

SYNTHETIC ORGANIC CHEMICALS

United States Production
and Sales, 1981

(Investigation No. 332-135)

SYNTHETIC ORGANIC CHEMICALS, 1981

USITC PUBLICATION 1292

United States International Trade Commission / Washington, D.C. 20436



RECENT REPORTS OF THE UNITED STATES INTERNATIONAL TRADE
COMMISSION ON SYNTHETIC ORGANIC CHEMICALS

- Synthetic Organic Chemicals, United States Production and Sales, 1974
(USITC Publication 776, 1976), \$3.20
- *Synthetic Organic Chemicals, United States Production and Sales, 1975
(USITC Publication 804, 1977), \$3.10
- *Synthetic Organic Chemicals, United States Production and Sales, 1976
(USITC Publication 833, 1977), \$5.25
- *Synthetic Organic Chemicals, United States Production and Sales, 1977
(USITC Publication 920, 1978), \$6.25
- *Synthetic Organic Chemicals, United States Production and Sales, 1978
(USITC Publication 1001, 1979), \$7.50
- *Synthetic Organic Chemicals, United States Production and Sales, 1979
(USITC Publication 1099, 1980), \$8.00
- Synthetic Organic Chemicals, United States Production and Sales, 1980
(USITC Publication 1183, 1981), \$8.00

Note.--The reports preceded by an asterisk (*) are out of print. The other reports listed above may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. All U.S. International Trade Commission reports reproduced by the Government Printing Office may be consulted in the official depository libraries throughout the United States.

UNITED STATES INTERNATIONAL TRADE COMMISSION

**SYNTHETIC
ORGANIC CHEMICALS**

**United States Production
and Sales, 1981**

**U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1982**

USITC PUBLICATION 1292

UNITED STATES INTERNATIONAL TRADE COMMISSION

COMMISSIONERS

Alfred E. Eckes, Chairman

Paula Stern

Michael J. Calhoun

Eugene J. Frank

Veronica A. Haggart

Kenneth R. Mason, Secretary to the Commission

OFFICE OF INDUSTRIES

Norris A. Lynch, Director

This report was prepared principally by William Baker, Tedford C. Briggs, Edmund Cappuccilli, Kenneth Conant III, Cynthia B. Foreso, J. Lawrence Johnson, Eric Land, David G. Michels, James Raftery, Edward J. Taylor, and Sharon Thompson.

Assistance in the preparation of the report was provided by Mildred C. Higgs, Robert Allison, Frances Battle, Patricia Bentley, Brenda Carroll, Russell Flynt, Sharon Greenfield, Kenneth Kozel, and Wanda Tolson. Automatic Data Processing input was provided by James Gill, Marie Jagannathan, and Peggy Verdine.

Address all communications to
Office of the Secretary
United States International Trade Commission
Washington, D.C. 20436

C O N T E N T S

| | <u>Page</u> |
|---|-------------|
| Introduction----- | 1 |
| Summary----- | 3 |
| General----- | 4 |
| Section I. Tar and tar crudes: | |
| Statistical highlights----- | 7 |
| Production and sales statistics----- | 9 |
| Section II. Primary products from petroleum and natural gas for chemical conversion: | |
| Statistical highlights----- | 13 |
| Production and sales statistics----- | 15 |
| Section III. Cyclic intermediates: | |
| Statistical highlights----- | 23 |
| Production and sales statistics----- | 25 |
| Section IV. Dyes: | |
| Statistical highlights----- | 55 |
| Production and sales statistics----- | 57 |
| Section V. Organic pigments: | |
| Statistical highlights----- | 89 |
| Production and sales statistics----- | 91 |
| Section VI. Medicinal chemicals: | |
| Statistical highlights----- | 101 |
| Production and sales statistics----- | 103 |
| Section VII. Flavor and perfume materials: | |
| Statistical highlights----- | 123 |
| Production and sales statistics----- | 125 |
| Section VIII. Plastics and resin materials: | |
| Statistical highlights----- | 139 |
| Production and sales statistics----- | 141 |
| Section IX. Rubber-processing chemicals: | |
| Statistical highlights----- | 153 |
| Production and sales statistics----- | 155 |

CONTENTS

| | <u>Page</u> |
|---|-------------|
| Section X. Elastomers: | |
| Statistical highlights----- | 163 |
| Production and sales statistics----- | 165 |
| Section XI. Plasticizers: | |
| Statistical highlights----- | 169 |
| Production and sales statistics----- | 171 |
| Section XII. Surface-active agents: | |
| Statistical highlights----- | 179 |
| Production and sales statistics----- | 181 |
| Section XIII. Pesticides and related products: | |
| Statistical highlights----- | 209 |
| Production and sales statistics----- | 211 |
| Section XIV. Miscellaneous end-use chemicals and chemical products: | |
| Statistical highlights----- | 225 |
| Production and sales statistics----- | 227 |
| Section XV. Miscellaneous cyclic and acyclic chemicals: | |
| Statistical highlights----- | 239 |
| Production and sales statistics----- | 241 |

APPENDIX

| | |
|---|-----|
| Directory of manufacturers----- | 285 |
| U.S. imports of benzenoid chemicals and products----- | 301 |
| Cyclic intermediates: Glossary of synonymous names----- | 305 |

INTRODUCTION

This is the 65th 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 consists of 15 sections, each covering a specified group (based principally on use) of organic chemicals as follows: Tar and tar crudes; 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 780 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 for all sections are 5,000 pounds of production or sales or \$5,000 of value of sales with the following exceptions: Plastics and resin materials--50,000 pounds or \$50,000; pigments, medicinal chemicals, flavor and perfume materials, and rubber-processing chemicals--1,000 pounds or \$1,000. They are usually given in terms of undiluted materials; however, 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.

Table 1 of the Appendix 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.

Table 2 of the Appendix summarizes U.S. general imports in 1981 of benzenoid intermediates and finished benzenoid products, entered under schedule 4, parts 1B and 1C, of the Tariff Schedules of the United States.

Table 3 of the Appendix 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.

Data contained in this report are compiled primarily from Commission's 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% active ingredient unless otherwise specified in the reporting instructions--of the quantities:

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, analysed, or otherwise measured. This includes byproducts and co-products that are not classifiable as waste materials;

¹Title 18, U.S.C. 1905, and title 44, U.S.C. 3508.

INTRODUCTION

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% owned subsidiaries or affiliates;
 Produced and sold to, or bartered with, other firms (including less than 100% 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%.

SALES EXCLUDES:

All intra-company transfers within a corporate entity;
 All shipments to 100% 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.

Combined production of all synthetic organic chemicals, tar, and primary products from petroleum and natural gas in 1981 was 331,147 million pounds--a decrease of 2.5 percent from the output in 1980 (table 1). Sales of these materials in 1981, which totaled 176,272 million pounds, valued at \$63,637 million, were 2.7 percent smaller than in 1980 in terms of quantity and 5.3 percent larger in terms of value. These figures include data on production and sales of chemicals measured at several successive steps in the manufacturing process, and, therefore, they necessarily reflect some duplication.

In 1981, production of all synthetic organic chemicals, including cyclic intermediates and finished products totaled 217,340 million pounds, or 1.0 percent more than the output in 1980. Eight sections showed an increase in production in 1981 over 1980. Organic pigments (76 million pounds) increased by 10.1 percent; plastics and resin materials (40,601 million pounds) increased by 6.3 percent; plasticizers (1,866 million pounds) increased by 4.6 percent; surface-active agents (5,078 million pounds) increased by 4.6 percent; elastomers (4,849 million pounds) increased by 1.7 percent; miscellaneous cyclic and acyclic chemicals (95,039 million pounds) increased by 0.7 percent; cyclic intermediates (45,323 million pounds) increased by 0.6 percent; and medicinal chemicals (245 million pounds) increased by 0.4 percent. The remaining sections showed a decrease in production in 1981 from that in 1980. Dyes (230 million pounds) and miscellaneous end-use chemicals and chemical products (22,158 million pounds) led the decrease with a loss of 6.1 percent; flavor and perfume materials (165 million pounds) decreased 5.7 percent; rubber-processing chemicals (280 million pounds) decreased 3.8 percent; and pesticides and related products (1,430 million pounds) decreased 2.6 percent.

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS AND THEIR RAW MATERIALS: U.S.
PRODUCTION AND SALES, 1980 AND 1981

| CHEMICAL | PRODUCTION | | | SALES | | | | | |
|---|-------------------|-------------------|--|-------------------|-------------------|--|--------------------|--------------------|--|
| | | | | QUANTITY | | VALUE | | | |
| | | | | | | | | | |
| | 1980 | 1981 | INCREASE: OR DECREASE: (-), 1981 OVER 1980 ¹ | 1980 | 1981 | INCREASE: OR DECREASE: (-), 1981 OVER 1980 ¹ | 1980 | 1981 | INCREASE: OR DECREASE: (-), 1981 OVER 1980 ¹ |
| | Million pounds | Million pounds | Percent | Million pounds | Million pounds | Percent | Million dollars | Million dollars | Percent |
| Grand total ² ----- | 339,723 | 331,147 | -2.5 | 181,188 | 176,272 | -2.7 | 60,444 | 63,637 | 5.3 |
| Tar----- | 4,366 | 4,290 | -1.7 | 3,128 | 2,749 | -12.1 | ... | 555 | ... |
| Primary products from petroleum and natural gas----- | 120,232 | 109,517 | -8.9 | 64,292 | 59,222 | -7.9 | 10,646 | 10,369 | -2.6 |
| Synthetic organic chemicals, total ³ ----- | 215,125 | 217,340 | 1.0 | 113,768 | 114,301 | 0.5 | 49,798 | 52,713 | 5.9 |
| Cyclic intermediates----- | 45,070 | 45,323 | 0.6 | 20,060 | 19,202 | -4.3 | 7,248 | 7,437 | 2.6 |
| Dyes----- | 245 | 230 | -6.1 | 227 | 219 | -3.5 | 791 | 773 | -2.3 |
| Organic pigments----- | 69 | 76 | 10.1 | 61 | 64 | 4.9 | 361 | 415 | 15.0 |
| Medicinal chemicals----- | 244 | 245 | 0.4 | 167 | 153 | -8.4 | 1,153 | 1,199 | 4.0 |
| Flavor and perfume materials---- | 175 | 165 | -5.7 | 129 | 119 | -7.8 | 254 | 252 | -0.8 |
| Plastics and resin materials---- | 38,186 | 40,601 | 6.3 | 33,550 | 36,107 | 7.6 | 16,011 | 17,092 | 6.8 |
| Rubber-processing chemicals----- | 291 | 280 | -3.8 | 194 | 182 | -6.2 | 296 | 298 | 0.7 |
| Elastomers (synthetic rubber)---- | 4,770 | 4,849 | 1.7 | 3,258 | 3,256 | -0.1 | 2,280 | 2,505 | 9.9 |
| Plasticizers----- | 1,784 | 1,866 | 4.6 | 1,574 | 1,567 | -0.4 | 858 | 894 | 4.2 |
| Surface-active agents----- | 4,853 | 5,078 | 4.6 | 2,928 | 3,104 | 6.0 | 1,296 | 1,477 | 14.0 |
| Pesticides and related products---- | 1,468 | 1,430 | -2.6 | 1,406 | 1,291 | -8.2 | 4,078 | 4,652 | 14.1 |
| Miscellaneous end-use chemicals and chemical products----- | 23,602 | 22,158 | -6.1 | 14,075 | 12,954 | -8.0 | 3,499 | 3,975 | 13.6 |
| Miscellaneous cyclic and acyclic chemicals----- | 94,368 | 95,039 | 0.7 | 36,139 | 36,083 | -0.2 | 11,672 | 11,744 | 0.6 |

¹Percentages calculated from figures rounded to thousands.

²Because of rounding, figures may not add to the totals shown.

³Estimated by using data from the 1981 U.S. Industrial Outlook, p. 179.

⁴Estimated by using the ratio of sales quantity as compared with production for elastomers in 1979.

⁵Value was computed by using the average price indexes for 1979 and 1980 which came from the Producers Prices and Prices Indexes for July 1980 and the Producers Prices and Prices Indexes for March 1981, pages 65 and 77, respectively.

SYNTHETIC ORGANIC CHEMICALS, 1981

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 1981 was 217,339 million pounds or 3.3 percent more than the output of 210,356 million pounds reported for 1980, and 107.6 percent more than the output of 104,711 million pounds reported in 1967 (see table 2). Sales of synthetic organic chemicals in 1981 amounted to 114,299 million pounds, valued at \$52,713 million, compared with 110,510 million pounds, valued at \$47,518 million, in 1980 and 55,177 million pounds, valued at \$10,438 million, in 1967. Production of all cyclic products (intermediates and finished products combined) in 1981 totaled 70,334 million pounds or 5.2 percent more than the 66,834 million pounds reported for 1980 and 110.1 percent more than the 33,479 million pounds reported for 1967; 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 1967 than would otherwise have resulted. Production of all acyclic products in 1981 totaled 147,006 million pounds, or 2.4 percent more than the 143,523 million pounds reported for 1980 and 106.4 percent more than the 71,232 million pounds reported for 1967.

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1980, AND 1981

| (Production and sales in thousands of pounds; sales value in thousands of dollars) | | | | | | |
|--|-------------------|-------------|-------------|--------------------------|----------------|--|
| CHEMICAL | 1967 ¹ | 1980 | 1981 | INCREASE OR DECREASE (-) | | |
| | | | | 1981 OVER 1967 | 1981 OVER 1980 | |
| | | | | Percent | Percent | |
| Organic chemicals, cyclic and cyclic, grand total: | | | | | | |
| Production----- | 104,711,357 | 210,356,473 | 217,339,092 | 107.6 | 3.3 | |
| Sales----- | 55,176,823 | 110,509,967 | 114,298,750 | 107.1 | 3.4 | |
| Sales value----- | 10,438,453 | 47,518,404 | 52,712,854 | 405.0 | 11.0 | |
| Cyclic, total: | | | | | | |
| Production----- | 33,479,469 | 66,833,907 | 70,333,502 | 110.1 | 5.2 | |
| Sales----- | 19,328,628 | 35,045,536 | 36,546,767 | 89.1 | 4.3 | |
| Sales value----- | 4,610,293 | 22,265,859 | 24,067,541 | 422.0 | 8.1 | |
| Acyclic, total: | | | | | | |
| Production----- | 71,231,888 | 143,522,566 | 147,005,590 | 106.4 | 2.4 | |
| Sales----- | 35,848,195 | 75,464,431 | 77,751,983 | 116.9 | 3.0 | |
| Sales value----- | 5,828,160 | 25,252,545 | 28,645,313 | 391.5 | 13.4 | |
| 1. Cyclic Intermediates | | | | | | |
| Production----- | 20,793,132 | 45,069,670 | 45,323,048 | 118.0 | 0.6 | |
| Sales----- | 9,461,180 | 20,060,375 | 19,201,715 | 103.0 | -4.3 | |
| Sales value----- | 1,000,359 | 7,248,265 | 7,436,562 | 643.4 | 2.6 | |
| 2. Dyes | | | | | | |
| Production----- | 206,240 | 245,348 | 229,670 | 11.4 | -6.4 | |
| Sales----- | 198,592 | 227,448 | 218,848 | 10.2 | -3.8 | |
| Sales value----- | 332,049 | 790,664 | 772,837 | 132.7 | -2.3 | |
| 3. Organic Pigments | | | | | | |
| Production----- | 53,322 | 69,373 | 75,795 | 42.1 | 9.3 | |
| Sales----- | 42,867 | 60,771 | 64,067 | 49.5 | 5.4 | |
| Sales value----- | 108,354 | 361,334 | 415,320 | 283.3 | 14.9 | |
| 4. Medicinal Chemicals | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 110,129 | 174,597 | 180,260 | 63.7 | 3.2 | |
| Sales----- | 70,120 | 102,606 | 100,204 | 42.9 | -2.3 | |
| Sales value----- | 348,873 | 1,095,950 | 1,144,400 | 228.0 | 4.4 | |
| Acyclic: | | | | | | |
| Production----- | 69,941 | 69,279 | 64,422 | -7.9 | -7.0 | |
| Sales----- | 56,804 | 64,625 | 53,226 | -6.3 | -17.6 | |
| Sales value----- | 36,402 | 56,844 | 54,292 | 49.1 | -4.5 | |

See footnotes at end of table.

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1980, AND 1981--CONTINUED

| (Production and sales in thousands of pounds; sales value in thousands of dollars) | | | | | | |
|--|-------------------|------------|------------|--------------------------|----------------|--|
| CHEMICAL | 1967 ¹ | 1980 | 1981 | INCREASE OR DECREASE (-) | | |
| | | | | 1981 OVER 1967 | 1981 OVER 1980 | |
| | | | | Percent | Percent | |
| 5. Flavor and Perfume Materials | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 57,978 | 97,791 | 93,136 | 60.6 | -4.8 | |
| Sales----- | 47,285 | 73,760 | 68,673 | 45.2 | -6.9 | |
| Sales value----- | 52,866 | 156,794 | 157,708 | 198.3 | 0.6 | |
| Acyclic: | | | | | | |
| Production----- | 53,558 | 76,911 | 71,427 | 33.4 | -7.1 | |
| Sales----- | 49,311 | 55,238 | 49,879 | 1.2 | -9.7 | |
| Sales value----- | 40,495 | 96,726 | 93,887 | 131.8 | -2.9 | |
| 6. Plastics and Resin Materials | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 5,033,497 | 11,753,214 | 11,729,680 | 133.0 | -0.2 | |
| Sales----- | 4,224,121 | 9,606,419 | 10,470,900 | 147.9 | 9.0 | |
| Sales value----- | 1,036,940 | 6,316,455 | 6,836,908 | 559.3 | 8.2 | |
| Acyclic: | | | | | | |
| Production----- | 8,759,452 | 26,432,776 | 28,871,340 | 229.6 | 9.2 | |
| Sales----- | 7,753,242 | 23,944,008 | 25,635,651 | 230.6 | 7.1 | |
| Sales value----- | 1,635,690 | 9,694,713 | 10,255,361 | 527.0 | 5.8 | |
| 7. Rubber-Processing Chemicals | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 220,139 | 258,300 | 246,268 | 11.9 | -4.7 | |
| Sales----- | 169,970 | 167,854 | 157,591 | -7.3 | -6.1 | |
| Sales value----- | 116,318 | 269,905 | 270,934 | 132.9 | 0.4 | |
| Acyclic: | | | | | | |
| Production----- | 43,994 | 33,130 | 33,360 | -24.2 | 0.7 | |
| Sales----- | 30,878 | 26,071 | 23,949 | -22.4 | -8.1 | |
| Sales value----- | 15,477 | 26,047 | 27,419 | 77.2 | 5.3 | |
| 8. Elastomers (Synthetic Rubber) | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 2,297,637 | ... | 2,487,145 | 8.2 | ... | |
| Sales----- | 1,940,099 | ... | 1,552,530 | -20.0 | ... | |
| Sales value----- | 439,580 | ... | 848,554 | 93.0 | ... | |
| Acyclic: | | | | | | |
| Production----- | 1,524,908 | ... | 2,362,312 | 54.9 | ... | |
| Sales----- | 1,321,945 | ... | 1,703,302 | 28.8 | ... | |
| Sales value----- | 434,657 | ... | 1,656,542 | 281.1 | ... | |
| 9. Plasticizers | | | | | | |
| Cyclic: | | | | | | |
| Production----- | 929,871 | 1,388,935 | 1,458,323 | 56.8 | 5.0 | |
| Sales----- | 865,084 | 1,219,999 | 1,208,976 | 39.8 | -0.9 | |
| Sales value----- | 167,827 | 608,372 | 622,474 | 270.9 | 2.3 | |
| Acyclic: | | | | | | |
| Production----- | 332,908 | 395,505 | 407,216 | 22.3 | 3.0 | |
| Sales----- | 296,767 | 353,589 | 357,527 | 20.5 | 1.1 | |
| Sales value----- | 93,142 | 250,018 | 271,159 | 191.1 | 8.5 | |
| 10. Surface-Active Agents | | | | | | |
| Cyclic: ² | | | | | | |
| Production----- | 1,418,444 | 1,154,101 | 1,229,201 | -13.3 | 6.5 | |
| Sales----- | 852,238 | 616,824 | 665,700 | -21.9 | 7.9 | |
| Sales value----- | 95,810 | 339,708 | 366,860 | 282.9 | 8.0 | |
| Acyclic: | | | | | | |
| Production----- | 2,060,851 | 3,698,583 | 3,849,007 | 86.8 | 4.1 | |
| Sales----- | 897,786 | 2,310,680 | 2,438,593 | 171.6 | 5.5 | |
| Sales value----- | 220,877 | 956,552 | 1,109,659 | 402.4 | 16.0 | |

See footnotes at end of table.

SYNTHETIC ORGANIC CHEMICALS, 1981

TABLE 2.--SYNTHETIC ORGANIC CHEMICALS: SUMMARY OF U.S. PRODUCTION AND SALES OF INTERMEDIATES AND FINISHED PRODUCTS, 1967, 1980, AND 1981--CONTINUED

| (Production and sales in thousands of pounds; sales value in thousands of dollars) | | | | | | |
|--|-------------------|------------|------------|--------------------------|-----------|--|
| CHEMICAL | 1967 ¹ | 1980 | 1981 | INCREASE OR DECREASE (-) | | |
| | | | | 1981 OVER | 1981 OVER | |
| | | | | 1967 | 1980 | |
| 11. <i>Pesticides and Related Products</i> | | | | | | |
| Cyclic: | | | | Percent | Percent | |
| Production----- | 823,158 | 1,054,309 | 1,012,429 | 23.0 | -4.0 | |
| Sales----- | 681,532 | 1,017,006 | 907,365 | 33.1 | -10.8 | |
| Sales value----- | 627,742 | 3,079,575 | 3,503,886 | 458.2 | 13.8 | |
| Acyclic: | | | | | | |
| Production----- | 226,505 | 413,893 | 417,646 | 84.4 | 0.9 | |
| Sales----- | 215,831 | 389,315 | 383,276 | 77.6 | -1.6 | |
| Sales value----- | 159,301 | 998,923 | 1,148,496 | 621.0 | 15.0 | |
| 12. <i>Miscellaneous End-Use Chemicals and Chemical Products</i> ³ | | | | | | |
| Cyclic: | | | | | | |
| Production----- | (1,535,922) | 3,680,087 | 3,887,814 | 153.1 | 5.6 | |
| Sales----- | (775,540) | 855,764 | 867,742 | 11.9 | 1.4 | |
| Sales value----- | (283,575) | 577,347 | 701,512 | 147.4 | 21.5 | |
| Acyclic: | | | | | | |
| Production----- | (58,159,771) | 19,922,403 | 18,270,464 | -68.6 | -8.3 | |
| Sales----- | (25,225,631) | 13,218,867 | 12,086,173 | -52.1 | -8.6 | |
| Sales value----- | (3,192,119) | 2,922,055 | 3,273,682 | 2.6 | 12.0 | |
| 13. <i>Miscellaneous Cyclic and Acyclic Chemicals</i> ³ | | | | | | |
| Cyclic: | | | | | | |
| Production----- | ... | 1,888,182 | 2,380,733 | ... | 26.1 | |
| Sales----- | ... | 1,036,710 | 1,062,456 | ... | 2.5 | |
| Sales value----- | ... | 1,421,490 | 989,586 | ... | -30.4 | |
| Acyclic: | | | | | | |
| Production----- | ... | 92,480,086 | 92,658,396 | ... | 0.2 | |
| Sales----- | ... | 35,102,038 | 35,020,407 | ... | -0.2 | |
| Sales value----- | ... | 10,250,667 | 10,754,816 | ... | 4.9 | |

¹Standard reference base period for Federal Government general-purpose index numbers.²Includes ligninsulfonates.³Items in these two sections were previously included in the section named miscellaneous chemicals.

The following tabulation shows, by chemical groups, the number of companies that reported production in 1981 of one or more of the chemicals included in the groups listed in table 2:

| Chemical group | Number of companies | Chemical group | Number of companies |
|-----------------------------------|---------------------|--|---------------------|
| Cyclic intermediates----- | 194 | Elastomers (synthetic rubber)----- | 26 |
| Dyes----- | 37 | Plasticizers----- | 52 |
| Organic pigments----- | 36 | Surface-active agents----- | 176 |
| Medicinal chemicals----- | 89 | Pesticides and related products----- | 85 |
| Flavor and perfume materials----- | 39 | Miscellaneous end-use chemicals and chemical products----- | 151 |
| Plastics and resin materials----- | 264 | Miscellaneous cyclic and acyclic chemicals----- | 282 |
| Rubber-processing chemicals----- | 28 | | |

SECTION I -- TAR AND TAR CRUDES

7

STATISTICAL HIGHLIGHTS

Cynthia B. Foreso

TAR

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

The quantity of coal tar produced in the United States in 1981 amounted to 472 million gallons (table 1). Production in 1981 was 12 percent less than the 534 million gallons of coal tar produced in 1980. Sales of coal tar in 1981 amounted to 362 million gallons, compared with 325 million gallons in 1980. U.S. production of water-gas and oil-gas tars was not reported to the Commission for 1980 or 1981; production of these tars in 1968 amounted to 21 million gallons, according to trade publications.

TAR CRUDES

Tar crudes are obtained from coke-oven gas and by distilling coal tar, water-gas tar, and oil-gas tar. The most important tar crudes are benzene, toluene, xylene, 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 tables 1 and 1B.

Domestic production of industrial and specification grades of benzene reported by coke-oven operators and petroleum refiners in 1981 amounted to 1,339 million gallons--16 percent less than the 1,585 million gallons reported for 1980. These statistics include data for benzene produced from light oil and petroleum. Sales of benzene by coke-oven operators and petroleum refiners in 1981 amounted to 688 million gallons, compared with 1,147 million gallons in 1980. In 1981, the output of toluene (including material produced for use in blending in aviation fuel) amounted to 856 million gallons--16 percent less than the 1,017 million gallons reported for 1980. Sales of toluene (Nitration grade 1°) in 1981 were 608 million gallons, compared with 677 million gallons in 1980. The output of xylene in 1981 (including that produced for blending in motor fuels) was 882 million gallons, compared with 909 million gallons in 1980. Sales of xylene decreased slightly to 381 million gallons in 1981, compared with 443 million gallons in 1980.

Production of crude naphthalene from coal-tar oils in 1981 amounted to 358 million pounds; however, sales figures could not be published without disclosing the operations of individual companies. Production of petroleum-derived naphthalene in 1981 amounted to 142 million pounds, compared with 103 million pounds in 1980. Production figures on road tar for 1981 cannot be published; in 1972 production amounted to 30 million gallons.

Some of the products obtained from tar and included in the statistics in table 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.

Data for 1981 tar crudes were supplied by 20 companies and company divisions.

TABLE 1.--TAR AND TAR CRUDES: U.S. PRODUCTION AND SALES, 1981

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

| TAR AND TAR CRUDES | UNIT OF QUANTITY | PRODUCTION | SALES | | |
|---|------------------------|------------|----------|------------------|----------------------------|
| | | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | | | | 1,000 dollars | |
| Coal tar: ² Coke-oven operators----- | 1,000 gal-- | 472,181 | 362,164 | 296,974 | \$0.82 |
| Crude light oil: ³ Coke-oven operators----- | 1,000 gal-- | 146,950 | 118,805 | 136,626 | 1.15 |
| Intermediate light oil: ³ Coke-oven operators----- | 1,000 gal-- | 4,163 | 131 | 176 | 1.34 |
| Light-oil distillates: | | | | | |
| Benzene, all grades, total ⁴ ----- | 1,000 gal-- | 1,339,160 | 687,625 | 1,180,395 | 1.72 |
| Coke-oven operators----- | 1,000 gal-- | 31,429 | 31,990 | 53,729 | 1.68 |
| Petroleum refiners ⁵ ----- | 1,000 gal-- | 1,307,731 | 655,635 | 1,126,666 | 1.72 |
| Toluene, all grades, total ⁴ ----- | 1,000 gal-- | 856,465 | 608,251 | 767,941 | 1.26 |
| Coke-oven operators----- | 1,000 gal-- | 4,829 | 5,151 | 6,892 | 1.34 |
| Petroleum refiners----- | 1,000 gal-- | 851,636 | 603,100 | 761,049 | 1.26 |
| Xylene, all grades, total ⁴ ----- | 1,000 gal-- | 882,408 | 381,040 | 563,250 | 1.48 |
| Coke-oven operators----- | 1,000 gal-- | 657 | 626 | 897 | 1.43 |
| Petroleum refiners----- | 1,000 gal-- | 881,751 | 380,414 | 562,353 | 1.48 |
| Naphthalene, crude, total----- | 1,000 lb-- | 358,334 | ... | ... | ... |
| Solidifying at: | | | | | |
| Less than 74° C----- | 1,000 lb-- | 6,961 | 6,162 | 25,264 | 4.10 |
| 74° C to less than 79° C----- | 1,000 lb-- | 351,373 | ... | ... | ... |
| Creosote oil (Dead oil) (100% creosote basis): | | | | | |
| Distillate as such (100% creosote basis)----- | 1,000 gal-- | 81,902 | 61,493 | 31,584 | .51 |
| Creosote in coal tar solution (100% solution basis)----- | 1,000 gal-- | 61,120 | 44,460 | 43,745 | .98 |
| Tar, refined, for uses other than road tar----- | 1,000 gal-- | 11,022 | 7,164 | 9,661 | 1.35 |
| Pitch of tar ⁶ ----- | 1,000 tons- | 19,199 | 1,176 | 234,434 | 199.35 |

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

²Includes only data for coal tar reported to the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy (Energy Data Reports, Coke Plant Report, quarterly, October-December, 1981, May 27, 1982). Data on U.S. production of water-gas tar and oil-gas tar are not collected by the U.S. International Trade Commission, but according to trade publications, production of these tars amounted to 21 million gallons in 1968.

³Data reported by tar distillers are not included because publication would disclose the operations of individual companies. At date of publication, sales values for coke-oven operators were not available.

⁴Includes 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.

⁵Benzene, specification grades (1°, 2°).

⁶Includes soft, medium, and hard pitch of tar, and pitch emulsion.

Note 1.--Statistics for materials produced in coke and gas-retort ovens are compiled by the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy. Statistics for materials produced in tar and petroleum refineries are compiled by the U.S. International Trade Commission.

Note 2.--Data for all other tars and tar crudes are not included in the 1981 report because publication would disclose the operation of individual companies. Preliminary coke-oven operators' data were obtained from cumulative totals reported in Energy Data Reports, Coke Plant Report, quarterly, October-December, 1981, May 27, 1982.

