.1	04	818.057
Dodecylbenzenesulfonic acid, (Mixed alkyl)amine salt	12	114.000	Drug And Cosmetic Red 63	04	818.063
Dodecylbenzenesulfonic acid, ammonium salt	12	122.000	Drug And Cosmetic Red 101	04	818.101
Dodecylbenzenesulfonic acid, calcium salt	12	115.000	Drug And Cosmetic Green 5	04	793.000
Dodecylbenzenesulfonic acid, diethanolamine salt	12	117.000	Drug and Cosmetic Green 8	04	796.000
Dodecylbenzenesulfonic acid, isopropanolamine salt	12	118.000	Drug and Cosmetic Orange 4	04	797.000
Dodecylbenzenesulfonic acid, monoethanolamine salt	12	120.000	Drug and Cosmetic Orange 5	04	798.000
Dodecylbenzenesulfonic acid, sodium salt	12	121.000	Drug and Cosmetic Red 3	04	799.100
Dodecylbenzenesulfonic acid, potassium salt	12	122.500	Drug and Cosmetic Red 6	04	800.000
Dodecylbenzenesulfonic acid, triethanolamine salt	12	123.000	Drug and Cosmetic Red 7	04	801.000
Dodecyl diphenyl oxide	12	125.000	Drug and Cosmetic Red 17	04	807.000
Dodecyl diphenyl oxidedisulfonic acid	03	870.600	Drug and Cosmetic Red 21	04	809.000
Dodecyl diphenyl oxidedisulfonic acid, disodium salt	12	205.990	Drug and Cosmetic Red 27	04	811.000
n-Dodecylguanidine acetate (Dodine)	12	206.000	Drug and Cosmetic Red 30	04	813.000
N-Dodecyl-3-iminodipropionic acid	13	188.000	Drug and Cosmetic Red 33	04	815.000
N-Dodecyl-3-iminodipropionic acid, disodium salt	12	10.500	Drug and Cosmetic Red 34	04	816.000
N-Dodecyl-3-imino-dipropionic acid, monosodium salt	12	11.000	Drug and Cosmetic Red 36	04	817.000
tert-Dodecyl mercaptan, ethoxylated	12	11.020	Drug and Cosmetic Yellow 5	04	820.000
Dodecyl mercaptans	09	759.000	Edrophonium chloride	04	823.000
Dodecylxypoly(ethyleneoxy)acetic acid, sodium salt	12	171.000	Enflurane	06	575.700
Dodecylpentadecyl methacrylate	15	40.400	Epichlorohydrin	06	436.500
		952.700	Epichlorohydrin bisphenol A, ethoxylated	12	1310.000
					744.500

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Epoxides, ethers, acetals, all other	15	1325.000	Ethoxylated anhydrosorbitol monopalmitate	12	618.000
Epoxidized esters, all other	11	80.000	Ethoxylated anhydrosorbitol monostearate	12	619.000
Epoxidized linseed oils	11	75.400	Ethoxylated anhydrosorbitol triester of tall oil acids	12	621.000
epoxidized pentaerythritol tetraphthalate	11	75.800	Ethoxylated anhydrosorbitol trioleate	12	622.000
Epoxidized soya oils	11	76.000	Ethoxylated anhydrosorbitol tristearate	12	623.000
Epoxy resins, advanced	08	6.000	ethoxylated 1,3-butylene glycol condensed with oil fatty acid	12	707.820
Epoxy resins, unmodified	08	5.000	Ethoxylated 1,3-butylene glycol stearate	12	707.900
Ergocalciferol (vitamin D ₂)	06	813.000	Ethoxylated castor oil, didecylmaleate	12	708.780
Erucamide	15	238.000	Ethoxylated glycerol and propylene glycol esters of coco fatty acids	12	709.000
[Erucyl alkylamine	12	420.500	Ethoxylated glycerol sesquiester of mixed fatty acids	12	708.780
Erucyl stearamide	15	239.250	Ethoxylated(hydrogenated tallow amine), methyl ammonium chloride	12	458.100
Erythromycin	06	46.000	Ethoxylated 1,2-propanediol monostearate	12	711.000
Erythromycin estolate	06	46.500	Ethoxylated and propoxylated glycerol mono- and diesters of tallow acids	12	708.700
Erythromycin stearate	06	46.700	Ethoxylated, quaternized (C12-18 alkyl) oxypropyl trimethylene diamine	12	458.200
Esters of sulfated oleic acid, all other	12	263.000	Ethoxylated, quaternized reaction product of formaldehyde and tallow diamine	12	458.250
Estradiol cypionate	06	674.500	Ethoxylated sorbitol beeswax ester	12	625.000
Estrogens, all other	06	679.000	Ethoxylated sorbitol hexaester of tall oil acids	12	627.000
Estrogens, conjugated	06	675.000	Ethoxylated sorbitol hexaoleate	12	628.000
Estrogens, esterified	06	676.000	Ethoxylated sorbitol lanolin ester	12	629.000
Ethacrynic acid	06	739.000	Ethoxylated sorbitol mono-oleate	12	630.000
Ethanolamine condensates, all other	12	568.000	Ethoxylated sorbitol mono-stearate	12	631.000
Ethanolamine condensates, amine/acid ratio = 1/1, all other	12	566.000	Ethoxylated sorbitol oleate, acetylated	12	631.500
Ethanolamine condensates, amine/acid ratio = 2/1, all other	12	563.000	Ethoxylated sorbitol tetraester of lauric and oleic acids	12	635.000
Ethanolglycine, disodium salt	14	43.000	Ethoxylated sorbitol tetraester of tall oil acids	12	636.000
4-Ethanolpiperidine	03	873.550	Ethoxylated sorbitol tetracleate	12	636.400
2-Ethanolpyridine	03	873.600	Ethoxylated sorbitol tetraesterate	12	636.500
5-Ethanoxy-3-trichloromethyl-1,2,4-thiadiazole	03	873.700	2-Ethoxynaphthalene	07	35.000
Ethchlorwylol	06	468.000	Ethyl acetate (100% basis)	15	954.001
Ethers and thioethers, all other	12	775.000	Ethyl acetoacetate	15	955.000
Ehisterone	03	873.800	Ethyl acrylate	15	956.000
Eihopabate	06	172.000	Ethyl acrylate methacrylic acid copolymer	14	419.000
Eihosuximide	06	419.000	Ethyl alcohol, phosphated, amine salt	12	96.700
Eihotoin	06	420.000	Ethyl alcohol, synthetic	15	853.000
N-(p-ethoxycarbonylphenyl)-n'-ethyl-n'-phenylformamide	07	34.200	Ethylaluminum dichloride	15	1360.000
6-Ethoxy-12-dihydro-2,2,4-trimethyl quinoline	15	76.500	Ethylaluminum sesquichloride	15	1361.000
2-Ethoxyethanol (Ethylene glycol monoethyl ether)	15	1159.000	Ethylamine, mono	15	278.000
2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)	15	1160.000	2-Ethylaminoethanol (Ethylmonoethanolamine)	15	385.000
2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)	15	1161.000	2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s triazine (Ametryne)	13	69.000
2-(2-Ethoxyethoxy)ethyl acetate	15	1105.000	N-Ethylaniline, refined	03	883.000
2-Ethoxyethyl acetate	15	953.000	2-(N-Ethylanilino)ethanol	03	884.000
Ethoxylated acetic acid, sodium salt	12	318.100	3-(N-Ethylanilino)propionitrile	03	886.000
Ethoxylated anhydrosorbitol esters, all other	12	624.000			
Ethoxylated anhydrosorbitol monolaurate	12	616.000			
Ethoxylated anhydrosorbitol mono-oleate	12	617.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
α -(N-Ethylanilino)-m-toluenesulfonic acid	03	887.000	(Ethylenedinitrilo)tetraacetic acid, disodium salt	14	53.000
Ethylbenzene	03	892.000	(Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate	14	56.000
Ethyl benzoate	07	35.900	(Ethylenedinitrilo)tetraacetic acid, magnesium salt	14	57.000
(Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride	12	527.000	(Ethylenedinitrilo)tetraacetic acid, manganese salt	14	58.000
N-Ethyl-N,N-bis(polyoxyethylene)allow ammonium ethyl sulfate	12	458.850	(Ethylenedinitrilo)tetraacetic acid, monoammonium ferric salt	14	59.000
Ethyl butyrate	07	144.000	(Ethylenedinitrilo)tetraacetic acid, monosodium iron salt	14	60.000
Ethyl cellulose	08	21.030	(Ethylenedinitrilo)tetraacetic acid, tetraammonium salt	14	61.000
Ethyl chloride (Chloroethane)	15	1223.000	(Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt	14	62.000
Ethyl chloroformate	15	959.000	(Ethylenedinitrilo)tetraacetic acid, trisodium salt	14	63.000
Ethyl 2 (4-chloro-6-methoxy-pyrimidin-2-yl) amino carbonyl amino sulfonyl benzoate (Chlorimuron ethyl)	13	69.025	Ethylene glycol	15	1081.000
Ethyl chloroformate	15	959.600	Ethylene glycol adipate	15	63.450
Ethyl cinnamate	07	36.000	Ethylene glycol diacetate	11	1106.000
Ethyl cyanoacetate	15	440.100	Ethylene glycol dimercaptoacetate	15	1107.000
2-(N-Ethyl-N, β -cyanoethyl)-4-acetaminoanisole	03	895.100	Ethylene glycol dimethacrylate	15	1108.000
Ethyl cyclohexylamine	15	78.100	Ethylene glycol distearate	12	638.000
N-Ethylcyclohexylamine (Herbicide intermediate)	03	896.100	Ethylene glycol di-tributyl ether	15	1161.700
S-Ethyl cyclohexylmethyl thiocarbamate	13	69.100	Ethylene glycol di-triethyl ether	15	1161.760
Ethyl 3,3-di(t-amyloxy)butyrate	15	1296.315	Ethylene glycol mono-oleate	15	1187.320
Ethyl 3,3-di(t-butyloxy)butyrate	15	1296.320	Ethylene glycol monostearate	12	639.000
O-Ethyl S,s-di-sec-butyl phosphorodithioate	13	166.053	Ethylene glycol sesquisteareate	12	640.000
S-Ethyl disubutylthiocarbamate (Butylate)	13	202.500	Ethylenol(1,2)hydroxystearamide	15	241.500
Ethyl dimethyl(mixed alkyl)ammonium ethyl sulfate	12	490.000	Ethylene oxide	15	241.500
O-Ethyl S,S-dipropyl phosphorodithioate	13	243.010	Ethylene-propylene copolymer	15	1312.000
S-Ethyl dipropylthiocarbamate (EPTC)	13	202.000	Ethylene-propylene (EP) type	14	279.000
Ethylene	02	40.000	Ethylene-vinyl acetate (EVA) copolymer resins	10	10.000
N-N-Ethylenedibiscocoamide	15	239.900	Ethyl- α,β -epoxy- β -methylhydrocinnamate	08	31.700
Ethylene bis(dithiocarbamic acid), disodium salt (Nabam)	13	183.000	Ethyl ether	07	37.000
Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions	13	184.500	Ethyl ethers of tetra and higher ethylene glycols (high boiling)	15	1313.000
N,N'-Ethylenedibis-oleamide (Oleic acid-ethylenediamine condensate (Amine/acid ratio = 1/2))	15	240.000	Ethyl 3-ethoxy propionate	15	1161.400
N,N'-Ethylenedibis(stearamide)	15	241.000	Ethyl furoate	15	961.100
Ethylene/chlorotrifluoro ethylene copolymer (Halar)	08	38.230	1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolium ethyl sulfate	07	95.700
Ethylenediamine	15	280.000	Ethyl heptanoate	12	460.000
Ethylenediamine dihydriodide	06	583.000	N-Ethyl-N-hexadecylmorpholinium ethyl sulfate	07	145.000
Ethylene diamine ethoxylated	12	328.455	S-Ethyl-hexahydro-1H-azepine-1-carbothioate (Mollinate)	13	461.000
Ethylene dibromide	14	182.000	2-Ethylhexanal (α -Ethylcaproaldehyde)	12	70.000
(Ethylenedinitrilo)tetraacetic acid	14	47.000	2-Ethyl-1,3-hexanediole	15	789.000
(Ethylenediaminetetraacetic acid) (EDTA) salt	14	49.000	Ethyl hexanoate	15	1082.000
(Ethylenedinitrilo)tetraacetic acid, calcium disodium salt	14	50.000	2-Ethylhexanoic acid (α -Ethylcaproic acid)	07	146.000
(Ethylenedinitrilo)tetraacetic acid, diammonium salt	14	54.000	2-Ethylhexanoic acid salts, all other	15	519.000
(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate	14	54.000	2-Ethyl-1-hexanol	15	646.000
				15	854.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated	12	80,090	Ethyl laurate	07	147,000
2-Ethylhexanol and ethoxylated nonylphenol, polyphosphated, sodium salt	12	80,100	Ethyl maleate	15	964,350
2-Ethylhexanol, ethoxylated and phosphated	12	80,000	N-Ethylmaleimide	03	896,600
2-Ethylhexanol, ethoxylated, phosphated, potassium salt	12	80,050	Ethyl mercaptan (Ethaneethiol)	02	93,000
2-Ethylhexanoyl chloride	15	520,000	Ethyl methacrylate	15	964,400
2-Ethyl-1-hexyl acetate	15	962,000	N-Ethyl-2-methylallylamine	15	281,500
2-Ethyl-1-hexyl acrylate	15	963,000	Ethyl-2-methyl butyrate	07	147,700
2-Ethylhexyl acrylate-methyl acrylate copolymer resins	08	19,970	Ethyl-2 methyl pentanoate	07	147,760
(2-Ethylhexyl)amine, mono	15	281,000	2-[Ethyl(3-methylphenyl)amino]ethanol	03	897,200
2-Ethylhexyl benzoate	15	9,040	N-[3-(1-Ethyl-1-methylpropyl)-5-isoxazolyl]-2,6-dimethoxybenzamide (Flexidor)	13	118,062
N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3 dicarboximide	13	173,000	7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt	12	244,000
2-Ethylhexyl chloroformate	15	963,600	4-Ethylmorpholine	15	81,000
2-Ethylhexyl-1-p-dimethylaminobenzoate	15	79,100	Ethyl myristate	07	148,000
2-Ethylhexyl epoxystalates	11	77,000	2-Ethyl-2-nitro-1,3-propanediol	15	392,250
2-Ethylhexyl hydrogen phosphate	15	1032,000	Ethyl 2(2-nitro-4-trifluoromethylphenyl)-3-oxobutanoate	15	899,800
2-Ethyl-1-hexyl methacrylate	15	964,000	Ethyl phenylacetate	07	37,800
2-Ethylhexyl-p-methoxy cinnamate	07	37,100	N-Ethyl-N-phenylbenzylamine	03	901,000
2-Ethylhexyl-p-methoxy cinnamate	15	79,300	Ethyl(polyoxyethylene, cocoamine) ethylsulfate	12	458,830
2-Ethylhexyl nitrate ethyl ester	15	391,500	Ethyl propionate	07	150,200
2-Ethylhexyl oleate	11	96,900	N-(1-Ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine	13	118,030
2-Ethylhexyl palmitate	12	96,800	N-Ethyl pyrrolidone	15	81,300
2-Ethylhexyl phosphate	12	97,000	N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate	12	463,000
2-Ethylhexyl phosphate, sodium salt	12	99,000	Ethyl succinyl chloride	15	1327,300
2-Ethylhexyl polyphosphate, sodium salt	12	99,000	Ethyl sulfate (Diethyl sulfate)	15	966,000
2-Ethylhexyl salicylate	15	79,400	Ethylthioacetate	15	1327,400
2-Ethylhexyl stearate	15	969,090	N-Ethyl-p-toluenesulfonamide	11	5,000
2-Ethylhexyl sulfate, sodium salt	11	119,000	N-Ethyl-m-toluidine	03	908,000
p-[Ethyl(2-hydroxyethyl)amino]benzenediazonium chloride	15	969,090	3-(N-Ethyl-m-toluidino)propionitrile	03	911,000
(N-Ethyl-N-(2-hydroxyethyl)-3-methyldehydrogen sulfate)	12	243,000	Ethyl trimethyl cyclopentyl buterol	07	150,250
p-phenylenediamine	14	352,000	Ethyl 3,7,11-trimethyldodeca-2,4-dienoate	13	231,016
4-(N-Ethyl-N-2-hydroxyethyl)-2-methylphenylene-diamine	14	353,000	Ethyl valerate	07	150,300
N-Ethyl-N-hydroxyethyl-1,4-pentanediamine	15	79,600	Ethyl vinyl ether	15	1316,000
N-Ethyl-N-(2-hydroxyethyl)-m-toluidine	15	392,100	Etidronate, disodium	06	837,001
4-Ethyl-4-hydroxymethylloxazoline	03	896,500	Etidronic acid ((1-Hydroxyethylidene)biphosphonic acid)	15	520,500
2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane)	15	79,720	Expandable polystyrene beads	15	520,500
2,2'-Ethylidene-bis(4,6-di-tert-butylphenol) (Isonox 129)	15	1083,000	External Drug and Cosmetic Orange 3	08	44,010
Ethylidene norbornene	15	78,550	Fats and oils, chemically modified, all other	04	827,000
(+)-5-Ethyl-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl)-2-ylcolonic acid	15	80,000	Fatty acid, alkanolamine ester	15	1331,000
Ethyl isovalerate	13	118,076	Fatty acid amide mixtures	15	392,500
	07	146,500	Fatty acid esters, not included with plasticizers surface-active agents, all other	15	242,100
			Fatty acid polyamine condensate	15	981,000
			Fatty acid/polyamine condensates	14	280,000
			Fatty acid residues	15	392,700
			Fatty acids	15	1434,300
			Fatty acids, hydrogenated	15	522,000
				15	521,000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Fatty acids, partially hydrogenated	15	523.000	Furan	03	920.000
Fatty amines	15	282.000	Furan derivatives, all other	15	84.000
Fenopropfen	06	401.200	Furfuryl alcohol	03	921.000
Fentanyl citrate	15	401.250	Furfuryl amine	15	82.200
Fish oil, C ₁₄ -C ₂₂ menhaden, lead salts	06	646.700	Furfuryl type resins	08	7.000
Flavoxate hydrochloride	06	745.500	Furoic acid	15	82.400
Flufenicol	06	172.500	D-Galactose	14	456.000
Flotation reagents, all other	14	147.000	Galaxolide (1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethyl-cyclopenta-γ-2-benzopyran)	07	96.000
Fluconazole	06	135.600	Gallium nitrate	06	278.400
Flucytosine	06	135.700	Gasoline additives, acyclic, all other	14	189.000
Fludrocortisone acetate	06	656.000	Gasoline additives, cyclic, all other	14	190.000
Fluorelastomers (CFM, FKM, FFKM) type	10	11.000	Gastrointestinal agents, all other	06	622.000
Fluorescent Brightener 28	04	761.000	Gemfibrozil	06	620.500
Fluorescent Brightener 49	04	766.000	Gentamycin	06	48.000
Fluorescent Brightener 52	04	767.000	Geranyl acetate	07	151.000
Fluorescent Brightener 61	04	770.000	Geranyl butyrate	07	153.000
Fluorescent Brightener 71	04	771.000	Geranyl formate	07	153.010
Fluorescent Brightener 130	04	779.000	Geranyl isobutyrate	07	153.020
Fluorescent Brightener 205	04	780.205	Geranyl nitrile (Citralva)	07	153.560
fluorescent brightener 231	04	780.231	Geranyl propionate	07	153.600
fluorescent brightener 232	04	780.232	Gibberellic acid	13	168.450
fluorescent brightener 290	04	780.290	Glipizide	06	688.000
Fluorescent brighteners, all other	04	781.000	Glucoceramylase	14	96.000
Fluorinated (Including other fluorohalogenated) hydrocarbons, all other	15	1276.000	Glucosaminidase	14	65.000
o-Fluorobenzoyl chloride	03	913.700	Glucosaminidase β-isomer, sodium salt	14	66.000
Fluorocarbon resins, all other	08	38.200	Glucosaminidase α, sodium salt	14	66.000
Fluorometholone	06	657.000	α-Gluconamidopropyl dimethyl-2-hydroxyethyl ammonium chloride	12	471.500
p-Fluoronitrobenzene	03	913.560	Gluconic acid, potassium and sodium salts W/20% mix of sodium bisulfite-formaldehyde	12	57.530
Fluoxymesterone	06	640.000	Gluconic acid and salts, mixed	15	1434.800
Fluphenazine hydrochloride	06	485.000	Gluconic acid, technical	15	526.000
Flutamide	06	692.700	Glucono-δ-lactone	15	104.650
Food, Drug, and Cosmetic Blue 1	04	782.000	Glucose, ethoxylated	12	760.000
Food, Drug, and Cosmetic Blue 2	04	783.000	Glucose oxidase	14	123.000
Food, Drug, and Cosmetic Blue 3	04	784.000	Glucose-6-phosphate dehydrogenase	14	124.000
Food, Drug, and Cosmetic Red 3	04	786.000	Glutamic acid hydrochloride	14	8.000
Food, Drug, and Cosmetic Red 4	04	787.000	Glutamic acid	15	576.500
Food, Drug, and Cosmetic Red 40	04	787.040	Glutaraldehyde bis(sodium bisulfite)	15	1333.000
Food, Drug, and Cosmetic Yellow 5	04	789.005	Glutaric acid	15	526.900
Food, Drug, and Cosmetic Yellow 6	04	790.000	glutaric acid esters, all other	11	85.950
Formaldehyde (37% HCHO by Weight)	15	791.000	Glutethimide	06	471.000
Formaldehyde, dicyandiamide, ethylene sulfate esters	12	787.500	Glycerides, mixed C ₁₄ -18 and C ₁₆ -18, mono- and di	15	1110.400
Formaldehyde polymer with carbamate esters	14	487.000	Glycerine, alkoxylated	12	761.700
Formic acid, 90%	15	524.000	Glycerol, alkoxylated, toluene diisocyanate copolymer	12	761.800
1-Formylpiperidine	03	919.153	Glycerol diacetyl tartrate monostearate	12	644.000
Fuel additives, acyclic, all other	14	177.000	Glycerol diester of lard acids	12	660.000
Fumaric acid	15	525.000			
2-Furaldehyde (Furfural)	15	82.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Glycerol dilaurate	12	651.500	Glycolic acid, sodium salt	15	664.000
Glycerol esters of chemically defined acids, all other	12	659.000	Glycol pelargonate	11	84.000
Glycerol esters of mixed acids, all other	12	668.000	Glycol phthalate esters, all others	11	41.700
Glycerol, ethoxylated	12	729.700	Glycol residues	15	1435.000
Glycerol, ethoxylated and phosphated	12	111.900	Glycopyrrolate	06	288.500
Glycerol kinase	14	125.000	Glyoxal	15	793.000
Glycerol monoallyl ether	15	1163.000	Glyoxal-formaldehyde resins	08	7.500
Glycerol mono- and diesters of mixed fatty acids	12	648.800	Gonadorelin, acetate	06	692.900
Glycerol monoester of C ₈ -C ₁₀ acids	12	660.900	Grease, other than wool, sulfated, sodium salt	12	292.000
Glycerol monoester of coconut oil acids, sulfated, sodium salt	12	267.000	Guaiacwood acetate	07	96.100
Glycerol monoester of cottonseed oil acids	12	662.000	Guaiifenesin	06	584.000
Glycerol monoester of hydrogenated cottonseed oil acids	12	663.000	Guanidines, cyclic, other	09	22.000
Glycerol monoester of hydrogenated lard acids	12	663.500	Guanine	03	921.500
Glycerol monoester of hydrogenated soybean oil acids	12	664.000	Halcinonide	06	659.500
Glycerol monoester of lard acids	12	665.000	Half-phthalic acid ester of tallow alkanolamide/monoglyceride	12	318.300
Glycerol monoester of mixed fatty acids, acetylated	12	649.000	Heliotropyl acetate	07	80.500
Glycerol monoester of mixed fatty acids, phosphated	12	112.000	Heliotropyl acetone	07	80.520
Glycerol monoester of mixed fatty acids, succinylated	12	649.100	Heptachloro-tetrahydro-endo-methanoindene (Heptachlor)	13	136.000
Glycerol monoester of palm oil acids	12	665.800	2-(8-Heptadecenyl)-4,4-bis(hydroxymethyl)-2-oxazoline	12	343.000
Glycerol monoester of safflower oil acids	12	666.200	Heptaldehyde-aniline condensate	09	6.000
Glycerol monoester of tall oil acids	12	666.300	n-Heptane	02	71.000
Glycerol monoester of tallow acids	12	666.400	Heptanoic acid	15	528.500
Glycerol monolaurate	12	655.000	Heptanoic acid, potassium salt	12	57.550
Glycerol mono-oleate	12	656.000	2-Heptanone (Methyl amyl ketone)	15	819.000
Glycerol monoricinoleate	12	657.000	3-Heptanone (Ethyl butyl ketone)	15	820.000
Glycerol monostearate	12	658.000	Heptenes, mixed	02	72.000
Glycerol polyglycidyl ether	15	1317.600	2-Heptylcyclopentanone	07	96.500
Glycerol sesquiester of hydrogenated tallow acids	12	667.400	Herring oil, sulfated	12	298.490
Glycerol, synthetic only	15	1084.000	Herring oil, sulfated, sodium salt	12	299.000
Glycerol triester of mixed fatty acids	12	667.900	Helacillin	06	15.000
Glycerol trioctanoate/decanoate	12	658.400	Hexabromocyclodecane	15	87.800
Glyceryl diacetate (Diacetin)	15	1111.000	Hexachlorocyclopentadiene	03	924.000
Glyceryl monoacetate (Monoacetin)	15	1112.000	1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride (Chlorendic anhydride)	03	925.100
Glyceryl monoricinoleate	11	108.000	Hexadecane	15	1342.000
Glyceryl monothioglycolate	15	1113.000	Hexadecanoic acid (Palmitic acid)	15	529.000
Glyceryl triacetate (Triacetin)	15	1114.000	1-Hexadecanol (Cetyl alcohol)	15	873.000
Glyceryl tri(acetylricinoleate)	11	109.000	Hexadecanolide	07	96.600
Glyceryl triacetyl stearate	11	120.000	Hexadecene	15	1342.002
Glyceryl trioleate (Triolein)	11	91.000	Hexadecyl alcohol, ethoxylated	12	730.000
Glyceryl tripropionate	11	83.000	Hexadecyl alcohol, propoxylated	12	730.015
Glycidol (2,3-Epoxy-1-propanol)	15	1317.000	Hexadecylamine	12	421.000
α-Glycidoxypropyltrimethoxysilane	15	1387.000	Hexadecylmonophosphate	12	99.520
Glycine (Aminoacetic acid), non-medical	14	10.000	N-Hexadecylmorpholine	12	347.000
Glycolic acid (Hydroxyacetic acid)	15	528.000	Hexadecyl sulfate, sodium salt	12	230.000
Glycolic acid, potassium salt	15	663.750			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Hexadecyltrimethylammonium bromide	12	494.000	Homomenthyl salicylate	15	88.999
Hexadecyltrimethylammonium chloride	12	495.000	Humatrope	06	693.500
Hexafluoropropylene, monomer	15	1267.000	Hydralazine hydrochloride	06	357.000
Hexaglycerol	12	691.947	Hydratropaldehyde, dimethyl acetal	07	43.000
Hexahydro-1-[(2-aminophenyl)sulfonyl]-1h-azepine	03	926.500	Hydrazine acetate	15	594.500
Hexahydro-1-(2-nitrophenyl)sulfonyl]-s-triazine	03	927.000	Hydrindantin	15	91.000
Hexahydro-1,3,5-triethyl-s-triazine	13	40.012	Hydrocarbon carboxylic acid derivatives (specify)	14	205.000
Hexahydro-1,3,5-tri(2-hydroxyethyl)-s-triazine	13	40.022	Hydrocarbon derivatives all other hydrocarbon derivatives	02	97.000
Hexamethylsilazane	15	87.900	Hydrocarbon phosphorous acid, barium salt	14	206.000
Hexamethylenediamine adipate (Nylon salt)	15	1387.500	Hydrocarbon phosphoryl derivatives	14	207.000
Hexamethylenediaminetetra(methylene phosphonic acid), potassium salt	15	397.000	Hydrocarbons, all other	15	1349.000
Hexamethylene-1,6-diisocyanate (HDI)	14	68.000	Hydrocarbons, C ₄ , all other	02	52.000
Hexamethyleneimine	15	397.100	Hydrocarbons, C ₅ , all other	02	59.000
Hexamethylenetetramine, tech.	03	927.870	Hydrocarbons, C ₆ , all other	02	68.000
N-hexanal	15	88.000	Hydrocarbons, C ₇ , all other	02	73.000
Hexane	07	155.310	Hydrocarbons, C ₈ , all other	02	77.000
Hexane-1,6-bis(tributylammonium bromide)	02	65.000	Hydrocarbons, C ₉ and above, all other, including mixtures	02	89.000
1,6-Hexanediamine (Hexamethylenediamine)	12	497.500	Hydrocarbons, C ₄ fraction	02	51.200
2-Hexenal	15	283.000	Hydrocarbons, C ₂ -C ₃ mixtures	02	43.000
1-Hexene	15	1085.000	Hydrocarbons, C ₄ mixtures	02	49.600
Hexenes, mixed	07	155.300	Hydrocarbons, C ₅ mixtures	02	58.500
cis-3-Hexen-1-yl acetate	02	67.015	Hydrocarbons, C ₅ -C ₆ mixtures	02	67.030
cis-3-Hexenyl butyrate	07	155.650	Hydrochlorothiazide	06	722.000
cis-3-Hexenyl methyl carbonate	07	155.653	Hydrocinnamic acid	06	43.500
cis-3-Hexenyl salicylate	07	155.654	Hydrocodone bitartrate	06	433.000
cis-3-Hexenyl tiglate	07	40.500	Hydrocortisone	06	660.000
Hexyl acetate	07	155.656	Hydrocortisone acetate	06	661.000
Hexyl alcohol	15	984.000	Hydrocoumarin	07	44.000
n-Hexyl alcohol	15	985.000	Hydrogenated castor oil, ethoxylated	12	670.000
N-Hexyl alcohol, ethoxylated	15	857.000	Hydrogenated menhaden fish oil	15	1329.050
Hexylalcohol, ethoxylated and phosphated	12	729.900	(Hydrogenated tallow alkyl)amine	12	422.000
n-Hexylamine	12	80.500	(Hydrogenated tallow alkyl)amine acetate	12	394.000
Hexylamine ethoxylate	15	284.000	(Hydrogenated tallow alkyl)amine, ethoxylated	12	329.000
α-Hexylcinnamaldehyde	15	398.000	(Hydrogenated tallow alkyl)trimethylammonium chloride	12	498.000
Hexyl n-decyl phthalate	07	41.000	Hydrogenated tallow amides, ethoxylated	12	575.200
Hexyl 2-methylbutyrate	11	44.000	1-(2-Hydrogenated tallow amidoethyl)-2-nor(hydrogenated tallow)-2-imidazoline	12	386.500
Hexyl neopentanoate	07	155.715	Hydrogenated tallow fatty acid aminoethylmethanolamine condensation products	12	488.000
Hexyl nitrate	15	985.200	Hydrogenated tallow glycerides	14	488.000
2-[2-(Hexyloxy)ethoxy]ethanol	14	149.000	Hydrogenated tallow glycerides diethylenediamine condensate	15	1329.000
Hexyloxypropyl amine	15	1164.000	Hydrogenated tallow glycerides diethylenediamine condensate	12	587.943
Hexyl phosphate	12	328.600	Hydrogenated tallow glycerides diethylenetriamine condensate	12	587.945
Hexyl phosphate, potassium salt	12	99.900	Hydrolytic enzyme mixtures	14	113.000
Hexyl sulfate, potassium salt	12	99.910			
Hexyltrichlorosilane	15	231.000			
		1387.530			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Hydromorphone hydrochloride	06	401.400	1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline	12	349.000
Hydroquinone (Hydroquinol)	14	357.000	1-(2-Hydroxyethyl)-2-nor(tail oil alkyl)-2-imidazoline	12	350.000
Hydroquinone, di(β-hydroxyethyl) ether	15	91.250	2-Hydroxyethyl n-octyl sulfide	13	233.010
Hydroquinone, tech.	03	934.000	N-(Hydroxyethyl) piperazine	15	96.000
p-Hydroxybenzenesulfonic acid	03	944.000	3-Hydroxy-2-ethyl-4-pyrone (Ethylmaltol)	07	97.000
p-Hydroxybenzoic acid	03	946.000	N-(2-Hydroxyethyl)-N-(2-stearamidoethyl)glycine, sodium salt	12	13.000
p-Hydroxybenzoic acid, butyl ester	15	92.000	1-(2-Hydroxyethyl)-2-(tail oil alkyl)imidazoline, fatty acid salt	12	351.700
p-Hydroxybenzoic acid, ethyl ester (Ethyl paraben)	15	93.000	N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl) ethylenediamine	12	330.000
p-Hydroxybenzoic acid, methyl ester	15	94.000	Hydroxyethyl-2-undecyl-2,3-imidazoline	12	464.000
p-Hydroxybenzoic acid, propyl ester	15	95.000	5-Hydroxyisophthalic acid	03	962.500
4-Hydroxy-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	03	947.000	4-Hydroxy-3-methoxybenzaldehyde [Vanillin]	07	44.300
Hydroxychloroquine sulfate	06	175.000	2-Hydroxy-4-methoxybenzophenone	15	97.000
Hydroxycitronellal methyl anthranilate	07	44.050	4(4-Hydroxy-3-methoxyphenyl)-2-butanone (Vanillylacetone)	07	44.800
Hydroxycitronellol	07	156.500	2-((Hydroxymethyl)amino)-2-methylpropanol	13	245.014
2'-Hydroxy-5,9-dimethyl-6,7-benzomorphan	03	953.550	4-Hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylic acid, methyl ester, 1,1-dioxide	03	969.050
7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal)	07	156.000	Hydroxymethyl-bis-oxazoline	15	99.300
7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal)	07	157.000	2-Hydroxymethylene-17α-ethinylandroster-17β-ol-4-en-3-one	03	969.010
Hydroxyethane-1-diphosphonic acid	14	69.000	2-(Hydroxymethyl)ethanol	13	245.012
2-Hydroxyethane sulfonic acid, sodium salt	15	666.000	Hydroxymethyl-5,5-hydantoin	15	99.500
4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin)	07	44.100	Hydroxymethyl(methyl)dithiocarbamic acid, potassium salt	13	185.500
Hydroxyethyl acrylate	151119.000		2-(Hydroxymethyl)-2-methyl-1,3-propanediol (Trimethylethane)	15	1086.000
3-[N-(2-Hydroxyethyl)amino]propionitrile	03	956.000	2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris(hydroxymethyl)nitromethane)	15	401.000
Hydroxyethylcellulose	14	409.000	4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)	15	823.000
N-β-Hydroxyethyl-2,4-dihydroxybenzamide (2-Hydroxyethyl)dimethyl(3-stearamidopropyl)ammonium nitrate	03	958.000	4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-10-carboxaldehyde (Lyral)	07	97.200
N-(2-Hydroxyethyl)-1,2-diphenylethylenediamine	12	474.000	3-Hydroxy-2-methyl-4-pyrone (Maltol)	07	98.000
(N-Hydroxyethyl)ethylenedinitrilo triacetic acid	12	351.000	3-Hydroxy-N-(3-N-morpholino-γ-propyl)-2-naphthimide	03	972.500
(N-Hydroxyethyl)ethylenedinitrilo) triacetic acid, iron salt	14	70.000	6-Hydroxy-2-naphthalenesulfonic acid, sodium salt	03	987.000
(N-Hydroxyethyl)ethylenedinitrilo) triacetic acid, magnesium salt	14	72.000	1-Hydroxy-2-naphthoic acid	03	990.000
(N-Hydroxyethyl)ethylenedinitrilo) triacetic acid, trisodium salt	14	73.000	3-Hydroxy-2-naphthoic acid (B.O.N.)	03	992.000
Hydroxyethyl hydroxypropyl cellulose	14	74.000	3-Hydroxy-2-naphthoic acid, methyl ester	03	993.000
1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-nor-coconut oil fatty acids-2-imidazolium hydroxide	14	409.500	4-Hydroxynonanonic acid, γ-lactone (γ-Nonalactone)	07	99.000
1-Hydroxyethyl-1-(2-hydroxy-3-sodiumsulfonatopropyl)-2-oleyl-2-imidazolium hydroxide	12	26.700	2-(1-Hydroxyphenyl)-cyclopentanone	07	99.500
N-(2-Hydroxyethyl)-12-hydroxystearamide	12	26.800	p-Hydroxyphenylbutanone	07	44.850
Hydroxyethylidene diphosphonic acid, potassium salt	15	399.200	α-D-p-Hydroxyphenylglycine methyl ester K Hydroxyprogesterone	15	100.200
Hydroxyethylidene diphosphonic acid, sodium salt	14	75.000		06	679.600
Hydroxyethyl methacrylate	14	76.000			
1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline	12	151119.200			
		348.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Hydroxypropyl acrylate	15	1120.000	Isosorbic acid, sodium salt (Sodium erythorbate)	15	667.000
2-Hydroxypropyl cellulose	14	410.000	Isobornyl acetate	07	105.000
Hydroxypropyl guar gum	14	421.000	Isobornyl acrylate	15	103.540
Hydroxypropyl methacrylate	15	1121.000	Isobornyl methacrylate	15	103.750
N-2-hydroxypropyl-N-methyl-N,n-bis(tallow amide ethyl) ammonium ethyl sulfate	12	474.190	Isobornyl methyl ether	07	105.200
4-Hydroxyundecanoic acid, γ -lactone (γ -Undecalactone)	07	101.000	Isobornyl propionate	07	105.300
Hydroxy zinc pamoate	06	502.000	Isobutane (2-Methylpropane)	02	50.000
Hygromycin B	06	66.000	Isobutanol, ethoxylated and sulfated, ammonium salt	12	275.200
Ibuprofen	06	401.500	Isobutyl acetate	15	892.000
Imazaquin 2,4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1-hidazol-2-yloquinoline-carboxylic acid	13	118.075	Isobutyl acrylate	15	987.000
Imazethbenz methyl ester (CI222,293)	13	118.074	Isobutyl alcohol (Isopropylcarbinol)	15	849.000
2-Imidazolidinone modification	03	1005.100	Isobutylaluminum chloride	15	1361.500
Imidazoline from tall oil fatty acids and diethylenetriamine	14	164.000	Isobutylbenzene	03	1016.750
Imidazolium, 1-carboxymethyl)-4,5-dihydro-1-(hydroxyethyl)-2-nor(cocaoalkyl), hydroxides, monosodium salts	12	474.400	Isobutylbiphenyl	03	1016.000
Iminodiacetic acid	15	403.000	Isobutyl-2-butenolate	07	158.003
Imipramine hydrochloride	06	528.000	Isobutyl chloroformate	15	988.000
5-Indanol	03	1012.500	Isobutylene (2-Methylpropene)	02	51.000
1,2,3-Indantrione monohydrate (Ninhydrin)	15	103.000	Isobutyl isobutyrate	15	989.000
Indomethacin	06	402.000	Isobutyl methacrylate	15	989.500
Ingrain Blue 2	04	832.000	Isobutyl oleate	11	92.300
Insect attractants, all other	13	120.000	Isobutyl palmitate	11	97.000
Insulin	06	694.000	Isobutyl phenylacetate	07	46.000
Iodinated glycerol	06	586.000	Isobutyloquinoline	07	46.400
Iodinated (Not otherwise halogenated) hydrocarbons, all other	15	1281.000	Isobutyl stearate	11	121.390
Iodochlorhydroquin	06	176.000	Isobutyrimethoxysilane	15	1387.600
Iodoethane (Ethyl iodide), non-medical	15	1278.000	Isobutyraldehyde	15	796.000
Iodoform	06	262.000	Isobutyric acid	15	534.000
Iodomethane (Methyl iodide)	15	1280.000	Isobutyric anhydride	15	535.000
1-Iodoperfluorohexane	15	1268.000	Isobutyronitrile	15	443.000
3-Iodo-2-propynyl butylcarbamate	13	245.013	Isobutyrophenone	03	1016.800
p-Iodotoluene	03	1016.695	Isocetyl stearate	15	971.800
Iohexol	06	566.000	Isocetyl acrylate	03	1026.000
Ionone(α - and β -)	07	104.000	Isodecyl alcohol	15	990.000
α -Ionone	07	102.000	Isodecyl alcohol, ethoxylated	15	857.500
β -Ionone	07	103.000	Isodecyl diphenyl phosphate	12	760.900
Iohalamate, meglumine	06	570.000	Isodecyl methacrylate	11	12.500
Iron 1- α -alkylcarboxylate	15	670.000	Isodecyl oxypropylamine	15	990.700
Iron 2-ethylhexanoate	15	636.000	Isodecyl oxypropylamine, ethoxylated	12	330.100
Iron naphthalene	14	303.000	3-(3-Isodecyl)propylaminopropyl amine	12	330.103
Isoamyl phenylacetate	07	45.300	Isodecyl oxypropyliminopropionic acid, monosodium salt	12	330.105
Isosorbic acid (Erythorbic acid)	15	533.000	N-Isodecyl oxypropyl trimethylene diamine	12	13.900
			Isodecyl pelargonate	12	330.350
			Isolupredone, acetate	11	85.000
			Isolurane	06	670.001
			Isopentanes	06	439.001
			Isopentanes	02	69.000
			Isopentyl alcohol	15	857.700
			iso-Hexadecenyl succinic anhydride	15	165.720