SYNTHETIC ORGANIC CHEMICALS, 1981

TABLE 1A.--TAR: U.S. PRODUCTION AND CONSUMPTION, 1980 AND 1981

| (In thousands of gallons) | | | |
|--|------------------|------------------|--|
| TAR | 1980 | 1981 | |
| PRODUCTION | | | |
| Coal tar from coke-oven byproduct plants, total ¹ | 534,068 | 472,181 | |
| CONSUMPTION | | | |
| Total | (²) | (²) | |
| Tar consumed by distillation, total | (²) | (²) | |
| Coal tar distilled or topped by coke-oven operators ¹ | (²) | (²) | |
| Coal tar and oil-gas tar distilled by tar distillers ³ | 308,659 | 439,440 | |
| Tar consumed by the producers chiefly as fuel ¹ | (²) | (²) | |
| Coal tar consumed at coke-oven plants in miscellaneous uses ¹ | (²) | (²) | |

¹Reported to the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy.

²Department of Energy data were not available at time of publication.

³Reported to the U.S. International Trade Commission. Represents tar purchased from companies operating coke-ovens and gas retort plants and distilled by companies operating tar-distillation plants. Statistics also include tar consumed other than by distillation by tar distillers.

TABLE 1B.--TAR AND TAR CRUDES: SUMMARY OF U.S. PRODUCTION OF SPECIFIED PRODUCTS, 1967, 1980, AND 1981

| TAR AND TAR CRUDES | UNIT OF QUANTITY | 1967 ¹ | 1980 | 1981 | INCREASE, OR DECREASE (-) | |
|---|------------------------|-------------------|------------------|------------------|------------------------------|------------------|
| | | | | | 1981 : 1981 | 1981 : 1981 |
| | | | | | OVER : OVER | OVER : OVER |
| | | | | | 1967 : 1980 | 1980 : 1981 |
| Coal tar ² | 1,000 gal-- | 780,334 | 534,068 | 472,181 | -40 | -12 |
| Benzene: ³ | | | | | | |
| Coke-oven operators | 1,000 gal-- | 90,642 | 50,781 | 31,429 | -65 | -38 |
| Petroleum refiners | 1,000 gal-- | 878,704 | 1,533,845 | 1,307,731 | 49 | -15 |
| Total | 1,000 gal-- | 969,346 | 1,584,626 | 1,339,160 | 38 | -16 |
| Toluene: ³ | | | | | | |
| Coke-oven operators | 1,000 gal-- | 19,357 | 7,812 | 4,829 | -75 | -38 |
| Petroleum refiners | 1,000 gal-- | 624,454 | 1,009,509 | 851,636 | 36 | -16 |
| Total | 1,000 gal-- | 643,811 | 1,017,321 | 856,465 | 33 | -16 |
| Xylene: ³ | | | | | | |
| Coke-oven operators | 1,000 gal-- | 5,488 | 1,364 | 657 | -88 | -52 |
| Petroleum refiners | 1,000 gal-- | 449,349 | 907,182 | 881,751 | 96 | -3 |
| Total | 1,000 gal-- | 454,837 | 908,546 | 882,408 | 94 | -3 |
| Naphthalene: | | | | | | |
| Crude ⁵ | 1,000 lb-- | 520,991 | (⁶) | (⁶) | (⁶) | (⁶) |
| Petroleum naphthalenes, all grades | 1,000 lb-- | 376,679 | 103,357 | 142,164 | -62 | 38 |
| Total | 1,000 lb-- | 879,670 | (⁶) | (⁶) | (⁶) | (⁶) |
| Creosote oil (Dead oil): ⁷ | | | | | | |
| Distillate as such (100% creosote basis) | 1,000 gal-- | 108,832 | 60,648 | 81,902 | -25 | 35 |
| Creosote in coal tar solution (100% solution basis) | 1,000 gal-- | 27,420 | 36,011 | 61,120 | 123 | 70 |
| Creosote content of coal tar solution (100% creosote basis) | 1,000 gal-- | 17,402 | (⁶) | (⁶) | (⁶) | (⁶) |
| Total | 1,000 gal-- | 153,654 | (⁶) | (⁶) | (⁶) | (⁶) |

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

²Includes only data for coal tar reported to the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy.

³Data reported by tar distillers are not included because publication would disclose the operations of individual companies.

⁴Includes data for material produced for use in blending motor fuels. Statistics are not comparable with monthly figures which include some o-xylene.

⁵Naphthalene solidifying at less than 79° C. Figures include production by tar distillers and coke-oven operators and represent combined data for the commercial grades of naphthalene. Because of conversion between grades, the figures may include some duplication. Statistics on naphthalene refined from domestic crudes are reported in the section on "Cyclic Intermediates."

⁶Statistics cannot be published; to do so would disclose the operations of individual companies.

⁷Includes data for creosote oil produced by tar distillers and coke-oven operators and used only in wood preservatives.

TABLE 2.--TAR CRUDES FOR WHICH U.S. PRODUCTION OR SALES WERE REPORTED,
IDENTIFIED BY MANUFACTURERS, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3]

| TAR CRUDES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| Light-oil distillates: | |
| *Benzene ¹ , coke-oven operators----- | BTS, CLF, JLS, USS. |
| Solvent naphtha----- | BTS, CLF, IGC, USS. |
| *Toluene ¹ , coke-oven operators----- | BTS, CLF, JLS, USS. |
| Xylene ¹ , coke-oven operators----- | CLF, JLS, USS. |
| Pyridine, crude bases----- | KPT. |
| Naphthalene, crude, solidifying at: | |
| Less than 74° C----- | BTS, IGC, RSC, USS. |
| 74° C to less than 79° C----- | ACS, KPT, USS. |
| Methylnaphthalene----- | KPT. |
| *Crude tar-acid oils: ¹ | |
| Tar-acid content 5% to less than 24%----- | KPT. |
| Tar-acid, all other----- | USS. |
| Cresylic acid, crude----- | FER, KPT. |
| Creosote oil (Dead oil): | |
| *Distillate as such----- | ACS, COP, KPT, RIL, USS, WTC. |
| *Creosote in coal tar solution----- | ACS, KPT, RIL, USS, WTC. |
| All other distillate products: | |
| Carbon black oil----- | KPT. |
| Creosote tar acid oil----- | KPT. |
| Crude coal tar solvent----- | KPT. |
| Crude tetralin----- | KPT. |
| Priming and refractory oil----- | KPT. |
| All other----- | ACS, KPT. |
| Tar, road----- | ACS, NTS, RIL. |
| Tar for other uses: | |
| Crude----- | HUS, IGC, RSC, USS. |
| Refined----- | ACS, KPT, RIL. |
| *Pitch of tar: | |
| Soft (water softening point less than 110° F)----- | ACS, KPT, USS. |
| Medium (water softening point 110° F to 160° F)----- | ACS, COP, KPT, RIL, USS. |
| Hard (water softening point above 160° F)----- | KPT, RIL, USS, WTC. |
| Pitch emulsion----- | JEN. |
| Refined anthracene----- | ACS. |

¹Does not include manufacturers' identification codes for producers which report to the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy.

TABLE 3.--TAR AND TAR CRUDES: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of tar and tar crudes to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--------------------------------------|------|--|
| ACS | Allied Corp., Allied Chemicals Co. | KPT | Koppers Co., Inc. |
| ALF | Allied Corp. | | |
| BTS | Bethlehem Steel Corp. | NEV | Neville Chemical Co. |
| CLF | C. F. & I. Steel Corp. | NTS | National Steel Corp., Great Lakes Plant |
| COP | Coopers Creek Chemical Corp. | | |
| DHC | Donner-Ranna Coke Joint Venture | RIL | Reilly Tar & Chemical Corp. |
| FER | Ferro Corp., Productol Chemical Div. | RSC | Republic Steel Corp. |
| HUS | Husky Industries, Inc. | | |
| IGC | Indiana Gas & Chemical Corp. | USS | U.S. Steel Corp.: Clairton Plant Fairfield Plant Gary Plant Geneva Plant |
| JEN | Jennison-Wright Corp. | WTC | Witco Chemical Corp. |
| JLS | Jones & Laughlin Steel Corp. | | |

Note.--Complete names and addresses of the above reporting companies are listed in table 1 of the appendix.

SECTION II -- PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS 13 FOR CHEMICAL CONVERSION

STATISTICAL HIGHLIGHTS

James Raftery

Primary products that are derived from petroleum and natural gas¹ 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 tar 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 xylene). 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 xylene which are used in blending aviation and motor fuel.

The output of primary products derived from petroleum and natural gas as a group amounted to 109,517 million pounds in 1981. Production in 1980 was 117,137 million pounds. The output of aromatic and naphthenic products from petroleum amounted to 26,261 million pounds in 1981, compared with 29,521 million pounds in 1980. Sales amounted to \$2,758 million in 1981 and \$3,724 million in 1980. In 1981, production of benzene was 9,573 million pounds; production of toluene was 6,140 million pounds; and production of xylene was 6,701 million pounds (table 1).

Production of all aliphatic hydrocarbons and derivatives from petroleum and natural gas was 83,257 million pounds in 1981, compared with 87,615 million pounds in 1980. Sales of these products were valued at \$7,611 million in 1981, compared with \$6,922 million in 1980. Production of ethylene was 29,418 million pounds in 1981. The output of 1,3-butadiene in 1981 was 2,986 million pounds. Production of propylene in 1981 was 13,482 million pounds (table 1).

Data for 1981 primary products from petroleum and natural gas for chemical conversion were supplied by 78 companies or company division.

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

TABLE 1.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION: U.S. PRODUCTION AND SALES, 1981

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

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|----------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 109,517,482 | 59,221,982 | 10,369,286 | \$0.18 |
| AROMATICS AND NAPHTHENES ² | | | | |
| Total----- | 26,260,683 | 14,675,842 | 2,758,015 | .19 |
| Benzene (1° and 2°)----- | 9,572,592 | 4,799,245 | 1,126,666 | .23 |
| Naphthalene, all grades----- | 142,164 | 107,865 | 30,081 | .28 |
| Naphthenic acid----- | 22,205 | 21,329 | 4,929 | .23 |
| Toluene, all grades, total----- | 6,140,298 | 4,348,350 | 761,049 | .18 |
| Nitration grade, 1°----- | 3,921,095 | 3,052,111 | 575,969 | .19 |
| Pure commercial grade, 2°----- | 678,397 | 582,522 | 55,202 | .09 |
| All other ³ ----- | 1,540,806 | 713,717 | 129,878 | .18 |
| Xylenes, mixed, total----- | 6,701,308 | 2,891,150 | 562,353 | .19 |
| 3° grade----- | 2,950,701 | 1,514,500 | 296,313 | .20 |
| 5° grade----- | 1,654,757 | 723,219 | 144,623 | .20 |
| All other ⁴ ----- | 2,095,850 | 653,431 | 121,417 | .19 |
| All other aromatics and naphthenes ⁵ ----- | 3,682,116 | 2,507,903 | 272,937 | .11 |
| ALIPHATIC HYDROCARBONS | | | | |
| Total----- | 83,256,799 | 44,546,140 | 7,611,271 | .17 |
| C ₂ Hydrocarbons, total----- | 35,993,839 | 12,025,821 | 2,624,162 | .22 |
| Acetylene ⁶ (For chemical use only)----- | 278,494 | 87,464 | 44,387 | .51 |
| Ethane----- | 6,297,256 | 2,524,723 | 240,129 | .10 |
| Ethylene----- | 29,418,089 | 9,413,634 | 2,339,646 | .25 |
| C ₃ Hydrocarbons, total----- | 21,347,095 | 14,644,836 | 2,224,032 | .15 |
| Propane----- | 7,865,044 | 7,354,548 | 812,494 | .11 |
| Propylene ⁷ ----- | 13,482,051 | 7,290,288 | 1,411,538 | .19 |
| C ₄ Hydrocarbons, total----- | 10,412,317 | 6,037,672 | 1,429,135 | .24 |
| Butadiene and butylene fractions----- | 1,075,498 | 887,080 | 182,489 | .21 |
| 1,3-Butadiene, grade for rubber (elastomers)----- | 2,986,329 | 2,375,615 | 799,326 | .34 |
| n-Butane----- | 1,719,310 | 792,493 | 92,125 | .12 |
| 1-Butene----- | 136,907 | 122,629 | 33,861 | .28 |
| 1-Butene and 2-Butene, mixed ⁸ ----- | 562,003 | ... | ... | ... |
| Isobutane----- | 1,058,387 | 517,331 | 63,503 | .12 |
| Isobutylene----- | 1,034,553 | 435,404 | 96,530 | .22 |
| All other ⁹ ----- | 1,839,330 | 907,120 | 161,301 | .18 |
| C ₅ Hydrocarbons, total----- | 2,463,503 | 1,263,162 | 200,139 | .16 |
| Isoprene (2-Methyl-1,3-butadiene)----- | 505,707 | 200,599 | 52,513 | .26 |
| n-Pentane----- | 47,154 | ... | ... | ... |
| Pentenes, mixed----- | 163,621 | 131,173 | 18,592 | .14 |
| Piperylene (1,3-Pentadiene)----- | 50,138 | 47,992 | 8,513 | .18 |
| All other ^{10 11} ----- | 1,696,883 | 883,398 | 120,521 | .14 |
| All other aliphatic hydrocarbons, derivatives and mixtures, total----- | 13,040,045 | 10,574,649 | 1,133,803 | .11 |
| Alpha olefins ¹² ----- | 999,050 | 332,386 | 131,675 | .40 |
| tert-Butylmercaptan(2-methyl-2-propanethiol)----- | 14,281 | 10,428 | 6,753 | .65 |

See footnotes at end of table.

TABLE 1.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL
CONVERSION: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|----------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ALIPHATIC HYDROCARBONS--Continued | | | | |
| All other aliphatic hydrocarbons, derivatives, and mixtures--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Dodecene (Tetrapropylene)----- | 287,012 | 75,059 | 52,196 | \$0.70 |
| Heptenes, mixed----- | 126,725 | 86,745 | 40,663 | .47 |
| Hexane----- | 365,414 | 223,349 | 56,263 | .25 |
| Nonene (Tripropylene)----- | 452,771 | 254,959 | 89,021 | .35 |
| n-Paraffins ^{1,2} ----- | 1,300,376 | 771,217 | 148,808 | .19 |
| Polybutene----- | 339,699 | 196,265 | 60,837 | .31 |
| All other ^{1,4} ----- | 9,154,717 | 8,624,241 | 547,587 | .06 |

¹Calculated from rounded figures.

²The 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 and 1B of the report on "Tar and Tar Crudes."

³Includes toluene, solvent grade, 90 percent.

⁴Includes toluene and xylene used as solvents; may include that which is blended in aviation and motor gasoline.

⁵Includes data for alkyl aromatics, crude cresylic acid, refined cresylic acid, polyethylbenzene, distillates, solvents and miscellaneous cyclic hydrocarbons.

⁶Production figures on acetylene from calcium carbide for chemical synthesis are collected by the U.S. Bureau of the Census.

⁷Includes data for refinery propylene.

⁸The statistics represent principally the butene content of crude refinery gases from which butadiene is manufactured.

⁹Includes data for butanes, mixed C₄ streams, 2-butene, and mixed butylenes.

¹⁰Includes data for isopentane, amylenes, dibutanized aromatic concentrate.

¹¹Includes sales data only for n-pentane.

¹²Includes data for the following molecular weight ranges: C₆-C₇; C₈-C₁₀; C₁₁-C₁₅; C₁₅-C₂₀; and others.

¹³Includes data for the following chain lengths: C₆-C₉; C₆-C₁₆; C₉-C₁₅; C₁₀-C₁₄; C₁₀-C₁₆; and others.

¹⁴Includes production and/or sales data for methane, methyl acetylene propadiene, methylcyclopentadiene, n-heptane, n-octane, di-isobutylene, eicosane, mixtures of C₂ and C₃, C₆ and C₇ hydrocarbons, hydrocarbon derivatives, and other hydrocarbons.

TABLE 2.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| AROMATICS AND NAPHTHENES | |
| ALKYL AROMATICS: | |
| Cyclosols- - - - - | SHC. |
| Alkyl aromatics: all other - - - - - | AMO, BFG. |
| *BENZENE: | |
| Benzene 1° (99-100 %) - - - - - | AMO, APR, ASH, ATR, CCP, CO, CPI, CRP, CSD, CSO, CSP, EKX, ENJ, GOC, GRS, HES, KHI, MOC, MON, PLC, PPR, QH, SHC, SKO, SM, SOC, SOG, SUN, SWR, TID, TOC, TX, UCC, UOC, X. |
| Benzene 2° (98-98.9%) - - - - - | DOW. |
| Benzene 90-97.9% (Non-fuel) - - - - - | KLM. |
| Cresylic acid (Less than 75 percent distilling over 215° C) - - - - - | FER. |
| Cresylic acid, refined - - - - - | ENJ. |
| *Naphthalene - - - - - | ASH, CO, MON, TID. |
| *NAPHTHENIC ACID: | |
| Naphthenic acid, acid number 150-199 - - - - - | HEC, SOC, SUN. |
| Naphthenic acid, acid number 200-224 - - - - - | FER. |
| Naphthenic acid, acid number less than 150 - - - - - | ATR, FER, GOC, HEC, SUN. |
| *TOLUENE ALL GRADES, TOTAL: | |
| Toluene, 1° (99.5-100%) - - - - - | ASH, ATR, CPI, ENJ, GOC, GRS, HES, HST, MOC, PLC, QH, SHC, SKO, SOG, SUN, SWR, TID, TOC, TX, UOC. |
| Toluene, 2° (98.5-99.4%) - - - - - | ATR, CO, DOW, ELP, KHI, PPR, SOG, UCC. |
| Toluene, 90-98.4% (Non-fuel) - - - - - | CCP, CSD, CSP, MON, PPR, PPX, SKO, SM. |
| *XYLENES, MIXED, TOTAL: | |
| Xylene, 3° (99-100%) - - - - - | AMO, ATR, CPI, GOC, HES, SHC, SOG, SWR. |
| Xylene, 5° (98-98.9 %) - - - - - | CCP, CSD, ENJ, GRS, HCF, MOC, PPR, QH, TOC, UOC. |
| Xylene, 90-97.9% (Non-fuel) - - - - - | AMO, ASH, CO, CSP, MON, SOC, SUN, UCC. |
| *ALL OTHER AROMATICS AND NAPHTHENES: | |
| Aromatics, C9 - - - - - | CO, QH. |
| Carbon black feedstock - - - - - | ENJ, GOC. |
| Polyethylbenzene - - - - - | HST. |
| All other products from petroleum and natural gas, cyclic - - - - - | CO, CRP, EKX, ENJ, KHI, NWP, QH, SHC, SOG, UCC. |

TABLE 2.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ALIPHATIC HYDROCARBONS--CONTINUED | |
| ALL OTHER ALIPHATIC HYDROCARBONS, DERIVATIVES, AND MIXTURES | |
| *ALPHA OLEFINS: | |
| Alpha olefins, C6-C7- | GOC, SHC, SOC. |
| Alpha olefins, C8-C10 | GOC, SHC, SOC. |
| Alpha olefins, C11-C15- | GOC, SHC, SOC. |
| Alpha olefins, C15-C20- | SOC. |
| Alpha olefins, all other | FER, SHC, SOC, TNA. |
| C/6 HYDROCARBONS: | |
| *Hexane | APR, ASH, ENJ, HMY, PLC, SHO, SOG, TNA, UOC, X. |
| Methylcyclopentadiene- | ENJ. |
| Hydrocarbons, C6, all other- | CPI, ENJ, PLC, SWC. |
| C/7 HYDROCARBONS: | |
| n-Heptane- | PLC. |
| *Heptenes, mixed- | AIP, AMO, EKK, ENJ, SOG, TID. |
| Hydrocarbons, C7, all other- | ENJ. |
| C/8 HYDROCARBONS: | |
| Di-isobutylene (Di-isobutene)- | EKT, FRS, PTT. |
| n-Octane | SOG, TNA. |
| Hydrocarbons, C8, all other- | AIP, ENJ, FRS, SHC, TID. |
| C/9 AND ABOVE HYDROCARBONS (EXCEPT ALPHA OLEFINS): | |
| *Dodecene | ATR, ENJ, GP, SOC, SUN, UOC. |
| Eicosane | HMY. |
| *Nonene (Tripropylene)- | AIP, ATR, CSP, ENJ, FKE, TID, UOC. |
| *N-PARAFFINS - CARBON CHAIN LENGTH: | |
| n-Paraffins, C6-C9- | CPX, SOG, UCC. |
| n-Paraffins, C6-C16 | QH. |
| n-Paraffins, C9-C15 | SHO, SOG. |
| n-Paraffins, C10-C14- | ENJ, SHO, SOG. |
| n-Paraffins, C10-C16- | CO. |
| n-Paraffins- | CSP, ENJ, SHC, SOC, TNA. |
| Hydrocarbons, C5-C9, mixtures- | CRP, PPR. |
| *Polybutene | AMO, CSD, SOC. |
| HYDROCARBON DERIVATIVES: | |
| n-Butyl mercaptan (1-Butanethiol)- | PAS, PLC. |
| *tert-Butyl mercaptan (2-Methyl-2-propanethiol) | HAP, PAS, PLC. |
| Decyl mercaptans | PAS. |
| Di-tert-butyl disulfide- | PLC. |
| Ethyl mercaptan (Ethanolthiol) | HAP, PAS. |
| Hexadecyl mercaptans | PAS. |
| Isopropyl mercaptan (2-Propanethiol) | PAS. |

TABLE 2.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ALIPHATIC HYDROCARBONS | |
| C/1 HYDROCARBONS: | |
| Methane - - - - - | MON, SHO, TX. |
| C/2 HYDROCARBONS: | |
| *Acetylene (For chemical use only) - - - - - | DOW, MNO, RH, UCC. |
| *Ethane - - - - - | ACU, AMO, CO, ENJ, IRC, MON, OMC, PLC, SHO, SM, USI. |
| *Ethylene - - - - - | ACU, AMO, ATR, BAS, BFG, CBN, CO, CPX, CRP, DOW, DUP, EKK, ELP, ENJ, GOC, MCB, MON, NWP, OMC, PLC, SHC, SM, SMO, TX, UCC, USI, USS. |
| C/3 HYDROCARBONS: | |
| Hydrocarbons, C2-C3, mixtures - - - - - | CSO, KHI, MON. |
| Methyl acetylene propadiene - - - - - | CO, MON. |
| *Propane (Commercial and hd-5) - - - - - | AMO, ASH, CCP, COR, CPI, CSD, CSO, CSP, ENJ, EPC, GRS, IRC, KHI, MOC, OMC, PLC, SHO, SM, SOG, SUN, TCR, TUS, UCC, UOC, USI. |
| *Propylene - - - - - | ACU, AMO, ASH, ATR, BFG, CCP, CLK, CO, CPX, CRP, CSD, CSO, DOW, DUP, EKK, ELP, ENJ, EPC, GOC, MCB, MOC, MON, NWP, PLC, SHC, SIO, SKO, SM, SOC, SOG, SUN, TCR, TX, UCC, USS, X. |
| C/4 HYDROCARBONS: | |
| *Butadiene and butylene fractions - - - - - | ACU, CO, CPX, CRP, DOW, EKK, GOC, NWP, TUS, UCC. |
| *1,3-Butadiene, grade for rubber (Elastomers) - - - - - | AMO, ATR, CO, CPY, DOW, ELP, ENJ, FRS, MON, PTT, SHC, SM, TUS, UCC. |
| *n-Butane - - - - - | AMO, APR, ASH, COR, CSD, CSO, CSP, EPC, IRC, OMC, PLC, SHO, SM, SUN, TUS, USI. |
| *1-Butene - - - - - | GOC, PTT, SHC, TNA. |
| *2-Butene - - - - - | CO, MON, PLC, SHC. |
| *1-Butene and 2-butene, mixed - - - - - | ATR, CSO, DUP, ENJ, SHC, SOG. |
| Butylenes, mixed - - - - - | MON, SM. |
| *Isobutane (2-Methylpropane) - - - - - | AMO, CSO, CSP, ELP, ENJ, IRC, KHI, OMC, PLC, SHO, SM, SUN, TUS, USI. |
| *Isobutylene (2-Methylpropene) - - - - - | AMO, ATR, ENJ, SHC, TUS, UCC. |
| *Hydrocarbons, C4, all other - - - - - | BFG, CBN, CO, CRP, ELP, ENJ, KHI, MCB, QH, SHC, SM, TNA. |
| C/5 HYDROCARBONS: | |
| Amylenes - - - - - | SHO. |
| Dibutanized aromatic concentrate - - - - - | DUP, ELP. |
| Isopentane (2-Methylbutane) - - - - - | PLC, SHO. |
| *Isoprene (2-Methyl-1,3-butadiene) - - - - - | ATR, CO, CRB, DOW, ENJ, MON, SHC, UCC. |
| *n-Pentane - - - - - | APR, ASH, PLC, SHO. |
| *Pentenenes, mixed - - - - - | COR, DOW, ENJ, QH, SHO, TUS, USS. |
| *Piperylene (1,3-Pentadiene) - - - - - | CRB, DOW, MON. |
| *Hydrocarbons, C5, all other - - - - - | ATR, CO, CSO, CXI, GOC, PLC, TUS, TX. |

TABLE 2.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ALIPHATIC HYDROCARBONS--CONTINUED | |
| HYDROCARBON DERIVATIVES--CONTINUED | |
| Methyl mercaptan (Methanethiol)- - - - - | PAS. |
| tert-Octyl mercaptan (2,4,4-Trimethyl-2- pentanethiol)- - - - - | PAS. |
| Octyl mercaptans - - - - - | PAS. |
| n-Propyl mercaptan (1-Propanethiol)- - - - - | PAS, PLC. |
| Hydrocarbon derivatives: all other hydrocarbon derivatives- - - - - | HAP, PAS, PLC, TX. |
| *Hydrocarbons, C9 and above, all other, including mixtures - - - - - | CO, CPI, ENJ, GOC, MOC, SOG. |

TABLE 3.--PRIMARY PRODUCTS FROM PETROLEUM AND NATURAL GAS FOR CHEMICAL CONVERSION: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of crude products from petroleum and natural gas for chemical conversion to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|--|
| ACU | Allied Chemical Corp., Union Texas Petroleum Corp. | KHI | Koch Industries, Inc., Koch Refining Co. |
| AIP | Air Products & Chemicals, Inc. | KLM | Kalama Chemical, Inc. |
| AMO | Standard Oil Co. (Indiana) | MCB | Borg-Warner Corp., Borg-Warner Chemicals |
| APR | Atlas Processing Co. | MNO | Monochem, Inc. |
| ASH | Ashland Oil, Inc. | MOC | Marathon Oil Co., Texas Refining Div. |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | MON | Monsanto Co. |
| BAS | BASF Wyandotte Corp. | NWP | Northern Petrochemical Co. |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical Group | OMC | Olin Corp. |
| CBN | Cities Service Co., Petrochemicals Div. | PAS | Pennwalt Corp. |
| CCP | Crown Central Petroleum Corp. | PLC | Phillips Petroleum Co. |
| CLK | Clark Oil & Refining Corp. | PPR | Phillips Puerto Rico Core, Inc. |
| CO | Conoco, Inc. | PPX | Phillips Paraxylene, Inc. |
| COR | Commonwealth Oil & Refining Co., Inc.: | PTT | Petro-Tex Chemical Corp. |
| CPI | Commonwealth Petrochemicals, Inc. | QH | Quintana Petrochemical Co. |
| CPX | Chemplex Co. | RH | Rohm & Haas Co. |
| CPY | Copolymer Rubber & Chemical Corp. | SHC | Shell Oil Co., Shell Chemical Co. Div. |
| CRB | Caribe Isoprene Corp. | SHO | Shell Oil Co. |
| CRP | Corpus Christi Petrochemical Co. | SIO | Standard Oil of Ohio |
| CSD | Cosden Oil & Chemical Corp. | SKO | Getty Refining & Marketing Co. |
| CSO | Cities Service Co., Petroleum Products Group | SM | Mobil Oil Corp.: |
| CSP | Coastal Corp., Coastal States Petroleum Co. | | Gas Liquids Dept. |
| CKI | Chemical Exchange Industries, Inc. | | Mobil Chemical Co., Petrochemicals Div. |
| DOW | Dow Chemical Co. | SNO | SunOlin Chemical Co. |
| DUP | E. I. duPont de Nemours & Co., Inc. | SOC | Standard Oil Co. of California, Chevron Chemical Co. |
| EXX | Eastman Kodak Co., Texas Eastman Co. Div. | SOG | Charter International Oil Co. |
| ELP | El Paso Products Co. | SUN | Sun Company, Inc. |
| ENJ | Exxon Chemical Americas | SWC | Corco Cyclohexane, Inc. |
| EPC | Enterprise Products Co., Enterprise Petrochemicals Co. Sub. | SWR | Southwestern Refining Co. |
| FER | Ferro Corp., Productol Chemical Div. | TCR | Texas City Refining, Inc. |
| FKE | Frank Enterprises, Inc. | TID | Getty Refining & Marketing Co., Delaware Refinery |
| FRS | Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div. | TNA | Ethyl Corp. |
| GOC | Gulf Oil Corp., Gulf Oil Chemicals Co.-U.S. | TOC | Tenneco Oil Co., P & M |
| GP | Georgia-Pacific Corp., Houston Div. | TUS | Texas Butadiene Co. |
| GRS | Champlin Petroleum Co. | TX | Texaco, Inc. |
| HAP | Helmerich & Payne, Inc., National Gas Odorizing Div. | UCC | Union Carbide Corp. |
| BCF | Hercofina | UOC | Union Oil Co. of California |
| HEC | Hewchem | USI | National Distillers & Chemicals Corp., U.S. Industrial Chemicals Co. |
| HES | Amerada Hess Corp. (Hess Oil Virgin Islands Corp.) | USS | USS Chemicals Div. of U.S. Steel Corp. |
| HMY | Humphrey Chemical Co. | | |
| HST | American Hoechst Corp., Petrochemical Div. | | |
| IRC | Independent Refinery Corp. | | |

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

STATISTICAL HIGHLIGHTS

Edmund Cappuccilli

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, refined naphthalene may be used as a raw material in the manufacture of 2-naphthol or of other more advanced intermediates, or may be packaged and sold as a moth repellant or as a deodorant. In 1981, about 42 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.

Total production of cyclic intermediates in 1981 amounted to 45,323 million pounds, an increase of less than one percent from the 45,070 million pounds produced in 1980. Sales of cyclic intermediates in 1981 were 19,202 million pounds, valued at \$7,437 million, compared with 20,060 million pounds, valued at \$7,248 million in 1980.

Intermediates which were produced in excess of 2 billion pounds in 1981 were ethylbenzene (7,813 million pounds), styrene (6,679 million pounds), dimethyl terephthalate (6,235 million pounds), p-xylene (4,532 million pounds), cumene (3,309 million pounds), and phenol (2,578 million pounds). Other large-volume intermediates produced in 1981 were cyclohexane (1,820 million pounds), isocyanates (1,203 million pounds), o-xylene (918 million pounds), nitrobenzene (902 million pounds), phthalic anhydride (870 million pounds), cyclohexanone (766 million pounds), aniline (634 million pounds), bisphenol A (555 million pounds), alkylbenzenes (535 million pounds), monochlorobenzene (285 million pounds), and toluene-2,4-diamine (205 million pounds). The chemicals noted above accounted for 88 percent of the total output of intermediates in 1981.