Appendix D

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Isobutane	02	66,000	4,4'-Isopropylidenediphenol (Bisphenol A)	03	1038,000
Isobutene	07	47,200	4,4'-Isopropylidenediphenol, ethoxylated	03	1039,000
Isobutylene oxide	07	105,800	4,4'-Isopropylidenediphenol, propoxylated	03	1040,000
Isobutylene	07	106,000	Isopropyl linoleate	15	972,000
Isobutylene, mono- and triethanolamine salt	12	564,150	Isopropyl mercaptan (2-Propanethiol)	02	96,030
Isobutyramide	12	27,000	Isopropyl-11-methoxy-3,7,11-trimethyldodeca-2,4-dienoate	13	231,014
Isobutyric acid	03	1027,900	Isopropyl myristate	11	88,000
Isobutyric acid, triethanolamine salt	03	1029,000	Isopropyl naphthalenesulfonic acid	12	170,000
Isobutyronitrile	15	858,000	Isopropyl oleate, sulfated, sodium salt	12	260,000
Isobutyl alcohol	15	876,500	Isopropyl palmitate	11	98,000
Isobutyl alcohol, ethoxylated	15	165,750	Isopropyl phenol, mixed	03	1041,100
Isobutyl alcohol, ethoxylated	15	990,900	N-Isopropyl-N'-phenyl-p-phenylenediamine	09	63,000
Isobutyl acrylate	15	859,000	Isopropyl phosphate	12	100,500
Isobutyl alcohol	12	761,000	Isopropyl stearate	11	121,400
Isobutyl alcohol, ethoxylated	12	103,930	Isopulegol acetate	07	106,220
Isobutyl-3,5-di-t-butyl-4-hydroxyhydrocinamate	15	1033,000	Isostearamidopropyl dimethylamino glycolate	12	474,500
Isobutyl hydrogen phosphate	15	991,000	Isostearic acid, aminoethylthanolamide, acetate salt	12	575,340
Isobutyl mercaptoacetate	15	992,000	Isostearic acid, isopropyl titanium salt	12	57,600
Isobutyl-3-mercaptopropionate	11	92,600	Isostearic acid, mixed isopropanolamines salt	12	29,490
Isobutyl oleate	12	745,000	Isostearic acid, triethanolamine salt	12	29,500
Isobutylphenol, ethoxylated	12	100,400	Isostearic acid, ethoxylated	12	730,200
Isobutyl phosphate	12	100,420	Isostearyl isostearate	15	972,300
Isobutyl phosphate, potassium salt	12	207,100	Isostearyl neopentanoate	15	995,500
Isobutylphenol, ethoxylated and sulfonated, sodium salt	12	53,000	Isotrityloxypropylamine	12	330,300
Isopentane (2-Methylbutane)	02	158,950	N-Isotrityloxypropyl trimethylene diamine	12	330,320
Isopentyl acetate (Isoamyl acetate)	07	47,700	Isovalerone (Diisobutyl ketone)	15	824,000
Isopentyl benzoate	07	159,000	2-Isovaleryl-1,3-indandione	13	169,900
Isopentyl butyrate	07	160,000	Itaconic acid (Methylenesuccinic acid)	15	539,000
Isopentyl formate	07	161,000	Kanamycin	06	50,000
Isopentyl isovalerate	07	103,950	Ketamine hydrochloride	06	437,000
Isophorone	15	1031,100	Ketamine, tetrafunctional	15	414,000
Isophthalic acid, diallyl ester	03	1032,000	Ketones, all other	15	839,000
Isophthalic acid, dimethyl ester	03	1034,000	Ketoprofen	06	402,400
Isophthalonitrile	03	1034,100	Lactic acid, 100%	15	542,000
Isophthaloyl chloride	03	54,000	Lanolin, ethoxylated	12	671,000
Isoprene (2-Methyl-1,3-butadiene)	02	574,000	Lard oil acids	12	533,650
Isopropanolamine condensates, all other	12	1362,000	Lard oil acids, sodium salt	12	293,000
Isopropenylaluminum	15	330,270	Lasalocid, sodium	06	66,600
Isopropoxy-tris(2-ethylenediamino)ethyl titanate	12	993,000	Latex type polyvinylidene chloride resins	08	50,010
Isopropyl acetate	15	860,000	3-Lauramido-N,N-dimethylpropylamine oxide	12	387,000
Isopropyl alcohol	15	287,000	(3-Lauramidopropyl)trimethylammonium methyl sulfate	12	475,000
Isopropylamine, mono	15	411,000	Lauric acid	12	570,000
2-Isopropylaminoethanol	15	1035,118	Lauric acid (Ratio = 1/1)	12	547,000
Isopropylbiphenyl	03	994,000	Lauric acid (Ratio = 1/1)	12	564,300
Isopropyl chloroformate	15	74,000	Lauric acid (Ratio = 2/1)	12	534,000
Isopropyl N-(3-chlorophenyl)carbamate (CIPC)	13	106,200	Lauric acid esters, all other	11	87,000
2-Isopropylcyclohexanol	07	106,210	Lauric acid, potassium salt	12	58,000
6-Isopropyldecalone	07	1319,000	Lauric acid, zinc salt	15	678,000
Isopropyl ether	15				

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Lauric and myristic acid (Ratio = 1/1)	12	547.200	Leuco Sulfur Red 14	041070.014	
Lauric and myristic acids	12	571.000	Leuco Sulfur Yellow 22	041064.022	
Lauric and myristic acids (Ratio = 2/1)	12	535.000	Leuprolide acetate	06	278.600
Lauric and myristic acids (Ratio = 1/1)	12	564.400	Levodopa	06	835.000
Lauryl chloride	15	543.000	Levohydroxine, sodium	06	694.500
2-(2-Lauroxyethyl)carbamoyl-1-methylpyridinium chloride	12	476.000	Lidocaine	06	706.000
Lauroyl peroxide	15	1296.400	Lidocaine hydrochloride	01	9.000
N-Lauroylsarcosine, sodium salt	12	44.000	Light-oil disillates, all other	12	357.010
Lauryl acrylate	15	995.270	Lignin amine	12	761.900
Lauryl alcohol, ethoxylated and phosphated	12	81.800	Lignin, ethoxylated	12	318.400
Lauryl alkyl dimethylamine acetate	14	489.250	Lignin, sodium salt	12	159.000
Lauryl alkyl dimethylamine phosphate	14	489.260	Ligninsulfates, all other	12	153.000
Laurylamidopropyl betaine	12	13.400	Ligninsulfonic acid, ammonium salt	12	154.000
Laurylamphoglycinate	12	13.500	Ligninsulfonic acid, calcium salt	12	155.000
Lauryl chlorides	15	1239.000	Ligninsulfonic acid, chromium salt	12	156.000
Lauryl lactate	15	996.000	Ligninsulfonic acid, iron salt	12	157.000
Lauryl methacrylate	15	997.000	Ligninsulfonic acid, magnesium salt	12	157.200
Lauryl methacrylate-stearyl methacrylate copolymer resins	08	19.980	Ligninsulfonic acid, mixed chromium and iron salts	12	157.700
Lauryl pyridinium chloride	12	498.500	Ligninsulfonic acid, potassium salt	12	158.000
Lead acetate	15	595.000	Ligninsulfonic acid, sodium salt	12	158.500
Lead 1- α -alkylcarboxylate	15	670.500	l-Limonene	07	50.200
Lead-cobalt neodecanoate	15	706.000	Linaryl anthranilate	07	49.500
Lead 2-ethylhexanoate	15	637.000	Lincomycin (animal feed grade)	06	67.000
Lead/iron resorcylate salicylate	15	104.776	Linear alcohols, sulfated, all other	12	240.000
Lead naphthenate	14	306.000	Linoleic acid (Ratio = 1/1)	12	547.800
Lead neodecanoate	15	707.000	Linoleic acid (Ratio = 2/1)	12	536.000
Lead stearate, dibasic	15	757.000	Linoleic acid dimers, alkoxyated	12	711.200
Lead subacetate	15	596.000	Lipase	14	114.000
Lead tallate	15	176.000	Lipotrophic agents and cholesterol reducers, other than choline salts, all other	06	619.000
Leuco Sulfur Black 1	04	1107.000	Lithium heparin	06	627.000
Leuco Sulfur Black 2	04	1110.000	Lithium hydroxystearate	15	1373.500
Leuco Sulfur Black 11, 11:1	04	1115.000	Lithium neodecanoate	15	708.000
Leuco Sulfur Black 18	04	1115.018	Lithium ricinoleate	15	741.000
Leuco Sulfur Blue 7	04	1075.000	Lithium stearate	15	758.000
leuco sulfur blue 20	04	1080.000	Lubricating oil and grease additives, acyclic, all other	14	293.000
Leuco Sulfur Brown 1, 1:1	04	1081.020	Lubricating oil and grease additives, cyclic, all other	14	294.000
Leuco Sulfur Brown 3	04	1091.000	2,6-Lutidine	03	1047.000
Leuco Sulfur Brown 37	04	1101.000	Malenide	06	202.900
Leuco Sulfur Brown 52	04	1101.052	Malenide acetate	06	203.000
Leuco Sulfur Green 2	04	1084.000	Magnesium acetate	15	598.000
Leuco Sulfur Green 16	04	1087.000	Magnesium methyleate	15	1352.000
Leuco Sulfur Green 34	04	1087.034	Magnesium salicylate	06	262.500
Leuco Sulfur Green 35	04	1087.035	Magnesium stearate	15	759.000
Leuco Sulfur Green 36	04	1087.036	Maleic acid, monoalkyl ester	12	44.500
			Maleic acid salts, all other	15	690.000

Appendix D

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Maleic anhydride	15	104.800	N-(Mercaptoethyl)phthalimide S-(O,O	13	165.024
Maleic anhydride, polypropylene glycol copolymer	12	711.700	dimethylphosphorodithioate)		
Malic acid	15	547.000	3-Mercapto-1,2-propanediol (Thioglycerol)	15	1088.000
D-Maltose	14	459.000	3-Mercaptopropionic acid	15	550.000
Manganese t- α -alkylcarboxylate	15	671.000	Mercaptopropyltrimethoxysilane	15	1388.000
Manganese 2-ethylhexanoate	15	639.000	Mercaptosuccinic acid (Thiomalic acid)	15	551.000
Manganese gluconate	06	765.000	2-Mercaptotoluidimidazole, zinc salt	09	41.475
Manganese naphthenate	14	309.000	Mesalamine	06	404.500
Manganese neodecanoate	15	709.000	Meta, para-cresol, ethoxylated and polyphosphated, neutralized	12	81.900
Manganese stearate	15	760.000	Metaxalone	06	478.000
Mannitol	15	177.000	Methacrylamide	15	247.000
Maprotiline hydrochloride	06	529.000	Methacrylic acid	15	552.000
Meclofenamate, sodium	06	402.500	α -Methacryloxypropyltrimethoxysilane	15	1389.000
Meclofenamic acid	06	402.600	Methacycline	06	34.000
Medicinal chemicals, all other	06	837.000	Methadone hydrochloride	06	405.000
Medroxyprogesterone acetate	06	680.000	Methamphetamine	06	519.800
Mefenamic acid	06	662.000	Methamphetamine hydrochloride	06	520.000
Megestrol acetate	06	403.000	Methane	02	37.000
Melamine	06	680.500	Methanesulfonic acid, disodium salt (DSMA)	13	204.000
Melamine formaldehyde methanol polymer	03	1050.000	Methanesulfonic acid, dodecyl- and octyl- ammonium salts	13	205.000
Melamine formaldehyde resins	14	483.000	Methanesulfonic acid, monosodium salt (MSMA)	13	205.900
Melamine formaldehyde copolymer	08	8.000	Methanesulfonic acid	15	553.000
Melamine stearyl alcohol polymer	14	490.000	Methanesulfonyl chloride	15	554.000
Melatonin	06	835.500	4,7-Methano-1H-indene-2-methanol octahydro acetate	07	50.700
Melengestrol acetate	06	681.000	Methanol, synthetic	15	861.000
p-Mentha-1,3-diene (α -Terpinene)	07	107.600	Methanethine bromide	06	291.300
p-Mentha-1,4-diene (γ -Terpinene)	07	107.700	Methanamine	06	239.000
p-Mentha-1,4(8)-diene	03	1051.000	Methanamine mandelate	06	241.000
p-Mentha-1,8-diene (Limonene)	07	50.000	Methimazole	06	645.000
di-p-Mentha-1,8-diene (Limonene)	03	1052.000	Methionine (animal feed grade)	14	13.000
p-Menth-8-en-3-ol (Isopulegol)	07	108.300	Methionine, hydroxy analogue, calcium salt	14	15.000
p-Menth-1-en-3-one (Piperitone)	07	108.400	Methocarbamol	06	479.000
p-Menth-4-(8)-en-3-one (Pulegone)	07	108.700	4-Methoxyacetophenone	03	1055.000
1-1-p-Menthen-6-yl-1-propanone	07	108.600	o-Methoxy benzaldehyde	07	51.950
di-Menthol, synthetic	07	110.100	4-Methoxybenzyl alcohol (Anisyl alcohol)	07	52.000
l-Menthol, synthetic	07	110.200	2-Methoxyethanol (Ethylene glycol monomethyl ether)	03	1057.300
l-Menthyl acetate	07	111.100	2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)	15	1168.000
Meperidine hydrochloride	06	404.000	monomethyl ether)		
Mercaptoacetic acid (Thioglycolic acid)	15	549.000	2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)	15	1170.000
Mercaptoacetic acid (Thioglycolic acid) salts, all other	15	698.000	glycol monomethyl ether)		
2-Mercaptobenzothiazole	09	30.000	2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Triethylene glycol dimethyl ether)	15	1171.000
2-Mercaptobenzothiazole, copper salt	09	30.300	1-Methoxy-2-ethyl acetate	15	1000.800
2-Mercaptobenzothiazole, sodium salt	13	40.024	2-Methoxyethyl acetate	15	1124.000
2-Mercaptobenzothiazole, zinc salt	09	32.000	2-Methoxyethyl acrylate	15	1001.000
2-Mercaptoethanol	15	1353.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
2-Methoxyethyl carbonate	15	1125.000	α -Methylbenzyl acetate (Styralyl acetate)	07	58.000
Methoxyethyl morpholine	15	108.450	N-Methylbenzylamine	03	1079.000
2-Methoxyethylpiperidine	03	1057.503	2-Methyl-1,1-biphenyl(n-3-yl) methanol	03	1080.300
2-Methoxynaphthalene	07	53.000	N-Methylbis(coconut oil alkyl)amine	12	441.000
N-(4-Methoxy-3-nitrophenyl)acetamide	03	1060.100	N-Methylbis(hydrogenated tallow alkyl)amine	12	442.000
Methoxyphenamine hydrochloride	06	335.000	Methyl, bis-(2-hydroxyethyl) hydrogenated tallow alkylammonium chloride	12	465.120
4-Methoxyphenol	15	109.000	Methyl, bis-(2-hydroxyethyl) isodecylpropylammonium chloride	12	465.135
3-(4-Methoxyphenyl)-2-methyl propanal	07	53.300	Methyl, bis-(2-hydroxyethyl) isodecylpropylammonium chloride	12	465.140
1-p-Methoxyphenyl penten-1-one-3 (α -Methyl anisacetone)	07	53.400	isotridecylpropylammonium chloride	12	465.140
3-(2-Methoxyphenyl)-2-propenal	07	76.700	Methyl, bis-(2-hydroxyethyl) soyaalkylammonium chloride	12	465.160
Methoxypolyethylene glycol	15	1172.000	Methyl bromide (Bromomethane)	13	240.000
2-Methoxy-4-propenylphenol (Isoeugenol)	07	54.000	2-Methyl-1-butanol	15	841.000
2-Methoxy-4-propenylphenol, acetate	07	54.100	3-Methyl-1-butanol	15	841.001
1-Methoxy-2-propyl acetate	15	1125.300	3-Methyl-2-butenyl acetate	07	162.012
3-Methoxypropylamine	15	417.000	Methyl-1-(butylcarbamoyl)-2-benzimidazolecarbamate (Benomyl)	13	24.900
2-Methoxy-4-propylphenol	07	54.150	Methyl-1-butyl ether	14	184.000
Methocopolamine bromide	06	620.700	2-Methylbutyl isovalerate	07	162.015
Methsuximide	06	421.000	Methylbutyl pyrophosphate, ethylenedioxy titanium salt	12	100.200
Methyl 3	13	118.072	2-Methyl-3-buten-2-ol	15	862.000
N-Methylacetamide	15	248.000	Methyl butyrate	15	1006.300
Methyl acetoacetate	15	1003.000	Methylcellulose	14	411.000
4-Methylacetophenone	07	55.000	Methyl chloroformate	15	1008.000
Methyl acrylate, monomer	15	1004.000	2-(2-Methyl-4-chlorophenoxy)propionic acid, iso-octyl ester	13	118.057
Methylal (Dimethoxymethane)	15	1320.000	α -Methylcinnamaldehyde	07	59.000
Methyl alcohol, alkoxylated	12	730.700	Methyl cyanoacetate	15	448.650
Methylamine, mono	15	290.000	Methylcyclohexane	03	1083.000
Methylaminoacetaldehyde dimethyl acetal (MAADMA)	15	418.800	2-Methylcyclohexylamine	15	111.100
2-Methylaminoethanol (N-Methylethanolamine)	15	419.000	3-(N-Methyl-N-cyclohexylamino)-6-methyl-7-anilino fluoran	15	111.200
Methyl ammonium chloride	15	419.000	1-(2-Methylcyclohexyl)-3-phenylurea (Siduron)	13	76.000
Methyl (tri-hydrogenated tallow alkyl) ammonium chloride	15	419.150	Methylcyclopentadiene	02	65.500
2-(N-Methylanilino)ethanol	12	498.900	Methylcyclopentadienylmanganese tricarbonyl	14	185.000
3-(N-Methylanilino)propionitrile	03	1070.000	Methyl 3-(2-(2-dichloroethyl)-2,2-dimethyl-3-cyano-3-phenoxyphenyl)cyclopropanecarboxylate	13	166.035
p-Methylanisole	07	56.000	Methyl 3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane carboxate	03	1084.150
Methyl anthranilate	07	57.000	Methyl dihydrogen phosphate	15	1034.000
2-Methylanthraquinone	03	1075.000	5-Methyl-1,7-dihydroxy-1,3,4-triazaindolizine	14	366.000
Methyl behenate	15	972.800	Methyl 2 (4,6-dimethoxy-pyrimidin-2-yl) amino carbonyl amino sulfonyl methyl benzoate (Bensulfuron) (Londax)	13	76.045
β -Methylbenzene propanal	07	57.070			
Methylbenzene sulfonate	15	110.150			
Methyl-2-benzimidazole carbamate	03	1464.300			
Methyl benzoate	07	57.100			
Methyl-p-benzoquinone	15	110.200			
2-Methylbenzothiazole	03	1078.000			
4-Methylbenzotriazole	03	1078.300			
o-Methylbenzoyl chloride	03	1078.700			
4-Methylbenzoyl chloride	03	1078.800			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Methyl N',N'-dimethyl-N-[(methylcarbamoyloxy)-1-thiooxamide]	13	231.010	6-Methyl- α -ionone	07	112.000
Methyl 3,3-dimethyl-4-pentenoate	15	1009.200	Methyl isobutyl ketone	15	828.000
Methyl 2-[[[(4,6-dimethyl-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]benzoate	13	118.055	Methyl isobutyrate	07	162.500
N-Methylcloctadecylamine	12	443.000	Methyl isocyanate	15	424.500
Methyl-ditalowimidazolium methosulfate	12	465.163	Methyl iso-octadecanoate	15	977.500
N-Methylthiocarbamic acid, potassium salt	13	187.012	Methylisopropyl ketone	15	828.200
N-Methylthiocarbamic acid, sodium salt (Meitham)	13	241.000	2-Methylacetonitrile (Acetone cyanohydrin)	15	449.000
Methylkopa	06	358.000	Methyl linoleate	15	977.600
2,2'-Methylenbis(6-tert-butyl-p-cresol)	09	90.000	Methyl mercaptan (Meihanethiol)	02	94.000
2,2'-Methylenbis(6-tert-butyl-4-ethylphenol)	09	91.000	Methyl methacrylate-butadiene styrene (MBS) resins	08	44.041
2,2'-Methylenbis(4-methyl-6-nonyl-p-cresol)	03	1089.100	Methyl methacrylate, monomer	15	1011.000
Methylenbis(thiocyanate)	13	195.010	N-Methyl-methanamine with borane (1:1)	15	1368.600
Methylene-bridged polyalkyl phenols	14	208.000	methyl 2-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino carbonyl amino sulfonyl benzozote (Metsulfuron methyl)	13	76.060
Methylene chloride (Dichloromethane)	15	1234.000	Methyl 2-[[[N-(4-methoxy-6-methyl-1,3,5-triazin-2-yl)thylamino]carbonyl]amino]sulfonyl]benzoate	13	76.062
4,4'-Methylenedianiline	03	1091.300	Methyl N-methylanthranilate	07	62.000
Methylenedicyclohexylmethane 1,4-diisocyanate	03	1091.100	Methyl-2-methyl butyrate	07	162.550
1,2-Methylenedioxybenzene	07	60.600	S-Methyl-N-[(methylcarbamoyloxy]thioacetimidate (Methomyl)	13	213.400
1,2-Methylenedioxy-4-propylene benzene (isoSafrole)	03	1092.000	a-Methyl-3,4-methylene dioxycinnamaldehyde	07	62.200
5,5'-Methylenedisulcyllic acid	07	163.200	3-Methyl-N-[2(methylsulfonamidoethyl)-N-ethyl-p-phenylenediamine] sequisulfate monohydrate	14	367.500
2-Methylene undecanal	07	973.000	2-Methyl-2-(methylthio)propionaldehyde	13	213.500
Methyl esters of coconut oil	15	974.500	(methylcarbamoyloxy)oxime (Aldicarb)	15	117.000
Methyl esters of lard oil	15	975.000	4-Methylmorpholine	01	12.500
Methyl ethyl ketone	15	826.500	Methylnaphthalene	12	173.000
Methyl ethyl sulfide	02	93.800	Methylnaphthalenesulfonic acid, sodium salt	01	173.000
a-(1-methylethyl-x-4-trifluoro-methoxy phenyl)-5-pyrimidinemethanol (Flurprimidol)	13	168.997	N-Methyl-p-nitroaniline	03	1102.000
Methyl formate	15	1010.000	4-Methyl-2-nitroanisole	03	1104.000
Methyl p-formylbenzoate	15	1450.000	1-(2-Methyl-4-nitrophenyl)pyrrolidine	03	1096.300
Methyl p-formylbenzoate	03	897.500	2-Methyl-2-nitro-1-propanol	15	426.000
Methylglucoside laurate	12	713.000	3-Methyl-2-[and 3]nonene nitrile	07	162.750
N-(1-Methylheptyl)ethanolamine	14	185.500	Methyl-2-nonenolate	07	162.600
N-(1-Methylheptyl)-N'-phenyl-p-phenylenediamine	09	64.000	Methyrynylnaphthalenesulfonic acid, sodium salt	12	174.000
5-Methyl-2-hexanone (Methyl isocamyl ketone)	15	827.000	2-Methyl-5-norbornene-2,3-dicarboxylic anhydride	03	1108.000
Methyl hexyl ether	07	162.480	1-methyl-2-nor-tallow-1-[2-tallow amidoethyl]imidazoliummethyl sulfate	12	476.880
p-Methylhydratropaldehyde	07	60.800	Methyl oleate	15	977.650
Methyl(hydrogenated tallow alkyl)diethylamine condensate, polyethoxylated, methyl sulfate	12	465.165	Methyl oleate	11	94.000
4-Methyl-5-hydroxymethyl imidazole	15	448.750	Methyl oleate, sulfated, sodium salt	12	261.000
Methyl 12-hydroxystearate	15	976.000	N-Methyl-N-oleoyltaurine, sodium salt	12	184.000
(2,4-Methyl-5-imidazolyl)methylthioethylamine dihydrochloride	03	1094.853	Methyl-3-oxo-2-pentane acetate	07	114.250
2,2'-(Methylimino)diethanol (Methyldiethanolamine)	15	424.000	N-Methyl-N-palmitoyltaurine, sodium salt	12	185.000
3-Methylindole (Skatole)	07	61.000	Methyl pentachlorostearate	15	977.700
Methylionone(α - and β -)	07	114.000	2-Methyl-2,4-pentanediol (Hexylene glycol)	15	1089.000
γ -Methylionone	07	114.100	2-Methyl-1-pentanol	15	863.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
4-Methyl-2-pentanol (1-Methylisobutylcarbinol)	15	864.000	Methyltrimethoxysilane and polymethyltrisiloxane	15	1390.000
4-Methyl-3-penten-2-one (Mesityl oxide)	15	829.000	Methyltriocetylammmonium chloride	12	499.000
N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine	09	64.200	2-Methylundecanal	07	163.000
Methylphenylacetate hydrochloride	06	545.700	Methylvinyl cyclic siloxane	15	120.500
N-(3-Methylphenyl)acetamide	03	1114.480	Methyl vinyl ether	15	1322.000
Methyl phenylacetate	07	63.000	Metoclopramide hydrochloride	06	81.300
4-(1-Methyl-1-phenylethyl)phenol	03	1114.600	Metoprolol tartrate	06	358.300
3-Methyl-5-phenyl-1-pentanol	07	63.200	Metronidazole	06	177.000
4-Methyl-1-phenyl-3-pyrazolidione	14	369.000	Metyrapone	06	578.000
1-Methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)pyridone (Fluridone)	13	118.063	Minocycline	06	35.000
4-Methylphthalic acid	03	1120.502	Minoxidil	06	358.400
1-Methylpiperidine	03	1123.500	Miscellaneous acylic chemicals, all other	15	1423.000
2-Methylpiperidine	03	1121.800	Mixed alcohol borates	15	1368.720
3-(2-Methylpiperidino)propyl-3,4-dichlorobenzoate (Pipron)	13	40.026	Mixed alcohols, ethoxylated	12	762.000
Methyl pivaloylacetate	15	1012.800	Mixed alkanesulfonic acid	12	211.000
N-Methyl-N-polyoxyethylene-N,N-bis(hydrogenated tallow amidoethyl)ammonium	12	476.920	Mixed alkane sulfonic acid, sodium salt	12	212.000
N-Methyl-N-polyoxyethylene-N,N-bis(tallow amidoethyl) methylprednisolone	06	663.000	3-(Mixed alkoxy)propylamine, ethoxylated oxides	12	330.950
2-Methyl-2-propanamine with borane(1:1)	15	1368.700	3-(3-Mixed alkoxy)propylaminopropyl amine	12	330.955
Methylpropyl ketone	15	829.500	(Mixed alkyl)amine	12	423.000
Methylpseudoionone	15	830.000	(Mixed alkyl)amine, ethoxylated	12	331.000
1-Methyl-2-pyrrolidone, monomer	15	120.000	(Mixed alkyl)amine phosphate	12	394.700
Methyl ricinoleate	11	110.000	(Mixed alkyl)ammonium chloride	12	499.500
Methyl salicylate	07	64.000	Mixed alkyl benzoate	12	714.450
Methyl stearate	15	978.000	Mixed t- α -alkylcarboxylic acid salts	15	671.100
α -Methylstyrene	03	1125.000	Mixed alkyl imidazole derivative, ethoxylated	12	465.300
ar-Methylstyrene (Vinyltoluene)	03	1125.100	(Mixed alkyl)phenol alkylenediaminealkanolamine formaldehyde	12	782.950
α -Methyl styrene polymers	08	45.000	(Mixed alkyl)phenol epichlorohydrin-formaldehyde, alkoxyated	12	722.100
Methyl sulfite (Dimethyl sulfite)	15	1013.000	(Mixed alkyl)phenol, ethoxylated	12	746.000
Methyl sulfide (Dimethyl sulfide)	15	1354.000	(Mixed alkyl)phenol, ethoxylated, butyl ether	12	747.000
Methyl sulfoxide (Dimethyl sulfoxide)	15	1355.000	(Mixed alkyl)phenol-formaldehyde, alkoxyated	12	722.000
N-Methyl-N-(tall oil acyl)taurine, sodium salt	12	186.000	Mixed alkyl phenol sulfate, ethoxylated, triethanolamine salt	12	244.300
Methylaloldiethylenetriamine condensate, polyethoxylated, methyl sulfate	12	465.200	Mixed alkyl phosphate, sodium salt	12	102.100
Methylaloldiethylenetriamine condensate, polypropoxylated, methyl sulfate	12	465.210	Mixed alkyl phosphate	12	101.000
N-Methyl taurine, sodium salt (2-Methyl-2-aminoethanesulfonic acid, sodium salt)	15	701.300	Mixed alkyl phosphate, alkylamine salt	12	101.500
Methyltestosterone	06	641.200	Mixed alkyl phosphate, diethanolamine salt	12	102.000
Methyltetrahydrophthalic anhydride	15	120.300	Mixed alkyl phosphate, potassium salt	12	102.050
Methyl-2-thiofuroate	07	114.400	Mixed alkyl phosphate, triethanolamine salt	12	102.120
Methyl thiopinalone oxime	15	120.400	N-(Mixed alkyl)polyethylenepolyamine	12	412.000
Methyl tri(C9-10)ammonium chloride	12	499.900	(Mixed alkyl)stearate	12	714.520
1-Methyl-3,5,7-triaza-1-azonia tricyclodecane chloride	13	175.300	(Mixed alkyl)sulfobetaine	12	15.000
			Mixed alpha-olefins and vegetable	12	318.485
			Mixed animal and vegetable oil, sulfated, sodium salt	12	299.800
			Mixed carboxylic acids	12	536.450
			Mixed carboxylic acids	12	547.850

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Mixed (coco and soya fatty acids) reaction products with chloromethane and diethylenetriamine, ethoxylated, quaternized	12	477.220	Modified rosin (unesterified)	08	41.000
Mixed dialkyl hydrogen phosphates, amine salts	15	1034.502	Modified rosin esters	08	40.000
Mixed fatty acid amide with diethylene triamine/ethyl sulfate	12	477.226	Modified succinimides	14	249.500
Mixed fatty acids-alkylenediamine condensate, polyethoxylate	12	377.000	Molindone hydrochloride	06	505.000
Mixed fatty acids, alkyl ether, ethoxylated	12	671.100	Monesin	06	68.000
Mixed fatty acids, camine/acid ratio=1/1	12	547.855	Monoethanolamine	15	379.000
Mixed fatty acids, diethanolamine condensate	12	578.800	mono(2-ethylhexyl)-2-ethylhexyl-phosphonic acid	15	1031.950
Mixed fatty acids, neutralized	12	536.570	Monohydric alcohol esters, all other	15	1070.000
Mixed fish oils, sulfated, ammonium salt	12	299.990	Monoisopropanolamine	15	407.000
Mixed fish oils, sulfated, sodium salt	12	300.000	Monomethyl tin	15	1404.877
Mixed higher glycol amine (MHGA)	15	430.500	Mordant Brown 1	04	871.000
Mixed linear alcohols, alkoxyated, all other	12	741.000	Mordant Brown 70	04	882.000
Mixed linear alcohols, alkoxyated	12	736.950	Mordant Orange 3	04	848.003
Mixed linear alcohols, alkoxyated and phosphated, potassium salt	12	87.007	Mordant Orange 6	04	850.000
Mixed linear alcohols, ethoxylated	12	737.000	Mordant Orange 6	04	841.000
Mixed linear alcohols, ethoxylated, benzyl ether	12	737.100	Mordant Yellow 16	04	842.000
Mixed linear alcohols, ethoxylated and carbonated, sodium salt	12	318.500	Mordant Yellow 20	04	842.000
Mixed linear alcohols, ethoxylated and phosphated	12	87.000	Morphine sulfate	06	405.500
Mixed linear alcohols, ethoxylated and phosphated, sodium salt	12	87.010	Morpholine	15	121.000
Mixed linear alcohols, ethoxylated and propoxylated	12	738.000	Morpholine salt of gluconic acid	15	121.800
Mixed linear alcohols, ethoxylated and sulfated, ammonium salt	12	276.000	Morpholine salt of p-toluene sulfonic acid	15	122.000
Mixed linear alcohols, ethoxylated and sulfated, sodium salt	12	278.000	N-Morpholinyl-2-benzothiazolyl disulfide	09	33.000
Mixed linear alcohols, sulfated, ammonium salt	12	232.000	p-Morpholinyl-2,5-dibutoxybenzene diazonium chloride	14	370.000
Mixed linear alcohols, sulfated, sodium salt	12	233.100	Moxalactam	06	51.500
Mixed linear olefin sulfonate	12	212.125	Mustard seed oil, sulfated, sodium salt	12	309.000
Mixed oleic, lauric, stearic, and palmitic hexaglycerol esters	12	692.000	Myrcene	15	1343.000
Mixed (secondary linear alcohol)polyethylene propionic acid, sodium salt	12	45.700	Myrcenyl acetate	07	163.800
Mixed tall oil and rosin acids, ethoxylated	12	671.300	Myristaldehyde	07	164.000
Mixed tridecyl alcohol and 2-ethylhexanol, phosphated, potassium salt	12	87.050	Myristic acid (Ratio=1/1)	12	547.900
Mixed vegetable fatty acids, potassium salt	12	59.000	Myristic acid esters, all other	11	89.000
Mixed vegetable oils, sulfated, sodium salt	12	307.900	Myristyl alcohol, propoxylated	12	738.300
Mixed vegetable oils, sulfated, sodium salt	12	308.000	Myristyl lactate	15	1015.000
Mixed wool grease and tall oil fatty acids	12	74.050	Myristyl myristate	15	979.000
Mixtures not specifically itemized, all other	15	1500.000	Myristyl stearate	15	979.100
Mixtures of alcohols, C ₁₂ and higher, other	15	883.360	Nadolol	11	124.525
			Natcilin, sodium	06	358.500
			Naphazoline hydrochloride	06	17.000
			Naphthalene	06	336.000
			Naphthalene, crude, solidifying at less than 74° C.	02	17.000
			Naphthalene, crude, solidifying at 76° C to less than 79° C	01	12.000
			2,6-Naphthalenedicarboxylic acid	01	14.000
			Naphthalenesulfonates, all other	03	819.000
			2-Naphthalenesulfonic acid	12	176.000
			1-Naphthalenesulfonic acid, formaldehyde condensate and salt	03	1141.000
			2-Naphthalenesulfonic acid, formaldehyde condensate and salt	14	465.000
				14	466.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Naphthalene sulfonic acid, polymer with formaldehyde, sodium salt	12	722.500	Neopentyl glycol oleate	15	1126.600
Naphthalene sulfonic acid, sodium salt, formaldehyde condensate	12	174.500	Neopentyl glycol vegetable oil ester	15	1126.700
Naphthalimide	03	1148.000	Neostigmine methylsulfate	06	317.000
Naphthenate driers, mixed salts	14	310.000	Netilmicin	06	62.001
Naphthenic acid, acid number 150-199	02	19.000	Niacinamide (medicinal grade)	06	780.500
Naphthenic acid, acid number 200-224	02	20.000	Niacinamide (animal feed grade)	06	780.000
Naphthenic acid, acid number less than 150	02	18.000	Nickel acetate	15	601.000
Naphthenic acid, copper salt	13	26.000	Nickel 2-ethylhexanoate	15	640.000
Naphthenic acid, ethoxylated	12	45.800	Nicotine polacrilex	06	836.000
Naphthenic acid/polyamine condensates	15	122.250	Nicotinic acid, 2-(4-isopropyl-4-methyl-5-oxo-2-imidazolyl-1)	13	118.073
Naphthenic acids-polyalkylene polyamine condensate	12	361.150	Nicotinonitrile (3-Cyanopyridine)	03	1162.000
Naphthenic acids-tall oil fatty acids-polyalkylene polyamine condensate	12	361.200	Nifedipine	06	374.200
β -Naphthol, ethoxylated	12	748.500	Nitarsone	06	158.000
1-Naphthol, ethoxylated and sulfated, free acid	12	286.090	Nitrated lard oil	15	431.000
Naphthol reds, all other	05	46.000	Nitriles, all other	15	457.000
1-Naphthylamine (α -Naphthylamine)	03	1158.000	Nitroacetic acid, zinc salt	14	85.000
p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2-naphthylamine)	03	1160.000	Nitrotri-acetic acid	14	78.000
1-Naphthyl N-methylcarbamate (Carbaryl)	13	77.900	Nitrotri-acetic acid, trisodium salt	14	81.000
N-1-Naphthylphthalamic acid (NPA)	13	150.000	Nitro-tris-methylene triphosphonic acid	14	82.000
Naphthalene sulfonic acid, polymer with formaldehyde and 4,4'-dihydroxydiphenyl sulfone, ammonium salt	12	722.450	Nitro-tris-methylene triphosphonic acid, potas	14	83.000
Natural fats and oils, ethoxylated, all other	12	673.000	Nitro-tris-methylene triphosphonic acid, sodium salt	14	84.000
(NBR) type	10	12.000	o-Nitroaniline	03	1172.000
Neat's foot oil, sulfated, sodium salt	12	294.000	p-Nitroaniline	03	1173.000
Neo-C ₈ -C ₁₂ acids	15	555.970	5-Nitroanthranilic acid	03	1184.000
Neoalkoxy, dodecylbenzene-sulfonyl titanate	12	137.500	1-Nitroanthraquinone	03	1185.000
Neoalkoxy, tris(m-amino)-phenyl titanate	12	331.850	-Nitrobenzamide	03	1187.503
Neoalkoxy, trineodecanoyl titanate	12	59.600	Nitrobenzene	03	1190.000
Neoalkoxy, trineodecanoyl zirconate	12	59.620	m-Nitrobenzenesulfonic acid, sodium salt	03	1195.000
Neoalkoxy, tris(m-amino) phenyl zirconate	12	331.890	o-Nitrobenzoic acid	03	1200.503
Neoalkoxy tris(dioctyl) pyrophosphato zirconate	12	102.550	m-Nitrobenzoic acid	03	1200.000
Neodecanoic acid	15	556.000	p-Nitrobenzoic acid	03	1201.000
Neodecanoic acid, diethanolamine salt	15	701.500	m-Nitrobenzoic acid, sodium salt	03	1205.000
Neodecanoic acid, potassium salt	15	709.600	2-Nitro-N-benzoylaniline	03	1205.603
Neodecanoic acid, sodium salt	15	709.770	2-Nitro-1-butanol	15	458.000
Neodecanoyl chloride	15	557.100	4-(2-Nitrobutyl) morpholine	15	122.406
Neoheptanoyl chloride	15	67.000	2-Nitro-p-cresol	03	1210.000
Neohexane (2,2-Dimethylbutane)	02	52.000	5-Nitrodimethylisophthalate	03	1215.150
Neomycin (medicinal grade)	06	69.000	Nitrodiphenylamine	03	1212.000
Neomycin (animal feed grade)	06	69.000	Nitroethane	15	459.000
Neopentanoic/neohexanoic acids	15	558.000	Nitrogenous compounds, acyclic, all other	15	484.000
Neopentyl glycol adipate	11	64.500	5-Nitroisophthalic acid	03	1215.000
Neopentyl glycol glutarate	11	85.650	Nitromethane	15	460.000
			p-Nitrophenethyl alcohol	03	1224.000
			p-Nitrophenol	03	1228.000
			p-Nitrophenol, sodium salt	03	1229.000
			p-Nitrophenoxymethanol	03	1230.202