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1981

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

| CYCLIC INTERMEDIATES | PRODUCTION | SALES | | |
|--|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 45,323,048 | 19,201,715 | 7,436,562 | \$0.39 |
| Acetoacetanilide----- | 10,285 | 9,340 | 10,012 | 1.07 |
| o-Acetoacetanisidide----- | 792 | 970 | 2,438 | 2.51 |
| o-Acetoacetotoluidide----- | 1,623 | 1,818 | 2,605 | 1.43 |
| Acetophenone, tech----- | 4,439 | ... | ... | ... |
| Alkylbenzenes ² ----- | 535,271 | 426,154 | 203,631 | .48 |
| 4-Amino-5-methoxy-2-methylbenzenesulfonic acid----- | 1,279 | ... | ... | ... |
| 6-Aminopenicillanic acid----- | 679 | ... | ... | ... |
| p-[(p-Aminophenyl)azo]benzenesulfonic acid----- | 174 | ... | ... | ... |
| Aniline (Aniline oil)----- | 634,293 | 191,486 | 69,359 | .36 |
| Anilinomethanesulfonic acid and salt----- | 183 | ... | ... | ... |
| Benzoic acid, tech----- | 78,547 | 29,863 | 13,429 | .45 |
| Biphenyl----- | 47,116 | 21,674 | 7,742 | .36 |
| Butylphenols, mixed----- | 2,750 | 2,393 | 1,952 | .82 |
| p-tert-Butyltoluene----- | 3,284 | ... | ... | ... |
| Chlorobenzene, mono----- | 285,480 | 85,822 | 29,643 | .35 |
| Cresols and cresylic acid, total ³ ----- | 137,250 | 124,080 | 80,439 | .65 |
| (m, p)-Cresol----- | 31,672 | 28,675 | 17,594 | .61 |
| o-Cresol----- | 32,239 | 28,146 | 18,950 | .67 |
| All other ⁴ ----- | 73,339 | 67,259 | 43,895 | .65 |
| Cumene----- | 3,309,256 | 1,746,393 | 453,206 | .26 |
| Cyclohexane----- | 1,819,530 | 1,542,559 | 411,890 | .27 |
| Cyclohexanone----- | 765,542 | 35,667 | 19,133 | .54 |
| o-Dichlorobenzene----- | 51,581 | 52,347 | 20,575 | .39 |
| p-Dichlorobenzene----- | 73,533 | 68,829 | 26,279 | .38 |
| Dicyclopentadiene (including cyclopentadiene)----- | 88,570 | 69,297 | 15,558 | .22 |
| 1,4-Dihydroxyanthraquinone (Quinizarin)----- | 618 | ... | ... | ... |
| N,N-Dimethylbenzylamine----- | 229 | ... | ... | ... |
| 2,4-Dinitrotoluene----- | 504,292 | ... | ... | ... |
| Ethylbenzene----- | 7,812,959 | 344,494 | 64,790 | .19 |
| Isocyanic acid derivatives, total----- | 1,202,782 | 965,579 | 732,421 | .76 |
| Polymethylene polyphenylisocyanate----- | 517,923 | 360,645 | 271,643 | .75 |
| Toluene-2,4- and 2,6-diisocyanate (80/20 mixture)----- | 591,325 | 533,226 | 384,137 | .72 |
| Other isocyanic acid derivatives----- | 93,534 | 71,708 | 76,641 | 1.07 |
| 4,4'-Isopropylidenediphenol (Bisphenol A)----- | 554,565 | 197,562 | 98,703 | .50 |
| α-Methylstyrene----- | 35,548 | 31,732 | 12,148 | .38 |
| o-Nitroaniline----- | 6,777 | ... | ... | ... |
| p-Nitroaniline----- | 13,661 | ... | ... | ... |
| Nitrobenzene ⁵ ----- | 901,631 | 19,574 | 5,517 | .28 |
| Nonylphenol----- | 151,724 | 59,771 | 26,629 | .43 |
| Phenol, total ³ ----- | 2,577,631 | 1,061,978 | 318,580 | .30 |
| From cumene----- | 2,485,974 | 990,422 | 295,350 | .30 |
| All other----- | 91,657 | 71,556 | 23,230 | .33 |
| 2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanol-amine)----- | 433 | 220 | 180 | .82 |
| Phthalic anhydride----- | 869,520 | 446,945 | 153,368 | .34 |
| Propiophenone----- | ... | 543 | 974 | 1.79 |
| Salicylic acid, tech----- | 37,768 | ... | ... | ... |

See footnotes at end of table.

TABLE 1.--CYCLIC INTERMEDIATES: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| CYCLIC INTERMEDIATES | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Styrene----- | 6,679,453 | 2,993,179 | 998,174 | \$0.33 |
| Terephthalic acid, dimethyl ester ⁶ ----- | 6,234,986 | ... | ... | ... |
| Toluene-2,4-diamine (4-m-Tolylenediamine)----- | 205,042 | ... | ... | ... |
| o-Xylene----- | 917,601 | 812,211 | 201,264 | .25 |
| p-Xylene----- | 4,532,421 | 2,974,234 | 900,097 | .30 |
| All other cyclic intermediates----- | 4,231,950 | 4,885,001 | 2,555,826 | .52 |

¹Calculated from unrounded figures.

²Includes straight-chain dodecylbenzene, tridecylbenzene, and other straight-chain alkylbenzenes. Branched-chain alkylbenzenes are included in "All other cyclic intermediates." Data for 1980, included branch-chained alkylbenzenes.

³Does not include data for coke oven and gas-retort ovens, reported to the Office of Energy Data and Interpretation, Energy Information Administration, Department of Energy.

⁴Figures include (o,m,p)-cresol from coal tar, m-cresol, p-cresol, and cresylic acid refined from petroleum and coal tar.

⁵Data for 1981 are correct. Data for several previous years did not include all plants.

⁶The figures for terephthalic acid, dimethyl ester (DMT) include 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.