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
1-Nitropropane	15	461,000	Nylon 6/6	14	389,000
2-Nitropropane	15	462,000	Nylon 6,6-acrylonitrile-butadiene-styrene	08	52,150
5-Nitrosalicylic acid	03	1239,200	Nylon type, polyamide resins	08	26,000
p-Nitrosophenol	03	1240,000	Nystatin (medicinal grade)	06	3,000
4-Nitrosophenol, sodium salt	03	1240,100	Ocimene	07	165,700
N-Nitrosophenylhydroxylamine, ethanolic salt	15	122,450	Ocimenyl acetate	07	165,800
o-Nitrotoluene	03	1244,000	Octabromodiphenyl oxide	15	122,500
m-Nitrotoluene	03	1243,000	Octachlorohexahydro-4,7-methanoindene (Chlordan)	13	143,000
p-Nitrotoluene	03	1245,000	n-Octadecane	15	1346,000
Nitrotoluene mixtures	03	1246,000	Octadecanoic acid, 2-(1-carboxyethoxy)-1-methyl-2-oxoethyl ester, sodium salt	15	1355,150
(2-Nitro-4-trifluoromethylphenyl)acetic acid	03	1255,500	1-Octadecanol (Stearyl alcohol)	15	877,000
Nizatidine	06	620,800	Octadecanenitrile (Oleonitrile)	15	450,000
Nonanal	07	165,000	cis-9-Octadecen-1-ol (Oleyl alcohol)	15	878,000
1,3-Nonanediol acetate	07	165,200	9-Octadecenyl alcohol, ethoxylated	12	731,000
Nonanoic acid (Pelargonic acid)	15	559,000	9-Octadecenyl alcohol, ethoxylated and phosphated	12	84,000
Nonene (Tripropylene)	02	80,000	9-Octadecenylamine	12	424,000
Nonenylsuccinic anhydride	15	165,770	(9-Octadecenyl)amine, ethoxylated	12	332,000
Nonionic surface-active agents, all other	12	787,000	9-Octadecenyl phosphate	12	103,000
Non-nylon type, polyamide resins	08	27,000	Octadecanyl succinic anhydride	15	165,800
Nonnyldiphenylamine mixture (Mono-, di-, and tri-)	09	76,700	N-(9-Octadecenyl)trimethylenediamine	15	165,800
ter-Nonyl mercaptan	09	171,250	Octadecylamine, ethoxylated and phosphated, sodium salt	12	413,000
Nonylphenol	03	1262,000	Octadecyl alcohol, ethoxylated	12	112,630
Nonylphenol, barium salt	14	229,000	Octadecylamine	12	732,000
Nonylphenol, ethoxylated	12	749,000	Octadecylamine acetate	12	425,000
Nonylphenol, ethoxylated and carbonated, sodium salt	12	318,640	Octadecylamine, ethoxylated	12	396,000
Nonylphenol, ethoxylated and phosphated	12	82,000	Octadecyl-dibenzyltrimethyl-1,3-propane diammonium chloride	12	333,000
Nonylphenol, ethoxylated and phosphated, diethanolamine salt	12	83,100	N-Octadecyl-N,N-di(2-hydroxyethyl)-N-methylammonium chloride	12	527,670
Nonylphenol, ethoxylated and phosphated, sodium salt	12	83,200	Octadecyl-3-mercaptopropionate	12	465,400
Nonylphenol, ethoxylated, phosphate esters	12	750,010	N-Octadecylsulfosuccinamic acid, disodium salt	15	1016,000
Nonylphenol, ethoxylated and propoxylated	12	750,000	Octahydro-5-methoxy-4,7-methano-1H-indene, 2-carboxaldehyde	12	179,000
Nonylphenol, ethoxylated and sulfated, ammonium salt	12	287,000	Octanal	07	64,600
Nonylphenol, ethoxylated and sulfated, sodium salt	12	288,000	n-Octane	07	166,000
Nonylphenol, ethoxylated with mixed fatty acids	12	750,050	n-Octane	15	1348,000
Nonylphenol ethoxylate, oleate	12	714,650	n-Octane	02	75,000
Nonylphenol-formaldehyde, alkoxylated	12	723,000	n-Octanesulfonic acid, sodium salt	12	212,100
Nonylphenol oleate, ethoxylated	12	749,500	Octanoic acid (Caprylic acid)	15	560,000
Nonylphenol poly(ethyleneoxy)acetic acid, sodium salt	12	45,900	Octanoic acid (Caprylic acid) salts, all other	15	716,000
nonylphenoxy ethoxycocaoate	12	750,900	1-Octanol	15	866,000
Nonylphenoxy poly(ethyleneoxy)ethyl iodide	12	751,000	2-Octanol (sec-Capryl alcohol)	15	867,000
Nonylphenyl phosphites, mixed	09	85,000	2-Octanone (Hexyl methyl ketone)	15	831,000
Nopyl acetate	07	115,000	2-Octanone-4-one	07	166,250
Norgestrel	06	682,000	Octenes, mixed	02	75,700
2-Nor-tall oil alkyl-1-tall oil amido-ethyl imidazoline	12	361,050	Octenylsuccinic anhydride	15	165,820
Nortriptyline hydrochloride	06	531,000	N-Octyl acetate	07	166,300
Noscipine	06	434,500			
Novobiocin, sodium	06	53,000			
Nylon 6 (Polymer for fiber, only)	14	388,000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
tert-Octylamine	15	293.100	Oleic acid-N,N-dimethyltrimethylenediamine condensate	12	365.000
n-Octylamine, mono	15	293.000	Oleic acid esters, all other	11	96.000
Octyl chloride	15	124.000	Oleic acid-ethanolamine condensate, ethoxylated	12	579.000
Octyl decyl dimethyl ammonium chloride	12	500.700	Oleic acid, ethoxylated	12	671.500
n-Octyl n-decyl phthalate	11	49.000	Oleic acid, ethoxylated and propoxylated	12	671.505
Octyldimethylamine oxide	12	333.050	Oleic acid-ethylenediamine condensate, propoxylated and sulfated, sodium salt	12	16.000
Octyldiphenylamine	09	77.000	Oleic acid, mixed isopropanolamine salt	12	30.400
Octyldiphenylamine, alkylated	09	78.000	Oleic acid, morpholine salt	12	30.500
2-n-Octyl-4-isothiazolin-3-one	13	25.500	Oleic acid, potassium salt	12	60.000
Octyl isovalerate	07	166.360	Oleic acid, sodium salt	12	61.000
n-Octyl mercaptan	09	171.400	Oleic acid, sulfated	12	261.600
Octylphenol	03	1265.000	Oleic acid, sulfated, disodium salt	12	261.700
n-Octylphenol, ethoxylated	12	752.000	Oleic acid, sulfated, sodium salt	12	261.800
Octylphenol, ethoxylated and phosphated	12	85.000	Oleic acid, triethanolamine salt	12	31.000
Octylphenol, ethoxylated and phosphated, magnesium salt	12		N-(Oleoyloxyisopropyl)sulfosuccinamic acid	12	180.000
Octylphenol, ethoxylated and sulfated, sodium salt	12	86.000	Oleoylpalmitamide	15	251.000
n-Octylphenol, ethoxylated and sulfonated, sodium salt	12	290.000	Oleyl alcohol, ethoxylated	12	732.100
tert-Octylphenol-formaldehyde, ethoxylated	12	208.000	Oleyl betaine	12	16.100
Octylphenoxydiethoxy chloride	03	1265.118	Oleyl oleate	11	94.500
Octylphenoxy polyethoxy ethyl sulfate	12	290.100	Oleoyloxyethyldiamide oxypropanol sulfonic acid	12	212.200
Octyl phosphate, alkylamine salt	12	106.400	Oleyl sulfate, sodium salt	12	238.200
Octyl phosphate, isopropoxy titanium salt	12	106.400	Olive oil acids, potassium salt	12	61.950
Octyl phosphate neoalkoxy titanium salt	12	106.700	Organo-aluminum compounds, all other	15	1367.000
Octyl polyphosphate	12	108.000	Organo-boron compounds, all other	15	1371.000
Octyl polyphosphate, potassium salt	12	109.000	Organo-phosphorus insecticides, cyclic, all other	13	165.000
Octyl pyrophosphate, ethylenedioxy titanium salt	12	110.100	Organo-silicone compounds, all other	15	1399.000
Octyl pyrophosphate, isopropoxy titanium salt	12	110.150	Organo-tin compounds, all other	15	1407.000
Octyl pyrophosphate neoalkoxy titanium salt	12	110.150	Organotin mercaptides	15	1404.910
Octyl pyrophosphate, oxoethylenedioxy titanium salt	12	110.170	Organotin zinc compounds, all other	15	1409.000
Octyl pyrophosphate titanium salt	12	110.200	Orphenadrine citrate	06	265.500
Octyl sulfate, sodium salt	12	238.000	Other copolymer resins of acrylic and/or methacrylic acid esters	08	20.000
N-Octyltriethoxy silane	15	1390.500	Other ethylene copolymer resins	08	31.800
Oil-soluble petroleum sulfonate, all other	14	217.000	Other homopolymer resins of acrylic and/or methacrylic acid esters	08	20.050
Oil-soluble petroleum sulfonate, barium salt	14	212.000	Other hydrolytic enzymes	14	120.000
Oil-soluble petroleum sulfonate, calcium salt	14	213.000	7-Oxabicyclo-[2.2.1]-heptane-2,3-dicarboxylic acid, disodium salt (Endothall)	13	83.000
Oil-soluble petroleum sulfonate, magnesium salt	14	214.000	Oxacillin, sodium	06	18.000
Oil-soluble petroleum sulfonate, mixed salts	14	214.500	Oxalic acid salts, all other	15	727.000
Oil-soluble petroleum sulfonate, sodium salt	14	215.000	Oxamide	15	251.250
Oleamide (Octadecene amide)	15	250.000	Oxidate light ends	15	1451.000
Oleamidopropyl betaine	12	15.900	Oxidized Fischer-Tropsch wax	15	566.000
Oleamidossulfosuccinamic acid, disodium salt	12	179.900	Oxidized hydrocarbon mixture	14	218.000
Oleic acid (Ratio = 1/1)	12	548.000	Oxiracetam	06	836.500
Oleic acid (Ratio = 2/1)	12	538.000	Oxoalcohol bottoms, sulfated, sodium salt	12	238.500
Oleic acid	15	563.000			
Oleic acid-1-(2-aminoethyl)piperazine condensate	12	362.000			
Oleic acid, ammonium salt	12	59.800			
Oleic acid, diethanolamine salt	12	29.990			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Oxaluminum benzoate/2-ethylhexanoate	15	125.497	Penicillin V	06	26.000
Oxaluminum isopropoxide	15	1363.050	Penicillin G, benzathine	06	21.000
Oxaluminum stearate	15	1363.100	Penicillin G, potassium	06	22.000
1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]anthraquinone	03	1269.000	Penicillin V, potassium	06	29.000
3-Oxo-1,2-benzisothiazoline-2-acetic acid, methyl ester, 1,1-dioxide	03	1272.000	Penicillin G, procaine (animal feed grade)	06	74.000
3-Oxo-2-pentylcyclopropane acetic acid	07	115.050	Penicillin G, procaine (medicinal grade)	06	23.000
Oxo process bottoms	15	1451.300	Pentachloronitrobenzene (PCNB)	13	27.000
Oxtriphyllyne	06	745.800	Pentachlorophenol, sodium salt	13	29.000
Oxaluminum benzoate	03	1275.700	Pentaerythritol	15	1091.000
Oxaluminum octanoate	15	1363.200	Pentaerythritol stearate	15	715.100
p,p'-Oxybis(benzenesulfonhydrazide)	09	109.000	Pentaerythritol tetrakis (3-Mercaptopropionate)	15	1131.000
Oxybutyryn chloride	06	301.500	Pentaerythritol tetrastearate	15	1131.300
Oxycodone hydrochloride	06	406.000	Pentaerythritol tribenzoate	15	125.700
Oxycodone terephthalate	06	406.100	Pentaerythritol trihexamine	15	294.000
4,4'-Oxydianiline	03	1275.000	1,1,3,3,5-Pentamethyl-4,6-dinitroindan (Moskene)	07	64.900
N-Oxydiethylene-2-benzothiazolesulfenamide	09	34.000	N,N,N',N'-Pentamethyl-N-(tallow alkyl)trimethylene bis(ammonium chloride)	12	501.000
N-Oxydiethylenethiocarbamyl-N'-oxydiethylenesulfenamide	09	34.100	Pentamidine isethionate	06	270.700
Oxygen-containing quaternary ammonium salts (Except those having amide linkages), all other	12	467.000	n-Pentane	02	55.000
Oxyquinoline citrate	06	269.000	2,4-Pentanedione (Acetylacetone)	15	833.000
Oxyquinoline sulfate	06	270.000	2,4-Pentanedione peroxide	15	1296.420
Oxytetracycline (animal feed grade)	06	72.000	1-Pentanol	15	843.000
Palmitic and stearic acids, sodium salt	12	63.350	3-Pentanone (Diethyl ketone)	15	835.000
Palm kernel oil acids (Ratio=1/1)	12	549.100	Pentazocine	06	416.001
Palm kernel oil acids, potassium salt	12	62.890	Pentazocine hydrochloride	02	416.003
Palm kernel oil acids, sodium salt	12	62.900	1-Pentene	02	56.000
Palm oil acids, sodium salt	12	63.000	2-Pentene	02	57.000
Panthenol	06	790.000	Pentenes, mixed	02	58.000
Papain	14	102.000	Pentobarbital	06	456.000
Papaverine hydrochloride	06	746.000	Pentylamine, mono	15	296.000
para-Cymene	07	95.400	α-Pentylcinnamaldehyde	07	65.000
n-Paraffins, other	02	85.000	2-Pentyl-cyclopenten-1-one	07	115.060
n-Paraffins, C ₁₀ -C ₁₄	02	84.000	o-Pentylphenol (o-Amylphenol)	03	1279.000
n-Paraffins, C ₁₀ -C ₁₆	02	84.250	p-tert-Pentylphenol	03	1279.100
n-Paraffins, C ₁₂ -C ₁₈	02	84.260	Pepsin	14	103.000
n-Paraffins, C ₆ -C ₁₁	02	82.000	Perchloroethylene (Tetrachloroethane)	15	1243.000
n-Paraffins, C ₆ -C ₉	02	81.000	Perfluoroalkyl polyether	15	1410.100
n-Paraffins, C ₉ -C ₁₅	02	83.000	Peroxyacetic acid (Peracetic acid)	15	1296.430
Parformaldehyde	15	1176.500	Perphenazine	06	486.000
Peanut oil, sulfated, sodium salt	12	310.000	3,4,9,10-Perylene-tetracarboxylic-3,4,9,10-dianhydride	03	1280.503
Pectinase	14	116.000	3,4,9,10-Perylene-tetracarboxylic-3,4,9,10-diimide	03	1281.000
Pelargonic acid (Ratio = 2/1)	12	541.000	Pesticides and related products, acyclic, all other	13	245.000
Pelargonic acid, calcium salt (Calcium nonoate)	15	730.200	Pesticides and related products, cyclic, all other	13	175.000
Pelargonic acid esters, all other	11	101.500	Petroleum hydrocarbon resins	08	24.000
Pelargonic acid-tetraethylene-pentamine condensate	12	366.000	Petroleum sulfonic acid, water soluble (Acid layer), sodium salt	12	213.000
Pemoline	06	547.500	1,10-Phenanthroline	03	1281.950

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Phenethyl acetate	07	66.000	Phenylacetaldehyde, dimethyl acetal	07	76.000
Phenethyl alcohol	07	67.000	Phenylacetic acid	07	76.050
2-Phenethylamine	03	1282.000	Phenyl acid phosphate	15	129.300
Phenethyl formate	07	68.000	Phenyl alanine	14	16.000
Phenethyl isobutyrate	07	69.000	4-(Phenylazo)diphenylamine	03	1311.000
Phenethyl isovalerate	07	70.000	2-Phenylbenzimidazole	03	1312.600
2-Phenethyl phenylacetate	07	71.000	Phenyldiisocetyl phosphite	15	129.600
Phenethyl propionate	07	72.000	m-Phenylenebismaleimide	03	1321.200
p-Phenetidine	03	1286.000	m-Phenylenebismaleimide	09	45.000
Phenindamine tartrate	06	102.000	o-Phenylenediamine	03	1320.000
Phenobarbital	06	458.000	m-Phenylenediamine	03	1319.000
Phenobarbital, sodium	06	459.000	p-Phenylenediamine	03	1321.000
Phenol, alkylated	09	101.000	p-Phenylenediamines, substituted, other	09	65.000
Phenol, ethoxylated	03	1298.103	Phenylephrine hydrochloride	06	341.000
Phenol, benzylated	12	754.000	Phenyl ether (Diphenyl oxide)	03	1322.000
Phenol, ethoxylated	12	88.000	d-(+)- α -Phenylethylamine	03	1322.025
Phenol, ethoxylated and phosphated	12	725.100	Phenylethyl benzoate	07	77.100
Phenol-formaldehyde resin (with lignite)	09	102.000	Phenylethyl 2-methyl butyrate	07	77.250
Phenol, hindered	09	105.000	N-Phenylglycine	03	1322.850
Phenolic antioxidants, all other	08	9.000	α -D-Phenylglycine methyl ester K	15	131.600
Phenolic and other tar acid resins	03	1292.000	Phenylglycine, potassium salt	03	1322.702
Phenol, natural, from petroleum, all other	03	1291.000	Phenylglycine, sodium salt	03	1323.000
Phenol, natural, from petroleum, U.S.P.	12	754.020	2,2'-(Phenyl)imino]diethanol (N-Phenyldiethanolamine)	03	1327.000
Phenol, propoxylated	14	231.000	2,2'-(Phenyl)imino]diethanol, diacetate ester	03	1327.500
Phenol salts, all other	12	758.000	Phenyl-5-mercaptotetrazole	14	375.000
Phenols, ethoxylated, all other	03	1298.703	o-Phenylphenol	03	1330.000
Phenol, styrenated	09	103.000	p-Phenylphenol	03	1331.000
Phenol, styrenated, mixtures	03	1299.100	p-Phenylphenol, alkoxyated	12	754.050
Phenolsulfonaphthalein	15	125.960	p-Phenylphenol, ethoxylated and propoxylated	12	754.070
Phenol-sulfonated formaldehyde rosin	03	1299.200	o-Phenylphenol, sodium salt	03	1333.000
Phenolsulfonic acid	14	467.000	N-Phenyl-p-phenylenediamine	03	1334.000
1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde, sulfonated)	03	1299.802	1-Phenyl-1,2-propanedione, 2-oxime	03	1338.000
Phenolsulfonic acid, sodium salt	03	1298.002	Phenylpropanolamine	15	134.660
Phenol, synthetic, all other	03	1294.000	Phenylpropanolamine bitartrate	06	343.500
Phenol, synthetic, by caustic fusion, all other	03	1297.000	Phenylpropanolamine hydrochloride	06	343.000
Phenol, synthetic, from cumene by oxidation, U.S.P.	03	1299.600	Phenyl-2-propanone	03	1339.000
Phenoxyacetic acid, sodium salt	03	359.300	3-Phenylpropyl acetate	07	79.000
Phenoxybenzamine	06	127.000	4-Phenylpropyl pyridine	03	1339.853
2-Phenoxyethanol (Ethylene glycol monophenyl ether)	15	128.500	1-Phenyl-3-pyrazolidone	14	377.000
Phenoxyethyl acrylate	07	74.000	Phenylstyrene, ethoxylated	12	754.080
2-Phenoxyethyl isobutyrate	13	166.025	5-Phenyltetrazole	09	109.200
3-(Phenoxyphenyl) methyl-cis, trans-3-(2,2-dichloroethenyl)-2,2-dimethyl cyclopropanecarboxylate	08	25.000	Phenyltoloxamine citrate	06	104.000
Phenoxy (R) resin (other than for coating and adhesives)	03	1299.750	Phenyltrimethyl ammonium chloride	03	1342.400
m-Phenoxytoluene	06	423.000	N-Phenylurea	03	1343.500
Phensuximide	06	549.000	1-Phenylsal-1,2-propanidione	07	115.150
Phentermine	06	75.000	Phenytoloin	06	423.300
Phenylacetaldehyde	07	76.000	Phenytoloin, sodium	06	423.600

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Phosgene (Carbonyl chloride)	15	1411.000	Pigment Brown 5	05	140.000
Phosphated and polyphosphated alcohols, all other	12	111.000	Pigment Green 1, (PMA)	05	125.000
Phosphonate ester, cyclic	15	134.900	Pigment Green 2, (PMA)	05	128.000
2-Phosphonobutane-1,2,4-tricarboxylic acid, sodium salt	14	86.000	Pigment Green 2, (PTA)	05	129.000
N-(Phosphonomethyl)glycine, isopropylamine salt	13	205.950	Pigment Green 4, (fugitive)	05	130.000
N-(Phosphonomethyl)glycine, sodium sesqui salt	13	231.592	Pigment Green 4, (PMA)	05	132.000
Phosphoric acid esters, all other	11	16.000	Pigment Green 7	05	133.000
Phosphoric acid esters, all other	11	105.000	Pigment Green 8	05	134.000
Phosphoric and polyphosphoric acid esters, all other	12	113.000	Pigment Green 10	05	134.260
Phosphorodithiotes used as lubricating oil and grease additives, all other	14	244.000	Pigment Green 36	05	135.000
Phosphorus acid esters, all other	15	1049.000	Pigment green toners, all other	05	19.000
Photographic chemicals, all other	14	383.000	Pigment Orange 1	05	20.000
Phthalic acid	03	1346.000	Pigment Orange 2	05	21.000
Phthalic acid, lead salt, (Dibasic)	15	135.000	Pigment Orange 5	05	23.000
Phthalic anhydride	03	1348.000	Pigment Orange 13	05	24.000
Phthalic anhydride esters, all other	11	51.000	Pigment Orange 15	05	25.000
Phthalic anhydride type alkyd resins	08	2.000	Pigment Orange 16	05	206.000
Phthalimide	03	1351.000	Pigment Orange 17	05	25.180
(Phthalocyaninato(2-))copper	03	1352.000	Pigment Orange 34	05	25.190
Phthalocyaninetetrafluoronyl chloride, copper derivative	03	1353.800	Pigment Orange 36	05	25.250
Phthaloyl chloride (Phthalyl chloride)	03	1355.000	Pigment Orange 38	05	26.046
Picoline (3,4-mixture)	03	1359.000	Pigment Orange 46	05	26.049
2-Picoline (α -Picoline)	03	1356.000	Pigment Orange 49	05	29.000
3-Picoline (β -Picoline)	03	1357.000	Pigment orange toners, all other	05	48.000
4-Picoline (γ -Picoline)	03	1358.000	Pigment Red 1, (light)	05	30.000
Picolinonitrile (2-Cyanopyridine)	03	1359.100	Pigment Red 2	05	49.000
3-Picolylamine	03	1361.000	Pigment Red 3	05	50.000
Picramic acid, sodium salt	15	136.000	Pigment Red 4	05	31.000
Picric acid (Trinitrophenol)	03	1362.000	Pigment Red 5	05	36.000
Pigment Black 7	05	143.007	Pigment Red 13	05	37.000
Pigment black toners, all other	05	144.000	Pigment Red 14	05	39.000
Pigment Blue 1, (PMA)	05	99.000	Pigment Red 17	05	40.021
Pigment Blue 1, (PTA)	05	100.000	Pigment Red 21	05	43.000
Pigment Blue 2, (PMA)	05	102.000	Pigment Red 22	05	44.000
Pigment Blue 14, (PMA)	05	111.000	Pigment Red 23	05	45.000
Pigment Blue 15, (α form)	05	113.010	Pigment Red 31	05	52.000
Pigment Blue 15:1, (α form)	05	113.020	Pigment Red 38	05	54.000
Pigment Blue 15:2, (α form)	05	113.030	Pigment Red 41	05	55.100
Pigment Blue 15:3, (β form)	05	114.010	Pigment Red 48:1, (barium)	05	55.200
Pigment Blue 15:4, (β form)	05	114.020	Pigment Red 48:2, (calcium)	05	55.300
Pigment Blue 19	05	116.000	Pigment Red 48:3, (strontium)	05	55.400
Pigment Blue 25	05	119.000	Pigment Red 48:4, (manganese)	05	57.000
Pigment Blue 61	05	120.061	Pigment Red 49:1, (barium)	05	58.000
Pigment Blue 62	05	120.062	Pigment Red 49:2, (calcium)	05	61.000
Pigment blue toners, all other	05	124.000	Pigment Red 52:1, (calcium)	05	62.000
			Pigment Red 52:2, (manganese)	05	64.000
			Pigment Red 53:1, (barium)	05	