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| 3-Acetamido-N-(2-succinimidoethyl)-N-ethylaniline - - - | EKT. |
| Acetanilide, tech. - - - - - | SAL. |
| p-Acetanilide - - - - - | SDC. |
| Acetic acid, phenyl ester - - - - - | BKM. |
| *Acetoacetanilide - - - - - | BRD, EKT, HST. |
| *o-Acetoacetanilide - - - - - | BRD, EKT, HST. |
| *o-Acetoacetotoluidide - - - - - | BRD, EKT, HST. |
| p-Acetoacetotoluidide - - - - - | HST. |
| 2',4'-Acetoacetoxylidide - - - - - | EKT, HST. |
| Acetoacet-m-xylidide - - - - - | BRD. |
| 1'-Acetonaphthone - - - - - | GIV. |
| *Acetophenone, tech. - - - - - | CLK, SKO, UCC. |
| p-Acetotoluidide - - - - - | EK. |
| α-Acetylmino-p-toluenesulfonamide - - - - - | SDW. |
| p-Acetylbenzenesulfonamide - - - - - | LIL. |
| p-Acetylbenzenesulfonic acid, sodium salt - - - - - | LIL. |
| 2-Acetylpyridine - - - - - | RIL. |
| *ALKYLBENZENES: | |
| Alkylbenzene straight-chain (Except dodecyl and tridecyl) - - - - - | MON, WTC. |
| DODECYLBENZENE (INCLUDING TRIDECYLBENZENE): | |
| Dodecylbenzene, straight-chain - - - - - | CO, MON, UCC, WTC. |
| Dodecylbenzene, other - - - - - | CO, FER, SOC, WTC. |
| Alkylbenzene all other (Except dodecyl, tridecyl and straight-chain) - - - - - | CPS, PLC, WTC. |
| Alkylphenols, mixed - - - - - | FER. |
| Alkylpyridines, mixed - - - - - | RIL. |
| alpha-Phenethylamine - - - - - | HXL. |
| 1-Amino-4-(4-acetamidoanilino)-9,10-dihydro-9,10-dioxo-2-anthracenesulfonic acid - - - - - | VPC. |
| 3'-Aminoacetanilide - - - - - | TRC. |
| 4'-Aminoacetanilide (Acetyl-p-phenylenediamine) - - - - - | HST, TRC. |
| 3'-Amino-p-acetanilide - - - - - | HST, SDC. |
| 5-Amino-2-(p-aminoanilino)benzenesulfonic acid - - - - - | TRC. |
| 2-(p-aminoanilino)-5-nitrobenzenesulfonic acid - - - - - | TRC. |
| 3-Amino-p-anisanilide - - - - - | PCW. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| 1-Aminoanthraquinone and salt- - - - - | TRC. |
| 6-Amino-3,4'-azodibenzenesulfonic acid (C.I. Acid Yellow 9)- - - - - | TRC. |
| p-Aminobenzamide - - - - - | LEL, SDH. |
| 1-Amino-5-benzamidoanthraquinone - - - - - | TRC. |
| o-Aminobenzenethiol- - - - - | FMT. |
| 2-Amino-6-benzothiazolecarboxylic acid - - - - - | LEL. |
| 2-Amino-6-benzothiazolecarboxylic acid, monosodium salt - - - - - | X. |
| 1-Amino-4-bromo-9,10-dihydro-9,10-dioxo-2- anthracenesulfonic acid and sodium salt- - - - - | TRC, VPC. |
| 1-Amino-2-bromo-4-hydroxyanthraquinone - - - - - | AC, VPC. |
| 2-Amino-1-chloroanthraquinone- - - - - | VPC. |
| 2-Amino-5-chlorobenzophenone - - - - - | GNW. |
| 1-Amino-2-chloro-4-hydroxyanthraquinone- - - - - | TRC. |
| 3-Amino-6-chloropyridazine - - - - - | ACY. |
| 2-Amino-5-chloro-p-toluenesulfonic acid [SO ₃ H=1] - - - - - | ACY, BAS. |
| 6-Amino-5-chloro-m-toluenesulfonic acid [SO ₃ H=1] (2B Acid)- - - - - | DUP. |
| 2-Amino-p-cresol - - - - - | SOL. |
| 1-Amino-2,4-dibromoanthraquinone - - - - - | VPC. |
| 1-Amino-2,4-dichloroanthraquinone- - - - - | TRC. |
| 4-Amino-N,N-di(β-hydroxyethyl)aniline sulfate- - - - - | WAY. |
| 5-Amino-2,4-dimethylacetanilide- - - - - | X. |
| 5-Amino-2,3-dimethylbenzenesulfethanolamide- - - - - | TRC. |
| 3-Amino-9-ethylcarbazole - - - - - | SDC. |
| 4-Amino-N-ethyl-N-(β-methylsulfonamidoethyl)-m- toluidinephosphate - - - - - | WAY. |
| 4-Amino-5-hydroxy-2,7-naphthalenedisulfonic acid, benzenesulfonate - - - - - | TRC. |
| 4-Amino-3-hydroxy-1-naphthalenesulfonic acid - - - - - | TRC. |
| 6-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt - - - - - | TRC. |
| 2-(2-Amino-5-hydroxy-7-sulfo-1-naphthylazo)-5- nitrobenzoic acid- - - - - | TRC. |
| 3-Amino-2-mercaptobenzoic acid - - - - - | SDW. |
| 2-Amino-s-methoxybenzene-1-sulfonic acid - - - - - | TRC. |
| 4-Amino-5-methoxy-2-methylbenzenesulfonic acid - - - - - | ATL, VPC, X. |
| m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid - - - - - | AC, TRC. |
| m-[(4-Amino-3-methoxyphenyl)azo]benzenesulfonic acid, sodium salt- - - - - | DUP. |
| 3-[(4-Amino-3-methoxyphenyl)azo]1,5-naphthalene disulfonic acid- - - - - | TRC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| <hr/> | |
| 3-[(4-Amino-5-methoxy-o-tolyl)azo]-1,5-naphthalenedisulfonic acid | TRC. |
| 3-Amino-4-methylbenzanilide | AES. |
| 3-Amino-4-methylbenzanilide | HST. |
| 2-Amino-4-methylbenzothiazole | MRT. |
| 4-Amino-4'-(3-methyl-5-oxo-2-pyrazolin-1-yl)-2,2'-stilbenedisulfonic acid | RIL, TRC. |
| 2-Amino-3-methylpyridine | RIL. |
| 2-Amino-4-(methylsulfonyl)phenol | TRC. |
| 2-Amino-1,5-naphthalenedisulfonic acid | ACY. |
| 3-Amino-1,5-naphthalenedisulfonic acid (C Acid) | TRC. |
| 6-Amino-1,3-naphthalenedisulfonic acid (Amino I acid) | AC, TRC. |
| 7-Amino-1,3-naphthalenedisulfonic acid (Amino G acid) | TRC. |
| 2-Amino-1,5-naphthalenedisulfonic acid, sodium salt | X. |
| 2-Amino-1-naphthalenesulfonic acid (Tobias acid) | ACY, SW. |
| 6-Amino-2-naphthalenesulfonic acid (Broenner's acid) | AC, TRC. |
| 1-Amino-5-naphthol | BUC. |
| 5(and 8)-Amino-2-naphthol | BUC. |
| 8-Amino-2-naphthol | TRC. |
| 6-Amino-1-naphthol-3-sulfonic acid, sodium salt (7-Amino-4-hydroxy-2-naphthalenesulfonic acid, sodium salt) | AC, TRC. |
| 2-Amino-6-nitrobenzothiazole | SAL. |
| 2-Amino-4-nitrophenol | SOL, VPC. |
| 4-Amino-4'-nitro-2,2'-stilbenedisulfonic acid | AC, ATL, TRC. |
| 2-Amino-5-nitrothiazole | PCW. |
| 3'-Aminooxanilic acid | ATL. |
| 4'-Aminooxanilic acid | ATL. |
| 3-Amino-2-oxazolidinone | NOR. |
| *6-Aminopenicillanic acid | PFZ, TRD, WYT. |
| p-Aminophenol | MAL. |
| m-[(p-Aminophenyl)azo]benzenesulfonic acid | SCN. |
| *p-[(p-Aminophenyl)azo]benzenesulfonic acid | ACY, TRC, VPC. |
| 7-[(4-Aminophenyl)azo]-1,3-naphthalenedisulfonic acid | TRC. |
| 2,2'-(m-Aminophenylimino)diethanol, diacetate ester | TRC. |
| 2-(p-Aminophenyl)-6-methyl-7-benzothiazolesulfonic acid and salt | ATL, TRC. |
| 1-(m-Aminophenyl)-5-oxo-2-pyrazoline-3-carboxylic acid | TRC. |
| m-Aminophenylphosphonic acid | ICI. |
| 2-Aminopyridine | NEP, RIL. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| 3-Aminopyridine - - - - - | RIL. |
| 4-Aminopyridine - - - - - | RIL. |
| 3-Amino-p-tolamide - - - - - | SDH. |
| 4-Amino-m-toluenesulfonic acid [SO ₃ H=1]- - - - - | DUP. |
| 6-Amino-m-toluenesulfonic acid [SO ₃ H=1]- - - - - | DUP. |
| m-[(4-Amino-3-tolyl)azo]benzenesulfonic acid - - - - - | TRC. |
| 7-[(4-Amino-o-tolyl)azo]-1,3-naphthalenedisulfonic acid - - - - - | TRC. |
| * Aniline (Aniline oil)- - - - - | ACY, DUP, FST, ICI, MAL, MOB, RUC, USR. |
| 2-Anilinoethanol - - - - - | EKT, MIL, TCH. |
| 7-Anilino-4-hydroxy-2-naphthalenesulfonic acid - - - - - | ALD, TRC. |
| * Anilinomethanesulfonic acid and salt - - - - - | ACY, TRC, VPC |
| 8-Anilino-1-naphthalenesulfonic acid (Phenyl peri acid)- - - - - | EK. |
| p-Anilinophenol - - - - - | SDC. |
| o-Anisidinomethanesulfonic acid - - - - - | ATL, TRC, VPC. |
| Anthra[1,9]pyrazol-6(2H)-one (Pyrazoleanthrone)- - - - - | SW, TRC. |
| Anthraquinone, 100%- - - - - | TRC. |
| N,N'-(1,5-Anthraquinonylene)dianthranilic acid - - - - - | TRC. |
| 4',4'''-Azobis[4-biphenylcarboxylic acid]- - - - - | VPC. |
| Benzaldehyde, tech.- - - - - | HM, KLM. |
| 7-Benzamido-4-hydroxy-2-naphthalenesulfonic acid - - - - - | TRC. |
| 7H-Benz[de]anthracen-7-one (Benzanthrone)- - - - - | TRC. |
| Benzenesulfonic acid - - - - - | UPF. |
| Benzenesulfonyl chloride - - - - - | UPF, USR. |
| 1,2,4-Benzenetricarboxylic acid 1,2-anhydride (Trimellitic anhydride)- - - - - | AMO. |
| Benzhydrol (Diphenylmethanol)- - - - - | PD. |
| Benzil - - - - - | GNW, LEM. |
| Benzimidazole - - - - - | EK. |
| * Benzoic acid, tech.- - - - - | HM, KLM, PFZ, VEL. |
| Benzooin- - - - - | SFS. |
| Benzonitrile - - - - - | SW. |
| Benzophenone - - - - - | UPJ. |
| 2-Benzothiazolethiol, sodium salt- - - - - | BKM, GYR, USR. |
| 1H-Benzotriazole - - - - - | FMT, SW. |
| 2-Benzoxazolethiol - - - - - | EK. |
| Benzoyl chloride - - - - - | HK, VEL. |
| 2-Benzoyl pyridine - - - - - | GNW. |
| N-Benzylacetamide - - - - - | SDW. |
| Benzylamine - - - - - | HXL. |
| 2-(Benzylamino)ethanol - - - - - | HXL. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| 4-Benzyl-6-chloro-3-keto-2-methyl-7-sulfamyl-1,2,4-benzylthiadiazine-1,1-dioxide | ABB. |
| Benzyl ether (Dibenzyl ether) | OPC. |
| 3-(Benzylethylamino)acetanilide | EKT. |
| p-(Benzylloxy)phenol | FKE. |
| 1-Benzyl-4-phenylisonipicotic acid, ethyl ester | SDW. |
| 1-Benzyl-4-phenylisonipicotonitrile | SDW. |
| Benzyltrimethylammonium hydroxide | HXL. |
| [3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)-dione (Pyrazoleanthrone Yellow) | TRC. |
| [4,4'-Bi-7H-benz[de]anthracene]-7,7'-dione | TRC. |
| Biphenyl | CHL, DOW, GOC, KHI, MON, SUN, TCC. |
| N,N-Bis-(2-acetoxyethyl)-aniline | VPC. |
| Bis(p-aminocyclohexyl)methane | DUP, TRC. |
| 1,4-Bis[1-anthraquinonylamino]anthraquinone and 1,4-bis[5-Chloro-1-anthraquinonylamino]anthraquinone (Mixed) | TRC. |
| 2,6-Bis(p-azidobenzylidene)-4-methylcyclohexanone | X. |
| 4,5'-Bis-benzoylamino-1,1'-anthrimid-2,2'-carbazole | VPC. |
| 5,5'-Bis-benzoylamino-1,1'-anthrimid-2,2'-carbazole | VPC. |
| 4,4'-Bis-benzoylamino-1,1'-anthrimide-2,2'-carbazole | VPC. |
| Bis(chlorosulfonyl)phthalocyaninedisulfonic acid, copper derivative | TRC. |
| 4,4'-Bis[diethylamino]benzophenone (Ethyl ketone base) | X. |
| 4,4'-Bis[dimethylamino]benzhydrol (Michler's hydrol) | X. |
| Bis(β-dimethylaminoethyl)phenylacetoneitrile | WYT. |
| 1,5-Bis[2,4-dinitrophenoxy]-4,8-dinitroanthraquinone | VPC. |
| 3'-[Bis(2-hydroxyethyl)amino]benzanilide, diacetate ester | TCH. |
| 4,4'-Bis[(p-hydroxyphenyl)azo]-2,2'-stilbenedisulfonic acid (C.I. Direct Yellow 4) | VPC. |
| 1,2-Bis(tribromophenoxy)ethane | GTL, VEL. |
| p-Bromoaniline | EK. |
| Bromobenzene, mono- | GTL. |
| o-Bromobenzoic acid | X. |
| 4-Bromo-3,5-dihydroxybenzamide | PCW. |
| 2-Bromo-4,6-dinitroaniline | HST, SDC. |
| 2-(2-Bromo-4,6-dinitrophenylazo)-5-diethylaminoacetanilide | TRC. |
| Bromoethylbenzene | ESA. |
| α-Bromo-p-nitrotoluene (p-Nitrobenzyl bromide) | SDW. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| (p-Bromophenyl)acetonitrile | SFS. |
| 2-Bromopyridine | OMC. |
| p-Bromotoluene | SFS. |
| α-Bromotoluene | WCC. |
| p-Butylaniline | TNA. |
| n-Butylaniline | TNA. |
| 3-(N-Butylanilino)propionitrile | TCH. |
| 2-tert-Butylanthraquinone | DUP. |
| p-tert-Butylbenzaldehyde | GIV. |
| sec-Butylbenzene | PLC. |
| tert-Butylbenzene | PLC. |
| p-tert-Butylbenzoic acid | SHC. |
| o-(p-tert-Butylbenzoyl)benzoic acid | DUP. |
| 2-tert-Butyl-p-cresol | ACY, FER. |
| 6-tert-Butyl-m-cresol | KPT. |
| 2'-tert-Butyl-4',6'-dimethylacetophenone | GIV. |
| 2-tert-Butyl-4-ethylphenol | ACY. |
| tert-Butylhydroquinone | UPJ. |
| 2-tert-Butyl-5-methylanisole | GIV. |
| o-sec-Butylphenol | SCN, TNA. |
| o-tert-Butylphenol | TNA. |
| p-sec-Butylphenol | SCN. |
| p-tert-Butylphenol | FER, SCN. |
| * Butylphenols, mixed | FER, SCN, TNA. |
| * p-tert-Butyltoluene | GIV, SHC, SUN. |
| 5-tert-Butyl-1,2,3-trimethylbenzene | GIV. |
| 5-tert-Butyl-m-xylene | GIV, KHI, SUN. |
| 6-tert-Butyl-2,4-xylene | FER, PIT. |
| d-10-Camphorsulfonic acid | KF. |
| 3-Carboxy-1,4-dimethylpyrrole-2-acetic acid | SDW. |
| 2-Chloroacetamido-5-chlorobenzophenone | WYT. |
| 2'-Chloroacetoacetanilide | EKT, HST. |
| 4'-Chloroacetophenone | LIL. |
| 4'-(Chloroacetyl)acetanilide | DUP. |
| o-Chloroaniline | CWN, DUP. |
| m-Chloroaniline | DUP. |
| p-Chloroaniline | DUP, MON. |
| 3-(o-Chloroanilino)propionitrile | DUP, TCH. |
| 1-Chloroanthraquinone | TRC. |
| 2-Chloroanthraquinone | ACY. |
| o-Chlorobenzaldehyde | SDH. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| o-Chlorobenzamide - - - - - | X. |
| Chloro-7H-benzide[anthracen-7-one (Chlorobenzanthrone) | TRC. |
| *Chlorobenzene, mono- - - - - | DOW, MON, MTO, PPG, SCC. |
| p-Chlorobenzenesulfinic acid - - - - - | TRC. |
| p-Chlorobenzenesulfonic acid - - - - - | UPF. |
| p-Chlorobenzenethiol - - - - - | SFA. |
| p-Chlorobenzophenone - - - - - | X. |
| o-Chlorobenzoyl chloride - - - - - | X. |
| Chloro(p-chlorophenyl)phenylmethane - - - - - | OPC. |
| 2-Chloro-1,4-dibutoxybenzene - - - - - | ALL. |
| 1-Chloro-2,5-dibutoxy-4-nitrobenzene - - - - - | ALL. |
| 2-Chloro-1,4-diethoxybenzene - - - - - | ALL. |
| 1-Chloro-2,5-diethoxy-4-nitrobenzene - - - - - | ALL. |
| 7-Chloro-1,3-dihydro-3-hydroxy-5-phenyl-2H-1,4- benzodiazepin-2-one, acetate ester - - - - - | WYT. |
| 7-Chloro-1,3-dihydro-5-phenyl-2H-1,4-benzodiazepin-2- one-4-oxide - - - - - | WYT. |
| 4'-Chloro-2',5'-dimethoxyacetacetanilide - - - - - | PCW. |
| 4-Chloro-2,5-dimethoxyaniline - - - - - | PCW. |
| 5-Chloro-2,4-dimethoxyaniline - - - - - | ALL. |
| 2-Chloro-1,4-dimethoxybenzene - - - - - | PCW. |
| 4-Chloro-2,5-dimethoxynitrobenzene - - - - - | PCW. |
| 2-[p-Chloro-α-(2-dimethylaminoethyl)benzyl]pyridine - - - - - | SK. |
| 2-Chloro-10-[3-(dimethylamino)propyl]phenothiazine - - - - - | SK. |
| 1-Chloro-2,4-dinitrobenzene (Dinitrochlorobenzene) - - - - - | SDC. |
| 3-Chloro-4,6-dinitrobenzenesulfonic acid - - - - - | TRC. |
| 4-Chloro-3,5-dinitrobenzenesulfonic acid, potassium salt - - - - - | SDC. |
| 3-Chlorodiphenylamine - - - - - | SK. |
| N-(2-Chloroethyl)-N-ethylaniline - - - - - | TCH. |
| 4-Chloro-5'-ethyl-2'-hydroxybenzanilide - - - - - | LIL. |
| p-[(2-Chloroethyl)methylamino]benzaldehyde - - - - - | DUP. |
| 2-Chloroethyl-p-toluenesulfonic acid - - - - - | TRC. |
| 2-Chloro-4'-fluorobenzophenone - - - - - | LIL. |
| 4-Chloro-N-isopropyl-3-nitrobenzenesulfonamide - - - - - | TRC. |
| 4-Chloro-N-methyl-3-nitrobenzenesulfonamide - - - - - | TRC. |
| 2-Chloro-10-[3(4-methyl-1-piperazinyl)propyl]- phenothiazine - - - - - | SK. |
| ar-Chloromethylstyrene - - - - - | DOW. |
| 5-Chloro-2-(N-methyl)sulfonyl-4-sulfonyl-N- benzylaniline - - - - - | ABB. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| 2-[(Chloromethyl)thiol]benzothiazole - - - - - | BKM. |
| 2-Chloro-4-nitroaniline (o-Chloro-p-nitroaniline)- - - | DUP. |
| 4-Chloro-2-nitroaniline (p-Chloro-o-nitroaniline)- - - | DUP. |
| 1-Chloro-2-nitrobenzene (Chloro-o-nitrobenzene)- - - | DUP, MON. |
| 1-Chloro-3-nitrobenzene (Chloro-m-nitrobenzene)- - - | SCC. |
| 1-Chloro-4-nitrobenzene (Chloro-p-nitrobenzene)- - - | DUP, MON. |
| 4-Chloro-3-nitrobenzenesulfonamide - - - - - | TRC. |
| 4-Chloro-3-nitrobenzenesulfonamide - - - - - | TRC. |
| 2-Chloro-5-nitrobenzenesulfonic acid - - - - - | TRC. |
| 4-Chloro-3-nitrobenzenesulfonyl chloride - - - - - | SDC. |
| 2-Chloro-4-nitrobenzoic acid - - - - - | SAL. |
| 2-Chloro-5-nitrobenzoic acid - - - - - | TRC. |
| 2-Chloro-4-nitrobenzoic acid, potassium salt - - - - - | SAL. |
| 4-Chloro-3-nitrophenylmethyl sulfone - - - - - | TRC. |
| 2-Chloro-4-nitrotoluene - - - - - | DUP. |
| o-Chlorophenol - - - - - | MON. |
| p-Chlorophenol - - - - - | MON, RDA. |
| 2-Chlorophenothiazine - - - - - | SK. |
| 4-Chloro- α -phenyl-o-cresol - - - - - | MON. |
| o-Chlorophenylcyclopentyl ketone - - - - - | X. |
| o-Chlorophenyl-1-hydroxycyclopentyl-N-methylketamine - - - | X. |
| 1-(m-Chlorophenyl)-3-methyl-2-pyrazolin-5-one - - - - - | TRC. |
| p-Chlorophenyl methyl sulfone - - - - - | TRC. |
| 4-Chlorophthalic acid - - - - - | SW. |
| (3-Chloropropenyl)benzene - - - - - | SDW. |
| 2-Chloropyridine - - - - - | NES, OMC. |
| 2-[[4-[(7-Chloro-4-quinolyl)-amino]pentyl]ethylamino]- ethanol - - - - - | SDW. |
| 4-Chlororesorcinol - - - - - | PCW. |
| 5-Chloro-4-sulfamyl-2-(N-methylsulfamyl)aniline - - - - - | ABB. |
| o-Chlorotoluene - - - - - | MK. |
| α -Chlorotoluene (Benzyl chloride)- - - - - | MON, SFS. |
| 3-Chloro-p-toluidine [NH ₂ =1] - - - - - | DUP. |
| 5-[2-Chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid - - - - - | SDC. |
| p-Chloro- α,α,α -trifluorotoluene - - - - - | MK. |
| 4-Chloro-3,5-xylene - - - - - | FER. |
| Cinnamoyl chloride - - - - - | EK. |
| Copper, [2,2',2'',2'''-[π 9H,31H- phthalacyanin]epentyl]pentakis(methylene)pentakis[1H- isoindole-1,3(2H)-dionato]]- - - - - | X. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| * CRESOLS: | |
| m-Cresol - - - - - | KPT, MER. |
| * O-CRESOL: | |
| o-Cresol, from coal tar - - - - - | FER. |
| o-Cresol, from petroleum - - - - - | DA, FER, GE, MER, PIT, SW. |
| p-Cresol - - - - - | MER, SW. |
| CRESOLS, MIXED: | |
| *(M,P)-CRESOL: | |
| (m,p)-Cresol, from coal tar - - - - - | FER, KPT. |
| (m,p)-Cresol, from petroleum - - - - - | DA, FER, MER, NPC. |
| (O,M,P)-CRESOL: | |
| (o,m,p)-Cresol, from coal tar - - - - - | KPT. |
| Cresols, mixed - - - - - | PIT. |
| * CRESYLIC ACID, REFINED: | |
| Cresylic acid, refined from coal tar - - - - - | FER, KPT. |
| Cresylic acid, refined from petroleum - - - - - | DA, FER, MER. |
| * Cumene (Isopropyl benzene) - - - - - | ASH, CLK, GOC, GP, GRS, KMI, MOM, SHC, SKO, SOC, SUN, TX, UCC. |
| p-Cumylphenol - - - - - | MON. |
| 2-[p-(Cyanoacetamido)phenyl]-6-methyl-7- | |
| benzothiazolesulfonic acid - - - - - | DUP. |
| 4-(Cyanoacetyl)morpholine - - - - - | DUP, PCW. |
| N-[3-[(2-Cyanoethyl)ethylamino]phenyl]acetamide - - - - - | SDC. |
| p-[(2-Cyanoethyl)methylamino]benzaldehyde - - - - - | ATL. |
| N-Cyano-s-methyl-N-2(4-methyl-5-imidazolyl)- | |
| methylthioethylisothiourea - - - - - | SK. |
| 4-Cyanopyridine - - - - - | RIL. |
| * Cyclohexane - - - - - | CSD, ENJ, GOC, GRS, PLC, PPR, SUN, SWC, SWR, TX, UOC. |
| Cyclohexanol - - - - - | AFP, DBC, DUP, MOM. |
| * Cyclohexanone - - - - - | AFP, CEL, CNP, DBC, DUP, MON, UCC. |
| Cyclohexanone oxime - - - - - | CNP. |
| Cyclohexene - - - - - | PLC, USR. |
| 3-Cyclohexene-1-carboxaldehyde - - - - - | UCC. |
| 4-Cyclohexene-1,2-dicarboximide - - - - - | SFC. |
| 4-Cyclohexene-1,2-dicarboxylic anhydride - - - - - | DKA. |
| Cyclohexene oxide - - - - - | USR. |
| #-(1-Cyclohexenyl)ethylamine - - - - - | HXL. |
| Cyclohexylamine - - - - - | ABB, RBC, VGC. |
| N-Cyclohexyltaurine, sodium salt - - - - - | GAF. |
| cyclooctadiene - - - - - | DUP. |
| Cyclopentene - - - - - | ALD. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| p-Cymene - - - - - | HPC. |
| Diacenaphtho[1,2-j:1',2'-1]fluoranthene (Decacyclene) | SDC. |
| 3,5-Diacetamido-2,4,6-triiodobenzoic acid- - - - - | SDW. |
| 1,5(and 1,8)-Diaminoanthraquinone- - - - - | SDC. |
| 2,6-Diaminoanthraquinone - - - - - | AC. |
| 2,4-Diaminobenzenesulfonic acid [SO ₃ H=1] - - - - - | TRC. |
| 1,3-Diaminocyclohexane - - - - - | DUP, MIL. |
| 1,4-Diamino-2,3-dicyanoanthraquinone - - - - - | DUP. |
| 1,4-Diamino-2,3-dihydroanthraquinone - - - - - | TRC. |
| 4,8(and 4,5)-Diamino-9,10-dihydro-1,5(and 1,8)- dihydroxy-9,10-dioxo-2,6(and 2,7)- anthracenedisulfonic acid- - - - - | TRC. |
| 1,4-Diamino-9,10-dihydro-9,10-dioxo-2,3- anthracenedicarboximide- - - - - | DUP. |
| 1,5-Diamino-4,8-dihydroxyanthraquinone - - - - - | VPC. |
| 2,6-Diaminopyridine- - - - - | RIL. |
| 4,4'-Diamino-2,2'-stilbenedisulfonic acid- - - - - | CGY, SDH, TRC. |
| 3,5-Diamino-2,4,6-triiodobenzoic acid- - - - - | SDW. |
| 2,5-Dianilinoterephthalic acid - - - - - | EKT. |
| 2-Diazo-1-naphthol-5-sulfonic acid, sodium salt- - - - - | HST. |
| Dibenzo(b,def)chrysene-7,14-dione- - - - - | TRC. |
| 1,5-Dibenzoylnaphthalene - - - - - | TRC, VPC. |
| N,N'-Dibenzylethylenediamine - - - - - | WYT. |
| N,N'-Dibenzylethylenediamine diacetate - - - - - | WYT. |
| 4,10-Dibromo-anthrantrone - - - - - | VPC. |
| 3,9-Dibromo-7H-benz[de]lanthracen-7-one - - - - - | TRC. |
| 2,6-Dibromo-4-nitroaniline - - - - - | HST, SDC. |
| 3,5-Dibromo-3'-trifluoromethylsalicylanilide (Fluorophene)- - - - - | PCW. |
| p-Dibutoxybenzene (DBB)- - - - - | ALL. |
| 2,5-Dibutoxy-4-morpholinobenzenediazonium sulfate salt (DBB Sulfate)- - - - - | ALL. |
| 2,6-Di-tert-butyl-o-dimethylamino-p-cresol - - - - - | TNA. |
| 2,6-Di-tert-butyl-4-nonylphenol- - - - - | GAF. |
| 2,4-Di-tert-butylphenol- - - - - | FER, PIT. |
| 2,6-Di-sec-butylphenol - - - - - | TNA. |
| 3,4-Dichloroaniline- - - - - | DUP, MON. |
| 1,5-Dichloroanthraquinone- - - - - | TRC. |
| 2,6-Dichlorobenzaldehyde - - - - - | DUP. |
| o(and p)-Dichlorobenzene - - - - - | MTO. |
| * o-Dichlorobenzene- - - - - | DOW, MON, PPG, SCC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| m-Dichlorobenzene- | MON. |
| *p-Dichlorobenzene- | DOW, MON, PPG, SCC. |
| 4,6-Dichloro-m-benzenedisulfonamide- | ABB. |
| 3,3'-Dichlorobenzidine base and salts- | LAK. |
| 2,2'-Dichlorobenzil- | CWN. |
| 4,4'-Dichlorobenzil- | MTO. |
| Dichlorobenzyl chloride- | SFS. |
| 7,16-Dichloro-6,15-dihydro-5,9,14,18-anthrazinetetrone | TRC. |
| Dichlorodiphenylsilane | DCC. |
| 2,5-Dichloro-4-(3-methyl-5-oxo-2-pyrazolin-1-yl)-benzenesulfonic acid | TRC. |
| Dichloromethylphenylsilane | DCC. |
| 2,6-Dichloro-4-nitroaniline- | CWN. |
| 1,2-Dichloro-4-nitrobenzene- | DUP, MON. |
| 1,4-Dichloro-2-nitrobenzene (Nitro-p-dichlorobenzene) | DUP, PCW. |
| 2,4-Dichlorophenol | DOW, MON, RDA. |
| 2,6-Dichloropyrazine | ACY. |
| 2,5-Dichlorosulfanilic acid [SO ₂ H=1] | VPC. |
| 2,5-Dichloro-4-sulfobenzenediazonium sulfate | TRC. |
| p,α-Dichlorotoluene- | HK. |
| Dicyclohexylamine- | ABB, VGC. |
| *Dicyclopentadiene (includes Cyclopentadiene) | CO, CRB, CXI, DOW, EMJ, GOC, MON, VEL. |
| Dicyclopentadiene diepoxide- | VIK. |
| Didodecylbenzene | CO. |
| p-Diethoxybenzene- | ALL. |
| p-(Diethylamino)benzaldehyde | VPC. |
| 3'-[2-(Diethylamino)ethyl]-4'-hydroxyacetanilide | X. |
| α-[2-(Diethylamino)ethyl]-α-phenylcyclohexanemethanol, hydrochloride- | ACY. |
| 2[4-Diethylamino-2-hydroxybenzylbenzoic acid]- | X. |
| 7-Diethylamino-4-methylcoumarin, crude | PCW. |
| m-(Diethylamino)phenol (N,N-Diethyl-3-aminophenol) | ACY, X. |
| N-[3(diethylamino)phenyl]acetamide | TRC. |
| 4-(Diethylamino)-o-tolualdehyde- | DUP. |
| N,N-Diethylaniline | ACY, BCC, DUP. |
| 2,6-Diethylaniline | TNA. |
| Diethylbenzene | DOW. |
| N ¹ ,N ¹ -Diethyl-4-methoxymetanilamide- | PCW. |
| N,N-Diethyl-m-toluidine- | DUP. |
| 2,4-Difluoroaniline- | OMC. |
| 6,11-Dihydrodibenz(b,e)oxepin-11-one | PFZ, SK. |
| 9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid | TRC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| 9,10-Dihydro-9,10-dioxo-1,5-anthracenedisulfonic acid, disodium salt | TRC. |
| 9,10-Dihydro-9,10-dioxo-1,8-anthracenedisulfonic acid, potassium salt | TRC. |
| 9,10-Dihydro-9,10-dioxo-1-anthracenesulfonic acid and salt | TRC. |
| Dihydrophenylglycine danc salt | SK. |
| 1,2-Dihydro-2,2,4,7-tetramethylquinoline | EKT. |
| 1,4-Dihydroxyanthraquinone | EKT, HSH, TRC. |
| 1,8-Dihydroxyanthraquinone | TRC. |
| 2,5-Dihydroxy-p-benzenedisulfonic acid, dipotassium salt | EK. |
| 2,4-Dihydroxybenzophenone | ACY. |
| 4,4'-Dihydroxybiphenyl | BCC. |
| 1,5-Dihydroxy-4,8-dinitroanthraquinone | TRC, VPC. |
| 1,8-Dihydroxy-4,5-dinitroanthraquinone | EKT, VPC. |
| N,N-Di(β-hydroxyethyl)-m-chloroaniline | MIL. |
| 3,5-Dihydroxy-N-(2-hydroxyethyl)benzamide | PCW. |
| 4,5-Dihydroxy-2,7-naphthalenedisulfonic acid (Chromotropic acid) | TRC. |
| 6,7-Dihydroxy-2-naphthalenesulfonic acid | WAY. |
| 16,17-Dihydroxyviolanthrone (Dihydroxydibenzanthrone) | TRC. |
| Diisopropylbenzene | GP. |
| N,N-Diisopropyl-p-phenylenediamine | DUP. |
| 2,5-Dimethoxyaniline | EKT. |
| 1,5(and 1,8)-Dimethoxyanthraquinone | TRC. |
| m-Dimethoxybenzene | ACY. |
| 2,5-Dimethoxytetrahydrofuran | HEX. |
| p-(Dimethylamino)benzaldehyde | EK, TRC, X. |
| m-(Dimethylamino)benzoic acid | X. |
| m-Dimethylaminophenol | ACY. |
| 11-[3-(Dimethylamino)propyl]-11-hydroxydibenz(b,e)-oxepin | PFZ, SK. |
| *N,N-Dimethylaniline | BCC, TNA. |
| 3,3'-Dimethylbenzidine hydrochloride | EK. |
| N,N-Dimethylbenzylamine | ARS, HXL, RH, SW. |
| Dimethyl-1,4-cyclohexanedicarboxylate | EKT. |
| 5,5-Dimethyl-1,3-cyclohexanedione | EKT. |
| N,N-Dimethylcyclohexylamine | ABB. |
| 5,5-Dimethylhydantoin | GLY. |
| 2,5-Dimethyl-4(2)-morpholinylmethylphenol, hydrochloride | TRY, WAY. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| M,M-Dimethyl-p-nitrosoaniline - - - - - | EK. |
| 3,5-Dimethylpyrazole - - - - - | UPJ. |
| M,M-Dimethyl-o-toluidine - - - - - | RSA. |
| M,M-Dimethyl-p-toluidine - - - - - | RSA. |
| 2,4-Dinitroaniline - - - - - | HST, SDC. |
| 1,5(and 1,8)-Dinitroanthraquinone - - - - - | SDC. |
| m-Dinitrobenzene - - - - - | DUP. |
| 3,5-Dinitrobenzoic acid - - - - - | SAL. |
| 10,10'-Dinitro[3,3'-bi-7h-benz[de]anthracene]-7,7'- dione - - - - - | RH. |
| 4,4'-Dinitrodiphenyl ether - - - - - | DUP. |
| 3',5'-Dinitro-2'-hydroxyacetanilide - - - - - | TRC. |
| 2,6-Dinitro-4-isopropylphenol - - - - - | SDC. |
| 2,4-Dinitrophenol, tech. - - - - - | SDC, VPC. |
| 3,5-Dinitrosalicylic acid - - - - - | SAL. |
| 4,4'-Dinitrostilbene-2,2'-disulfonic acid - - - - - | CGY. |
| 4,4-Dinitrostilbene-2,2'-disulfonic acid, sodium salt - - - - - | X. |
| *2,4-Dinitrotoluene - - - - - | ACS, DUP, RUC, X. |
| 2,4(and 2,6)-Dinitrotoluene - - - - - | DUP, MOB, OMC. |
| 3,5-Dinitro-o-toluic acid - - - - - | SAL. |
| Dinonylphenol - - - - - | GAF, MON, TX. |
| 2,4-Di-tert-pentylphenol - - - - - | FER, PAS. |
| 2-(2,4-Di-tert-pentylphenoxy)butyric acid - - - - - | EK. |
| 1,5-Diphenoxanthraquinone - - - - - | VPC. |
| Diphenylacetonitrile, tech. - - - - - | SOL. |
| Diphenylamine - - - - - | ACY, ORO, RUC, USR. |
| 1,4-Di-p-toluidinoanthraquinone - - - - - | TRC. |
| 2,5-Di-p-toluidinoterephthalic acid - - - - - | EKT. |
| Divinylbenzene - - - - - | DOW, HST. |
| Dodecahydro-1,4a-dimethyl-7-(1-methylethyl)-1- phenanthrenemethanol - - - - - | HPC. |
| Dodecylaniline - - - - - | MON. |
| Dodecylbenzyl chloride - - - - - | SFS. |
| Dodecylmethylbenzyl chloride - - - - - | RH. |
| p-Dodecylphenol - - - - - | GAF, MCB, MON. |
| Doxepin base - - - - - | SK. |
| 4(5)-Ethoxycarbonyl-5(4)-methylimidazole - - - - - | SK. |
| 6-(2-Ethoxy-1-naphthamido)penicillanic acid - - - - - | WYT. |
| 2-Ethoxy-1-naphthoic acid - - - - - | WYT. |
| 2-Ethoxy-1-naphthoyl chloride - - - - - | WYT. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| 4-Ethoxy-o-phenylenediamine - - - - - | TRC. |
| N'-(6-Ethoxy-3-pyridazinyl)sulfanilamide - - - - - | ACY. |
| 3'-(Ethylamino)acetanilide - - - - - | EKT. |
| N-Ethyl-N-(#-aminoethyl)-m-toluidine - - - - - | X. |
| o-Ethylaniline - - - - - | TNA. |
| N-Ethylaniline, refined - - - - - | ACY, BCC, DUP. |
| 2-(N-Ethylanilino)ethanol - - - - - | MIL, TCH. |
| 3-(N-Ethylanilino)propionitrile - - - - - | MIL, TCH. |
| α-(N-Ethylanilino)-m-toluenesulfonic acid - - - - - | X. |
| *Ethylbenzene - - - - - | AMO, ATR, CO, CSD, DOW, ELP, GOC, HST, KHI, KPT, MCB, MON, SOG, SUN, TOC. |
| Ethylbenzyl chloride - - - - - | SFS. |
| d(-)Ethyl-3-(α-carboxybenzyl)amino crotonate, potassium salt - - - - - | KF. |
| N-Ethyl-N-(2-chloroethyl)-3-toluidine - - - - - | VPC. |
| 2-(N-Ethyl-N,#-cyanoethyl)-4-acetaminobenzene - - - - - | SDC, TCH. |
| N-Ethylcyclohexylamine (Herbicide intermediate) - - - - - | ABB. |
| Ethylene-bis-tetrabromophthalimide - - - - - | TNA. |
| 3,3'-Ethylenedioxydiphenol - - - - - | WAY. |
| N-Ethylmaleimide - - - - - | REG. |
| dl-13B-Ethyl-3-methoxy-8,14-secogona-1,3,5(10),9(11)- tetraene-14,17-dione - - - - - | WYT. |
| 6-Ethyl-2-methylaniline - - - - - | TNA. |
| N-Ethyl-N-(2-methylsulfonamidoethyl)-m-toluidine - - - - - | X. |
| 9-Ethyl-3-nitrocarbazole - - - - - | SDC. |
| α-Ethyl-3-nitrocinnamic acid - - - - - | SDW. |
| N-Ethyl-N-phenylbenzylamine - - - - - | X. |
| N-Ethyl-N-(3'-sulfobenzyl)aniline - - - - - | VPC. |
| Ethyl toluene - - - - - | DOW. |
| N-Ethyl-m-toluidine - - - - - | DUP. |
| 3-(N-Ethyl-m-toluidino)propionitrile - - - - - | MIL, TCH. |
| 4-Fluoro-3-nitroaniline - - - - - | OMC. |
| o-Fluoronitrobenzene - - - - - | OMC. |
| o-Formylbenzenesulfonic acid, sodium salt - - - - - | X. |
| 1-Formylpiperidine - - - - - | RIL. |
| Furan - - - - - | QKO. |
| Furfuryl alcohol - - - - - | QKO. |
| Hexachlorocyclopentadiene - - - - - | VEL. |
| 1,4,5,6,7,7-Hexachloro-5-norbornene-2,3-dicarboxylic anhydride (Chlorendic anhydride) - - - - - | VEL. |
| Hexahydro-1-methyl-4-phenyl-1H-azepine-4-carbonitrile - - - - - | WYT. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| Hexamethyleneimine - - - - - | CXI, DUP. |
| Hydroquinone, tech. - - - - - | EKT, GYR. |
| p-Hydroxybenzaldehyde - - - - - | DOW. |
| p-Hydroxybenzenesulfonic acid - - - - - | FER, UPF. |
| 3-[N-(2-Hydroxyethyl)anilino]propionitrile - - - - - | MIL, TCH. |
| 3-[N-(2-Hydroxyethyl)anilino]propionitrile acetate - - - - - | MIL, TCH. |
| N-(2-Hydroxyethyl)-o-chloroaniline - - - - - | EKT. |
| N-β-Hydroxyethyl-2,4-dihydroxybenzamide - - - - - | PCW. |
| N-Hydroxyethylpyrrolidone (stripped) - - - - - | GAF. |
| 3-[N-(2-Hydroxyethyl)-m-toluidino]propionitrile - - - - - | DUP. |
| 4-Hydroxy-4'-isopropylmethanilamide - - - - - | TRC. |
| 4-Hydroxymetanilamide - - - - - | DUP, TRC. |
| 4-Hydroxymetanilanilide - - - - - | TRC. |
| 3-Hydroxy-2-methylcinchoninic acid - - - - - | TRC. |
| 4-Hydroxy-N'-methylmetanilamide - - - - - | TRC. |
| 4(5)-Hydroxymethyl-5(4)-methylimidazole hydrochloride - - - - - | SK. |
| 4-Hydroxy-7-methyl-1,8-naphthyridine-3-carboxylic acid, ethyl ester - - - - - | X. |
| 3-Hydroxy-N-(3-N-morpholino-7-propyl)-2-naphthimide - - - - - | WAY. |
| 7-Hydroxy-1,3-naphthalenedisulfonic acid - - - - - | TRC. |
| 3-Hydroxy-2,7-naphthalenedisulfonic acid, disodium salt - - - - - | ACY, TRC. |
| 6-Hydroxy-2-naphthalenesulfonic acid, sodium salt - - - - - | ACY, SDH, TRC. |
| 8-Hydroxy-1-naphthalenesulfonic acid, 7-sultone - - - - - | TRC. |
| 3-Hydroxy-2-naphthoic acid (B.O.N.) - - - - - | PCW. |
| 3-Hydroxy-2-naphthoic acid, ethanolamide - - - - - | PCW. |
| 3-Hydroxy-2-naphthoic acid, methyl ester - - - - - | PCW. |
| 3-Hydroxy-2-naphthoic acid, sodium salt - - - - - | PCW. |
| 2-Hydroxy-1,4-naphthoquinone - - - - - | SAL. |
| N-(7-Hydroxy-1-naphthyl)acetamide - - - - - | TRC. |
| 1-(2-Hydroxy-1-naphthylazo)-6-nitro-2-hydroxynaphthalene-4-sulfonic acid - - - - - | TRC. |
| 2-Hydroxy-5-nitrometanilic acid - - - - - | TRC. |
| 1-Hydroxy-6-octadecyloxy-2-naphthoic acid - - - - - | ARA. |
| 2-Hydroxy-4-n-octoxybenzophenone - - - - - | CCW. |
| 3-[4-(4-Hydroxyphenylazo)-2,5-dimethoxyphenyl]azo-benzenesulfamic acid - - - - - | TRC. |
| 11 α-Hydroxyprogesterone - - - - - | UPJ. |
| 1-Hydroxy-4-p-toluidinoanthraquinone - - - - - | HSB. |
| 2-Indolecarboxylic acid - - - - - | ARA. |
| Indole-2,4-dione - - - - - | TRC. |
| 2-Iodoacetamido-5-chlorobenzophenone - - - - - | WYT. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| p-Iodotoluene - - - - - | EK. |
| Isatoic anhydride - - - - - | SW. |
| Isobutylbenzene - - - - - | PLC, TNA. |
| *ISOCYANIC ACID DERIVATIVES: | |
| Bitolylene diisocyanate (TODI)- - - - - | CWN. |
| Diphenylmethane-4,4'-diisocyanate (MDI)- - - - - | MOB, RUC, UPJ. |
| Isocyanic acid, p-chlorophenyl ester - - - - - | MOB. |
| Isonicotinamide - - - - - | RIL. |
| Phenylisocyanate - - - - - | MOB. |
| *Polymethylene polyphenylisocyanate - - - - - | MOB, RUC, UPJ. |
| Toluene 2,4-diisocyanate - - - - - | DUP, MOB. |
| *Toluene 2,4-and 2,6-diisocyanate (80/20 Mixture) - - - - - | ACS, BAS, DOW, DUP, MOB, OMC, RUC. |
| Toluene 2,4-and 2,6-diisocyanate (65/35 Mixture) - - - - - | MOB. |
| p-Toluenesulfonyl isocyanate - - - - - | CWN. |
| Isocyanic acid derivatives, all other- - - - - | MOB, UCC. |
| 2-Isonitrosoacetanilide - - - - - | TRC. |
| Isophthalic acid (Benzene-1,3-dicarboxylic acid) - - - - - | AMO. |
| Isophthalic acid, diphenyl ester - - - - - | BJL. |
| Isophthaloyl chloride - - - - - | DUP, SW, TLC, USR. |
| Isopropylbiphenyl - - - - - | TCC. |
| 5,5'-Isopropylidenebis(2-hydroxy-m-xylene- α,α' -diol) | ARK. |
| *4,4'-Isopropylidenediphenol (Bisphenol A)- - - - - | DOW, GE, SHC, UCC, USS. |
| 4,4'-Isopropylidenediphenol, ethoxylated - - - - - | ICI. |
| 4,4'-Isopropylidenediphenol, propoxylated- - - - - | ICI, VPC. |
| o-Isopropylphenol - - - - - | TNA. |
| p-Isopropylphenol - - - - - | FER. |
| Isopropylphenol, mixed - - - - - | FER, FMP. |
| Isothiocyanic acid, phenyl ester - - - - - | EK. |
| Leuco quinzarin (1,4,9,10-Anthratetrol) - - - - - | HSR, TRC. |
| 2,4-Lutidine - - - - - | KPT. |
| 2,6-Lutidine - - - - - | RIL. |
| 3,4-Lutidine - - - - - | RIL. |
| Mandelonitrile - - - - - | KF. |
| Melamine - - - - - | ACY, MLC. |
| p-Mentha-1,4(8)-diene - - - - - | GIV. |
| dl-p-Mentha-1,8-diene (Limonene) - - - - - | ARZ, NCI. |
| p-Menthane-3-carboxylic acid - - - - - | SDW. |
| p-Menth-1-ene (Carvomenthene)- - - - - | GIV. |
| 1-Menthylchloride - - - - - | SDW. |
| Metanilic acid (m-Aminobenzenesulfonic acid) - - - - - | DUP, TRC, USM. |
| 4-Methoxyacetanilide - - - - - | TRC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| 2-Methoxyethylpiperidine - - - - - | RIL. |
| N-(4-Methoxy-3-nitrophenyl)acetamide - - - - - | SDC. |
| (p-Methoxyphenyl)acetic acid - - - - - | HEX. |
| N[4-[1-[(2-Methoxyphenylamino)carbonyl]-2-oxopropylazophenyl]-4-[(2-methoxyphenylamino)-carbonyl]-2-oxopropylazobenzamide]- - - - - | X. |
| Methylacetoacetic ester enamine of D-2-amino-2-(1,4-cyclohexadienyl)acetic acid, sodium salt - - - - - | TRD. |
| 1-(Methylamino)-4-p-toluidinoanthraquinone - - - - - | VPC. |
| 2-(N-Methylanilino)ethanol - - - - - | TCH. |
| 3-(N-Methylanilino)propionitrile - - - - - | MIL, TCH. |
| 5-Methyl-o-anisidinesulfonic acid- - - - - | SW. |
| m-Methylanisole- - - - - | GIV. |
| 2-Methylanthraquinone- - - - - | ACY. |
| 3-Methylbenzo[f]quinoline- - - - - | ACY. |
| 2-Methylbenzothiazole- - - - - | FMT. |
| 4-Methylbenzothiazolone, hydrazone - - - - - | LIL. |
| N-Methylbenzylamine- - - - - | HXL. |
| 5-(1-Methylbutyl)barbituric acid - - - - - | BCC. |
| N-Methyl-N-carboxyanthranilic anhydride- - - - - | SW. |
| 1-Methyl-4-(3-chloropropyl)piperazine hydrochloride- - - - - | SK. |
| Methylcyclohexane- - - - - | PLC. |
| N-Methylcyclohexylamine- - - - - | ABB. |
| 2-Methylcyclohexylamine- - - - - | ABB. |
| N-Methyldicyclohexylamine- - - - - | ABB. |
| 4-Methyl-2,6-dinitrophenol - - - - - | SW. |
| 4,4'-Methylenebis[N,N-diethylaniline]- - - - - | ACY. |
| 4,4'-Methylenebis[N,N-dimethylaniline] (Methane base) - - - - - | ACY, X. |
| 4,4'-Methylenebis[3-hydroxy-2-naphthoic acid], disodium salt - - - - - | EK. |
| 4,4'-Methylenedianiline- - - - - | ACS, DUP, OMC, RUC, USR. |
| 1,2-Methylenedioxybenzene- - - - - | CRZ. |
| 1,2-Methylenedioxy-4-nitrobenzene- - - - - | X. |
| 5,5'-Methylenedisalicylic acid - - - - - | HN. |
| Methylhydroquinone - - - - - | EKT. |
| (2,4-Methyl-5-imidazolyl)methylthioethylamine dihydrochloride- - - - - | SK. |
| N-Methyl-p-nitroaniline- - - - - | ACY. |
| 4-Methyl-2-nitroanisole- - - - - | SW. |
| 4-Methyl-3-nitrobenzoic acid, methyl ester - - - - - | X. |
| 2-Methyl-5-norbornene-2,3-dicarboxylic anhydride - - - - - | BCC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| m-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonamide | VPC. |
| p-(3-Methyl-5-oxo-2-pyrazolin-1-yl)benzenesulfonic acid | TRC. |
| 2-Methyl-5-phenylbenzoxazole | EK. |
| 1-Methyl-4-phenylisonipicotic acid | WYT. |
| 4-Methylphthalic acid | EK. |
| 4-Methylphthalic anhydride | EK. |
| [(6-Methyl-2-pyridinyl)amino]methylenepropanedioic acid, diethyl ester | X. |
| 4'-[(4-Methyl-2-pyrimidinyl)sulfamoyl]acetanilide | DUP. |
| N-Methylpyrrole-2-acetonitrile | SDW. |
| *α-Methylstyrene | CLK, GP, SKO, UCC, USS. |
| 2-(Methylsulfonyl)-4-nitroaniline | TRC. |
| N-Methyl-N-[4-(1H-1,2,4-triazol-3-ylazo)phenyl]-benzenemethanamine | TRC. |
| 1-Morpholino-2,5-dibutoxy-4-nitrobenzene | ALL. |
| 1-Morpholino-2,5-diethoxy-4-nitrobenzene | ALL. |
| 1-Naphthaldehyde | GNW. |
| NAPHTHALENE, SOLIDIFYING AT 79 C. OR ABOVE (REFINED FLAKE): | |
| Naphthalene, solidifying at 79° C. or above (Refined flake), from imported crude naphthalene | ASH. |
| 2,7-Naphthalenedisulfonic acid | ACS, TRC. |
| 1-Naphthalenesulfonic acid | TRC. |
| 2-Naphthalenesulfonic acid | AC, ACY. |
| 1-Naphthalenesulfonic acid, sodium salt | TRC. |
| 1,4,5,8-Naphthalenetetracarboxylic acid | HST. |
| Naphthalimide | SDC, VPC. |
| 1-Naphthoic acid | GNW. |
| 1-Naphthol (α-Naphthol) | UCC. |
| 2-Naphthol, tech. (β-Naphthol) | ACY. |
| Naphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid | TRC. |
| 1-Naphthylamine (α-Naphthylamine) | DUP. |
| p-(2-Naphthylamino)phenol (N-(p-Hydroxyphenyl)-2-naphthylamine) | SDC. |
| Nicotinonitrile (3-Cyanopyridine) | NEP. |
| 3'-Nitroacetanilide | EKT. |
| 4'-Nitroacetanilide | TRC, VPC. |
| 2'-Nitro-p-acetanilide | VPC. |
| 4'-Nitro-o-acetanilide | SDH. |
| 4'-Nitro-4-amino-3-methoxyazobenzene | SDC. |
| *o-Nitroaniline | DUP, MON, X. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| * p-Nitroaniline - - - - - | AC, DUP, MON. |
| 2-Nitro-p-anisidine [NH ₂ =1] - - - - - | DUP. |
| 5-Nitro-o-anisidine [NH ₂ =1] - - - - - | SDH. |
| 5-Nitroanthranilic acid - - - - - | TRC. |
| 1-Nitroanthraquinone - - - - - | TRC. |
| m-Nitrobenzaldehyde - - - - - | SDH. |
| -Nitrobenzamide - - - - - | X. |
| * Nitrobenzene - - - - - | ACY, DUP, FST, MOB, RUC. |
| m-Nitrobenzenesulfonic acid - - - - - | TRC. |
| m-Nitrobenzenesulfonic acid, sodium salt - - - - - | USM. |
| o-Nitrobenzoic acid - - - - - | SAL. |
| m-Nitrobenzoic acid - - - - - | SAL, X. |
| p-Nitrobenzoic acid - - - - - | DUP. |
| m-Nitrobenzoic acid, sodium salt - - - - - | SAL. |
| 2-Nitro-p-cresol - - - - - | SW. |
| 4-Nitro-m-cresol - - - - - | MTP. |
| p-Nitro-N-(2-diethylamino)ethylbenzamide - - - - - | X. |
| Nitrodiphenylamine - - - - - | ACY, MON. |
| 5-Nitro-2-furanmethanediol, diacetate - - - - - | NOR. |
| 5-Nitroisophthalic acid - - - - - | SAL. |
| 3-Nitro-4-methoxyacetanilide - - - - - | TRC. |
| 1-Nitronaphthalene - - - - - | DUP. |
| 3-Nitro-1,5-naphthalenedisulfonic acid - - - - - | TRC. |
| 7(and 8)-Nitronaphth[1,2-d][1,2,3]oxadiazole-5-sulfonic acid - - - - - | TRC. |
| o-Nitrophenol - - - - - | MON. |
| p-Nitrophenol - - - - - | DUP, MON. |
| p-Nitrophenol, sodium salt - - - - - | DUP. |
| 2-(o-Nitrophenylazo)-4,6-di-tert-pentylphenol (OH=1) - - - - - | TRC. |
| 4-Nitro-o-phenylenediamine - - - - - | FMT. |
| 4-Nitroso-N-ethyl-N-(β-methylsulfonamidoethyl)-m-toluidine - - - - - | X. |
| p-Nitrosophenol - - - - - | LC, SDC, VPC. |
| 4-Nitrosophenol, sodium salt - - - - - | SDC. |
| N-Nitroso-N-phenylhydroxylamine, ammonium salt - - - - - | FKE. |
| 4-Nitro-4'-(5-sulfo-2H-naphtho[1,2-d]triazol-2-yl)-2,2'-stilbenedisulfonic acid - - - - - | TRC. |
| 3-Nitro-p-toluamide - - - - - | X. |
| o-Nitrotoluene - - - - - | DUP, FST. |
| m-Nitrotoluene - - - - - | DUP, FST. |
| p-Nitrotoluene - - - - - | DUP, FST. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| Nitrotoluene mixtures- | FST. |
| p-Nitrotoluene-o-sulfonic acid | AC, CGY, DUP, X. |
| 5-Nitro-o-toluidine [NH ₂ =1]- | PCW. |
| 4-Nitro-m-xylene | DUP. |
| Nonyl-dinonylphenol, mixture | USR. |
| * Nonylphenol- | GAF, KLM, MCB, MON, RH, SCN, TX. |
| Octylphenol- | RH, SCN. |
| Octylphenoxydiethoxy chloride- | RH. |
| 1-[(7-Oxo-7H-benz[de]anthracene-3-yl)amino]- anthraquinone- | TRC. |
| 5-Oxo-1-phenyl-2-pyrazoline-3-carboxylic acid, ethyl ester- | VPC. |
| 4,4'-Oxydianiline- | DUP. |
| Pentabromochlorocyclohexane- | DOW. |
| Pentabromoethylbenzene | TMA. |
| 1,1,3,3,5-Pentamethylindan | GIV. |
| 2-Pentylanthraquinone- | DUP. |
| o-Pentylphenol (o-Amylphenol)- | PAS. |
| p-tert-Pentylphenol- | PAS. |
| 3,4,9,10-Perylenetetracarboxylic-3,4:9,10-dianhydride | VPC. |
| 3,4,9,10-Perylenetetracarboxylic-3,4:9,10-diimide- | SDC, VPC. |
| 2-Phenethylamine | HXL. |
| p-Phenetidine- | MON. |
| * PHENOL: | |
| NATURAL: | |
| FROM COAL TAR: | |
| Phenol, natural, from coal tar, 39 degree C., m.p. - | FER. |
| Phenol, natural, from coal tar, all other- | KPT. |
| FROM PETROLEUM: | |
| Phenol, natural, from petroleum, U.S.P. - | MER. |
| Phenol, natural, from petroleum, all other - | DA, FER, NPC. |
| SYNTHETIC: | |
| BY CAUSTIC FUSION: | |
| Phenol, synthetic, by caustic fusion, U.S.P. - | RCI. |
| Phenol, synthetic, by caustic fusion, all other | SW. |
| Phenol, benzylated - | MIL. |
| Phenol, styrenated - | MIL. |
| Phenol, synthetic, from chlorobenzene by vapor- phase hydrolysis, U.S.P. - | SOC. |
| * Phenol, synthetic, from cumene by oxidation, U.S.P. | AFP, CLK, DOW, GE, GP, MON, SHC, SKO, UCC, USS. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| Phenol, synthetic, from toluene by oxidation, U.S.P. | KLM. |
| Phenolsulfonaphthalein, sodium salt | EK. |
| Phenolsulfonic acid, sodium salt | SAL, USS. |
| Phenoxyacetic acid, sodium salt | LIL. |
| 3-Phenoxybenzaldehyde | GTL, TNA. |
| 3-Phenoxybenzenemethanol | TNA. |
| 2-(Phenoxyethyl)benzoic acid | PFZ. |
| Phenylacetic acid, ethyl ester, tech. | OPC. |
| Phenylacetic acid, methyl ester | OPC. |
| Phenylacetic acid, potassium salt | OPC, SFS. |
| Phenylacetic acid, sodium salt | OPC. |
| Phenylacetone nitrile (α -Tolunitrile) | OPC. |
| Phenylacetyl chloride | OPC. |
| p-Phenylazoaniline (C.I. Solvent Yellow 1) and hydrochloride | TRC. |
| 4-(Phenylazo)diphenylamine | EK. |
| 2-Phenylbenzimidazole | SAL. |
| Phenyl-1,2,3-butanetrione-2-oxime | EK. |
| 4-Phenyl-3-buten-2-one (Benzylidene acetone) | SDW. |
| 1-Phenyl-4,4-dimethyl-3-pyrazolidinone | EK. |
| o-Phenylenediamine | DUP, SW, TRC. |
| m-Phenylenediamine | DUP. |
| p-Phenylenediamine | DUP, SDC. |
| d-Phenylephrine | SDW. |
| Phenyl ether (Diphenyl oxide) | DOW, MON. |
| d(+)- α -Phenylethylamine | HXL. |
| dl-2-Phenylglycine (racemic) | BCC, KF. |
| d(-)-2-Phenylglycine | KF. |
| Phenylglycine, potassium salt | BCC. |
| Phenylglycine, sodium salt | LIL. |
| d(-)-2-Phenylglycyl chloride hydrochloride | KF, UPJ. |
| *2,2'-[(Phenyl)imino]diethanol (N-Phenyldiethanolamine) | EKT, MIL, TCH. |
| 2,2'-[(Phenyl)imino]diethanol, diacetate ester | TCH. |
| Phenyl- α -naphthylamine | UCC. |
| o-Phenylphenol | DOW. |
| p-Phenylphenol | DOW. |
| o-Phenylphenol, sodium salt | DOW. |
| N-Phenyl-p-phenylenediamine | USR. |
| Phenylphosphinic acid | SFS. |
| Phenylphosphonothioic dichloride | SFA. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| Phenylphosphorous dichloride - - - - - | SFA. |
| 1-Phenyl-1,2-propanedione, 2-oxime - - - - - | ORT. |
| 4-Phenylpropylpyridine - - - - - | RIL. |
| dl-Phenylsuccinic acid - - - - - | X. |
| 4-Phenylsulfinyl-1,2-phenylenediamine - - - - - | ARA. |
| 4-Phenylthiomorpholine-1,1-dioxide - - - - - | EKT. |
| Phenylundecanoic acid - - - - - | EK. |
| 1(2H)-Phthalazinone - - - - - | X. |
| Phthalic acid - - - - - | EK. |
| *Phthalic anhydride - - - - - | ACS, BAS, ENJ, KPT, MOM, SOC, STP, USS. |
| Phthalide - - - - - | SOL. |
| Phthalimide - - - - - | SW. |
| Phthalimidoacetic acid - - - - - | X. |
| Phthalimidoacetyl chloride - - - - - | X. |
| [Phthalocyaninato(2-)]copper - - - - - | DUP, PHC. |
| Phthalocyaninetetrasulfonyl chloride, copper derivative - - - - - | VPC. |
| Phthaloyl chloride (Phthalyl chloride) - - - - - | TLC. |
| PICOLINES: | |
| Picoline (3,4-mixture) - - - - - | KPT, RIL. |
| 2-Picoline (α -Picoline) - - - - - | RIL. |
| 3-Picoline (β -Picoline) - - - - - | NEP, RIL. |
| 4-Picoline (γ -Picoline) - - - - - | RIL. |
| Picolinic acid - - - - - | NEP. |
| Picolinonitrile (2-Cyanopyridine) - - - - - | NEP. |
| 3-Picolylamine - - - - - | RIL. |
| Picric acid (Trinitrophenol) - - - - - | SDC. |
| Piperidine - - - - - | ABB, RIL, TX. |
| 3-Piperidinopropiophenone hydrochloride - - - - - | ACY. |
| Polychlorobenzene - - - - - | DOW, SCC. |
| Polyethylbenzene (80 percent diethylbenzene) - - - - - | ELP. |
| *Propiophenone - - - - - | HEX, ORT, UCC. |
| PYRIDINE, REFINED: | |
| 2° Pyridine, refined - - - - - | KPT, NEP, RIL. |
| Pyridine, refined all other grades - - - - - | RIL. |
| 3-Pyridinemethanol - - - - - | RIL. |
| 2 Pyridinethiol-1-oxide, sodium salt - - - - - | OMC. |
| 2 Pyridinethiol-1-oxide, zinc salt - - - - - | OMC. |
| 2-Pyrimidinol - - - - - | CGY. |
| 2-Pyrrolidinone - - - - - | GAF. |
| Quinaldine - - - - - | ACY. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| QUINOLINE: | |
| Quinoline, 1 ^o and 2 ^o | KPT. |
| 2,4-Quinolinediol | PCW. |
| Resorcinol, tech. | KPT. |
| 6-Resorcylic acid, lead salt | KPT. |
| Salicylaldehyde | DOW, DUP, RDA. |
| Salicylaldehyde oxime | EK. |
| Salicylanilide | PCW. |
| Salicylic acid, phenyl ester | DOW. |
| Salicylic acid, tech. | DOW, HM, MON, SDH. |
| *Styrene (Vinylbenzene) | AMO, ATR, CRP, CSD, DOW, ELP, GOC, HST, MCB, MON, SHC, SUN, USS. |
| Sulfanilic acid (p-Aminobenzenesulfonic acid) and salt | ACY, EK. |
| 5-Sulfoisophthalic acid, 1,3- imethyl ester, sodium salt | DUP. |
| 5-Sulfoisophthalic acid, sodium salt | PCW. |
| 4,4'-Sulfonyldiphenol (4,4'-Dihydroxydiphenyl sulfone) | UPF. |
| 4-Sulphophthalic acid | CWN. |
| Terephthalic acid | AMO, HCF. |
| *Terephthalic acid, dimethyl ester | DUP, EKT, HCF. |
| Terephthaloyl chloride | DUP, TLC. |
| Terphenyl (Phenylbiphenyl) (m-, o-, and p-isomers) | MON. |
| Tetrabromophthalic anhydride | GTL, TNA, VEL. |
| 1,2,4,5-Tetrachlorobenzene | DOW. |
| 1,2,4,5-Tetrachloro-3-nitrobenzene | SDH. |
| Tetrachlorophthalic anhydride | MON. |
| 2,3,5,6-Tetrachloropyridine | DOW. |
| Tetrahydrobenzyl alcohol | UCC. |
| Tetrahydrofuran | DUP, GAF, QKO. |
| 1,2,3,4-Tetrahydronaphthalene | UCC. |
| 1,2,3,4-Tetrahydro-2,2,4,7-tetramethylquinoline | EKT. |
| 1,4,5,8-Tetrahydroxyanthraquinone, leuco derivative | AC, TRC. |
| 1,2,3,5-Tetramethylbenzene (Isodurene) | SUN. |
| 1,2,4,5-Tetramethylbenzene (Durene) | KHI, SUN. |
| p-(1,1,3,3-Tetramethylbutyl)phenol | GAF. |
| Tetrazolethiol | MRT. |
| Tetrahydrofurfurylamine | HXL. |
| 2-Thiophenecarboxaldehyde | EKT. |
| Thiophenol | SFA. |
| s-Thymol | GIV. |
| Toluene-2,3-(and 3,4)-diamine (35/65 Mixture) | OMC. |
| *Toluene-2,4-diamine (4-m-Tolylenediamine) | ACS, OMC, RUC, X. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| CYCLIC INTERMEDIATES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| Toluene-2,4-(and 2,6)-diamine (80/20 Mixture)- | OMC. |
| Toluene-3,4-diamine- | X. |
| p-Toluenesulfinic acid, sodium salt- | NES. |
| p-Toluenesulfonic acid- | TEN, UPF. |
| p-Toluenesulfonic acid, methyl ester- | FMT. |
| p-Toluenesulfonic acid monohydrate- | NES, UPF. |
| p-Toluenesulfonyl chloride- | MON. |
| p-Toluenesulphonic acid, ethyl ester- | FMT. |
| o-Toluidine- | DUP, FST. |
| m-Toluidine- | DUP. |
| p-Toluidine- | DUP, FST. |
| Toluidines, mixed- | DUP. |
| 2-o-Toluidinoethanol- | TCH. |
| p-Toluoyl chloride- | SDW. |
| 2,2'-(m-Tolylimino)diethanol- | MIL, TCH. |
| 2,2'-(m-Tolylimino)diethanol, diacetate ester- | SDC. |
| Tolyltriazole- | SW. |
| Triallyl trimellitate- | FMP. |
| 2,4,6-Triamino-5-nitrosopyrimidine- | SK. |
| 2,4,6-Tribromophenol- | GTL, VEL. |
| 3,4',5-Tribromosalicylanilide- | PCW. |
| 1,2,3(and 1,2,4)-Trichlorobenzene- | PPG, SCC. |
| 1,2,4-Trichlorobenzene- | DOW, SCC. |
| 2,4,5-Trichlorobenzenesulfonic acid, sodium salt- | UPF. |
| 1,1,1-Trichloro-2,2-diphenylethane- | CWN. |
| α,α,α-Trichloro-o-fluorotoluide- | OMC. |
| 3-Trichloromethyl-1,2,4-thiadiazole- | OMC. |
| 1,2,4-Trichloro-5-nitrobenzene- | PCW. |
| Trichlorophenylsilane- | DCC. |
| α,α,α-Trichlorotoluene (Benzotrichloride)- | HK, VEL. |
| 2,4,6-Trichloro-s-triazine- | CGY, DGC, NIL. |
| Tri(dimethylaminomethyl)phenol- | PEL. |
| α,α,α-Trifluoro-o-toluidine- | OMC. |
| α,α,α-Trifluoro-m-toluidine- | OMC. |
| 2,4,3'-Trihydroxydiphenyl- | PCW, PIT. |
| Trimesic acid- | AMB. |
| 3,4,5-Trimethoxybenzaldehyde- | MON. |
| 1,2,4-Trimethylbenzene (Pseudocumene)- | KHI, SUN. |
| 1,3,5-Trimethylbenzene (Mesitylene)- | KHI, SUN. |
| 2,3,3-Trimethyl-3H-indole- | VPC. |
| 1,3,3-Trimethyl-δ ² , α-indolineacetaldehyde- | ATL, DUP, VPC. |