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Pigment Red 57	05	67,057	Pigment Yellow 73	05	6,620
Pigment Red 57:1, (calcium)	05	68,000	Pigment Yellow 74	05	6,630
Pigment Red 60:1	05	209,000	Pigment Yellow 75	05	6,640
Pigment Red 63	05	70,000	Pigment Yellow 83	05	11,660
Pigment Red 81, (PMA)	05	74,000	Pigment Yellow 97	05	6,697
Pigment Red 81, (PTA)	05	75,000	Pigment Yellow 124	05	11,724
Pigment Red 83	05	211,000	Pigment Yellow 139	05	14,839
Pigment Red 112	05	45,810	Pigment yellow toners, all other	05	18,000
Pigment Red 122	05	79,320	Pinane	15	136,200
Pigment Red 123	05	80,000	Pinane hydroperoxide	15	136,500
Pigment Red 146	05	45,846	2-Pinanol (cis and trans)	15	136,800
Pigment Red 147	05	45,847	Pinanis/pinol mixtures	15	136,900
Pigment Red 168	05	80,550	α -Pinene	15	137,000
Pigment Red 169	05	80,555	β -Pinene	15	138,000
Pigment Red 170	05	45,870	α -Pinene oxide	15	139,500
Pigment Red 179	05	80,660	Pinene, sulfate	15	140,000
Pigment Red 188	05	80,688	Pinene, wood	15	141,000
Pigment Red 190	05	80,770	Pine oil, natural, sulfate	15	141,195
Pigment Red 200	05	84,200	Pine oil, synthetic	15	141,200
Pigment Red 202	05	84,202	Piperacillin	06	19,200
Pigment Red 206	05	84,206	Piperazine	06	123,000
Pigment Red 207	05	84,207	Piperazine dihydrochloride	06	125,000
Pigment Red 209	05	84,209	Piperazine hexahydrate	06	126,000
Pigment Red 210	05	45,910	Piperazine hydrochloride	06	127,000
Pigment Red 224	05	84,224	Piperazine sulfate	06	129,000
Pigment Red 245	05	84,245	Piperidine	03	1365,000
Pigment Red 63:1, calcium	05	70,001	Piperonal (Heliotropin)	07	80,000
Pigment red toners, all other	05	86,000	Piperonylene (1,3-Pentadiene)	02	58,600
Pigment Violet 1, (fugitive)	05	87,000	Piroxicam	06	412,500
Pigment Violet 1, (PMA)	05	88,000	Pitch of tar, all other	01	30,000
Pigment Violet 1, (PTA)	05	89,000	Pitch of tarhard (M.P. 161° F and Over)	01	28,000
Pigment Violet 3, (fugitive)	05	90,000	Pitch of tarmedium (M.P. 110° To 160° F)	01	27,000
Pigment Violet 3, (PMA)	05	91,000	Pitch of tarsoft (M.P. 80° To 109° F)	01	26,000
Pigment Violet 3, (PTA)	05	92,000	Pivaloyl chloride	15	569,000
Pigment Violet 4, (fugitive)	05	92,004	2-Pivaloyl-1,3-indandione (Pindone)	13	170,000
Pigment Violet 19	05	93,160	Plant growth regulators, acyclic, all other	13	231,590
Pigment Violet 23	05	93,200	Plastics alloys or blends	08	25,200
Pigment Violet 29	05	93,229	Pinyl acetate	07	115,290
Pigment Violet 39, (PMA)	05	93,439	Polyacrylamide	14	403,000
Pigment violet toners, all other	05	98,000	Polyacrylamide copolymers, all other	14	405,500
Pigment Yellow 1	05	1,000	Polyacrylate methacrylate copolymers	14	427,000
Pigment Yellow 3	05	2,000	Polyacrylate poly(hydroxypropylacrylate) copolymer	14	428,000
Pigment Yellow 12	05	8,000	Polyacrylic acid	15	570,000
Pigment Yellow 13	05	9,000	Polyacrylic acid, ethyl ester	14	430,000
Pigment Yellow 14	05	10,000	Poly(acrylic acid, methyl ester)/ethylene/1,1	14	423,000
Pigment Yellow 17	05	11,000	dichlorosuccinic acid, methylene-	14	424,000
Pigment Yellow 60	05	6,460			
Pigment Yellow 65	05	6,465			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Poly(acrylic acid, methyl ester/ethylene/1,1 dichlorosuccinic acid, methylene-) with ethyl acrylate	14	425.000	Polyethylene glycol diester of coconut oil acids	12	684.290
Polyacrylic acid salts, all other	14	434.000	Polyethylene glycol diester of coconut oil and oleic acids	12	684.300
Polyacrylic (ACM) type elastomers	10	13.000	Polyethylene glycol diester of mixed liner acid/oleic acid	12	684.400
Polyacrylonitrile and acrylonitrile copolymers	14	391.000	Polyethylene glycol diester of tall oil acids	12	684.500
Polyacrylonitrile, hydrolyzed	14	435.000	Polyethylene glycol dilaurate	12	674.000
Polyacrylonitrile, hydrolyzed, sodium salt	13	234.000	Polyethylene glycol dimethyl ether	15	1181.200
Polyacrylonitrile, starch hydrolyzed polymer	14	436.000	Polyethylene glycol dioleate	12	675.000
Polyalcyclene polyamines and salts and quats	12	417.500	Polyethylene glycol distearate	12	676.000
Polyalkylene glycol oleate	12	719.050	Polyethylene glycol ditallate	15	144.400
Polyalkylene polyamine, ethoxylated	12	333.700	Polyethylene glycol ester of mixed fatty acids	15	684.700
Polyalcohols	15	1411.150	Polyethylene glycol esters of chemically defined acids, all other	12	684.000
Polyamine polymethane phosphonic acid	14	87.000	Polyethylene glycol esters of mixed acids, all other	12	691.000
Polyamines	14	437.000	Polyethylene glycol monocaprylate	12	677.500
Polyamine/tall oil imidazoline	12	413.400	Polyethylene glycol monoester of coconut oil acids	12	685.510
Polybasic acid type alkyl resins	08	3.000	Polyethylene glycol monoester of tall oil acids	12	685.700
Polybutadiene acrylic acid acrylonitrile terpolymer (PBAN)	10	13.300	Polyethylene glycol mono(nonylpheno)ether ammonium sulfate	12	678.000
Polybutadiene, emulsion-polymerized	10	14.000	Polyethylene glycol mono-oleate	12	762.970
Polybutadiene resins	08	10.000	Polyethylene glycol monopalmitate	12	679.000
Polybutadiene, solution-polymerized	10	15.000	Polyethylene glycol monopalmitate, methoxylated	12	680.000
Polybutene	02	86.000	Polyethylene glycol monopalmitate	12	680.250
Polybutylene terephthalate(PBT)	08	30.020	Polyethylene glycol monostearate	12	680.200
Polybutylene type resins	08	28.000	Polyethylene glycol monostearate	12	681.000
Polybutylether carbamate	14	169.000	Polyethylene glycol monotallate	12	682.000
Polycarbonate resins	08	29.000	Polyethylene glycol monotallate	12	682.250
Polycarboxylic acid, alkylate	12	719.210	Polyethylene glycol (mixed ester) of tall oil acids	12	685.900
Polycarboxylic acid, alkylphenoxyalkoxyate	12	719.210	Polyethylene glycol oleate	15	1132.160
Polychloroprene (Neoprene) (CR) type	10	17.000	Polyethylene glycol, propoxylated	12	762.960
Polydextrose	14	438.000	Polyethylene glycol sesquiester of coconut oil acids	12	687.000
Poly(diallyldimethylammonium chloride)	14	439.000	Polyethylene glycol sesquiester of tall oil acids	12	689.000
Poly(dimethylimino(2-hydroxytrimethylene)chloride)	14	170.000	Polyethylene glycol sesquiester of tallow acids	12	690.000
Poly(epichlorohydrin)	12	762.400	Polyethylene glycol sesquinoate	12	683.000
Polyester resins, saturated, all other	08	30.050	Polyethylene glycol terephthalate	12	683.200
Polyester resins, unsaturated	08	12.000	Polyethyleneimine	14	442.000
Polyether amine, ethoxylated	12	334.400	Polyethylenepolyamine polymer with 1,4-dihydroxy-2-buylene	14	171.000
Polyether diols	12	762.730	Polyethylene terephthalate	14	390.000
Polyetheretherketone (PEEK) resins	08	33.000	Polyethylene terephthalate (PET)	08	30.040
Polyether and polyester polyols for urethanes	08	12.050	Polyglycerol distearate	12	692.500
Polyether polyols based on propylene oxide, all other	15	1187.560	Polyglycerol esters, all other	12	698.000
Polyether triols	12	762.750	Polyglycerol mono-oleate	12	696.000
Polyethoxylate/polypropoxylate dibenzyl ether	12	762.800	Polyglycerol monostearate	12	697.000
Polyethoxy methylstearyl ammonium chloride	12	465.600	Polyglycols, ethylene glycol and glycol ether, mixed	15	1184.000
Polyethoxy propoxy diethylene glycol ether	15	1180.500	Polyglycols-toluene diisocyanate reaction product	15	144.600
Polyethylbenzene (80 percent diethylbenzene)	03	1369.000	Polyhexafluoropropylene oxide	15	1411.200
Polyethylene glycol	15	1181.000			
Polyethylene glycol butyl ether, propoxylated	15	1181.080			
Polyethylene glycol dibenzoate	11	52.000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Polyhydric alcohol esters, all other	15	1141.000	Poly-m-phenylene isophthalamide	14	392.000
Polyhydric alcohol ethers, all other	15	1196.000	Polyphenylene oxide type resins	08	35.000
Polyhydric alcohol, ethoxylated and phosphated	12	88.800	Polyphenylene sulfide resins	08	35.500
Polyhydric alcohols, all other	15	1096.000	Poly-p-phenylene terephthalamide	14	393.000
Polyimides and amide-imide polymers	08	34.000	Polypropoxy diethylmethyl ammonium chloride	12	465.650
Polyisobutyl succinic anhydride	15	165.860	Polypropylene glycol	15	1187.480
Polyisobutyl succinic anhydride	14	288.000	Polypropylene glycol, alkoxyated, polymer with maleic anhydride, acrylic acid, and alkylphenol-formaldehyde resin, alkoxyated	12	764.400
Polyisoprene (IR) type	10	19.000	Polypropylene glycol butyl ether (Polypropoxy butyl ether)	15	1187.500
Polymeric phosphites	09	85.500	Polypropylene glycol butyl ether, ethoxylated	15	1187.503
Polymerization regulators, acyclic, other	09	173.000	(Polypropoxy butyl ether, ethoxylated)	12	719.400
Polymers for fibers, all other	14	394.000	Polypropylene glycol dioleate	15	145.490
Polymers, water soluble, all other	14	452.000	Polypropylene glycol ditallate/distearate	15	1132.230
Polymethacrylic acid esters	15	1411.300	Polypropylene glycol ester	15	764.000
Polymethacrylic acid, sodium salt	14	445.000	Polypropylene glycol, ethoxylated	12	764.000
Polyethylene polyphenylisocyanate	14	445.000	Polypropylene glycol glycerol triether	15	1187.520
Poly(1,1'-(methylimino)bis(3-chloro-2-propanol) tetramethylthylenediamine	03	1023.000	(Polypropoxyglyceryl triether)	15	1187.520
Polymethyl methacrylate (PMMA)	14	446.000	Polypropylene glycol glycerol triether, copolymer with epichlorohydrin bisphenol epoxy resin	12	764.110
Poly(mixed ethylene, propylene)glycol	08	20.040	Polypropylene glycol, phosphated	12	89.000
Poly(mixed ethylene/propylene glycol) capped with alkyl oxirone	12	763.000	Polypropylene polymer and copolymer resins	08	36.000
Polymyxin B	12	763.050	Poly sulfide (T) type elastomers	10	20.000
Polyol aluminum chelate	06	56.000	Polyterpene resins	08	38.000
Poly- α -olefins	15	1363.500	Polytetrafluoroethylene (PTFE)	08	38.100
Poly- α -olefins, sulfurized	14	453.000	Polytetramethylene glycol ether	15	1187.000
Polyol glycidyl ether	14	454.000	Polyurethane elastomers	08	13.040
Polyoxyalkene silicones	15	1317.700	Polyurethane resins	08	13.080
Polyoxyalkylated cyclic amines	15	1391.000	Polyvinyl acetate resins	08	47.000
Polyoxyalkylene glycol	14	468.000	Polyvinyl alcohol resins	08	48.000
Poly(oxy-1,2-ethanediyl), w-(2-carboxyethoxy)-w hydroxy- α , α' -(iminodi-2,1-ethanediyl) bis-, N-tallow alkyl derivs., potassium salt	15	1181.800	Polyvinyl butyral resins	08	49.000
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, ethoxylated	12	47.490	Polyvinyl chloride copolymer resins, all other	08	49.020
Poly(oxy-1,2-ethanediyl)acetoxy-methyl,	12	47.500	Polyvinyl formal resin	08	49.010
Poly(oxy-1,2-ethanediyl)- α -carboxymethyl, omega (tridecyloxy), potassium salt	06	457.000	Polyvinylidene fluoride	08	49.050
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, C_{12} C_{15} alkyl ethers	12	763.450	Polyvinylidene fluoride resin	08	38.300
Poly(oxy-1,2-ethanediyl), α -phenylmethyl-70-hydroxy, ethoxylated nonylphenol alkyl ether	12	763.500	Poly(vinyl-O-sulfobenzal)	08	38.150
Poly(oxyethanyl, 2-diyl)-di-[2-bis(2-aminoethyl) methylamiumethyl]	12	465.640	Potassium acetate	14	379.000
Poly(oxyethylene)(dimethylimino)ethylene(dimethylimino) ethylene dichloride	12	763.500	Potassium benzoate	15	602.000
Polyoxypropylene polyoxyethylene glycol, mixed	13	195.013	Potassium citrate	15	10.800
Polyoxypropylene triamine	15	1185.000	Potassium dihexyl phosphorodithioate	15	625.000
Polyphenolic phosphites, polyalkylated	09	86.000	Potassium 2-ethylhexanoate	15	730.500
			Potassium glutamate	15	641.000
			Potassium lactate	14	9.000
			Potassium 2-methyl-2-butanol	15	673.700
			Potassium 2-methyl-2-propanol	15	1411.400
				15	1411.600