TABLE 2.--CYCLIC INTERMEDIATES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

[illegible]

TABLE 3.--CYCLIC INTERMEDIATES: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of cyclic intermediates to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| ABB | Abbott Laboratories | FER | Ferro Corp.: |
| AC | American Color & Chemical Corp. | | Ottawa Chemical Div. |
| ACS | Allied Corp., Allied Chemical Co. | | Productol Chemical Div. |
| ACY | American Cyanamid Co. | FKE | Frank Enterprises, Inc. |
| AFP | Allied Corp., Fibers & Plastics Co., Div. | FMP | FMC Corp., Industrial Chemical Group |
| ALD | Aldrich Chemical Co., Inc. | FMT | Fairmount Chemical Co., Inc. |
| ALL | Alliance Chemical Corp. | FST | First Chemical Corp. |
| AMB | American Bio-Synthetics Corp. | | |
| AMO | Standard Oil Co. (Indiana) | GAF | GAF Group |
| ARA | Araphahoe Chemicals, Inc., Sub/Syntex U.S.A., Inc. | GE | General Electric Co. |
| ARK | Armstrong World Industries, Inc. | GIV | Givaudan Corp. |
| ARS | Araynco, Inc. | GLY | Glyco, Inc. |
| ARZ | Arizona Chemical Co. | GNW | Greenwood Chemical Co. |
| ASH | Ashland Oil, Inc. | GOC | Gulf Oil Corp., Gulf Oil Chemical Co.-U.S. |
| ATL | Atlantic Chemical Corp. | GP | Georgia-Pacific Corp.: |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | | Houston Div. |
| | | | Plaquemine Div. |
| | | GRS | Champlin Petroleum Co. |
| BAS | BASF Wyandotte Corp. and Pigments Div. | GTL | Great Lakes Chemical Corp. |
| BCC | Buffalo Color Corp. | GYR | Goodyear Tire & Rubber Co. |
| BJL | Burdick & Jackson Laboratories, Inc. | | |
| BKM | Buckman Laboratories, Inc. | HCF | Hercofina |
| BRD | Lonza, Inc. | HCR | Hercor Chemical Corp. |
| BUC | Synalloy Corp., Blackman-Uhler Chemicals Div. | HEX | Hexagon Laboratories, Inc. |
| | | HK | Hooker Chemicals & Plastics Corp. |
| CCW | Carstab Corp. | HML | Hummel Chemical Co. |
| CEL | Celanese Corp., Celanese Chemical Co., Inc. | HN | Tenneco Chemicals, Inc. |
| CGY | Ciba-Geigy Corp. | HPC | Hercules, Inc. |
| CHL | Chemol, Inc. | HSB | Harshaw Chemical Co. |
| CHT | Chattam, Inc. | HST | American Hoechst Corp.: |
| CLK | Clark Oil & Refining Corp. | | Industrial Chemicals Div. |
| CNP | Nipro, Inc. | | Petrochemicals Div. |
| CO | Conoco, Inc. | HXL | Hexcel Corp., Hexcel Chemical Products |
| COS | Cosan Chemical Corp. | | |
| CPI | Commonwealth Oil & Refining Co., Inc. | ICI | ICI Americas, Inc., Chemicals Specialties Co. |
| | Commonwealth Petrochemicals, Inc. | | |
| CPS | CPS Chemical Co., Inc. | KF | Kay-Fries, Inc., Member Dynamit Nobel Group |
| CRB | Caribe Isoprene Corp. | KHI | Koch Industries, Inc., Koch Refining Co. |
| CRP | Corpus Christi Petrochemicals Co. | KLM | Kalama Chemical, Inc. |
| CRZ | Crown Zellenbach Corp. | KPT | Koppers Co., Inc. |
| CSD | Cosden Oil & Chemical Co. | | |
| CWN | Upjohn Co., Fine Chemical Div. | LAK | Bofors Nobel, Inc. & Lakeway, Inc. |
| CXI | Chemical Exchange Industries, Inc. | LC | Lord Corp., Chemicals Products Group |
| | | LEL | Leland Chemical Co. |
| DA | Diamond Shamrock Corp., Diamond Shamrock Agricultural Chemicals, Inc., Cresylic Plant | LEM | Napp Chemicals, Inc. |
| | | LIL | Eli Lilly & Co., U.S. & Puerto Rico |
| DBC | Badische Co. | | |
| DCC | Dow Corning Corp. | MAL | Mallinckrodt, Inc. |
| DGC | Degussa Corp. | MCB | Borg-Warner Corp., Borg-Warner Chemicals |
| DKA | Denka Chemical Corp. | MER | Merichem Co. |
| DOW | Dow Chemical Co. | MIL | Milliken & Co., Milliken Chemical Co. |
| DUP | E. I. duPont de Nemours & Co., Inc. | MLC | Melamine Chemicals, Inc. |
| | | MOB | Mobay Chemical Co., Pittsburgh Div. |
| EK | Eastman Kodak Co.: | MON | Monsanto Co. |
| EKT | Tennessee Eastman Co. Div. | MRT | Morton-Norwich Products, Inc., Morton Chemical Co. Div. |
| ELP | El Paso Products Co. | | |
| ENJ | Exxon Chemical Americas | MTO | Montrose Chemical Corp. of California |
| ESX | Essex Industrial Chemicals, Inc., Essex Chemical Corp. | MTP | Mount Pleasant Chemical Co. |
| | | | |
| | | NCI | Union Carbide Corp., Terpene and Aromatics Div. |
| | | NEP | Nepera Chemical Co., Inc. |
| | | | |

TABLE 3.--CYCLIC INTERMEDIATES: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|--|
| NES | Ruetgers Nease Chemical Co. | SK | SmithKline Beckman Corp., SmithKline |
| NIL | Nilok Chemical, Inc. | | Chemicals Div. |
| NOR | Morton-Norwich Products, Inc., Norwich Eaton | SKO | Getty Refining & Marketing Co. |
| | Pharmaceutical Div. | SOC | Standard Oil Co. of California, Chevron |
| NPC | Northwest Petrochemical Corp. | | Chemical Co. |
| | | SOG | Charter International Oil Co. |
| OMC | Olin Corp. | SOI | Specialty Organics, Inc. |
| OPC | Orbis Products Corp. | SOL | Southland Corp., Fine Chemical Div. |
| ORO | Chevron Chemical Co. | STC | American Hoechst Corp., Sou-Tex Works |
| ORT | Roehr Chemicals, Inc. | STP | Stepan Chemical Co. |
| | | STX | St. Croix Petrochemical Corp. |
| PAC | Pacific Anchor Chemical Corp. | SUN | Sun Company, Inc. |
| PAS | Pennwalt Corp. | SW | Sherwin-Williams Co. |
| PCW | Pfister Chemical, Inc. | SWC | Corco Cyclohexane, Inc. |
| PD | Warner-Lambert Co. | SWR | Southwestern Refining Co., Inc. |
| PEL | Pelron Corp. | SYT | Synthron, Inc. |
| PFZ | Pfizer, Inc., & Pfizer Pharmaceuticals, Inc. | | |
| PHC | Phthalchem, Inc. | TCC | Sybron Corp., Chemical Division/Tanatex |
| PIT | Pitt-Consol Chemical Co. | TCH | Emery Industries, Inc., Trylon Div. |
| PLC | Phillips Petroleum Co. | TEN | Cities Service Co., Copperhill Operations |
| PPG | PPG Industries, Inc. | TLC | Twin Lake Chemical, Inc. |
| PPR | Phillips Puerto Rico Core, Inc. | TNA | Ethyl Corp. |
| PFX | Phillips Paraxylene, Inc. | TOC | Tenneco Oil Co., P & M |
| | | TRC | Toms River Chemical Corp. |
| QKO | Quaker Oats Co. | TRD | Squibb Manufacturing, Inc., Renesa, Inc., |
| | | | Ersana, Inc. |
| RBC | Fike Chemicals, Inc. | TRN | Trinity Chemical Corp. |
| RDA | Rhone-Poulenc, Inc. | TX | Texaco, Inc. |
| REG | Regis Chemical Co. | | |
| REL | Reliance Universal Inc., Louisville Resins | UCC | Union Carbide Corp. |
| | Operations | UOC | Union Oil Co. of California |
| RH | Rohm & Haas Co. | UPF | Jim Walker Resources, Inc. |
| RIL | Reilly Tar & Chemical Corp. | UPJ | Upjohn Co. |
| RSA | R.S.A. Corp. | USM | Crown Metro, Inc. |
| RUC | Rubicon Chemicals, Inc. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| | | USS | USS Chemicals Div. of U.S. Steel Corp. |
| SAL | Salsbury Laboratories, Inc. | | |
| SCC | Standard Chlorine of Delaware, Inc. | VEL | Velsicol Chemical Corp. |
| SCM | SCM Corp., PCR Div. | VGC | Virginia Chemicals, Inc. |
| SCN | Schenectady Chemicals, Inc. | VIK | Viking Chemical Co. |
| SDC | Martin-Marietta Corp., Sodyeco Div. | VPC | Mobay Chemical Corp., Dyestuff Div. |
| | Sterling Drug, Inc.: | | |
| SDH | Hilton Davis Chemical Co. Div. | WAY | Philip A. Hunt Chemical Corp., Organic |
| SDW | Sterling Organics Div. | | Chemical Div. |
| | Stauffer Chemical Co.: | WCC | White Chemical Corp. |
| SFA | Agricultural Div. | WTC | Witco Chemical Corp. |
| SFC | Calhio Chemicals, Inc. | WYT | Wyeth Laboratories, Inc., Wyeth Laboratories |
| SPS | Specialty Div. | | Div. of American Home Products Corp. |
| SHC | Shell Oil Co., Shell Chemical Co. Div. | | |
| | | | |

Note.--Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 194 reporting companies and company divisions for which permission to publish was not restricted.



STATISTICAL HIGHLIGHTS

William Baker

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

Total domestic production of dyes in 1981 amounted to 230 million pounds, or 6.4 percent less than the 245 million pounds produced in 1980 (table 1). Sales of dyes in 1981 amounted to 219 million pounds, valued at \$773 million, compared with 227 million pounds, valued at \$791 million, in 1980. In terms of quantity, sales of dyes in 1981 were 3.8 percent less than in 1980 and in terms of value, 2.3 percent less. The average unit value of sales of all dyes in 1981 was \$3.53 per pound compared with \$3.48 per pound in 1980.

The production of three classes of dyes increased in 1981, while the remaining six major classes registered slight to moderate declines in their production. Direct dyes increased by 15.3 percent from 31.2 million pounds in 1980 to 36.0 million pounds in 1981; food, drug, and cosmetic colors increased by 9.7 percent from 6.1 million pounds in 1980 to 6.7 million pounds in 1981; fluorescent brightening agents increased by 1.2 percent from 37.9 million pounds in 1980 to 38.4 million in 1981.

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1981

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

| DYES | PRODUCTION | SALES | | |
|------------------------------|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 229,670 | 218,848 | 772,837 | \$3.53 |
| ACID DYES | | | | |
| Total----- | 24,520 | 24,455 | 106,973 | 4.37 |
| Acid yellow dyes, total----- | 5,894 | 6,490 | 22,687 | 3.50 |
| Acid Yellow 17----- | 117 | 134 | 656 | 4.89 |
| Acid Yellow 19----- | 93 | 98 | 369 | 3.76 |
| Acid Yellow 23----- | 140 | 126 | 585 | 4.62 |
| Acid Yellow 36----- | 222 | 220 | 733 | 3.33 |
| Acid Yellow 49----- | 631 | ... | ... | ... |
| Acid Yellow 151----- | 1,495 | 2,083 | 4,982 | 2.39 |
| Acid Yellow 174----- | ... | 24 | 104 | 4.33 |
| All other----- | 3,196 | 3,805 | 15,258 | 4.01 |
| Acid orange dyes, total----- | 5,111 | 5,553 | 16,152 | 2.91 |
| Acid Orange 7----- | 250 | ... | ... | ... |
| Acid Orange 10----- | 148 | 155 | 644 | 4.16 |
| Acid Orange 156----- | 2,483 | ... | ... | ... |
| All other----- | 2,230 | 5,398 | 15,508 | 2.87 |
| Acid red dyes, total----- | 4,358 | 3,769 | 24,103 | 6.40 |
| Acid Red 1----- | 197 | 189 | 799 | 4.21 |
| Acid Red 4----- | 32 | 40 | 236 | 5.97 |
| Acid Red 73----- | 93 | 93 | 516 | 5.54 |
| Acid Red 88----- | 83 | 67 | 371 | 5.53 |
| Acid Red 114----- | ... | 142 | 739 | 5.22 |
| Acid Red 137----- | 218 | 185 | 1,500 | 8.11 |
| Acid Red 151----- | 270 | 255 | 874 | 3.43 |
| Acid Red 266----- | ... | 464 | 2,278 | 4.91 |
| Acid Red 337----- | 688 | 454 | 3,333 | 7.33 |
| All other----- | 2,777 | 1,880 | 13,457 | 7.16 |
| Acid violet dyes----- | 81 | 106 | 757 | 7.17 |
| Acid blue dyes----- | 5,255 | 4,994 | 26,909 | 5.39 |
| Acid green dyes, total----- | 201 | 166 | 1,502 | 9.06 |
| Acid Green 25----- | 36 | ... | ... | ... |
| All other----- | 165 | 166 | 1,502 | 9.06 |
| Acid brown dyes, total----- | 905 | 868 | 3,813 | 4.39 |
| Acid Brown 14----- | 288 | 263 | 1,153 | 4.38 |
| All other----- | 617 | 605 | 2,660 | 4.39 |
| Acid black dyes, total----- | 2,715 | 2,509 | 11,050 | 4.40 |
| Acid Black 1----- | 322 | 322 | 1,555 | 4.83 |
| Acid Black 52----- | 747 | 639 | 2,407 | 3.76 |
| Acid Black 172----- | 125 | 144 | 890 | 6.18 |
| All other----- | 1,521 | 1,404 | 6,198 | 4.41 |

See footnotes at end of table

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| DYES | PRODUCTION | SALES | | |
|-------------------------------------|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | per pound |
| BASIC DYES (CLASSICAL AND MODIFIED) | | | | |
| Total----- | 12,663 | 13,181 | 71,508 | \$5.43 |
| Basic yellow dyes, total----- | 3,025 | 3,547 | 14,198 | 4.00 |
| Basic Yellow 11----- | 347 | 336 | 1,104 | 3.28 |
| Basic Yellow 13----- | 142 | 181 | 809 | 4.48 |
| Basic Yellow 29----- | ... | 395 | 940 | 2.38 |
| Basic Yellow 79----- | ... | 356 | 1,372 | 3.85 |
| All other----- | 2,536 | 2,279 | 9,973 | 4.38 |
| Basic orange dyes, total----- | 1,018 | 966 | 3,481 | 3.60 |
| Basic Orange 2----- | 443 | 398 | 1,322 | 3.32 |
| All other----- | 575 | 568 | 2,159 | 3.80 |
| Basic red dyes, total----- | 1,833 | 2,076 | 9,957 | 4.80 |
| Basic Red 12----- | 147 | 131 | 945 | 7.21 |
| Basic Red 14----- | 376 | 601 | 1,358 | 2.26 |
| Basic Red 15----- | ... | 223 | 791 | 3.54 |
| Basic Red 49----- | 111 | 95 | 525 | 5.55 |
| All other----- | 1,199 | 1,026 | 6,338 | 6.18 |
| Basic violet dyes, total----- | 3,314 | 3,298 | 11,314 | 3.43 |
| Basic Violet 1----- | 2,392 | 2,143 | 5,362 | 2.50 |
| Basic Violet 16----- | ... | 229 | 970 | 4.23 |
| All other----- | 922 | 926 | 4,982 | 5.38 |
| Basic blue dyes, total----- | 2,546 | 2,410 | 20,973 | 8.70 |
| Basic Blue 3----- | 312 | 437 | 1,849 | 4.23 |
| Basic Blue 41----- | 336 | 296 | 1,723 | 5.83 |
| All other----- | 1,898 | 1,677 | 17,401 | 10.37 |
| All other basic dyes----- | 927 | 884 | 11,585 | 13.11 |
| DIRECT DYES | | | | |
| Total----- | 35,991 | 31,780 | 90,147 | 2.84 |
| Direct yellow dyes, total----- | 16,916 | 14,457 | 29,356 | 2.03 |
| Direct Yellow 4----- | 1,124 | 1,125 | 2,354 | 2.09 |
| Direct Yellow 6----- | ... | 378 | 876 | 2.32 |
| Direct Yellow 11----- | 6,545 | 5,747 | 5,027 | 0.87 |
| Direct Yellow 127----- | 584 | 493 | 1,296 | 2.63 |
| All other----- | 8,663 | 6,714 | 19,803 | 2.95 |
| Direct orange dyes, total----- | 1,348 | 1,158 | 3,856 | 3.33 |
| Direct Orange 15----- | ... | 357 | 644 | 1.80 |
| Direct Orange 39----- | 157 | 132 | 507 | 3.86 |
| Direct Orange 102----- | 443 | 361 | 1,294 | 3.59 |
| All other----- | 748 | 308 | 1,411 | 4.58 |
| Direct red dyes, total----- | 6,234 | 5,434 | 19,417 | 3.57 |
| Direct Red 2----- | 85 | 94 | 469 | 4.98 |
| Direct Red 23----- | ... | 54 | 306 | 5.63 |
| Direct Red 24----- | 168 | 128 | 760 | 5.96 |
| Direct Red 72----- | 439 | 401 | 1,970 | 4.91 |
| Direct Red 80----- | 419 | 406 | 2,121 | 5.23 |
| Direct Red 81----- | 1,854 | 1,072 | 3,451 | 3.22 |
| Direct Red 83----- | 153 | 139 | 612 | 4.40 |
| Direct Red 236----- | 1,028 | 1,015 | 2,768 | 2.73 |
| All other----- | 2,088 | 2,125 | 6,960 | 3.27 |

See footnotes at end of table

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| DYES | PRODUCTION | SALES | | |
|---|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| DIRECT DYES--CONTINUED | | | | |
| Direct violet and green dyes, total----- | 511 | 570 | 2,949 | \$5.17 |
| Direct Violet dyes----- | ... | 334 | 1,667 | 4.99 |
| Direct Green dyes----- | ... | 236 | 1,282 | 5.43 |
| Direct blue dyes, total----- | 6,117 | 5,850 | 21,047 | 3.60 |
| Direct Blue 1----- | ... | 84 | 526 | 6.25 |
| Direct Blue 15----- | 215 | 199 | 449 | 2.25 |
| Direct Blue 80----- | 327 | 297 | 1,155 | 3.89 |
| Direct Blue 86----- | 1,227 | 1,253 | 3,547 | 2.83 |
| Direct Blue 120, 120:1, 120:2, and 120:3----- | 113 | 119 | 869 | 7.30 |
| All other----- | 4,235 | 3,898 | 14,501 | 3.72 |
| Direct brown dyes----- | 567 | 471 | 2,226 | 4.73 |
| Direct black dyes, total----- | 4,298 | 3,840 | 11,296 | 2.94 |
| Direct Black 22----- | 1,195 | 1,103 | 1,971 | 1.79 |
| All other----- | 3,103 | 2,737 | 9,325 | 3.41 |
| DISPERSE DYES | | | | |
| Total----- | 38,805 | 34,940 | 148,009 | 4.24 |
| Disperse yellow dyes, total----- | 4,922 | 4,209 | 16,795 | 3.99 |
| Disperse Yellow 67----- | ... | 51 | 286 | 5.63 |
| All other----- | 4,922 | 4,158 | 16,509 | 3.97 |
| Disperse orange dyes, total----- | 4,870 | 4,767 | 13,566 | 2.85 |
| Disperse Orange 3----- | ... | 53 | 225 | 4.23 |
| Disperse Orange 25 and 25:1----- | 418 | 464 | 1,476 | 3.18 |
| Disperse Orange 29----- | ... | 499 | 1,578 | 3.16 |
| Disperse Orange 44 and 44:1----- | 168 | ... | ... | ... |
| All other----- | 4,284 | 3,751 | 10,287 | 2.74 |
| Disperse red dyes, total----- | 8,028 | 7,783 | 41,053 | 5.27 |
| Disperse Red 1----- | 272 | 251 | 855 | 3.41 |
| Disperse Red 17----- | ... | 179 | 600 | 3.35 |
| Disperse Red 55----- | 146 | ... | ... | ... |
| Disperse Red 65----- | 224 | ... | ... | ... |
| Disperse Red 167 and 167:1----- | 502 | 314 | 1,270 | 4.04 |
| Disperse Red 177----- | 854 | 921 | 3,675 | 3.99 |
| Disperse Red 179----- | 210 | 115 | 557 | 4.85 |
| All other----- | 5,820 | 6,003 | 34,096 | 5.68 |
| Disperse violet dyes----- | 432 | 444 | 2,205 | 4.97 |
| Disperse blue dyes, total----- | 17,804 | 15,156 | 64,129 | 4.23 |
| Disperse Blue 3----- | 943 | 901 | 3,972 | 4.41 |
| Disperse Blue 79----- | 8,164 | 7,318 | 17,598 | 2.40 |
| All other----- | 8,697 | 6,937 | 42,559 | 6.14 |
| Disperse black, brown, and green dyes, total----- | 2,749 | 2,581 | 10,261 | 3.98 |
| Disperse Brown 1----- | 1,174 | 1,100 | 3,435 | 3.12 |
| All other----- | 1,575 | 1,481 | 6,826 | 4.61 |

See footnotes at end of table

TABLE 1.--DYES: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| DYES | PRODUCTION | SALES | | |
|---|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | per pound |
| FLUORESCENT BRIGHTENING AGENTS | | | | |
| Fluorescent brightening agents, total----- | 38,380 | 38,263 | 63,979 | \$1.67 |
| Fluorescent Brightening Agent 28----- | 662 | 748 | 1,772 | 2.37 |
| All other fluorescent brightening agents----- | 37,718 | 37,515 | 62,207 | 1.66 |
| FOOD, DRUG, AND COSMETIC COLORS | | | | |
| Total----- | 6,666 | 6,060 | 56,282 | 9.29 |
| Food, Drug, and Cosmetic Dyes | | | | |
| Total----- | 6,218 | 5,604 | 47,982 | 8.56 |
| FD&C Blue No. 1----- | 193 | 279 | 3,607 | 12.93 |
| FD&C Red No. 3----- | 546 | 559 | 7,838 | 14.03 |
| FD&C Red No. 40----- | 2,408 | 2,088 | 20,934 | 10.02 |
| FD&C Yellow No. 5----- | 1,616 | 1,368 | 7,743 | 5.66 |
| FD&C Yellow No. 6----- | 1,377 | 1,173 | 5,318 | 4.53 |
| All other food, drug and cosmetic dyes----- | 78 | 137 | 2,542 | 18.55 |
| Drug and Cosmetic and External Drug and Cosmetic Dyes | | | | |
| Total----- | 448 | 456 | 8,299 | 18.19 |
| D&C Orange 5----- | 3 | 4 | 51 | 11.36 |
| D&C Red No. 7----- | 99 | ... | ... | ... |
| D&C Red No. 9----- | 67 | ... | ... | ... |
| D&C Red No. 19----- | 20 | 20 | 277 | 13.64 |
| D&C Red No. 36----- | 5 | 5 | 40 | 8.31 |
| All other drug and cosmetic and external drug and cosmetic dyes----- | 254 | 427 | 7,931 | 18.59 |
| MORDANT DYES | | | | |
| Total----- | 375 | 315 | 1,626 | 5.16 |
| SOLVENT DYES | | | | |
| Total----- | 10,296 | 7,188 | 28,936 | 4.03 |
| Solvent yellow dyes, total----- | 843 | 502 | 3,350 | 6.67 |
| Solvent Yellow 14----- | 148 | 145 | 599 | 4.12 |
| All other----- | 695 | 357 | 2,751 | 7.71 |
| Solvent orange dyes----- | 821 | 853 | 3,311 | 3.88 |
| Solvent blue dyes----- | 2,997 | 896 | 5,648 | 6.31 |
| All other solvent dyes----- | 5,635 | 4,937 | 16,627 | 3.37 |
| VAT DYES | | | | |
| Total----- | 35,267 | 37,547 | 121,273 | 3.23 |
| Vat orange dyes----- | 592 | 938 | 6,671 | 7.11 |
| Vat red dyes----- | 378 | 601 | 8,744 | 14.55 |
| Vat green dyes----- | 1,482 | 1,791 | 5,488 | 3.07 |
| All other vat dyes----- | 32,815 | 34,217 | 100,370 | 2.93 |
| All other dyes ² ----- | 26,707 | 25,119 | 84,104 | 3.71 |

See footnotes at end of table

Footnotes

¹Calculated from unrounded figures.

²The data include azoic compositions, azoic coupling components, azoic diazo components (bases and salts), fiber-reactive dyes, sulfur dyes, and miscellaneous dyes. Statistics for those groups of dyes may not be published separately because publication would disclose information received in confidence.

TABLE 1A.--Dyes: U.S. PRODUCTION AND SALES, BY CLASS OF APPLICATION, 1981

| CLASS OF APPLICATION | PRODUCTION | SALES | | |
|--------------------------------------|-----------------|-----------------|------------------|----------------------------|
| | | QUANTITY | VALUE | UNIT ¹ VALUE |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | per pound |
| Total----- | 229,670 | 218,848 | 772,837 | \$3.53 |
| Acid----- | 24,520 | 24,455 | 106,973 | 4.37 |
| Basic (Classical and modified)----- | 12,663 | 13,181 | 71,508 | 5.43 |
| Direct----- | 35,991 | 31,780 | 90,147 | 2.84 |
| Disperse----- | 38,805 | 34,940 | 148,009 | 4.24 |
| Fluorescent brightening agents----- | 38,380 | 38,263 | 63,979 | 1.67 |
| Food, drug, and cosmetic colors----- | 6,666 | 6,060 | 56,282 | 9.29 |
| Mordant----- | 375 | 315 | 1,626 | 5.16 |
| Solvent----- | 10,296 | 7,188 | 28,936 | 4.03 |
| Vat----- | 35,267 | 37,547 | 121,273 | 3.23 |
| All other ² ----- | 26,707 | 25,119 | 84,104 | 3.71 |

¹Calculated from unrounded figures.

²The data include azoic compositions, azoic coupling components, azoic diazo components (bases and salts), fiber-reactive dyes, sulfur dyes, and miscellaneous dyes. Statistics for those groups of dyes may not be published separately because publication would disclose information received in confidence.

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--------------------|---|
| ACID DYES | |
| *ACID YELLOW DYES: | |
| Acid Yellow 3- | ACY. |
| Acid Yellow 14 | TRC. |
| *Acid Yellow 17 | ATL, CK, SDH, TRC. |
| *Acid Yellow 19 | AC, ATL, CK, ICI. |
| *Acid Yellow 23 | AC, ACY, BAS, CK, LVR, SDH, TRC, WJ. |
| Acid Yellow 34 | ATL. |
| *Acid Yellow 36 | AC, ATL, TRC, VPC. |
| Acid Yellow 40 | CK, TRC. |
| Acid Yellow 42 | AC. |
| *Acid Yellow 49 | ATL, CK, PDC, S, VPC. |
| Acid Yellow 54 | AC. |
| Acid Yellow 59 | BAS, VPC. |
| Acid Yellow 65 | TRC. |
| Acid Yellow 73 | SDH. |
| Acid Yellow 76 | TRC. |
| Acid Yellow 79 | VPC. |
| Acid Yellow 99 | TRC. |
| Acid Yellow 114 | TRC. |
| Acid Yellow 121 | ATL. |
| Acid Yellow 127 | CK, TRC. |
| Acid Yellow 128 | TRC. |
| Acid Yellow 129 | TRC. |
| Acid Yellow 135 | ICI. |
| Acid Yellow 144 | VPC. |
| *Acid Yellow 151 | AC, CK, DUP, TRC, VPC. |
| Acid Yellow 159 | CK, TRC. |
| Acid Yellow 169 | TRC. |
| *Acid Yellow 174 | AC, PDC, VPC. |
| Acid Yellow 198 | CK, DUP. |
| Acid Yellow 199 | ICI. |
| Acid Yellow 200 | CK. |
| Acid Yellow 216 | VPC. |
| Acid Yellow 219 | CK, TRC. |
| Acid Yellow 221 | BAS. |
| Acid Yellow 392 | VPC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-------------------------------|---|
| ACID DYES--CONTINUED | |
| *ACID YELLOW DYES--CONTINUED | |
| *Acid yellow dyes, all other- | : AC, CK, DGO, VPC. |
| *ACID ORANGE DYES: | |
| Acid Orange 5- | : ACY. |
| *Acid Orange 7- | : AC, ACY, ATL, BAS, CK, TRC, VPC. |
| Acid Orange 8- | : AC, ATL, CK, TRC, VPC. |
| *Acid Orange 10- | : AC, ATL, BAS, CK, PDC, TRC. |
| Acid Orange 24- | : ACY, S, TRC. |
| Acid Orange 47- | : TRC. |
| Acid Orange 51- | : TRC. |
| Acid Orange 60- | : AC, CK, TRC, VPC. |
| Acid Orange 63- | : TRC. |
| Acid Orange 64- | : ATL, TRC. |
| Acid Orange 69- | : ACY, ATL. |
| Acid Orange 74- | : TRC. |
| Acid Orange 86- | : TRC. |
| Acid Orange 116- | : AC, CK. |
| Acid Orange 128- | : CK. |
| Acid Orange 152- | : CK, DUP. |
| *Acid Orange 156- | : CK, S, TRC. |
| Acid Orange 161- | : ATL. |
| *Acid orange dyes, all other- | : CK, TRC. |
| *ACID RED DYES: | |
| *Acid Red 1- | : AC, ATL, BAS, CK, TRC. |
| *Acid Red 4- | : AC, ATL, PDC, TRC. |
| Acid Red 14- | : ATL, BAS. |
| Acid Red 18- | : ATL. |
| Acid Red 26- | : ATL. |
| Acid Red 27- | : SDH. |
| Acid Red 57- | : CK, TRC. |
| Acid Red 66- | : AC. |
| *Acid Red 73- | : ATL, BAS, PSC, TRC. |
| Acid Red 85- | : FAB. |
| Acid Red 87- | : SDH. |
| *Acid Red 88- | : ATL, BAS, PDC, TRC. |
| Acid Red 97- | : ATL. |
| Acid Red 99- | : FAB. |
| *Acid Red 114- | : AC, CK, TRC, VPC. |
| Acid Red 115- | : ATL. |
| Acid Red 119- | : CK. |
| Acid Red 134- | : TRC. |
| *Acid Red 137- | : AC, ATL, BAS, TRC, VPC. |
| *Acid Red 151- | : AC, ACY, ATL, CK, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

64

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---------------------------|---|
| ACID DYES--CONTINUED | |
| *ACID RED DYES--CONTINUED | |
| Acid Red 167 | ATL, TRC. |
| Acid Red 174 | AC. |
| Acid Red 182 | AC, VPC. |
| Acid Red 183 | AC. |
| Acid Red 186 | AC. |
| Acid Red 194 | TRC. |
| Acid Red 211 | TRC. |
| Acid Red 213 | TRC. |
| Acid Red 226 | BAS. |
| Acid Red 257 | TRC. |
| *Acid Red 266 | ATL, CK, TRC, VPC. |
| Acid Red 278 | VPC. |
| Acid Red 299 | ATL, CK. |
| Acid Red 309 | TRC. |
| *Acid Red 337 | ATL, CK, S, TRC, VPC. |
| Acid Red 361 | TRC. |
| Acid Red 364 | CK. |
| Acid Red 384 | CK. |
| Acid Red 385 | AC. |
| Acid Red 388 | DUP. |
| Acid Red 396 | ICI. |
| Acid Red 408 | AC. |
| Acid Red 410 | ATL. |
| *Acid red dyes, all other | AC, ATL, CK, EKT, TRC, VPC. |
| *ACID VIOLET DYES: | |
| Acid Violet 3 | ATL, TRC. |
| Acid Violet 7 | ATL. |
| Acid Violet 12 | AC, ATL. |
| Acid Violet 17 | SDH. |
| Acid Violet 43 | HSH. |
| Acid Violet 49 | SDH, TRC. |
| *ACID BLUE DYES: | |
| Acid Blue 9 | BAS, SDH, TRC, WJ. |
| Acid Blue 15 | BAS. |
| Acid Blue 25 | ATL, CK, ICI, TRC, VPC. |
| Acid Blue 27 | ATL. |
| Acid Blue 29 | PDC. |
| Acid Blue 40 | ATL, S, TRC, VPC. |
| Acid Blue 41 | ATL. |
| Acid Blue 45 | TRC. |
| Acid Blue 78 | TRC. |
| Acid Blue 80 | TRC. |