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Potassium oxalate	15	725.000	S-Propyl butylethylthiocarbamate (Pebulate)	13	206.000
Potassium salicylate	06	387.000	n-Propyl chloroformate	15	1050.300
Potassium and sodium salts of fatty, rosin, and tall oil acids, all other	12	74.000	Propyl chloroformate	15	1050.400
Potassium sodium tartrate	15	768.000	S-Propyl dipropylthiocarbamate (Vernolate)	13	207.000
Potassium stearate	15	761.500	Propylene	02	42.000
Potassium tellate	15	177.200	Propylene glycol (1,2-Propanediol)	15	1093.000
Povidone - iodine	06	271.000	Propylene glycol, alkoxylated	15	1187.900
Pramoxine hydrochloride	06	710.000	Propylene glycol dibenzoate	15	147.800
Prazosin	06	359.650	Propylene glycol dicaprylate/caprate	15	1132.300
Prazosin hydrochloride	06	359.700	Propylene glycol esters of hydrogenated palm oil	12	719.500
Prednisolone	06	664.000	Propylene glycol ethers (and propylene glycols), all other	15	1187.475
Prednisolone acetate	06	665.000	Propylene glycol monomethyl ether (1-Methoxy-2-propanol)	15	1187.400
Prednisone	06	666.000	Propylene glycol monoricinoleate	11	110.500
Pilocaine hydrochloride	06	716.001	Propylene glycol sebacate	11	115.500
Primary monoamines, all other	12	430.000	Propylene oxide	15	1323.000
Priming and refractory oil	01	21.040	Propyl gallate	15	148.000
Probenecid	06	740.000	Propyl hexedrine	06	344.000
Procainamide hydrochloride	06	380.000	n-Propyl mercaptan (1-Propanethiol)	02	96.000
Procarbazine hydrochloride	06	279.400	n-Propyl oleate	11	95.000
Prochlorperazine	06	486.800	Propyl oleate, sulfated, sodium salt	12	262.000
Prochlorperazine edisylate	06	487.000	2-Propyn-1-ol (Propargyl alcohol)	15	869.000
Prochlorperazine maleate	06	488.000	2-propynyl 3,7,11-trimethyl-(2e,4e)-dodecadienoate	13	231.019
1-Propanamine, 3-(C ₁₂ -C ₁₅ alkoxy derivatives)	12	413.500	Protease (bacterial)	14	104.000
1-Propanaminium, N-ethyl-N,N-dimethyl-3-[(1-oxooctadecyl)amino]-, ethyl sulfate	12	477.280	Proteases, all other	14	108.000
1,2-Propanediol dodecanoate/decanoate	12	699.080	Protein hydrolysates	14	17.000
1,2-Propanediol mono-laurate	12	701.000	Pseudoephedrine hydrochloride	06	346.000
1,2-Propanediol mono-oleate	12	702.000	Pseudoephedrine sulfate	06	347.000
1,2-Propanediol monostearate	12	703.000	Pseudoionone	15	836.000
p-Propenylanisole (Anethole)	07	81.000	Pseudo linallyl acetate (Neobergamate)	07	166.700
Propionaldehyde	15	572.000	Pyridine hydrochloride	03	1382.000
Propionic acid	15	573.000	3-Pyridinemethanol	03	1383.000
Propionic acid salts, all other	15	739.000	2 ^o Pyridine, refined	03	1378.000
Propionic anhydride	15	573.000	Pyridine, refined all other grades	03	1379.000
Propionic blends	15	1460.000	2 Pyridinethiol-1-oxide, sodium salt	03	1380.003
Propionitrile	15	450.500	2 Pyridinethiol-1-oxide, zinc salt	03	1380.053
Propiophenone	03	1374.000	Pyridostigmine bromide	06	319.000
Propoxyethanol (Ethylene glycol monopropyl ether)	15	1187.750	Pyridoxine	06	800.000
Propoxylated starches	14	496.000	2,4(1H,3H)-Pyrimidinedione (Uracil)	15	148.990
Propoxyphene hydrochloride	06	413.000	Pyromellitic dianhydride	03	1392.000
Propoxyphene napsylate	06	414.000	2-Pyrrolidinone (2-Pyrrolidone)	03	1391.000
Propranolol hydrochloride	06	381.500	4-N-(1-Pyrrolyl)-m-toluenediazonium chloride	14	380.000
Propyl acetate	15	1050.000	Pyvinium pamoate	03	797.200
Propyl alcohol (Propanol)	15	868.000	Quaternary ammonium salts having amide linkages, all other	12	479.000
Propylamine, mono	15	301.000	Quaternary ammonium salts, not containing oxygen, acyclic, all other	12	507.000
n-Propylaminoethanol	15	468.500			
p-Propylanisole (Dihydroanethole)	07	81.200			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Quaternary ammonium salts not containing oxygen, cyclic, all other	12	528.000	Reactive Red 120	04	931.120
Quinaldine	03	1393.000	Reactive Red 141	04	931.141
8-Quinololin, copper salt	13	30.000	Reactive Red 147	04	931.147
p-Quinone	15	151.001	Reactive Red 180	04	931.180
Quinone dioxime	03	1397.500	Reactive red 198	04	931.198
Rapeseed acids (ratio=1/1)	12	549.200	Reactive red 243	04	521.243
Rare earths 2-ethylhexanoate	15	642.000	Reactive red dyes, all other	04	932.000
Rare earths naphthenate	14	312.000	Reactive Violet 1	04	936.000
Rare earths neodecanoate	15	709.750	Reactive Violet 5	04	936.033
Reactive Black 5	04	952.000	Reactive violet 33	04	937.000
Reactive Black 9	04	953.000	Reactive violet dyes, all other	04	906.000
Reactive black dyes, all other	04	954.000	Reactive Yellow 17	04	907.000
Reactive Blue 3	04	939.000	Reactive Yellow 18	04	910.000
Reactive Blue 4	04	940.000	Reactive Yellow 37	04	910.086
Reactive Blue 7	04	942.000	Reactive Yellow 86	04	910.086
Reactive Blue 19	04	943.000	Reactive Yellow 125	04	910.125
Reactive Blue 21	04	944.000	Reactive Yellow 135	04	910.135
Reactive Blue 28	04	944.028	Reactive Yellow 160	04	910.160
Reactive Blue 38	04	946.000	Reactive yellow dyes, all other	04	911.000
Reactive Blue 41	04	946.041	Reactive Red 35	04	928.035
Reactive Blue 71	04	946.071	Rennin	14	106.000
Reactive Blue 89	04	946.089	Resorcinol	06	272.000
Reactive Blue 199	04	946.199	Resorcinol monobenzoate	15	9.055
Reactive blue dyes, all other	04	947.000	Resorcinol, tech.	03	1399.000
Reactive Brown 1	04	949.000	β -Resorcylic acid	03	1402.000
Reactive Brown 17	04	949.017	Rhodinol	07	167.000
Reactive Brown 18	04	949.018	Riboflavin (animal feed grade)	06	801.000
Reactive brown dyes, all other	04	950.000	Ricinoleic and acetylricinoleic acid esters, all other	11	111.000
Reactive Green 19	04	948.019	Ricinoleic acid	12	564.950
Reactive Orange 1	04	912.000	Ricinoleic acid, magnesium salt	15	741.500
Reactive Orange 4	04	913.000	Rimantidine hydrochloride	06	188.600
Reactive Orange 12	04	914.000	Rosin acid salts, all other	15	160.000
Reactive Orange 13	04	915.000	Rosin acids, potassium salt	12	65.000
Reactive Orange 16	04	917.000	Rosin acids, sodium salt	12	66.000
Reactive Orange 20	04	917.020	Rosin acids, triethanolamine salt	12	32.000
Reactive orange 72	04	917.072	Rosin amine, ethoxylated	12	355.000
Reactive Orange 78	04	917.078	Rosin amines	14	136.000
Reactive Orange 84	04	917.084	Rosin esters, unmodified (Ester gums)	08	39.000
Reactive Orange 86	04	917.086	Roxarsone	06	159.000
Reactive orange dyes, all other	04	918.000	Roxarsone, sodium	06	160.000
Reactive Red 2	04	920.000	Rubber modified polystyrene	08	44.020
Reactive Red 11	04	924.000	Rubber-processing chemicals, acyclic, all other	09	180.000
Reactive Red 21	04	925.000	Rubber-processing chemicals, cyclic, all other	09	127.000
Reactive Red 31	04	927.000	Rust preventing additives	14	172.000
Reactive Red 43	04	930.043	Saccharin (1,2-Benzisothiazolin-3-one,-1,1-dioxide)	07	85.000
Reactive Red 49	04	930.049	Saccharin, sodium salt	07	87.000
Reactive Red 94	04	931.094	Salicylaldehyde	03	1404.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Salicylaldehyde oxime	03	1404.502	Sodium gluconate	15	662.000
Salicylanilide	03	1405.000	Sodium heparin	06	630.000
Salicylic acid	06	557.000	Sodium lactate (Nalac)	15	674.000
Salicylic acid, ammonium salt	15	161.500	Sodium mercaptoacetate	15	697.000
Salicylic acid magnesium salt	15	162.200	Sodium methoxide (Sodium methylate)	15	1418.000
Salicylic acid, tech.	03	1406.000	Sodium nitroprusside	06	359.800
Salsalate	06	389.000	Sodium oleate	15	719.500
Salts of organic acids, all other	15	781.000	Sodium oxalate	15	726.000
Sarcosine	14	18.000	Sodium phenolsulfonate	06	559.000
Sebacic acid	15	574.000	Sodium polyacrylate	14	433.000
Secobarbital	06	460.000	Sodium polyacrylate, grafted	14	433.100
Secobarbital, sodium	06	461.000	Sodium propionate	15	738.000
Secondary and tertiary monoamines, all other	12	447.000	Sodium salicylate	06	390.000
Semicarbazide hydrochloride	15	473.000	Sodium stearate	15	762.100
Semisynthetic penicillins, all other	06	20.000	Sodium p-sulfophenylmethyl ether	03	1410.100
Serine	14	19.000	Sodium trichlorobenzenesulfate	03	1410.500
Silicone fluids	15	1392.000	Soil fumigants, etc., all other	13	243.000
Silicone greases	14	462.000	Solubilized Sultur Black 2	04	111.000
Silicone resins	08	14.000	Solvent Black 7	04	1053.000
Silicone (Q) type elastomers	10	21.000	Solvent Black 13	04	1055.000
Silver stearate	15	762.000	Solvent Black 26	04	1057.000
Sisomycin	06	56.700	Solvent Black 46	04	1057.046
Sitosterols	06	618.000	Solvent Black 47	04	1057.047
Sodium acetate	15	603.000	Solvent Black 49	04	1057.049
Sodium ammonium polyacrylate and copolymers	14	431.000	Solvent Blue 3	04	1020.000
Sodium ascorbate	06	809.000	Solvent Blue 4	04	1021.000
Sodium benzoate	15	11.000	Solvent Blue 5	04	1022.000
Sodium n-butyloxanthate	14	142.000	Solvent Blue 23	04	1028.023
Sodium caprylate	06	137.000	Solvent Blue 35	04	1028.035
1-(Sodium carboxyethylene)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(tall oil fatty acids)-2-imidazolium hydroxide	12	27.100	Solvent Blue 36	04	1029.000
Sodium carboxymethyl amylose	14	432.000	Solvent Blue 38	04	1031.000
Sodium carboxymethylcellulose (100%)	14	412.000	Solvent Blue 58	04	1033.000
1-(Sodium carboxymethyl)-1-(sodium carboxymethyleneoxyethylene)-2-nor-(coconut oil fatty acids)-2-imidazolium lauryl sulfate	12	27.200	Solvent Blue 59	04	1034.000
Sodium citrate	15	604.000	Solvent Blue 98	04	1037.000
Sodium diacetate	15	731.000	Solvent Blue 99	04	1037.099
Sodium di-sec-butyl diethyl phosphorodithioate	15	732.000	Solvent Blue 100	04	1038.000
Sodium diethyl phosphorodithioate	15	733.000	Solvent Blue 101	04	1038.101
Sodium dihexyl phosphorodithioate	15	734.000	Solvent Blue 102	04	1038.102
Sodium diisobutyl phosphorodithioate	15	734.500	Solvent Blue 128	04	1038.128
Sodium diisopropyl phosphorodithioate	15	735.000	Solvent Blue 129	04	1038.129
Sodium fluoracetate	13	232.000	Solvent blue dyes, all other	04	1039.000
Sodium formate, technical	15	655.000	Solvent Brown 12	04	1045.000
			Solvent Brown 20	04	1047.000
			Solvent Brown 22	04	1048.000
			Solvent Brown 28	04	1049.000
			Solvent Brown 52	04	1049.052
			Solvent Green 3	04	1042.000
			Solvent Orange 2	04	977.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Solvent Orange 3	04	978.000	Solvent Yellow 143	04	975.143
Solvent Orange 7	04	980.000	Solvent Yellow 160	04	975.160
Solvent Orange 20	04	981.000	Solvent Yellow 161	04	975.161
Solvent Orange 23	04	982.000	Solvent Yellow 167	04	975.167
Solvent Orange 31	04	985.000	Solvent yellow dyes, all other	04	976.000
Solvent Orange 60	04	987.060	Sorbic acid (2,4-Hexadienoic acid)	15	576.000
Solvent Orange 77	04	987.077	Sorbic acid, potassium salt	15	745.000
Solvent Orange 97	04	987.097	Sorbitol (70% by Weight)	15	1094.000
Solvent orange dyes, all other	04	988.000	Sorbitol, alkoxyated	15	1188.900
Solvent Red 1	04	989.000	Sorbitol, crystalline	15	1094.001
Solvent Red 23	04	991.023	Sorbitol, ethoxyated	15	1189.000
Solvent Red 24	04	992.000	Sorbitol monooleate	15	1190.200
Solvent Red 26	04	993.000	Sorbitol monostearate	15	1190.300
Solvent Red 27	04	994.000	Soya fatty acids, reaction products with chloromethane and diethylenetriamine, ethoxyated, quaternized	12	477.350
Solvent Red 49	04	999.000	Soya fatty acids, reaction products with chloromethane and diethylenetriamine, propoxyated, quaternized	12	477.360
Solvent Red 68	04	1001.000	Soybean oil acids (Ratio=1/1)	12	549.300
Solvent Red 111	04	1008.000	Soybean oil acids, potassium salt	12	67.000
Solvent Red 164	04	1011.000	(Soybean oil alkyl)amine	12	427.000
Solvent Red 166	04	1012.000	(Soybean oil alkyl)amine, ethoxyated	12	335.000
Solvent Red 168	04	1012.168	N-(Soybean oil alkyl)trimethylenediamine	12	414.000
Solvent Red 169	04	1012.169	Soybean oil, sulfated, sodium salt	12	312.000
Solvent Red 172	04	1012.172	Specific gravity 0.940 and below	08	31.100
Solvent Red 175	04	1012.175	Specific gravity over 0.940	08	31.400
solvent red 179	04	1012.207	Specific gravity over 0.940 and below	08	32.000
Solvent Red 207	04	1012.208	Spectinomycin (animal feed grade)	06	75.000
Solvent Red 208	04	1013.000	Spectinomycin (medicinal grade)	06	57.000
Solvent red dyes, all other	04	1014.000	Spironolactone	06	740.500
Solvent Violet 8	04	1015.000	Stannous 2-ethylhexanoate	15	643.000
Solvent Violet 9	04	1015.011	Stanzolol	06	641.600
Solvent violet 11	04	1016.000	Starch, hydrolyzed and hydrogenated	15	1094.200
Solvent Violet 13	04	1017.000	Stearamide (Octadecane amide)	15	253.000
Solvent Violet 14	04	1017.000	Stearamidoethylethylamine	12	388.900
Solvent Violet 38	04	1018.038	Stearamidoethyl-2-heptadecyl imidazole	12	388.950
Solvent violet dyes, all other	04	1019.000	Stearamidopropylidimethylcetyl ammonium tosylate and propylene glycol	12	414.500
Solvent Yellow 3	04	957.000	Stearic acid (Octadecanoic acid)	12	477.390
Solvent Yellow 13	04	958.000	Stearic acid (Ratio = 2/1)	15	576.500
Solvent Yellow 14	04	959.000	Stearic acid (Ratio = 1/1)	12	542.000
Solvent Yellow 16	04	959.016	Stearic acid (Ratio = 2/1)	12	565.000
Solvent Yellow 33	04	963.000	Stearic acid (Ratio = 1/1)	12	562.000
Solvent Yellow 40	04	965.000	Stearic acid aminoethanolamine (amine acid ratio = 1.0/1.65)	12	550.000
Solvent Yellow 42	04	966.000	Stearic acid aminoethylethanolamine (amine acid ratio = 1/2)	12	575.450
Solvent Yellow 43	04	967.000	Stearic acid-N-aminoethyl ethanolaniline condensate	12	575.505
Solvent Yellow 45	04	971.000		12	581.200
Solvent Yellow 56	04	971.000			
Solvent Yellow 72	04	973.000			
Solvent Yellow 94	04	974.094			
Solvent Yellow 107	04	975.000			
Solvent Yellow 131	04	975.131			
Solvent Yellow 135	04	975.135			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Stearic acid, ammonium salt	12	67,990	Styrene latexes, all other	08	44,080
Stearic acid, diethanolamine condensate, methyl sulfate	12	389,500	Styrene-limonene copolymer	08	44,055
Stearic acid-diethylenetriamine condensate	12	367,000	Styrene-maleic anhydride copolymer resins	08	44,045
Stearic acid-diethylenetriamine condensate, ethyl sulfate	12	367,500	Styrene-maleic anhydride, glass filled	08	44,056
Stearic acid esters, all other	11	125,000	Styrene-maleic anhydride-isobutanol terpolymer	08	44,047
Stearic acid-ethylenediamine condensate	12	368,290	Styrene-methyl methacrylate copolymer resins	15	165,000
Stearic acid-ethylenediamine condensate amine/acid ratio=1/2	12	586,000	Styrene oxide	08	45,500
Stearic acid-ethylenediamine condensate, monoethoxylated	12382,000		Styrene type plastics materials, all other	08	45,500
Stearic acid mixed amine condensate	12	369,500	Succinic anhydride	15	165,500
Stearic acid monoethanolamine condensate	12	581,500	Succinylcholine chloride	06	480,000
Stearic acid, potassium salt	12	68,000	Succinyl peroxide	15	1296,500
Stearic acid, sodium salt	12	69,000	Sucralfate	06	621,500
Stearic acid-tetraethylenepentamine condensate	12	370,000	Sucrose acetate isobutyrate	11	126,000
Stearic acid, triethanolamine salt	12	34,000	Sucrose benzoate	15	166,000
N-Stearoyl-p-aminophenol	09	104,000	Sucrose octa-acetate	15	1133,000
Stearoyl iso-lactylate, sodium salt	12	318,780	Sulfadiazine, silver	06	217,200
Stearoyl lactylate, mixed sodium and calcium salt	12	318,800	Sulfamethoxazole	06	223,000
Stearoyl lactylate, sodium salt	12	318,785	Sulfamethoxazole (p-Aminobenzenesulfonic acid) and salt	06	224,000
Stearoyl lactylate, sodium salt	15	1035,300	Sulfapyridine	03	1414,000
Stearyl acid phosphate	12	733,310	Sulfasalazine	06	232,000
Stearyl alcohol, propoxylated	12	738,700	Sulfated animal fats and oils, all other	12	297,000
Stearyl alcohol, propoxylated	12	738,700	Sulfated cyclic ethers, all other	12	291,000
Stearylamidopropyl dimethyl myristyl acetate ammonium chloride	12	388,200	Sulfated esters, all other	12	269,000
Stearylamide	12	477,400	Sulfated fish and marine fat oils, all other	12	304,000
Stearyl methacrylate	15	254,000	Sulfathiazole, sodium	06	234,000
Stearyl pyridium chloride	15	1053,000	Sulfisoxazole	06	235,000
Stearyl stearamide	12	501,550	Sulfisoxazole, acetyl	06	201,000
Stearyl stearate	15	254,200	5-Sulfoisophthalic acid, 1,3-dimethyl ester, sodium salt	03	1417,100
Straight polystyrene	15	979,600	5-Sulfoisophthalic acid, sodium salt	03	1417,500
Streptomycin	08	44,030	Sulfonic acids, all other	12	215,000
Styrenated-alkyls, or copolymer alkyls	06	76,000	Sulfonic acids having amide linkages, all other	12	189,000
Styrene (Vinylbenzene)	08	279,500	Sulfonic acids with ether linkages, all other	12	209,000
Styrene-acrylonitrile copolymer resins (SAN)	03	3,500	Sulfonic acid with ester linkages, all other	12	204,000
Styrene-allyl alcohol copolymer resins	08	43,000	4-Sulphthalic acid	03	1421,000
Styrene-butadiene, dry type	10	3,100	Sulfosuccinamic acid derivatives, all other	12	181,000
Styrene-butadiene latexes	08	44,060	Sulfosuccinic acid, bis(disisobutyl)ester, amidodisodium salt	12	190,000
Styrene-butadiene, latex type	10	4,500	Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl)ester, sodium salt	12	191,000
Styrene-butadiene type elastomers, other	10	4,000	Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt	12	192,000
Styrene copolymers, all other	08	44,049	Sulfosuccinic acid, diisobutyl ester, sodium salt	12	194,210
Styrene-divinylbenzene copolymer resins	08	44,044	Sulfosuccinic acid, diisodecyl ester, sodium salt	12	194,200
			Sulfosuccinic acid, diisooctyl ester, sodium salt	12	194,220
			Sulfosuccinic acid, dioctyl ester, sodium salt	12	194,300

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Sulfosuccinic acid, dipentyl ester, sodium salt	12	195.000	Tall oil acids, sulfated, sodium salt	12	268.700
Sulfosuccinic acid, dilauryl ester, sodium salt	12	196.000	Tall oil acids, triethanolamine salt	12	34.360
Sulfosuccinic acid, (lauryl polyethylene glycol ether) ester, disodium salt	12	196.450	Tall oil acyl chloride	15	167.400
Sulfosuccinic acid esters, all other	12	197.000	Tall oil, chemically modified	15	168.000
Sulfosuccinic acid, (coconut oil alkyl)iminoisopropanol half-ester, sodium salt	12	193.400	Tall oil, diethanolamine salt	15	168.010
Sulfosuccinic acid, lauramidomonoethanolamine, disodium salt	12	196.440	Tall oil fatty acids (Ratio = 1/2)	12	555.300
Sulfosuccinic acid, morolaurith ester, disodium salt	12	196.495	Tall oil fatty acids (ratio = 2.7/1)	12	555.310
Sulfosuccinic acid, myristyl ester disodium monoethanolamine salt	12	196.580	Tall oil fatty acids, polymerized	12	555.305
Sulfosuccinic acid, nonoxynyl-10 ester, disodium salt	12	196.570	Tall oil fatty acids-triethanolamine condensate (Tall oil fatty acids), triethanolamine salt	12	575.600
Sulfosuccinic acid, oleamidopolyethyleneglycol, disodium salt	12	196.600	Tall oil fatty acids, triethanolamine salt	12	34.370
Sulfosuccinic acid, ricinoleamide monoethanolamine, disodium salt	12	196.800	Tall oil monomer	15	168.050
Sulfoxone, sodium	06	149.000	Tall oil Neopentyl glycol tallate	15	168.080
Sulfur Black 2	04	1109.000	Tall oil pentaerythritol tallate	15	168.100
Sulfur Black 11, 11:1	04	1114.000	Tall oil, refined, ethoxylated	12	672.500
Sulfur Brown 96	04	1104.096	Tall oil salts, all other (Linoleic-rosin acid salts)	15	179.000
Sulfur brown dyes, all other	04	1105.000	Tall oil, sulfated, ammonia salt	12	312.500
Sulfur compounds, all other	14	264.000	Tall oil, sulfated, sodium salt	12	312.700
Sulfuric acid esters, all other	12	317.000	Tall oil, sulfonated, potassium salt	12	214.300
Sulfurized lard oil	14	200.000	Tall oil, triethanolamine salt	15	168.030
Sulfurized sperm oil substitutes	14	202.000	Tallow acids (Ratio = 2/1)	12	544.000
Sulfur orange dyes, all other	04	1067.000	Tallow acids	12	552.000
Sulfur Red 10	04	1070.000	Tallow acids (amine/acid ratio=1.00/1.65)	12	567.450
Sulfur yellow dyes, all other	04	1065.000	Tallow acids, potassium salt	12	72.000
Sulindac	06	414.500	Tallow acids, sodium salt	12	73.000
Synthetic fatty alcohol ester, sulfated, sodium salt	12	302.500	Tallow acids, triethanolamine salt	12	34.500
Synthetic sweetener material, all other	07	88.000	Tallow alcohol, ethoxylated	12	740.000
Tacrine	06	837.007	(Tallow alkyl)amine	12	429.000
Tall oil acids (Ratio = 2/1)	12	543.000	(Tallow alkyl)amine acetate	12	399.000
Tall oil acids	12	551.000	(Tallow alkyl)amine, ethoxylated	12	336.000
Tall oil acids/aminoethylpiperazine condensate	12	370.900	(Tallow alkyl)amine, propoxylated	12	336.040
Tall oil acids, diethanolamine salt (Condensate)	12	34.300	N-(Tallow alkyl)dipropylenetriamine	12	415.000
Tall oil acids-diethylenetriamine condensate	12	371.000	N-(Tallow alkyl)-3-iminodipropionic acid, disodium salt	12	18.000
Tall oil acids-dimethylamine condensate (Amine acid ratio = 1/1)	12	587.500	N-(Tallow alkyl)trimethylenediamine	12	416.000
Tall oil acids, ethoxylated	12	672.400	N-(Tallow alkyl)trimethylenediamine acetate	12	400.000
Tall oil acids, ethoxylated and propoxylated	12	672.420	N-(Tallow alkyl)trimethylenediamine, ethoxylated	12	337.000
Tall oil acids-polyalkylenepolyamine condensate	12	372.000	N-(Tallow alkyl)trimethylenediamine oleate	12	402.000
Tall oil acids-polyalkylene polyamine condensate, salts, with dodecylbenzene sulfonic acid and/or tall oil fatty acids	12	372.010	Tallow amide	15	254.900
Tall oil acids, potassium salt	12	70.000	Tallow amide, hydrogenated	15	255.000
Tall oil acids, sodium salt	12	71.000	Tallow amine, ethoxylated, quarternary ammonium salt	12	477.700
			Tallow, n-3-(dimethylamino)propyl (amine/acid ratio=1/3)	12	587.600
			(Tallow ethyl alkyl)amine, ethoxylated, sulfate	12	336.020
			Tallow fatty acids-aminoethylethanolamine condensates	12	373.550
			Tallow nitrile	15	453.000
			Tallow, partially hydrogenated	15	1330.200
			Tallow, sulfated, sodium salt	12	295.000
			Tannic acid, N.F.	15	180.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Tanning materials, synthetic, all other	14	471,000	1,2,2,2-Tetrafluoroethane (F-134a)	15	1269,800
Tar basecrude bases (Dry basis)	01	10,000	Tetrafluoroethylene (F-114)	15	1270,000
Tar distillates, all other	01	22,000	Tetrafluoromethane (F-14)	15	1271,000
Tar for other usescrude	01	24,000	Tetrahydroalocimene	15	1348,600
Tar for other usesrefined	01	25,000	Tetrahydroalococimanyl hydrochloride (Tetrahydro dimethylatriene hydrochloride)	15	1244,400
Tepyl acetate	07	23,000	Tetrahydro-3,5-dimethyl-2(1H)-pyrimidinone[3-[4 (trifluoromethyl)phenyl]-1-[2-[4-(trifluoromethyl)phenyl]ethenyl]-2-propenylidene]hydrozone	13	166,028
Terazosin	06	359,900	Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (DMTT)	13	12,000
Terbutaline sulfate	06	347,500	Tetrahydrofuran	03	1438,000
Terephthalic acid	03	1422,000	Tetrahydrofurfuryl alcohol	15	83,000
Terephthalic acid, dimethyl ester	03	1424,000	Tetrahydrofurfuryl oleate	11	53,000
Terephthaloyl chloride	03	1424,500	Tetrahydrolinallyl acetate	07	169,050
Terfenadine	06	109,000	Tetrahydromyrcenol	07	169,170
Terpene hydrocarbons, monocyclic (Solvenol)	15	182,000	1,2,3,4-Tetrahydronaphthalene (Tetralin)	15	186,000
Terphenyl (Phenylphenyl) (m-, o-, and p-isomers)	03	1426,000	1,2,3,4-Tetrahydronaphthalene	15	186,000
Terpinene-ol	07	116,500	1,2,3,4-Tetrahydronaphthalene	03	1438,253
Terpinene-4-ol	03	1426,500	Tetrahydropyrimidine from tall oil fatty acids and propylenediamine	14	174,000
α-Terpineol	07	117,000	Tetrahydrothiophene	15	187,000
α-Terpinyl acetate	07	120,000	Tetrahydrothiophene-1,1-dioxide (Sulfolane)	15	188,000
α-Terpinyl propionate	07	121,000	2,2',4,4'-Tetrahydroxybenzophenone	14	497,000
Tertiary amyl per-2-ethylhexanoate	15	1283,200	Tetra-isopropoxy titanium (bis dioctyl) phosphite	12	784,550
Testosterone	06	641,800	Tetraisopropylmethylene diphosphonate	15	1035,400
Testosterone cypionate	06	642,300	Tetraisopropyl titanate	15	1061,000
Testosterone propionate	06	642,300	Tetrakis(2-chloroisopropyl)ethylene diphosphate	15	1035,500
Tetabromobisphenol A	15	184,000	Tetrakis(2-chloroisopropyl)ethylene diphosphate (T-RDT)	15	1035,550
Tetabromophthalic anhydride	03	1429,000	Tetrakis(2-ethylhexyl) titanate	15	1062,000
Tetabromophthalic anhydride, diester	03	1429,200	N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine	12	338,000
N,N,N',N'-Tetrabutylhexanediamine	15	302,800	N,N,N',N'-Tetrakis(2-Hydroxyethyl)ethylenediamine, propoxylated	12	338,100
Tetraethyl titanate	15	1060,000	N,N,N',N'-Tetrakis(2-hydroxypropyl)ethylenediamine, propoxylated and ethoxylated	12	339,000
Tetracaine hydrochloride	06	715,100	1,1,3,3-Tetramethoxypropane	15	1324,000
2,4,5,6-Tetrachloroisophthalonitrile	13	31,200	Tetramethylammonium chloride	15	477,000
Tetrachlorophthalic anhydride	03	1435,600	1,2,4,5-Tetramethylbenzene (Durene)	03	1442,100
Tetracycline	06	37,000	N,N,N',N'-Tetramethyl-1,3-butanediamine	15	304,000
n-Tetradecane	15	1348,500	p-(1,1,3,3-Tetramethylbutyl)phenol	03	1443,000
Tetradecanoic acid (Myristic acid)	15	579,000	2,4,7,9-Tetramethyl-5-decylene-4,7-diol, ethoxylated	12	768,000
1-Tetradecanol (Myristyl alcohol)	15	879,000	Tetramethyldisiloxane	15	1394,700
Tetradecene	15	1348,502	Tetramethylethylenediamine	15	305,000
Tetra-(2,2-diallyloxymethylene)-1-butoxy titanium bis (diferidyl) phosphite	12	784,500	2,4,6,8-Tetramethylnonan-1-yl acetate	07	169,250
Tetraethyl ammonium bromide	15	474,500	Tetramethyl octahydro acetyl naphthalene	07	88,800
Tetraethylene glycol	15	1191,000	Tetranitrodibenzene-1,3α,4,6α-tetraazapentalene	03	1443,700
Tetraethylene glycol di(2-ethylhexanoate)	11	126,100			
Tetraethylenepentamine	15	303,000			
Tetraethyl lead	14	186,000			
O,O,O',O'-Tetraethyl S,S'-methylene bisphosphorodithioate (E-thion)	13	227,000			
Tetraethyl orthosilicate (Tetraethyl silicate)	15	1054,000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Tetra octyloxy titanium (bis-tridecyl phosphite)	12	784.100	TMPP dibenzoate	15	198.500
Tetra/penta glycols, mixed	15	1192.000	N-2(C-5 to C-17)alkylamido-N-carboxyethyl,N-2 hydroxyethyl, 3-amino-2-hydroxypropyl phosphate, disodium salt	12	102.600
Tetrapropyl silicate	15	1055.500	Tobramycin	06	4.001
Textile chemicals, other than surface active agents, all other	14	507.000	Tocainide	06	383.001
Thebaine	06	435.000	d- α -Tocopherol	06	815.000
Theophylline	06	746.300	d- α -Tocopheryl acetate	06	817.000
Thermoplastic resins, benzenoid, all other	08	52.000	dl- α -Tocopheryl acetate (animal feed grade)	06	818.000
Thermosetting acrylate resins	08	20.030	dl- α -Tocopheryl acetate (medicinal grade)	06	819.000
Thermosetting resins, benzenoid, all other	08	18.000	d- α -Tocopheryl acid succinate	06	821.000
Thermoplastic elastomers (such as styrene-block copolymers, thermoplastic olefin elastomers, thermoplastic polyurethanes elastomers, and copolyester)	10	5.000	Tolazamide	06	689.000
Thiabendazole	06	132.000	Tolbutamide	06	690.000
1,3,4-Thiadiazole, 2,5-bis-(dialkylidithio) derivatives	14	290.000	Toluene-2,3-(and 3,4)-diamine (35/65 Mixture)	03	1454.803
Thiamine hydrochloride	06	804.000	Toluene-2,4-diamine (4-m-Tolylenediamine)	03	1455.000
Thiamine mononitrate	06	805.000	Toluene-2,4-(and 2,6)-diamine (80/20 Mixture)	03	1455.313
Thiamylal, sodium	06	463.000	Toluene-3,4-diamine	03	1455.402
Thiazole derivatives, cyclic, other	09	36.000	Toluene 2,4-disocyanate	03	1024.000
Thioacetic acid, potassium salt	15	770.500	Toluene 2,4- and 2,6-disocyanate (80/20 Mixture)	03	1025.600
3,3'-Thiobis[7 η -benz[e]janthracen-7-one]	15	1450.000	Toluene 2,4- and 2,6-disocyanate (65/35 Mixture)	03	1025.000
N,N'-thiobis-(methylimino)carbonyloxy bis ethanimidothiate	13	231.018	Toluene (Toluol) other grades	01	5.000
Thiocyanic acid, methylene ester	13	207.500	Toluene High purity (98-100%)	02	27.500
2-(Thiocyanomethylthio)benzothiazole	13	40.018	Toluene Other	02	28.500
2,2'-Thiodiethanol (Thiodiglycol)	15	1193.000	p-Toluenesulfonamide	03	1459.000
Thiodiglycol ethoxylated	12	768.500	p-Toluenesulfonamide o-, p-mixtures	11	54.000
6,6'-Thiodimethanolic acid	03	1452.000	p-(p-Toluenesulfonamido)diphenylamine	09	83.000
O,O'-(Thiodi-4,1-phenylene)bis(o,o-dimethyl phosphorothioate (Temphos))	13	165.025	p-Toluenesulfonic acid	03	1461.000
3,3'-Thiodipropionic acid	15	582.000	p-Toluenesulfonic acid, aniline salt	03	1461.300
3,3'-Thiodipropionitrile	15	455.000	Toluenesulfonic acid, potassium salt	12	146.000
Thiodisuccinic acid	15	582.100	Toluenesulfonic acid, sodium salt	12	147.000
Thiopental, sodium	06	464.000	p-Toluenesulfonyl isocyanate	03	1025.700
Thiophane (Tetrahydrothiophene)	02	96.095	p-Toluenesulfonylsemicarbazide	09	109.800
Thiophene	15	198.000	m-Toluic acid	12	147.500
Thiosemicarbazide	15	480.000	p-Toluic acid, methyl ester	03	1469.000
Thiothixene hydrochloride	06	509.000	o-Toluidine	03	1471.202
Thiourea resins	06	17.010	m-Toluidine	03	1473.000
z-1-Threoninamide mesylate	06	766.800	p-Toluidine	03	1472.000
Thyroglobulin	06	695.800	m-Toluidine, ethoxylated	12	356.200
Thyroid	06	696.000	p-Tolyl acetate	07	90.000
Ticarcillin, disodium	06	321.500	2,2'-(o-Tolylimino)diethanol	03	1486.052
Timolol maleate	06	677.800	2,2'-(m-Tolylimino)diethanol	03	1487.000
Tin laurate	15	1063.000	p-Tolyl isobutyrate	07	90.100
Titanic acid esters, all other	15	1281.650	p-Tolyl octanoate	07	90.400
Titanium acetylacetonate	15		p-Tolylphenylacetate	07	90.600
			Tolytriazole	03	1487.700