SYNTHETIC ORGANIC CHEMICALS, 1981

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---------------------------------|---|
| ACID DYES--CONTINUED | |
| *ACID BLUE DYES--CONTINUED | |
| Acid Blue 92 | ATL, FAB. |
| Acid Blue 113 | AC, CK. |
| Acid Blue 118 | AC. |
| Acid Blue 145 | ATL, CK. |
| Acid Blue 158, 158:1, and 158:2 | AC, TRC. |
| Acid Blue 231 | TRC. |
| Acid Blue 277 | TRC. |
| Acid Blue 298 | CK. |
| Acid Blue 330 | ATL. |
| Acid blue dyes, all other | AC, BAS, CK, TRC, VPC. |
| *ACID GREEN DYES: | |
| Acid Green 1 | LVR. |
| Acid Green 3 | TRC. |
| Acid Green 5 | WJ. |
| Acid Green 16 | TRC. |
| Acid Green 20 | ATL, PDC, TRC. |
| *Acid Green 25 | CK, HSH, TRC. |
| Acid Green 35 | TRC. |
| Acid Green 70 | TRC. |
| *Acid green dyes, all other | ATL, LVR, PDC, TRC, WJ. |
| *ACID BROWN DYES: | |
| *Acid Brown 14 | ATL, BAS, CK, FAB, S, TRC. |
| Acid Brown 19 | TRC. |
| Acid Brown 24 | FAB. |
| Acid Brown 45 | TRC. |
| Acid Brown 96 | PDC. |
| Acid Brown 97 | ATL, FAB, PDC. |
| Acid Brown 98 | ACY, ATL, CK, TRC. |
| Acid Brown 147 | CK, TRC. |
| Acid Brown 239 | CK, TRC. |
| Acid Brown 264 | BAS. |
| Acid Brown 355 | BAS. |
| *Acid brown dyes, all other | CK. |
| *ACID BLACK DYES: | |
| *Acid Black 1 | AC, ACY, ATL, BAS, CK, FAB, TRC. |
| Acid Black 2 | ACY. |
| Acid Black 24 | AC. |
| *Acid Black 52 | AC, ATL, CK, FAB, TRC. |
| Acid Black 58 | TRC. |
| Acid Black 60 | CK, TRC. |
| Acid Black 63 | BAS. |
| Acid Black 92 | ACY. |
| Acid Black 107 | CK, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACID DYES--CONTINUED | |
| *ACID BLACK DYES--CONTINUED | |
| *Acid Black 172 - - - - - | ICI, TRC, VPC. |
| Acid Black 194 - - - - - | BAS. |
| *Acid black dyes, all other - - - - - | ATL, CK, TRC, VPC. |
| AZOIC DYES AND COMPONENTS | |
| AZOIC COMPOSITIONS: | |
| AZOIC YELLOW COMPOSITIONS: | |
| Azoic Yellow 1 - - - - - | ALL, BUC. |
| Azoic yellow compositions, all other - - - - - | BAS. |
| AZOIC ORANGE COMPOSITIONS: | |
| Azoic Orange 3 - - - - - | ALL, BUC. |
| Azoic orange compositions, all other - - - - - | BAS, BUC. |
| AZOIC RED COMPOSITIONS: | |
| Azoic Red 1- - - - - | ALL, BUC. |
| Azoic Red 2- - - - - | ALL, BUC. |
| Azoic Red 6- - - - - | ALL, BUC. |
| Azoic red compositions, all other- - - - - | ALL, BUC. |
| AZOIC VIOLET COMPOSITIONS: | |
| Azoic Violet 1 - - - - - | BUC. |
| Azoic violet compositions, all other - - - - - | BUC. |
| AZOIC BLUE COMPOSITIONS: | |
| Azoic Blue 3 - - - - - | ALL, BUC. |
| AZOIC BROWN COMPOSITIONS: | |
| Azoic Brown 7- - - - - | BUC. |
| Azoic Brown 9- - - - - | ALL, BUC. |
| Azoic brown compositions, all other- - - - - | BUC. |
| AZOIC BLACK COMPOSITIONS: | |
| Azoic Black 4- - - - - | BUC. |
| AZOIC DIAZO COMPONENTS, BASES: | |
| Azoic Diazo Component 4, base- - - - - | ALL, BUC. |
| Azoic Diazo Component 13, base - - - - - | ALL, BUC. |
| Azoic Diazo Component 14, base - - - - - | ALL. |
| Azoic Diazo Component 32, base - - - - - | ALL. |
| Azoic Diazo Component 34, base - - - - - | ALL. |
| AZOIC DIAZO COMPONENTS, SALTS: | |
| Azoic Diazo Component 1, salt- - - - - | ALL, BUC. |
| Azoic Diazo Component 3, salt- - - - - | ALL, BUC. |
| Azoic Diazo Component 5, salt- - - - - | ALL, BUC. |
| Azoic Diazo Component 6, salt- - - - - | ALL. |
| Azoic Diazo Component 8, salt- - - - - | ALL, BUC. |
| Azoic Diazo Component 9, salt- - - - - | ALL, BUC. |
| Azoic Diazo Component 10, salt - - - - - | ALL, BUC. |
| Azoic Diazo Component 11, salt - - - - - | ALL. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| AZOIC DYES AND COMPONENTS--CONTINUED | |
| AZOIC DIAZO COMPONENTS, SALTS--CONTINUED | |
| Azoic Diazo Component 12, salt | ALL, BUC. |
| Azoic Diazo Component 13, salt | ALL, BUC. |
| Azoic Diazo Component 14, salt | ALL. |
| Azoic Diazo Component 20, salt | ATL. |
| Azoic Diazo Component 32, salt | ALL. |
| Azoic Diazo Component 34, salt | ALL. |
| Azoic Diazo Component 41, salt | ALL. |
| Azoic Diazo Component 42, salt | ALL. |
| Azoic Diazo Component 44, salt | ALL, ATL. |
| Azoic Diazo Component 48, salt | ATL. |
| Azoic Diazo Component 49, salt | ALL, BUC. |
| Azoic diazo components, salt, all other | ALL, ATL. |
| AZOIC COUPLING COMPONENTS: | |
| Azoic Coupling Component 2 | PCW. |
| Azoic Coupling Component 3 | PCW. |
| Azoic Coupling Component 7 | PCW. |
| Azoic Coupling Component 8 | PCW. |
| Azoic Coupling Component 11 | PCW. |
| Azoic Coupling Component 12 | PCW. |
| Azoic Coupling Component 14 | BUC, PCW. |
| Azoic Coupling Component 17 | PCW. |
| Azoic Coupling Component 18 | PCW. |
| Azoic Coupling Component 20 | PCW. |
| Azoic Coupling Component 21 | BUC, PCW. |
| Azoic Coupling Component 29 | BUC, PCW. |
| Azoic Coupling Component 34 | PCW. |
| Azoic Coupling Component 35 | PCW. |
| Azoic Coupling Component 43 | BUC. |
| BASIC DYES (CLASSICAL AND MODIFIED) | |
| *BASIC YELLOW DYES: | |
| Basic Yellow 2 | ACY. |
| *Basic Yellow 11 | ATL, CK, TRC, VPC. |
| Basic Yellow 12 | VPC. |
| *Basic Yellow 13 | ATL, DUP, TRC, VPC. |
| Basic Yellow 15 | DUP. |
| Basic Yellow 21 | VPC. |
| Basic Yellow 25 | BAS. |
| Basic Yellow 28 | BAS, VPC. |
| *Basic Yellow 29 | ATL, BAS, CK, DUP, VPC. |
| Basic Yellow 37 | ACY. |
| Basic Yellow 45 | TRC. |
| Basic Yellow 49 | BAS. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| BASIC DYES (CLASSICAL AND MODIFIED)--CONTINUED | |
| *BASIC YELLOW DYES--CONTINUED | |
| Basic Yellow 53- | DUP. |
| Basic Yellow 58- | DUP, VPC. |
| Basic Yellow 77- | BAS. |
| Basic Yellow 78- | ACY. |
| *Basic Yellow 79- | BAS, CK, DUP. |
| Basic yellow dyes, all other | X. |
| Basic yellow dyes, all other, modified | BAS, CK, VPC. |
| *BASIC ORANGE DYES: | |
| Basic Orange 1- | BAS, PSC, TRC. |
| *Basic Orange 2- | ATL, BAS, CK, DUP, PSC, TRC, VPC. |
| Basic Orange 21- | ATL, CK, TRC, VPC. |
| Basic Orange 26- | DUP. |
| Basic Orange 28- | VPC. |
| *Basic orange dyes, all other | X. |
| *BASIC RED DYES: | |
| *Basic Red 12- | ACY, ATL, VPC. |
| *Basic Red 14- | ATL, BAS, CK, DUP, VPC. |
| *Basic Red 15- | ATL, BAS, CK, DUP. |
| Basic Red 18- | ATL, DUP, VPC. |
| Basic Red 22- | TRC. |
| Basic Red 23- | VPC. |
| Basic Red 29- | BAS. |
| Basic Red 46- | TRC. |
| *Basic Red 49- | BAS, CK, TRC, VPC. |
| Basic Red 51- | BAS. |
| Basic Red 54- | BAS. |
| Basic Red 73- | CK, DUP. |
| Basic Red 104- | CK. |
| Basic red dyes, all other- | X. |
| Basic red dyes, all other, modified- | BAS, DUP, VPC. |
| *BASIC VIOLET DYES: | |
| *Basic Violet 1- | ACY, BAS, BCC, DSC. |
| Basic Violet 3- | ACY, CK, DSC, DUP. |
| Basic Violet 4- | DSC. |
| Basic Violet 10- | ACY, BAS. |
| *Basic Violet 16- | ATL, BAS, DUP, TRC, VPC. |
| Basic Violet 35- | BAS. |
| *Basic violet dyes, all other | X. |
| *BASIC BLUE DYES: | |
| Basic Blue 1- | SDH, VPC. |
| Basic Blue 2- | DSC. |
| *Basic Blue 3- | BAS, CK, DUP, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| BASIC DYES (CLASSICAL AND MODIFIED)--CONTINUED | |
| *BASIC BLUE DYES--CONTINUED | |
| Basic Blue 7 | DSC, SDH. |
| Basic Blue 9 | DUP. |
| Basic Blue 11 | SDH. |
| Basic Blue 21 | DUP. |
| Basic Blue 22 | DUP. |
| Basic Blue 26 | DSC. |
| Basic Blue 27 | VPC. |
| Basic Blue 35 | DUP. |
| *Basic Blue 41 | BAS, TRC, VPC. |
| Basic Blue 45 | VPC. |
| Basic Blue 47 | VPC. |
| Basic Blue 54 | BAS. |
| Basic Blue 60 | BAS. |
| Basic Blue 69 | VPC. |
| Basic Blue 75 | EKT. |
| Basic Blue 76 | BAS. |
| Basic Blue 77 | DUP. |
| Basic Blue 94 and 94:1 | CK, DUP. |
| Basic Blue 140 | VPC. |
| Basic blue dyes, all other | X. |
| Basic blue dyes, all other, modified | BAS, CK, VPC. |
| BASIC GREEN DYES: | |
| Basic Green 1 | DSC. |
| Basic Green 4 | ACY, BAS, DSC. |
| Basic green dyes, all other | X. |
| BASIC BROWN DYES: | |
| Basic Brown 1 | ACY, PSC, TRC. |
| Basic Brown 4 | ACY, BAS, PSC, TRC. |
| BASIC BLACK DYES: | |
| Basic black dyes, all other | CK, X. |
| Basic black dyes, all other, modified | CK, VPC. |
| DIRECT DYES | |
| *DIRECT YELLOW DYES: | |
| *Direct Yellow 4 | ATL, BAS, CK, TRC, VPC. |
| Direct Yellow 5 | ACY, BAS. |
| *Direct Yellow 6 | AC, ACY, BAS, DUP, VPC. |
| Direct Yellow 8 | ATL. |
| *Direct Yellow 11 | AC, BAS, DUP, TRC, VPC. |
| Direct Yellow 12 | CK, TRC, VPC. |
| Direct Yellow 27 | ATL. |
| Direct Yellow 28 | ATL, CK, TRC. |
| Direct Yellow 34 | CK, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| DIRECT DYES--CONTINUED | |
| *DIRECT YELLOW DYES--CONTINUED | |
| Direct Yellow 39 - - - - - | CK, TRC. |
| Direct Yellow 44 - - - - - | AC, CK, TRC. |
| Direct Yellow 50 - - - - - | AC, TRC. |
| Direct Yellow 51 - - - - - | FAB, TRC. |
| Direct Yellow 84 - - - - - | AC. |
| Direct Yellow 103 - - - - - | ATL. |
| Direct Yellow 105 - - - - - | AC, CK, TRC. |
| Direct Yellow 106 - - - - - | AC, CK, FAB, TRC. |
| Direct Yellow 107 - - - - - | CK, TRC. |
| Direct Yellow 118 - - - - - | CK, TRC. |
| Direct Yellow 119 - - - - - | DUP, VPC. |
| Direct Yellow 120 - - - - - | AC. |
| *Direct Yellow 127 - - - - - | BAS, CK, TRC, VPC. |
| Direct Yellow 131 - - - - - | DUP, VPC. |
| Direct Yellow 132 - - - - - | S, TRC. |
| Direct Yellow 133 - - - - - | S. |
| Direct Yellow 137 - - - - - | DUP. |
| Direct Yellow 139 - - - - - | DUP. |
| Direct Yellow 147 - - - - - | BAS, VPC. |
| Direct Yellow 148 - - - - - | S. |
| Direct Yellow 150 - - - - - | S. |
| Direct Yellow 155 - - - - - | AC. |
| *Direct yellow dyes, all other - - - - - | AC, ATL, CK, TRC, VPC. |
| *DIRECT ORANGE DYES: | |
| *Direct Orange 15 - - - - - | AC, ACY, BAS, DUP, TRC, VPC. |
| Direct Orange 26 - - - - - | CK, TRC. |
| Direct Orange 29 - - - - - | TRC. |
| Direct Orange 34 - - - - - | ATL, FAB. |
| *Direct Orange 39 - - - - - | AC, CK, FAB. |
| Direct Orange 61 - - - - - | TRC. |
| Direct Orange 72 - - - - - | AC, CK, FAB, TRC. |
| Direct Orange 73 - - - - - | TRC. |
| Direct Orange 80 - - - - - | ATL. |
| *Direct Orange 102 - - - - - | AC, ATL, BAS, DUP, FAB, VPC. |
| Direct Orange 118 - - - - - | S, TRC. |
| *Direct orange dyes, all other - - - - - | AC, ATL. |
| *DIRECT RED DYES: | |
| Direct Red 1 - - - - - | FAB. |
| *Direct Red 2 - - - - - | AC, ATL, FAB, TRC. |
| Direct Red 4 - - - - - | TRC. |
| Direct Red 16 - - - - - | ATL, TRC. |
| *Direct Red 23 - - - - - | AC, ACY, ATL, CK, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-------------------------------|---|
| DIRECT DYES--CONTINUED | |
| *DIRECT RED DYES--CONTINUED | |
| *Direct Red 24- | AC, ATL, FAB, TRC. |
| Direct Red 26- | AC, ATL. |
| Direct Red 28- | FAB. |
| Direct Red 31- | ATL, TRC. |
| Direct Red 39- | ATL. |
| Direct Red 62- | TRC. |
| *Direct Red 72- | AC, BAS, CK, DUP, TRC. |
| Direct Red 73- | AC. |
| Direct Red 79- | CK, TRC. |
| *Direct Red 80- | AC, ATL, CK, TRC. |
| *Direct Red 81- | AC, ACY, ATL, BAS, CK, DUP, FAB, LVR, TRC, VPC. |
| *Direct Red 83- | AC, ATL, CK, FAB, TRC. |
| Direct Red 122- | TRC. |
| Direct Red 149- | ATL. |
| Direct Red 153- | ATL. |
| Direct Red 209- | TRC. |
| *Direct Red 236- | AC, BAS, VPC. |
| Direct Red 238- | DUP, VPC. |
| Direct Red 239- | S, TRC. |
| Direct Red 254- | VPC. |
| *Direct red dyes, all other | AC, ATL, CK, VPC. |
| *DIRECT VIOLET DYES: | |
| Direct Violet 1- | VPC. |
| Direct Violet 3- | VPC. |
| Direct Violet 7- | ATL. |
| Direct Violet 9- | TRC. |
| Direct Violet 66- | ATL. |
| Direct Violet 99- | DUP, VPC. |
| Direct violet dyes, all other | VPC. |
| *DIRECT BLUE DYES: | |
| *Direct Blue 1- | AC, ATL, BAS, TRC. |
| Direct Blue 2- | FAB. |
| Direct Blue 8- | ATL. |
| Direct Blue 14- | TRC, VPC. |
| *Direct Blue 15- | AC, ATL, BAS, DUP, VPC. |
| Direct Blue 25- | CK, TRC. |
| Direct Blue 71- | CK. |
| Direct Blue 75- | CK, S, TRC. |
| Direct Blue 76- | AC, CK, TRC. |
| *Direct Blue 80- | AC, ATL, CK, FAB, TRC. |
| *Direct Blue 86- | AC, ATL, BAS, CK, DUP, FAB, TRC, VPC. |
| Direct Blue 91- | TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| DIRECT DYES--CONTINUED | |
| *DIRECT BLUE DYES--CONTINUED | |
| Direct Blue 98 - - - - - | ATL, CK, FAB. |
| Direct Blue 100 - - - - - | CK. |
| Direct Blue 108 - - - - - | ATL. |
| *Direct Blue 120, 120:1, 120:2, and 120:3 - - - - - | AC, ATL, CK, FAB, TRC. |
| Direct Blue 151 - - - - - | ATL. |
| Direct Blue 160 - - - - - | CK, FAB, TRC. |
| Direct Blue 189 - - - - - | CK, TRC. |
| Direct Blue 191 - - - - - | CK. |
| Direct Blue 199 - - - - - | BAS, DUP, VPC. |
| Direct Blue 218 - - - - - | AC, BAS, CK, DUP, FAB, TRC. |
| Direct Blue 260 - - - - - | DUP. |
| Direct Blue 261 - - - - - | S. |
| Direct Blue 267 - - - - - | TRC. |
| Direct Blue 269 - - - - - | VPC. |
| Direct Blue 279 - - - - - | VPC. |
| Direct Blue 280 - - - - - | ATL. |
| Direct Blue 281 - - - - - | AC. |
| Direct Blue 283 - - - - - | ATL. |
| Direct Blue 286 - - - - - | ATL. |
| *Direct blue dyes, all other - - - - - | AC, ATL, CK, FAB, TRC, VPC. |
| *DIRECT GREEN DYES: | |
| Direct Green 1 - - - - - | FAB. |
| Direct Green 6 - - - - - | FAB, TRC. |
| Direct Green 26 - - - - - | CK, TRC. |
| Direct Green 27 - - - - - | TRC. |
| Direct Green 51 - - - - - | TRC. |
| Direct Green 69 - - - - - | TRC. |
| Direct Green 92 - - - - - | ATL. |
| Direct green dyes, all other - - - - - | DUP, FAB. |
| *DIRECT BROWN DYES: | |
| Direct Brown 2 - - - - - | FAB. |
| Direct Brown 31 - - - - - | FAB. |
| Direct Brown 44 - - - - - | FAB. |
| Direct Brown 74 - - - - - | FAB. |
| Direct Brown 95 - - - - - | FAB. |
| Direct Brown 154 - - - - - | FAB. |
| Direct Brown 231 - - - - - | ATL. |
| Direct Brown 232 - - - - - | ATL. |
| Direct Brown 238 - - - - - | ATL. |
| Direct brown dyes, all other - - - - - | AC, ATL, CK, FAB, VPC. |
| *DIRECT BLACK DYES: | |
| Direct Black 4 - - - - - | FAB. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| DIRECT DYES--CONTINUED | |
| *DIRECT BLACK DYES--CONTINUED | |
| Direct Black 19- - - - - | TRC. |
| *Direct Black 22- - - - - | AC, ATL, CK, TRC, VPC. |
| Direct Black 38- - - - - | FAB. |
| Direct Black 78- - - - - | AC. |
| Direct Black 80- - - - - | AC, ATL, CK, FAB. |
| Direct Black 161- - - - - | AC. |
| Direct Black 165- - - - - | ATL. |
| Direct Black 170- - - - - | ATL. |
| *Direct black dyes, all other- - - - - | AC, ATL, CK, FAB, VPC. |
| DISPERSE DYES | |
| *DISPERSE YELLOW DYES: | |
| Disperse Yellow 3- - - - - | AC, BAS, CK, FAB, TRC. |
| Disperse Yellow 23- - - - - | ATL, CK, TRC. |
| Disperse Yellow 33- - - - - | AC, TRC. |
| Disperse Yellow 34- - - - - | AC, EKT. |
| Disperse Yellow 36- - - - - | VPC. |
| Disperse Yellow 42- - - - - | AC, SDC, TRC. |
| Disperse Yellow 54- - - - - | BAS, TRC, VPC. |
| Disperse Yellow 56- - - - - | BAS. |
| Disperse Yellow 58- - - - - | VPC. |
| Disperse Yellow 64- - - - - | BAS, TRC. |
| *Disperse Yellow 67- - - - - | DUP, TRC, VPC. |
| Disperse Yellow 74- - - - - | VPC. |
| Disperse Yellow 77- - - - - | VPC. |
| Disperse Yellow 86- - - - - | AC, EKT. |
| Disperse Yellow 88- - - - - | EKT. |
| Disperse Yellow 93- - - - - | VPC. |
| Disperse Yellow 99- - - - - | EKT. |
| Disperse Yellow 108- - - - - | EKT. |
| Disperse Yellow 114- - - - - | HST. |
| Disperse Yellow 125- - - - - | SDC. |
| Disperse Yellow 126- - - - - | ICI. |
| Disperse Yellow 137- - - - - | DUP. |
| Disperse Yellow 183- - - - - | ICI. |
| Disperse Yellow 198- - - - - | BAS. |
| Disperse Yellow 200- - - - - | EKT. |
| Disperse Yellow 218- - - - - | ICI. |
| Disperse Yellow 219- - - - - | SDC. |
| Disperse Yellow 223- - - - - | CK. |
| *Disperse yellow dyes, all other- - - - - | BAS, CK, EKT, HST, VPC. |
| *DISPERSE ORANGE DYES: | |
| *Disperse Orange 3- - - - - | AC, ATL, CK, FAB, TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-----------------------------------|---|
| DISPERSE DYES--CONTINUED | |
| *DISPERSE ORANGE DYES--CONTINUED | |
| Disperse Orange 5- | ATL. |
| Disperse Orange 17- | AC. |
| Disperse Orange 21- | TRC. |
| *Disperse Orange 25 and 25:1- | ATL, CK, EKT, ICI, TRC, VPC. |
| *Disperse Orange 29- | AC, BAS, CK, HST, SDC, VPC. |
| Disperse Orange 30- | AC, ATL, BUC, S, TRC, VPC. |
| Disperse Orange 31- | BAS. |
| Disperse Orange 37- | AC, ATL, CK, EKT. |
| Disperse Orange 41- | AC, TRC. |
| *Disperse Orange 44 and 44:1- | AC, CK, S, TRC. |
| Disperse Orange 53- | TRC. |
| Disperse Orange 55- | BAS. |
| Disperse Orange 56- | TRC. |
| Disperse Orange 57- | EKT. |
| Disperse Orange 66- | VPC. |
| Disperse Orange 73- | AC, BAS. |
| Disperse Orange 88- | SDC. |
| Disperse Orange 89- | AC. |
| Disperse Orange 94- | SDC. |
| Disperse Orange 125- | DUP. |
| Disperse Orange 129- | SDC. |
| Disperse Orange 136- | EKT. |
| Disperse Orange 138- | EKT. |
| Disperse Orange 139- | ICI. |
| Disperse Orange 145- | EKT. |
| *Disperse orange dyes, all other- | BUC, CK. |
| *DISPERSE RED DYES: | |
| *Disperse Red 1- | AC, ATL, CK, EKT, TRC. |
| Disperse Red 4- | TRC. |
| Disperse Red 5- | AC, ATL, CK. |
| Disperse Red 9- | ATL. |
| Disperse Red 13- | ATL, BAS. |
| Disperse Red 15- | HSH, TRC. |
| *Disperse Red 17- | AC, ATL, CK, FAB, TRC. |
| Disperse Red 30- | EKT. |
| Disperse Red 35- | EKT. |
| Disperse Red 50- | CK, FAB, TRC. |
| *Disperse Red 55- | BAS, TRC, VPC. |
| Disperse Red 59- | BAS. |
| Disperse Red 60- | AC, BAS, TRC, VPC. |
| *Disperse Red 65- | AC, CK, EKT, TRC. |
| Disperse Red 73- | BAS, S. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-------------------------------|---|
| DISPERSE DYES--CONTINUED | |
| *DISPERSE RED DYES--CONTINUED | |
| Disperse Red 82- | TRC, VPC. |
| Disperse Red 86- | EKT, TRC. |
| Disperse Red 88- | EKT. |
| Disperse Red 90- | VPC. |
| Disperse Red 91- | BAS. |
| Disperse Red 105 | VPC. |
| Disperse Red 108 | VPC. |
| Disperse Red 117 | EKT. |
| Disperse Red 118 | BAS. |
| Disperse Red 128 | TRC. |
| Disperse Red 133 | VPC. |
| Disperse Red 135 | AC, CK. |
| Disperse Red 136 | EKT. |
| Disperse Red 137 | EKT. |
| Disperse Red 151 | TRC. |
| Disperse Red 153 | SDC. |
| Disperse Red 159 | VPC. |
| *Disperse Red 167 and 167:1 | BAS, CK, S, TRC. |
| *Disperse Red 177 | AC, BUC, CK, S, SDC, VPC. |
| *Disperse Red 179 | AC, BAS, CK, S. |
| Disperse Red 184 | HST. |
| Disperse Red 195 | SDC. |
| Disperse Red 207 | AC. |
| Disperse Red 214 | BAS. |
| Disperse Red 217 | DUP. |
| Disperse Red 263 | BAS. |
| Disperse Red 271 | DUP. |
| Disperse Red 273 | BAS, SDC. |
| Disperse Red 274 | SDC. |
| Disperse Red 278 | ICI. |
| Disperse Red 305 | EKT. |
| Disperse Red 307 | EKT. |
| Disperse Red 309 | EKT. |
| Disperse Red 311 | ICI. |
| Disperse Red 313 | SDC. |
| Disperse Red 316 | SDC. |
| Disperse Red 319 | CK. |
| Disperse Red 325 | AC, CK. |
| Disperse Red 333 | SDC. |
| Disperse Red 338 | EKT. |
| Disperse Red 339 | EKT. |
| Disperse Red 340 | EKT. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| DISPERSE DYES--CONTINUED | |
| *DISPERSE RED DYES--CONTINUED | |
| Disperse Red 341 - - - - - | EKT. |
| Disperse Red 345 - - - - - | CK. |
| Disperse Red 350 - - - - - | AC. |
| Disperse Red 351 - - - - - | AC. |
| *Disperse red dyes, all other - - - - - | BUC, EKT, FAB, TRC, VPC. |
| *DISPERSE VIOLET DYES: | |
| Disperse Violet 1- - - - - | AC, HSH, TRC. |
| Disperse Violet 17 - - - - - | VPC. |
| Disperse Violet 27 - - - - - | AC. |
| Disperse Violet 28 - - - - - | TRC. |
| Disperse Violet 33 - - - - - | ICI. |
| Disperse Violet 36 - - - - - | SDC. |
| Disperse Violet 40 - - - - - | VPC. |
| Disperse Violet 48 - - - - - | HST. |
| Disperse Violet 60 - - - - - | SDC. |
| Disperse Violet 64 - - - - - | DUP. |
| *DISPERSE BLUE DYES: | |
| *Disperse Blue 3- - - - - | AC, EKT, FAB, HSH, TRC. |
| Disperse Blue 7- - - - - | AC, TRC. |
| Disperse Blue 19 - - - - - | TRC. |
| Disperse Blue 27 - - - - - | EKT. |
| Disperse Blue 55 - - - - - | TRC. |
| Disperse Blue 56 - - - - - | VPC. |
| Disperse Blue 60 - - - - - | BAS, TRC, VPC. |
| Disperse Blue 62 - - - - - | EKT. |
| Disperse Blue 64 - - - - - | AC, EKT, TRC. |
| Disperse Blue 73 - - - - - | S. |
| Disperse Blue 77 - - - - - | EKT. |
| *Disperse Blue 79 - - - - - | AC, ATL, BAS, BUC, CK, EKT, HST, S, TRC, VPC. |
| Disperse Blue 81 - - - - - | VPC. |
| Disperse Blue 87 - - - - - | BAS. |
| Disperse Blue 94 - - - - - | BAS. |
| Disperse Blue 95 - - - - - | HST. |
| Disperse Blue 102- - - - - | EKT. |
| Disperse Blue 109- - - - - | AC. |
| Disperse Blue 112- - - - - | EKT. |
| Disperse Blue 118- - - - - | EKT. |
| Disperse Blue 122- - - - - | ICI. |
| Disperse Blue 125- - - - - | TRC. |
| Disperse Blue 139- - - - - | VPC. |
| Disperse Blue 148- - - - - | BAS. |
| Disperse Blue 165- - - - - | HST, VPC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---------------------------------|---|
| DISPERSE DYES--CONTINUED | |
| *DISPERSE BLUE DYES--CONTINUED | |
| Disperse Blue 177- | SDC. |
| Disperse Blue 183- | S. |
| Disperse Blue 192- | DUP. |
| Disperse Blue 200- | ICI. |
| Disperse Blue 281- | SDC, TRC. |
| Disperse Blue 284- | ICI. |
| Disperse Blue 291- | SDC. |
| Disperse Blue 333- | HST. |
| Disperse Blue 337- | EKT. |
| Disperse Blue 338- | EKT. |
| *Disperse blue dyes, all other- | ATL, BAS, BUC, CK, DUP, EKT, HST, TRC, VPC. |
| DISPERSE GREEN DYES: | |
| Disperse Green 7- | DUP. |
| Disperse Green 9- | ICI. |
| Disperse green dyes, all other- | CK. |
| DISPERSE BROWN DYES: | |
| *Disperse Brown 1- | AC, ATL, BUC, CK, HST, ICI, SDC, TRC. |
| Disperse Brown 2- | SDC. |
| Disperse Brown 10- | SDC. |
| Disperse Brown 18- | SDC. |
| Disperse Brown 22- | EKT. |
| Disperse brown dyes, all other- | CK, EKT. |
| DISPERSE BLACK DYES: | |
| Disperse Black 1- | AC. |
| Disperse Black 9- | AC, EKT. |
| Disperse Black 33- | AC. |
| Disperse black dyes, all other- | BAS, CK, VPC. |
| FIBER-REACTIVE DYES | |
| REACTIVE YELLOW DYES: | |
| Reactive Yellow 3- | TRC. |
| Reactive Yellow 6- | TRC. |
| Reactive Yellow 7- | ICI. |
| Reactive Yellow 15- | HST. |
| Reactive Yellow 17- | HST. |
| Reactive Yellow 18- | ICI. |
| Reactive Yellow 22- | ICI. |
| Reactive Yellow 25- | VPC. |
| Reactive Yellow 27- | VPC. |
| Reactive Yellow 37- | HST. |
| Reactive Yellow 42- | HST. |
| Reactive Yellow 57- | HST. |
| Reactive Yellow 81- | TRC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

78

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| REACTIVE DYES--CONTINUED | |
| REACTIVE YELLOW DYES--CONTINUED | |
| Reactive Yellow 86 - - - - - | ICI. |
| Reactive Yellow 133- - - - - | ICI. |
| Reactive Yellow 135- - - - - | ICI. |
| Reactive yellow dyes, all other- - - - - | HST. |
| REACTIVE ORANGE DYES: | |
| Reactive Orange 1- - - - - | ICI. |
| Reactive Orange 4- - - - - | ICI. |
| Reactive Orange 12 - - - - - | ICI. |
| Reactive Orange 13 - - - - - | ICI. |
| Reactive Orange 14 - - - - - | ICI. |
| Reactive Orange 16 - - - - - | HST. |
| Reactive Orange 64 - - - - - | VPC. |
| Reactive Orange 70 - - - - - | TRC. |
| Reactive Orange 78 - - - - - | HST. |
| Reactive Orange 84 - - - - - | ICI. |
| Reactive Orange 86 - - - - - | ICI. |
| Reactive orange dyes, all other- - - - - | HST. |
| REACTIVE RED DYES: | |
| Reactive Red 2 - - - - - | FAB, ICI. |
| Reactive Red 8 - - - - - | ICI. |
| Reactive Red 11- - - - - | FAB, ICI. |
| Reactive Red 29- - - - - | ICI. |
| Reactive Red 31- - - - - | ICI. |
| Reactive Red 33- - - - - | ICI. |
| Reactive Red 41- - - - - | VPC. |
| Reactive Red 43- - - - - | CK, ICI, TRC. |
| Reactive Red 49- - - - - | HST. |
| Reactive Red 105 - - - - - | HST. |
| Reactive Red 106 - - - - - | HST. |
| Reactive Red 120 - - - - - | CK, ICI, TRC. |
| Reactive Red 123 - - - - - | VPC. |
| Reactive Red 141 - - - - - | ICI. |
| Reactive Red 180 - - - - - | HST. |
| Reactive Red 181 - - - - - | HST. |
| Reactive Red 186 - - - - - | ICI. |
| REACTIVE VIOLET DYES: | |
| Reactive Violet 5- - - - - | HST. |
| Reactive violet dyes, all other- - - - - | HST. |
| REACTIVE BLUE DYES: | |
| Reactive Blue 3- - - - - | ICI. |
| Reactive Blue 4- - - - - | ICI. |
| Reactive Blue 5- - - - - | ICI. |

SYNTHETIC ORGANIC CHEMICALS, 1981

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--------------------------------|---|
| REACTIVE DYES--CONTINUED | |
| REACTIVE BLUE DYES--CONTINUED | |
| Reactive Blue 7- | TRC. |
| Reactive Blue 13 | ICI. |
| Reactive Blue 19 | HST. |
| Reactive Blue 21 | HST, VPC. |
| Reactive Blue 29 | VPC. |
| Reactive Blue 38 | HST. |
| Reactive Blue 71 | ICI. |
| Reactive Blue 89 | HST. |
| Reactive Blue 109 | ICI. |
| Reactive Blue 137 | TRC. |
| Reactive Blue 171 | ICI. |
| Reactive Blue 173 | ICI. |
| Reactive Blue 174 | ICI. |
| Reactive Blue 189 | ICI. |
| Reactive blue dyes, all other | HST, ICI. |
| REACTIVE GREEN DYES: | |
| Reactive Green 19- | ICI. |
| Reactive green dyes, all other | HST. |
| REACTIVE BROWN DYES: | |
| Reactive Brown 10- | ICI. |
| Reactive Brown 17- | ICI. |
| Reactive Brown 18- | HST. |
| Reactive Brown 30- | HST. |
| REACTIVE BLACK DYES: | |
| Reactive Black 5 | HST. |
| Reactive Black 9 | ICI. |
| Reactive black dyes, all other | HST. |
| FLUORESCENT BRIGHTENERS | |
| Fluorescent Brightener 22- | CGY. |
| Fluorescent Brightener 24- | CGY. |
| *Fluorescent Brightener 28- | CCW, CGY, SDH, VPC. |
| Fluorescent Brightener 46- | CGY. |
| Fluorescent Brightener 49- | S. |
| Fluorescent Brightener 52- | S. |
| Fluorescent Brightener 59- | CGY. |
| Fluorescent Brightener 61- | ACY, CCW. |
| Fluorescent Brightener 71- | CGY, DGO. |
| Fluorescent Brightener 102 | CGY. |
| Fluorescent Brightener 126 | SDH. |
| Fluorescent Brightener 128 | SDH. |
| Fluorescent Brightener 130 | SDH. |
| Fluorescent Brightener 134 | CGY, S. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| FLUORESCENT BRIGHTENERS--CONTINUED | |
| Fluorescent Brightener 135 - - - - - | CGY, CK. |
| Fluorescent Brightener 148 - - - - - | VPC. |
| Fluorescent Brightener 185 - - - - - | TRC. |
| Fluorescent Brightener 191 - - - - - | VPC. |
| Fluorescent Brightener 200 - - - - - | VPC. |
| *Fluorescent brighteners, all other - - - - - | ACY, CGY, S, VPC, X. |
| FOOD, DRUG, AND COSMETIC COLORS | |
| *FOOD, DRUG, AND COSMETIC DYES: | |
| *Food, Drug, and Cosmetic Blue 1- - - - - | CK, KON, SDH, WJ. |
| Food, Drug, and Cosmetic Blue 2- - - - - | BCC, KON, SDH, WJ. |
| *Food, Drug, and Cosmetic Green 3 - - - - - | WJ. |
| Food, Drug, and Cosmetic Red 2 - - - - - | WJ. |
| Food, Drug, and Cosmetic Red 3 - - - - - | CK, KON, SDH, STG, WJ. |
| Food, Drug, and Cosmetic Red 4 - - - - - | CK, WJ. |
| *Food, Drug, and Cosmetic Red 40- - - - - | BCC, CK, KON, SDH, WJ. |
| *Food, Drug, and Cosmetic Yellow 5- - - - - | BCC, CK, KON, SDH, STG, WJ. |
| *Food, Drug, and Cosmetic Yellow 6- - - - - | BCC, CK, KON, STG, WJ. |
| *DRUG AND COSMETIC DYES: | |
| Drug and Cosmetic Green 5- - - - - | BCC, KON. |
| Drug and Cosmetic Green 6- - - - - | KON. |
| Drug and Cosmetic Green 8- - - - - | SDH. |
| Drug and Cosmetic Orange 4 - - - - - | BCC, KON. |
| *Drug and Cosmetic Orange 5 - - - - - | MRX, SDH, SNA, TMS. |
| Drug and Cosmetic Orange 17- - - - - | SNA. |
| Drug and Cosmetic Red 3- - - - - | KON. |
| Drug and Cosmetic Red 6- - - - - | KON, SNA. |
| *Drug and Cosmetic Red 7- - - - - | KON, SNA, TMS. |
| Drug and Cosmetic Red 8- - - - - | KON, SNA. |
| *Drug and Cosmetic Red 9- - - - - | KON, MRX, SNA, TMS. |
| Drug and Cosmetic Red 17 - - - - - | KON. |
| *Drug and Cosmetic Red 19 - - - - - | BCC, KON, MRX, SNA, TMS. |
| Drug and Cosmetic Red 21 - - - - - | SNA. |
| Drug and Cosmetic Red 22 - - - - - | SDH. |
| Drug and Cosmetic Red 27 - - - - - | SDH, TMS. |
| Drug and Cosmetic Red 28 - - - - - | SDH. |
| Drug and Cosmetic Red 30 - - - - - | KON, SNA. |
| Drug and Cosmetic Red 33 - - - - - | BCC, KON. |
| Drug and Cosmetic Red 34 - - - - - | KON, SNA. |
| *Drug and Cosmetic Red 36 - - - - - | KON, SDH, SNA, TMS. |
| Drug and Cosmetic Red 37 - - - - - | BCC. |
| Drug and Cosmetic Violet 2 - - - - - | BCC, KON. |
| Drug and Cosmetic Yellow 5 - - - - - | KON, TMS. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| FOOD, DRUG, AND COSMETIC COLORS--CONTINUED | |
| *DRUG AND COSMETIC DYES--CONTINUED | |
| Drug and Cosmetic Yellow 7 - - - - - | SDH. |
| Drug and Cosmetic Yellow 8 - - - - - | KON, SDH, TMS. |
| Drug and Cosmetic Yellow 10- - - - - | BCC, KON, WJ. |
| Drug and Cosmetic Yellow 11- - - - - | KON. |
| DRUG AND COSMETIC DYES, EXTERNAL: | |
| External Drug and Cosmetic Orange 3- - - - - | KON. |
| MORDANT DYES | |
| MORDANT YELLOW DYES: | |
| Mordant Yellow 1 - - - - - | PDC. |
| Mordant Yellow 8 - - - - - | PDC. |
| MORDANT ORANGE DYES: | |
| Mordant Orange 1 - - - - - | PDC. |
| Mordant Orange 6 - - - - - | PDC, TRC. |
| Mordant Orange 8 - - - - - | PDC. |
| MORDANT RED DYES: | |
| Mordant Red 7- - - - - | AC, ATL. |
| Mordant Red 11 - - - - - | ACY, VPC. |
| MORDANT BROWN DYES: | |
| Mordant Brown 1- - - - - | TRC. |
| Mordant Brown 18 - - - - - | PDC. |
| Mordant Brown 33 - - - - - | PDC. |
| Mordant Brown 70 - - - - - | PDC. |
| MORDANT BLACK DYES: | |
| Mordant Black 11 - - - - - | AC, TRC. |
| SOLVENT DYES | |
| *SOLVENT YELLOW DYES: | |
| Solvent Yellow 3 - - - - - | PSC. |
| Solvent Yellow 13- - - - - | ACY. |
| *Solvent Yellow 14- - - - - | ATL, MRT, PSC, VPC. |
| Solvent Yellow 16- - - - - | PSC. |
| Solvent Yellow 18- - - - - | MRT. |
| Solvent Yellow 30- - - - - | PSC. |
| Solvent Yellow 33- - - - - | AC, ACY. |
| Solvent Yellow 40- - - - - | BCC. |
| Solvent Yellow 42- - - - - | ATL, BCC. |
| Solvent Yellow 43- - - - - | DGO, MRT. |
| Solvent Yellow 44- - - - - | DGO. |
| Solvent Yellow 47- - - - - | ACY, DUP. |
| Solvent Yellow 56- - - - - | ACY, PSC. |
| Solvent Yellow 71- - - - - | ACY. |
| Solvent Yellow 72- - - - - | AC, ACY. |
| Solvent Yellow 77- - - - - | AC, ACY. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---------------------------------|---|
| SOLVENT DYES--CONTINUED | |
| *SOLVENT YELLOW DYES--CONTINUED | |
| Solvent Yellow 94- | SDH. |
| Solvent Yellow 107 | MRT. |
| Solvent Yellow 131 | DGO. |
| Solvent Yellow 135 | DGO. |
| Solvent Yellow 143 | MRT. |
| Solvent Yellow 161 | MRT. |
| *Solvent yellow dyes, all other | AC, DGO. |
| *SOLVENT ORANGE DYES: | |
| Solvent Orange 3 | ACY, ATL, BAS, PSC. |
| Solvent Orange 7 | ATL, PSC. |
| Solvent Orange 20- | BAS. |
| Solvent Orange 23- | ATL, BCC. |
| Solvent Orange 25- | ACY, DUP. |
| Solvent Orange 31- | PSC. |
| Solvent Orange 60- | AC. |
| Solvent Orange 73- | MRT. |
| Solvent Orange 74- | MRT. |
| Solvent Orange 75- | MRT. |
| Solvent Orange 76- | MRT. |
| Solvent Orange 77- | MRT. |
| Solvent Orange 96- | MRT. |
| Solvent Orange 97- | MRT. |
| Solvent orange dyes, all other | PSC. |
| SOLVENT RED DYES: | |
| Solvent Red 1- | ATL, PSC. |
| Solvent Red 5- | ATL. |
| Solvent Red 23 | PSC. |
| Solvent Red 24 | AC, ACY, ATL, PSC. |
| Solvent Red 26 | ACY, PSC. |
| Solvent Red 27 | PSC. |
| Solvent Red 30 | PSC. |
| Solvent Red 33 | DUP. |
| Solvent Red 43 | SDH. |
| Solvent Red 49 | ACY, BAS. |
| Solvent Red 68 | ATL, BCC, MRT. |
| Solvent Red 74 | ATL, BCC. |
| Solvent Red 111- | AC, ACY. |
| Solvent Red 164- | MRT. |
| Solvent Red 165- | MRT. |
| Solvent Red 166- | MRT. |
| Solvent Red 168- | MRT. |
| Solvent Red 169- | MRT. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--------------------------------|---|
| SOLVENT DYES--CONTINUED | |
| SOLVENT RED DYES--CONTINUED | |
| Solvent Red 172- | MRT. |
| Solvent Red 173- | MRT. |
| Solvent Red 175- | MRT. |
| Solvent Red 207- | MRT. |
| Solvent Red 208- | MRT. |
| Solvent Red 209- | MRT. |
| Solvent Red 210- | MRT. |
| Solvent red dyes, all other- | AC. |
| SOLVENT VIOLET DYES: | |
| Solvent Violet 8- | DSC. |
| Solvent Violet 9- | DSC. |
| Solvent Violet 13- | AC, HSH, MRT. |
| Solvent Violet 38- | MRT. |
| *SOLVENT BLUE DYES: | |
| Solvent Blue 3- | ACY, SW. |
| Solvent Blue 4- | DSC, SDH. |
| Solvent Blue 5- | DSC. |
| Solvent Blue 23- | BAS. |
| Solvent Blue 35- | MRT. |
| Solvent Blue 36- | MRT. |
| Solvent Blue 37- | DUP. |
| Solvent Blue 38- | DUP, TNI, X. |
| Solvent Blue 43- | ATL. |
| Solvent Blue 58- | ACY, VPC. |
| Solvent Blue 59- | AC, ACY, VPC. |
| Solvent Blue 98- | MRT. |
| Solvent Blue 99- | MRT. |
| Solvent Blue 100- | MRT. |
| Solvent Blue 128- | MRT. |
| Solvent Blue 129- | MRT. |
| Solvent blue dyes, all other- | HSH. |
| SOLVENT GREEN DYES: | |
| Solvent Green 1- | DSC. |
| Solvent Green 3- | HSH. |
| SOLVENT BROWN DYES: | |
| Solvent Brown 12- | PSC. |
| Solvent Brown 20- | ACY, DUP. |
| Solvent Brown 22- | PSC. |
| Solvent Brown 52- | MRT. |
| Solvent brown dyes, all other- | PSC. |
| SOLVENT BLACK DYES: | |
| Solvent Black 5- | ACY. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| SOLVENT DYES--CONTINUED | |
| SOLVENT BLACK DYES--CONTINUED | |
| Solvent Black 7- - - - - | ACY, PSC. |
| Solvent Black 13 - - - - - | ATL, BCC. |
| Solvent Black 26 - - - - - | ATL. |
| Solvent Black 48 - - - - - | MRT. |
| Solvent black dyes, all other- - - - - | DUP, PSC. |
| SULFUR DYES | |
| SULFUR YELLOW DYES: | |
| Leuco Sulfur Yellow 1- - - - - | SDC. |
| Leuco Sulfur Yellow 17 - - - - - | SDC. |
| Leuco Sulfur Yellow 21 - - - - - | SDC. |
| Leuco Sulfur Yellow 22 - - - - - | SDC. |
| SULFUR ORANGE DYES: | |
| Leuco Sulfur Orange 1- - - - - | SDC. |
| SULFUR RED DYES: | |
| Leuco Sulfur Red 14- - - - - | SDC. |
| Sulfur Red 10- - - - - | SDC. |
| SULFUR BLUE DYES: | |
| Leuco Sulfur Blue 7- - - - - | SDC, VPC. |
| Leuco Sulfur Blue 13 - - - - - | SDC, VPC. |
| Sulfur Blue 1- - - - - | VPC. |
| Sulfur Blue 7- - - - - | ACY. |
| Sulfur blue dyes, all other- - - - - | VPC. |
| SULFUR GREEN DYES: | |
| Leuco Sulfur Green 2 - - - - - | SDC. |
| Leuco Sulfur Green 3 - - - - - | SDC. |
| Leuco Sulfur Green 16- - - - - | SDC. |
| Leuco Sulfur Green 34- - - - - | SDC. |
| Leuco Sulfur Green 35- - - - - | SDC. |
| Leuco Sulfur Green 36- - - - - | SDC. |
| Sulfur green dyes, all other - - - - - | SDC. |
| SULFUR BROWN DYES: | |
| Leuco Sulfur Brown 1 - - - - - | SDC. |
| Leuco Sulfur Brown 3 - - - - - | SDC. |
| Leuco Sulfur Brown 10- - - - - | SDC. |
| Leuco Sulfur Brown 31- - - - - | SDC. |
| Leuco Sulfur Brown 37- - - - - | SDC. |
| Leuco Sulfur Brown 52- - - - - | SDC. |
| Leuco Sulfur Brown 95- - - - - | SDC. |
| Leuco Sulfur Brown 96- - - - - | SDC. |
| Sulfur Brown 96- - - - - | SDC. |
| Sulfur brown dyes, all other - - - - - | SDC, VPC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| SULFUR DYES--CONTINUED | |
| SULFUR BLACK DYES: | |
| Leuco Sulfur Black 1 - - - - - | SDC. |
| Leuco Sulfur Black 2 - - - - - | SDC. |
| Leuco Sulfur Black 10- - - - - | ACY. |
| Leuco Sulfur Black 11- - - - - | SDC. |
| Leuco Sulfur Black 11:1- - - - - | SDC. |
| Leuco Sulfur Black 18- - - - - | SDC. |
| Solubilized Sulfur Black 1 - - - - - | SDC. |
| Sulfur Black 1 - - - - - | SDC. |
| Sulfur Black 2 - - - - - | SDC. |
| Sulfur Black 11- - - - - | SDC. |
| Sulfur Black 11:1- - - - - | SDC. |
| Sulfur black dyes, all other - - - - - | VPC. |
| VAT DYES | |
| VAT YELLOW DYES: | |
| Vat Yellow 2, 8-1/2% - - - - - | AC, TRC, VPC. |
| Vat Yellow 22, 10% - - - - - | VPC. |
| Vat Yellow 33, 15% - - - - - | TRC. |
| Vat yellow dyes, all other - - - - - | VPC. |
| *VAT ORANGE DYES: | |
| Vat Orange 1, 20% - - - - - | TRC, VPC. |
| Vat Orange 2, 12% - - - - - | ACY, BAS, TRC. |
| Vat Orange 4, 6% - - - - - | DUP. |
| Vat Orange 5, 10% - - - - - | HST. |
| Vat Orange 7, 11% - - - - - | HST. |
| Vat Orange 9, 12% - - - - - | TRC. |
| Vat Orange 15, 10% - - - - - | TRC, VPC. |
| Vat orange dyes, all other - - - - - | CK. |
| *VAT RED DYES: | |
| Vat Red 1, 13% - - - - - | ACY, HST. |
| Vat Red 10, 18% - - - - - | BAS. |
| Vat Red 13, 11% - - - - - | TRC. |
| Vat Red 14, 10% - - - - - | HST. |
| Vat Red 15, 10% - - - - - | HST, TRC. |
| Vat Red 29, 18% - - - - - | SDC. |
| Vat Red 32, 20% - - - - - | BAS. |
| VAT VIOLET DYES: | |
| Vat Violet 1, 11% - - - - - | TRC. |
| Vat Violet 2, 20% - - - - - | HST. |
| Vat Violet 13, 6-1/4% - - - - - | BAS, TRC. |
| Vat Violet 21- - - - - | VPC. |
| VAT BLUE DYES: | |
| Vat Blue 1, 20% - - - - - | BAS, BCC. |