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Tolytriazole/butyl vinyl ether, combined	15	199,400	Tricresyl phosphate	11	14,000
Tolytriazole, potassium salt	15	199,500	Tridecyl alcohol, ethoxylated and phosphated, polyalkylene polyamine salt	12	90,010
Tranylepromine	06	533,500	Tridecyl alcohol, ethoxylated	12	769,000
Tretinoin (vitamin A acid)	06	770,000	Tridecyl alcohol, ethoxylated and carbonated, sodium salt	12	319,000
Trialkyl thiophosphate	15	1036,200	Tridecyl alcohol, ethoxylated and phosphated, potassium salt	12	90,000
Triallylamine	15	258,200	Tridecyl alcohol, ethoxylated and sulfated, sodium salt	12	282,000
Triallyl trimellitate	15	200,050	Tridecyl alcohol, propoxylated and ethoxylated	12	770,000
Triamcinolone	06	667,000	Tridecylbenzenesulfonic acid	12	139,100
Triamcinolone acetamide	06	668,000	Tridecylbenzenesulfonic acid, sodium salt	12	139,200
Triamcinolone diacetate	06	669,000	Tridecylpoly(ethyleneoxy)acetic acid, sodium salt	12	50,000
Triamterene	09	86,500	Tridecylpoly(ethyleneoxy)propionic acid, potassium salt	12	18,500
Triaryl phosphites	15	200,150	3-(3-Tridecyloxy)propylaminopropyl amine	12	339,600
Triazine	14	498,000	Tridecylphenol, ethoxylated and phosphated	12	90,300
Tri(phenyloxy)methyltrimethoxymethylmelamine	03	1488,289	Tridecyl phosphate	15	980,000
2,4,6-Tribromophenol	11	102,000	Tridecyl stearate	11	124,800
Tri(2-butoxyethyl) phosphate	11	71,100	Tridecyl stearate	11	124,800
Tributyl acetylacrylate	15	1363,950	Tridecyl sulfate, sodium salt	12	246,000
Tri-n-butylaluminum	15	266,000	Tridecyl-3-(trimethyleneamine), ethoxylated	12	339,400
Tri-n-butylamine	11	71,200	Tridimethylaminomethylphenol	03	1499,208
Tributyl citrate	14	289,000	Tri(2,4-ditertiarybutylphenyl) phosphite	15	204,500
Tributyl phosphite	15	455,400	Triethanolamine	15	381,000
Trichloroacetonitrile	03	1490,000	Triethanolamine, ethoxylated	12	340,000
1,2,3-(and 1,2,4)-Trichlorobenzene	15	1491,000	Triethanolamine hydrochloride	15	482,150
1,2,4-Trichlorobenzene	03	1491,000	Triethanolamine phosphate ester	12	340,050
1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor)	13	146,000	Triethanolamine, sulfuric & phosphoric acid salts	15	482,200
3,4,4'-Trichlorocarbaniide	15	203,000	Triethanolamine titanate	15	1062,500
1,1,1-Trichloroethane (Methyl chloroform)	15	1245,000	Triethyl acetylacrylate	11	71,300
1,1,2-Trichloroethane (Vinyl trichloride)	15	1246,000	Triethylaluminum	15	1364,000
Trichloroethylene	15	1247,000	Triethylamine	15	279,000
Trichlorofluoromethane (F-11)	15	1272,000	Triethylamine, nitric acid salt	15	482,300
Trichloromelamine	15	203,500	Triethylborane	15	1368,800
α -(Trichloromethyl)benzyl acetate (Rosetone)	07	91,000	Triethyl citrate	11	71,400
Trichloromethylsilane	15	1394,000	Triethylenediamine	15	305,600
3-Trichloromethyl-1,2,4-thiadiazole	03	1492,500	Triethylene glycol	15	1194,000
N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan)	13	34,000	Triethylene glycol di(caprylate-caprate)	11	127,000
Trichloronitromethane (Chloropicrin)	13	242,000	Triethylene glycol di(2-ethylbutyrate)	11	128,000
Trichlorophenylsilane	03	1494,000	Triethylene glycol di(2-ethylhexanoate)	11	129,000
1,2,3-Trichloropropane	15	1395,000	Triethylenetetramine	15	306,000
Trichloropropylsilane	15	1495,000	Triethylenetetramine, propoxylated	15	482,500
α, α -Trichlorotoluene (Benzotrithloride)	03	1499,000	Tri(2-ethylhexyl) trimellitate	11	54,750
2,4,6-Trichloro-s-triazine (Cyanuric chloride)	03	1499,000	Triethyl orthoacetate	15	1064,000
1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric acid)	15	204,000	Triethyl orthoformate	15	1065,000
Trichlorotrifluoroethane (F-113)	15	1273,000			
Trichlorovinylsilane	15	1396,000			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Triethyl orthoacetate	15	1066.000	1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien-3-one (Allyl- α -ionone)	07	122.000
Triethyl phosphate	11	103.000	Trimethylcyclohexyl salicylate	07	91.080
Triethyl phosphite	15	1040.000	2,2,5-Trimethyl-3-(dichloroacetyl)-1,3-oxazolidine	13	175.014
Triethyl phosphonacetate	15	1040.100	1,1-Trimethylene-bis-(4-formylpyridinium bromide) oxime	06	295.090
Triethyltrimethylenetriamine	09	7.000	3,5,5-Trimethyl hexanal	07	169.500
Trifluoroacetic acid	15	584.009	1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl)butane	09	95.000
Trifluoroacetic anhydride	15	584.010	1,3,3-Trimethyl- δ^2 , α -indolineacetaldehyde	03	1515.000
Trifluoroacetyl chloride	15	584.015	N,N,N-Trimethyl methanaminium octahydrotriborate	15	1370.500
α , α -Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin)	13	116.000	2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone)	15	838.000
α , α -Trifluoro-2,6-dinitro-N-ethyl-N-(2-methyl-2-propenyl)-p-toluidine (Ethylfluralin)	13	116.100	Trimethylnonyl alcohol, ethoxylated	12	773.000
Trifluoroethanol	15	1420.300	Trimethyl norbornane methanol	07	122.020
Trifluoropropene	15	1273.550	Trimethyloctadecylammonium chloride	12	503.000
Triglycerol distearate	12	697.500	Trimethylolpropane, alkoxylated	12	774.000
Tri-n-hexyl aluminum	15	1364.900	Trimethylolpropane decanoic acid ester	15	1139.000
Tri-n-hexyltrimellitate	11	54.850	Trimethylol propane ester	14	291.000
Tri(hydrogenated tallow) amine	12	446.050	Trimethylolpropane tallowate (TMP tallowate)	15	1139.300
Trihydrogenated tallow ammonium chloride	12	501.800	Trimethylolpropane triacrylate	15	1140.010
Trisobutylaluminum	15	1365.000	Trimethylolpropane trimethacrylate	15	1140.300
Trisodocylamine	12	444.300	Trimethylolpropane trioleate (TMP trioleate)	15	1140.007
Trisodocylphosphite	15	1040.500	Trimethylolpropane tris-3-mercaptopropionate	15	1066.200
Trisodocyl trimellitate	11	54.900	Trimethyl orthoacetate	15	1068.000
Trisononyl trimellitate	11	54.950	Trimethyl orthoformate	15	76.000
Trisooctyl phosphite	15	1041.000	2,2,4-Trimethylpentane (Iso-octane)	02	76.000
Trisoctyl trimellitate	11	55.000	2,2,4-Trimethyl-1,3-pentanediol	15	1095.000
Trisopropanolamine	15	409.000	2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	11	129.600
Trisopropyl phosphite	15	1042.000	2,2,3-Trimethyl-1,3-pentanediol monoisobutyrate	15	1140.500
Tri-laurylamine	12	444.600	2,3,6-Trimethylphenol	03	1516.050
all other Trimellitic acid esters	11	57.000	Trimethyl phosphite	15	1043.000
Trimellitic anhydride, acid chloride	03	1509.100	Trimethyl(soybean oil alkyl)ammonium chloride	12	504.000
Trimellitic trichloride	03	1509.300	Trimethyl(tallow alkyl)ammonium chloride	12	505.000
Trimeprazine	06	110.000	trimethyl trimellitate	11	55.400
Trimer dibasic acids	15	584.100	a,a,5-Trimethyl-5-vinyl-furfuryl alcohol and tetrahydro-5-(2,2,3-Trimethyl(cyclopent-3-en-1-yl)-3-methylpentan-2-ol	07	122.200
Trimethoprim	06	275.000	Tri(mixed alkyl)amine	07	122.010
Trimethoxyboroxine	15	1369.000	Tri-n-octylaluminum	12	444.700
Tri(methoxymethyl) tri(stearoxymethyl) melamine	15	205.500	Triocylamine	15	1366.400
Trimethylaluminum	15	292.000	Tri-n-octyl n-decyl trimellitate	12	445.000
Trimethyl amine	15	292.000	Triocyl phosphite	11	55.600
1,2,4-Trimethylbenzene (Pseudocumene)	03	1513.000	Triocyl trimellitate	11	104.000
1,3,5-Trimethylbenzene (Mesitylene)	03	1513.100	Triocyl trimellitate	11	56.000
Trimethyl borate	15	1370.000	Tri-oxylaluminum tri-isopropoxide	15	1366.500
Trimethyl-cyclododeca-trienyl ethanone	07	169.700	Tripelennamine	15	111.000
3,3,5-Trimethylcyclohexanol (m-homomenthol)	15	206.950	Tripelennamine citrate	06	112.000
3,3,5-Trimethyl cyclohexanol (m-Homomenthol)	07	121.800	Tripelennamine hydrochloride	06	113.000
3,5,5-Trimethyl-2-cyclohexene-1-one (Isophorone)	15	207.000	Tripentylamine	15	297.000
Trimethyl cyclohexenyl butenone	07	121.850			

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Triphenylmethane	03	1523.602	Vat Blue 1, 20%	04	1164.000
Triphenyl phosphate	11	15.000	Vat Blue 6, 8-1/3%	04	1167.000
Triphenyl phosphite	15	210.000	Vat Blue 16, 16%	04	1171.000
Tripyridine hydrochloride	06	114.000	Vat Blue 19	04	1172.019
Tripyridine oxalate	06	114.500	Vat Blue 29	04	1173.029
Tripropylamine	15	302.000	Vat Blue 43	04	1175.000
Tripropylene glycol	15	1187.450	Vat Blue 66	04	1175.066
Tripropylene glycol diacrylate	15	1140.600	Vat blue dyes, all other	04	1177.000
Tripropylene glycol monomethyl ether (3-[3]	15	1187.460	Vat Brown 57, 12.8%	04	1200.000
Methoxypropoxypropoxypropanol)	15	1187.460	Vat brown dyes, all other	04	1201.000
Tris(2-chloroethyl)phosphate	15	1043.998	Vat Green 1, 6%	04	1178.000
Tris(2-chloroethyl) phosphite	15	1044.000	Vat Green 3, 10%	04	1180.000
Tris-2-chloropropyl phosphate	15	1045.400	Vat Green 7	04	1180.007
Tris(1,3-dichloro-2-propyl) phosphate	15	1046.500	Vat Orange 1, 20%	04	1129.000
α, α' -Tris(dimethylamino)mesitol	03	1525.000	Vat Orange 2, 12%	04	1131.000
Tris(2-ethylhexyl)phosphate	15	1048.000	Vat Orange 7, 11%	04	1136.000
1,1,1-Tris(p-hydroxyphenyl)ethane	03	1525.500	Vat Orange 9, 12%	04	1137.000
Tris(2-methoxyethoxy)vinyl silane	15	1396.500	Vat Red 1, 13%	04	1142.000
Tris(2-methyl-1-aziridinyl)phosphine oxide	03	1526.000	Vat Red 10, 18%	04	1144.000
Tris(pentamethyldisiloxanyl)-3-methacrylatopropylsilane	15	1397.500	Vat Red 15, 10%	04	1148.000
Tubocurarine	06	481.000	Vat red dyes, all other	04	1154.000
Twitchell chemicals (Naphthalene/oleic acid, sulfonated)	15	211.550	Vat Violet 13, 6-1/4%	04	1159.000
Tylosin	06	77.000	Vegetable glycerides, hydrogenated	15	1330.400
Undecanal	07	170.000	Vegetable oils, sulfated, all other	12	313.000
Undecanol (Linear C ₁₁ alcohol)	15	869.700	Veratraldehyde (3,4-Dimethoxybenzaldehyde)	03	1529.000
Undecylenic acid	15	584.500	Very high molecular weight (>1000) hydrocarbons	14	292.000
Urea-formaldehyde resins	08	17.000	Veitvenol	07	124.000
Urea in feed compounds (100% Basis)	14	509.000	Veitvenyl acetate	07	125.000
Urea in liquid fertilizer (100% Basis)	14	510.000	Vinblastine sulfate	06	281.000
Urea in solid fertilizer (100% Basis)	14	512.000	Vincristine sulfate	06	282.000
Urea polymers with formaldehyde and methanol	14	511.000	Vinyl acetate-acrylate copolymers	08	50.080
Urea, primary solution (Report on 100% urea-content basis)	14	503.000	Vinyl acetate, monomer	15	1069.000
Urea toluenesulfonate	14	508.000	Vinyl bromide (Bromoethylene)	15	1215.000
7,7'-Ureylenebis[4-hydroxy-2-naphthalenesulfonic acid] (J-Acid urea)	15	211.600	Vinyl chloride, monomer (Chloroethylene)	15	1250.000
Uricase	03	1528.000	Vinylidimethylchlorosilane	15	1397.900
Valeraldehyde (Pentanal)	14	128.000	Vinyl fluoride, monomer	15	1274.000
Valeric acid	15	804.000	Vinylidene chloride, monomer (1,1-Dichloroethylene)	15	1251.000
Valproic acid	06	61.000	Vinylidene fluoride, monomer	15	1275.000
Vancomycin	06	423.900	2-Vinylpyridine	03	1535.000
Vat Black 22, 19%	04	1208.000	4-Vinylpyridine	03	1536.000
Vat Black 25, 12-1/2%	04	1209.000	1-Vinyl-2-pyrrolidinone ether copolymers	15	216.000
Vat Black 63	04	1213.063	1-Vinyl-2-pyrrolidinone, copolymers with vinyl acetate dimethylamine ethyl ester, copolymer	14	450.500
			1-Vinyl-2-pyrrolidinone, monomer	15	214.000
			1-Vinyl-2-pyrrolidinone, polymers	15	215.000
			1-Vinyl-2-pyrrolidinone vinyl acetate copolymer	14	450.000
				15	217.000

Chemical Name	Sect. No.	Item No.	Chemical Name	Sect. No.	Item No.
Vinyl resins, all other	08	51,000	Xylenol, low boiling point	03	1545,000
Vinyl toluene alkyls	08	3,800	Xylenols, not classified as to boiling point	03	1547,000
Vinyltriethoxysilane	15	1398,000	Xylidine, original mixture	03	1550,000
Vinyl trimethoxy silane	15	1398,300	Xylitol (1,2,3,4,5-Pentane(OH) ₅)	15	1095,500
Violet 5:1	05	220,000	Xylose (intestinal malabsorption test)	06	581,500
Violet 27	05	93,227	Zeranol	06	643,000
Vitamin A, all other	06	776,000	Zinc acetate	15	606,000
Vitamin C, all other	06	810,000	Zinc t- α -alkylcarboxylate	15	671,950
Vitamin D, all other	06	814,000	Zinc dialkyldithiophosphate	14	235,000
Vitamin A acetate (animal feed grade)	06	771,000	Zinc dialkylphenol dithiophosphate	14	236,000
Vitamin A acetate (medicinal grade)	06	772,000	Zinc dibutyl phosphorodithioate	14	239,000
Vitamin A alcohol	06	773,000	Zinc 2-ethylhexanoate	15	644,000
Vitamin B complex, all other	06	806,000	Zinc gluceptate	06	767,000
Vitamin A palmitate (medicinal grade)	06	775,000	Zinc gluconate	06	767,300
Waxes and paraffinic products	09	178,800	Zinc hydrocarbon dithiophosphate	06	767,300
Wool wax alcohols, ethoxylated	12	740,500	Zinc isopropyl xanthate	14	242,000
Xanthan gum	14	451,000	Zinc laurate (Activator, physical property improver, and processing auxiliary)	09	154,800
Xanthates and sulfides, acyclic, other	09	155,000	Zinc naphthenate	09	179,000
o-Xylene (90-100% of o-xylene isomer)	03	1540,000	Zinc neodecanoate	14	315,000
m-Xylene (90-100% of m-xylene isomer)	03	1539,000	Zinc neodecanoate	15	710,000
p-Xylene (90-100% of p-xylene isomer)	03	1541,000	Zinc stearate	15	763,000
Xylene High purity (98-100%)	02	30,500	Zinc tallate	15	178,000
Xylene Other	02	31,500	Zinc undecylenate	15	178,000
2,4-Xylenesulfonic acid	03	1542,800	Zircoaluminate compounds	06	140,000
Xylenesulfonic acid, ammonium salt	12	148,000	Zirconium acetate	15	1409,400
Xylenesulfonic acid, mixed isomers	03	1543,502	Zirconium 1- α -alkylcarboxylate	15	607,000
Xylenesulfonic acid, sodium salt	12	150,000	Zirconium 2-ethylhexanoate	15	671,975
2,6-Xylenol	03	1544,500	Zirconium neodecanoate	15	645,000
Xylenol crystals	03	1544,000			
Xylenol, ethoxylated	12	757,000			