TABLE 2.--DYES FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| DYES | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|------------------------------------|---|
| VAT DYES--CONTINUED | |
| VAT BLUE DYES--CONTINUED | |
| Vat Blue 6, 8-1/3% - - - - - | BAS, TRC. |
| Vat Blue 16, 16% - - - - - | BAS, TRC. |
| Vat Blue 18, 13% - - - - - | AC, ACY, TRC. |
| Vat Blue 19- - - - - | BAS. |
| Vat Blue 20, 14% - - - - - | AC, ACY, TRC. |
| Vat Blue 43- - - - - | SDC. |
| Vat Blue 66- - - - - | BAS. |
| Vat blue dyes, all other - - - - - | BCC, CK. |
| *VAT GREEN DYES: | |
| Vat Green 1, 6% - - - - - | BAS, TRC. |
| Vat Green 3, 10% - - - - - | ACY, BAS, TRC. |
| Vat Green 7- - - - - | SDC. |
| Vat Green 9, 12-1/2% - - - - - | TRC. |
| Vat Green 32 - - - - - | VPC. |
| Vat green dyes, all other- - - - - | CK. |
| VAT BROWN DYES: | |
| Vat Brown 1, 11% - - - - - | TRC, VPC. |
| Vat Brown 3, 11% - - - - - | ACY, TRC, VPC. |
| Vat Brown 5, 13% - - - - - | ACY, VPC. |
| Vat Brown 11, 12% - - - - - | TRC. |
| Vat Brown 13, 17% - - - - - | TRC. |
| Vat Brown 57, 12.8% - - - - - | HST. |
| Vat Brown 380- - - - - | VPC. |
| Vat brown dyes, all other- - - - - | AC, ACY, CK, TRC, VPC. |
| VAT BLACK DYES: | |
| Vat Black 16 - - - - - | BCC, TRC. |
| Vat Black 22, 19% - - - - - | ACY, TRC. |
| Vat Black 25, 12-1/2% - - - - - | ACY, TRC. |
| Vat Black 27, 12-1/2% - - - - - | TRC. |
| Vat black dyes, all other- - - - - | AC, ACY, CK. |
| MISCELLANEOUS DYES: | |
| Dyes, all other- - - - - | ALL, DUP. |

TABLE 3.--DYES: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of dyes to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| AC | American Color & Chemical Corp. | KON | H. Kohnstamm & Co., Inc. |
| ACY | American Cyanamid Co. | LVR | C. Lever Co., Inc. |
| ALL | Alliance Chemical Corp. | MRT | Morton Norwich Products, Inc., Morton Chemical Div. |
| ATL | Atlantic Chemical Corp. | MRX | Max Marx Color & Chemical Co. |
| BAS | BASF Wyandotte Corp. & Pigments Div. | PCW | Pfister, Inc. |
| BCC | Buffalo Color Corp. | PDC | Berncolors-Poughkeepsie, Inc. |
| BUC | Synalloy Corp., Blackman Uhler Chemical Div. | PSC | Passaic Color & Chemical Co. |
| CCW | Carstab Corp. | S | Sandoz, Inc., Colors & Chemicals Div. |
| CGY | Ciba-Geigy Corp. | SDC | Martin-Marietta Corp., Sodyeco Div. |
| CK | Crompton & Knowles Corp., Dyes & Chemical Div. | SDH | Sterling Drug, Inc., Hilton Davis Chemical Co. Div. |
| DGO | Day-Glo Color Corp. | SNA | Sun Chemical Corp. |
| DSC | Dye Specialties, Inc. | STG | McCormick & Co., Inc., McCormick/Stange Flavor Div. |
| DUP | E. I. duPont de Nemours & Co., Inc. | SW | Sherwin-Williams Co. |
| EKT | Eastman Kodak Co., Tennessee Eastman Co. Div. | TMS | Sterling Drug, Inc., Thomasset Colors Div. |
| FAB | Fabricolor Manufacturing Corp. | TNI | Gillette Co., Chemical Div. |
| HSH | Harshaw Chemical Co. | TRC | Toms River Chemical Corp. |
| HST | American Hoechst Corp., Industrial Chemicals Div. | VPC | Mobay Chemical Corp., Dyestuff Div. |
| ICI | ICI Americas, Inc., Chemical Specialties Co. | WJ | Warner-Jenkinson Co. |

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

STATISTICAL HIGHLIGHTS

William Baker

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 1981 are given in table 1.² For a few important pigments already reported in table 1, supplemental data on sales by commercial forms are reported in table 1A. 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 1981 was 75.8 million pounds--9.3 percent more than the 69.4 million pounds produced in 1980. Total sales of organic pigments in 1981 amounted to 64.1 million pounds, valued at \$415.3 million compared with 60.8 million pounds, valued at \$361.3 million, in 1980. In terms of quantity, sales of organic pigments in 1981 were 5.4 percent higher than in 1980; in terms of value, sales in 1981 were 14.9 percent higher than in 1980.

Production of toners in 1981 amounted to 75.0 million pounds--9.4 percent more than the 68.5 million pounds reported in 1980. Sales in 1981 were 63.5 million pounds, valued at \$412.6 million, compared with 60.2 million pounds, valued at \$358.7 million, in 1980. Sales in 1981 were 5.5 percent higher than those of 1980 in terms of quantity, and 15.0 percent higher in terms of value. The individual toners listed in the report which were produced in the largest quantities in 1981 were Pigment Yellow 12, 11.6 million pounds; Pigment Blue 15:3, beta form, 8.5 million pounds; Pigment Red 49:1; barium toner, 5.8 million pounds; Pigment Red 57:1, calcium toner, 5.4 million pounds; Pigment Red 53:1, barium toner, 4.3 million pounds; and Pigment Yellow 14, 3.7 million pounds.

Production of lakes totaled 815,000 pounds in 1981--1.4 percent less than the 827,000 pounds reported for 1980. Sales of lakes in 1981 amounted to 552,000 pounds, valued at \$2.8 million. In terms of quantity, sales of lakes in 1981 were 5.5 percent less than in 1980; in term of value, sales in 1981 were 6.0 percent higher than in 1980.

For each of 14 selected pigments, or groups of pigments, table 1A gives data on sales by commercial forms. Pigment Yellow 14, Pigment Red 3, Pigment Red 48:2, calcium, Pigment Red 49:1, barium, Pigment Blue 15:1 and 15:2, alpha forms, and Pigment Green 7 were sold principally in the dry full-strength form. Pigment Yellow 12, Pigment Red 53:1, barium, Pigment Red 57:1, calcium and Pigment Blue 15:3, beta form were sold principally in the flushed form.

¹Toners 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.

²See also table 2 which lists these products and identifies the manufacturers by codes. These codes are listed in table 3.

TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1981

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

| ORGANIC PIGMENTS | PRODUCTION | SALES | |
|---|---|---|----------------------------------|
| | | QUANTITY | UNIT VALUE ² |
| | 1,000 pounds dry basis ³ | 1,000 pounds dry basis ³ | 1,000 dollars Per pound |
| Grand total----- | 75,795 | 64,067 | 415,320 |
| TONERS | | | |
| Total----- | 74,980 | 63,515 | 412,561 |
| Yellow toners, total----- | 20,526 | 16,667 | 90,271 |
| Acetoacetarylide yellows: | | | |
| Pigment Yellow 1, C.I. 11 680----- | 271 | 242 | 1,323 |
| Pigment Yellow 3, C.I. 11 710----- | 109 | 128 | 726 |
| Pigment Yellow 65 C.I. 11 740----- | 196 | 168 | 1,363 |
| Pigment Yellow 73, C.I. 11 738----- | 306 | 396 | 1,941 |
| Pigment Yellow 74, C.I. 11 741----- | 1,124 | 1,050 | 8,274 |
| Diarylide yellows: | | | |
| Pigment Yellow 12, C.I. 21 090----- | 11,632 | 8,806 | 39,181 |
| Pigment Yellow 13, C.I. 21 100----- | 729 | 613 | 3,605 |
| Pigment Yellow 14, C.I. 21 095----- | 3,667 | 2,975 | 14,504 |
| Pigment Yellow 17, C.I. 21 105----- | 746 | 609 | 3,720 |
| Pigment Yellow 83, C.I. 21 108----- | 914 | 896 | 8,249 |
| All other----- | 832 | 784 | 7,385 |
| Orange toners, total----- | 2,164 | 2,083 | 12,855 |
| Pigment Orange 5, C.I. 12 075----- | 828 | 812 | 3,590 |
| Pigment Orange 13, C.I. 21 110----- | 197 | 192 | 1,448 |
| Pigment Orange 16, C.I. 21 160----- | 645 | 572 | 3,646 |
| Pigment Orange 34, C.I. 21 115----- | 71 | 75 | 556 |
| All other----- | 423 | 432 | 3,615 |
| Red toners, total----- | 27,102 | 23,164 | 145,788 |
| Naphthol reds, total----- | 1,452 | 1,318 | 12,361 |
| Pigment Red 2, C.I. 12 310----- | 45 | 50 | 317 |
| Pigment Red 5, C.I. 12 490----- | 57 | 53 | 601 |
| Pigment Red 17, C.I. 12 390----- | 67 | 20 | 182 |
| Pigment Red 22, C.I. 12 315----- | 67 | 63 | 710 |
| Pigment Red 23, C.I. 12 355----- | 110 | 101 | 1,254 |
| All other naphthol reds----- | 1,106 | 1,031 | 9,297 |
| Pigment Red 3, C.I. 12 120----- | 1,053 | 1,026 | 5,921 |
| Pigment Red 4, C.I. 12 085----- | 143 | 138 | 657 |
| Pigment Red 38, C.I. 21 120----- | 146 | 145 | 1,569 |
| Pigment Red 48:1, barium toner, C.I. 15 865----- | 601 | 481 | 3,158 |
| Pigment Red 48:2, calcium toner, C.I. 15 865----- | 1,600 | 1,316 | 8,723 |
| Pigment Red 48:4, manganese toner, C.I. 15 865----- | 302 | 161 | 1,205 |
| Pigment Red 49:1, barium toner, C.I. 15 630----- | 5,848 | 5,247 | 18,797 |
| Pigment Red 49:2, calcium toner, C.I. 15 630----- | 1,157 | 839 | 4,081 |
| Pigment Red 52:1, calcium toner, C.I. 15 860----- | 1,179 | 1,093 | 7,063 |
| Pigment Red 52:2, manganese toner, C.I. 15 860----- | 444 | 409 | 2,185 |
| Pigment Red 53:1, barium toner, C.I. 15 585----- | 4,305 | 3,573 | 17,109 |
| Pigment Red 57:1, calcium toner, C.I. 15 850----- | 5,445 | 4,550 | 28,524 |
| Pigment Red 81, PMA, C.I. 45 160----- | 405 | 390 | 4,855 |
| Pigment Red 81, PTA, C.I. 45 160----- | ... | 46 | 765 |
| All other----- | 3,022 | 2,432 | 28,815 |
| Violet toners, total----- | 2,433 | 1,881 | 32,843 |
| Pigment Violet 1, PMA, C.I. 45 170----- | 128 | 143 | 1,605 |
| Pigment Violet 1, PTA, C.I. 45 170----- | 61 | 45 | 642 |

See footnotes at end of table

TABLE 1.--ORGANIC PIGMENTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| ORGANIC PIGMENTS | PRODUCTION | SALES | | |
|---|---|---|----------------------|-------------------------|
| | | QUANTITY | VALUE ¹ | UNIT VALUE ² |
| | <i>1,000 pounds dry basis³</i> | <i>1,000 pounds dry basis³</i> | <i>1,000 dollars</i> | <i>Per pound</i> |
| TONERS--Continued | | | | |
| Violet toners--Continued | | | | |
| Pigment Violet 3, PMA, C.I. 42 535----- | 390 | ... | ... | ... |
| Pigment Violet 3, PTA, C.I. 42 535----- | 13 | 14 | 212 | \$15.35 |
| Pigment Violet 19, C.I. 46 500----- | 1,376 | 935 | 19,879 | 21.27 |
| All other----- | 465 | 744 | 10,505 | 14.12 |
| Blue toners, total----- | 19,632 | 16,880 | 104,313 | 6.18 |
| Pigment Blue 15, alpha form, C.I. 74 160----- | 937 | 776 | 5,741 | 7.40 |
| Pigment Blue 15:1, alpha form, C.I. 74 160----- | 1,081 | 795 | 8,052 | 10.12 |
| Pigment Blue 15:2, alpha form, C.I. 74 160----- | 1,246 | 690 | 7,581 | 10.99 |
| Pigment Blue 15:3, beta form, C.I. 74 160----- | 8,454 | 7,190 | 45,304 | 6.30 |
| All other----- | 7,914 | 7,429 | 37,635 | 5.07 |
| Green toners, total----- | 2,927 | 2,682 | 25,655 | 9.56 |
| Pigment Green 7, C.I. 74 260----- | 2,527 | 2,348 | 21,801 | 9.28 |
| Pigment Green 36, C.I. 74 265----- | 225 | 226 | 2,325 | 10.30 |
| All other----- | 175 | 108 | 1,529 | 14.07 |
| Brown and Black toners----- | 196 | 158 | 836 | 5.28 |
| LAKES | | | | |
| Total----- | 815 | 552 | 2,759 | 5.00 |
| Red lakes, total----- | 482 | 340 | 1,814 | 5.34 |
| Pigment Red 60:1, C.I. 16 105----- | 288 | 235 | 1,336 | 5.68 |
| All other----- | 194 | 105 | 478 | 4.57 |
| All other lakes----- | 333 | 212 | 945 | 4.46 |

¹The 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 costs of processing or packaging in commercial forms other than the dry full-strength or dry form.

²Calculated from unrounded figures, except "All other."

³Quantities 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) numbers shown in this report are the identifying number given in the third edition of the Colour Index.

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

TABLE 1A.--U.S. SALES OF SELECTED DRY FULL-STRENGTH TONERS, DRY EXTENDED TONERS, DRY DISPERSIONS, AQUEOUS DISPERSIONS, AND FLUSHED COLORS, 1981

[Listed below are supplemental sales data, by commercial forms, of selected pigments that have been reported in table 1]

| SELECTED PIGMENTS BY COMMERCIAL FORMS | SALES ¹ | | |
|---|---|--------------------------|-------------------------|
| | QUANTITY | VALUE | UNIT VALUE ² |
| | <i>1,000 pounds dry basis³</i> | <i>1,000 dollars</i> | <i>Per pound</i> |
| Pigment Yellow 12, C.I. 21 090, total----- | 8,806 | 39,181 | \$4.45 |
| Dry full-strength toner----- | 2,936 | 12,569 | 4.28 |
| Flushed color----- | 4,200 | 19,456 | 4.63 |
| Dry extended toner and aqueous dispersions ^{4 5} ----- | 1,670 | 7,156 | 4.29 |
| Pigment Yellow 14, C.I. 21 095, total----- | 2,975 | 14,504 | 4.88 |
| Dry full-strength toner----- | 1,883 | 9,423 | 5.00 |
| Aqueous dispersions ⁴ ----- | 1,051 | 4,867 | 4.63 |
| Dry extended toner, dry dispersions, and flushed color ⁵ ----- | 41 | 214 | 5.26 |
| Pigment Red 3, C.I. 12 120, total----- | 1,026 | 5,921 | 5.77 |
| Dry full-strength toner----- | 669 | 3,822 | 5.72 |
| Aqueous dispersions ⁴ ----- | 62 | 381 | 6.19 |
| Dry extended toner and flushed color ⁵ ----- | 295 | 1,718 | 5.82 |
| Pigment Red 48:2, calcium toner, C.I. 15 865, total----- | 1,316 | 8,723 | 6.63 |
| Dry full-strength toner----- | 1,091 | 7,271 | 6.66 |
| Aqueous dispersions ⁴ ----- | 44 | 362 | 8.18 |
| Flushed color----- | 104 | 567 | 5.43 |
| Dry extended toner and dry dispersions ⁵ ----- | 77 | 523 | 6.81 |
| Pigment Red 49:1, barium toner, C.I. 15 630, total----- | 5,247 | 18,797 | 3.58 |
| Flushed color----- | 239 | 934 | 3.91 |
| Dry full-strength toner, dry extended toner, dry dispersions, and aqueous dispersions ^{4 5} ----- | 5,008 | 17,863 | 3.57 |
| Pigment Red 53:1, barium toner, C.I. 15 585, total----- | 3,573 | 17,109 | 4.79 |
| Aqueous dispersions ⁴ ----- | 138 | 577 | 4.19 |
| Flushed color----- | 2,412 | 11,698 | 4.85 |
| Dry full-strength toner and dry dispersions ⁵ ----- | 1,023 | 4,834 | 4.73 |
| Pigment Red 57:1, calcium toner, C.I. 15 850, total----- | 4,550 | 28,524 | 6.27 |
| Dry full-strength toner----- | 380 | 2,148 | 5.65 |
| Flushed color----- | 2,984 | 18,251 | 6.12 |
| Dry extended toner and aqueous dispersions ^{4 5} ----- | 1,186 | 8,125 | 6.85 |
| Pigment Blue 15:1, alpha form, C.I. 74 160, total----- | 795 | 8,052 | 10.12 |
| Dry full-strength toner----- | 597 | 6,108 | 10.23 |
| Dry extended toner, dry dispersions, aqueous dispersions and flushed color ^{4 5} ----- | 198 | 1,944 | 9.79 |
| Pigment Blue 15:2, alpha form, C.I. 74 160, total----- | 690 | 7,581 | 10.99 |
| Dry full-strength toner----- | 420 | 4,642 | 11.03 |
| Aqueous dispersions ⁴ ----- | 43 | 423 | 9.84 |
| Dry extended toner and flushed color ⁵ ----- | 227 | 2,516 | 11.12 |

See footnotes at end of table

TABLE 1A.--U.S. SALES OF SELECTED DRY FULL-STRENGTH TONERS, DRY EXTENDED TONERS, DRY DISPERSIONS, AQUEOUS DISPERSIONS, AND FLUSHED COLORS, 1981--CONTINUED

| SELECTED PIGMENTS BY COMMERCIAL FORM | SALES ¹ | | |
|---|---|------------------|-------------------------|
| | QUANTITY | VALUE | UNIT VALUE ² |
| | 1,000 pounds dry basis ³ | 1,000 dollars | Per pound |
| Pigment Blue 15:3, beta form, C.I. 74 160, total----- | 7,190 | 45,304 | \$6.30 |
| Aqueous dispersions ⁴ ----- | 1,459 | 8,543 | 5.86 |
| Flushed color----- | 4,813 | 30,126 | 6.26 |
| Dry extended toner and dry dispersions ⁵ ----- | 918 | 6,635 | 7.23 |
| Pigment Green 7, C.I. 74 260, total----- | 2,348 | 21,801 | 9.28 |
| Dry full-strength toner----- | 1,171 | 11,486 | 9.81 |
| Aqueous dispersions ⁴ ----- | 778 | 6,463 | 8.31 |
| Flushed color----- | 296 | 2,628 | 8.87 |
| Dry extended toner and dry dispersions ⁵ ----- | 103 | 1,224 | 11.95 |

¹Sales quantities and values are identical in tables 1 and 1A.

²Calculated from unrounded figures.

³Quantity of the various commercial forms is given in terms of dry full-strength toner content.

⁴Includes presscake.

⁵Separate data on these commercial forms may not be published without revealing the operations of individual companies.

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

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

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| ORGANIC PIGMENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| TONERS | |
| TONERS: | |
| *YELLOW TONERS: | |
| ACETOACETARYLIDE YELLOWS: | |
| *Pigment Yellow 1 - - - - - | ALE, AMS, BAS, CGY, DUP, HRC, HSH, HST, KCW, KON, SDH, SNA. |
| Pigment Yellow 2 - - - - - | KCW. |
| *Pigment Yellow 3 - - - - - | ALE, BAS, BNS, CGY, DUP, GLX, HRC, HSH, HST, KCW, KON, SNA. |
| Pigment Yellow 5 - - - - - | CGY. |
| Pigment Yellow 6 - - - - - | CGY. |
| Pigment Yellow 49 - - - - - | ROM. |
| Pigment Yellow 60 - - - - - | HSN. |
| *Pigment Yellow 65 - - - - - | CGY, DUP, HRC, HSH, SNA. |
| *Pigment Yellow 73 - - - - - | CGY, HRC, HSH, HST, SNA. |
| *Pigment Yellow 74 - - - - - | BAS, CGY, DUP, HRC, HSH, HST, SDH, SNA, VPC. |
| Pigment Yellow 75 - - - - - | CGY. |
| Pigment Yellow 97 - - - - - | HST. |
| Pigment Yellow 98 - - - - - | HST. |
| Acetoacetarylide yellows, all others - - - - - | KCW. |
| DIARYLIDE YELLOWS: | |
| *Pigment Yellow 12 - - - - - | AMS, APO, BAS, BOR, CGY, GLX, HRC, HSH, HST, ICC, IDC, IND, POP, ROM, SDH, SNA. |
| *Pigment Yellow 13 - - - - - | AMS, APO, BAS, CGY, GLX, HRC, HST, IDC, IND, ROM, SDH, SNA. |
| *Pigment Yellow 14 - - - - - | AMS, BAS, BNS, CGY, GLX, HRC, HSH, HST, ICC, IDC, IND, ROM, SDH, SNA. |
| *Pigment Yellow 17 - - - - - | AMS, APO, BAS, CGY, GLX, HRC, HSH, HST, ICC, IDC, IND, ROM, SDH, SNA. |
| Pigment Yellow 55 - - - - - | CGY, GLX. |
| *Pigment Yellow 83 - - - - - | BAS, GLX, HST, ICC, IND, SNA. |
| Pigment Yellow 124 - - - - - | GLX. |
| Pigment Yellow 126 - - - - - | HST. |
| Pigment Yellow 127 - - - - - | HST. |
| Pigment Yellow 152 - - - - - | HST. |
| Diarylide yellows, other - - - - - | GLX, HSH, ROM. |
| *YELLOW PIGMENTS, OTHER: | |
| (Basic Yellow 2), fugitive - - - - - | MRX. |

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| ORGANIC PIGMENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|------------------------------------|---|
| TONERS--CONTINUED | |
| *YELLOW TONERS--CONTINUED | |
| *YELLOW PIGMENTS, OTHER--CONTINUED | |
| Pigment Yellow 16- | HST. |
| Pigment Yellow 62- | CGY. |
| Pigment Yellow 110- | CGY. |
| Pigment Yellow 139- | HRC. |
| Pigment Yellow 150- | HRC. |
| *Pigment yellow toners, all other | CGY. |
| *ORANGE TONERS: | |
| Pigment Orange 1- | HRC, KCW. |
| Pigment Orange 2- | CGY, UHL. |
| *Pigment Orange 5- | ACY, ALE, BAS, CGY, HRC, HSH, HST, SDH, SNA. |
| *Pigment Orange 13- | AMS, BAS, CGY, HRC, HSH, ICC, IND, SNA. |
| Pigment Orange 15- | BNS, HRC. |
| *Pigment Orange 16- | BNS, CGY, GLX, HRC, HSH, IND, ROM, SDH, USM. |
| *Pigment Orange 34- | CGY, GLX, HRC, IND, ROM, SDH. |
| Pigment Orange 43- | CGY, HST. |
| Pigment Orange 46- | BAS. |
| Pigment Orange 48- | DUP. |
| Pigment Orange 49- | DUP. |
| *Pigment orange toners, all other | CGY, GLX, ROM. |
| *RED TONERS: | |
| *NAPHTHOL REDS: | |
| *Pigment Red 2- | CGY, GLX, HRC, HSH, KCW. |
| *Pigment Red 5- | CGY, GLX, HSH, ROM. |
| Pigment Red 7- | GLX, HST. |
| Pigment Red 9- | CGY, HST, MRX. |
| Pigment Red 12- | IND. |
| Pigment Red 13- | CGY, KCW. |
| *Pigment Red 17- | ACY, BNS, CGY, ROM, SNA, UHL. |
| Pigment Red 21- | BNS. |
| *Pigment Red 22- | ACY, CGY, DUP, ROM, SNA. |
| *Pigment Red 23- | ACY, CGY, DUP, GLX, HSH, IND, KCW, ROM, SDH, UHL. |
| Pigment Red 31- | ROM, SDH. |
| Pigment Red 32- | IND. |
| Pigment Red 112- | CGY, HST. |
| Pigment Red 119- | HRC. |
| Pigment Red 146- | IND. |
| Pigment Red 147- | HSH. |
| Pigment Red 170- | GLX, HST. |
| *Naphthol reds, all other | BUC, DUP, GLX, HSH, HST, ICC, IND, KCW, ROM, SDH, SNA. |
| *RED PIGMENTS, OTHER: | |
| Pigment Red 1, (dark)- | CGY, HSH, KCW. |

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| ORGANIC PIGMENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| TONERS--CONTINUED | |
| *RED TONERS--CONTINUED | |
| *RED PIGMENTS, OTHER--CONTINUED | |
| Pigment Red 1, (light) - - - - - | CGY, HSH. |
| *Pigment Red 3- - - - - | ACY, ALE, BAS, CGY, CIK, DUP, HSH, KCM, KON, MRX, SDH, SNA, UHL. |
| *Pigment Red 4- - - - - | ALE, AMS, BAS, CGY, HSH, KCM, KON, MRX, SDH, UHL. |
| Pigment Red 6- - - - - | DUP, HSH, KCM, KON. |
| *Pigment Red 38 - - - - - | GLX, HRC, HSH, HST, SNA. |
| Pigment Red 41 - - - - - | HRC. |
| Pigment Red 48 - - - - - | CGY, DUP. |
| *Pigment Red 48:1, (barium) - - - - - | ACY, ALE, AMS, BAS, BOR, DUP, HSH, MGR, SNA, UHL. |
| *Pigment Red 48:2, (calcium)- - - - - | ACY, ALE, AMS, APO, BAS, DUP, HRC, HSH, MGR, MRX, SDH, SNA, UHL. |
| Pigment Red 48:3, (strontium)- - - - - | CGY, HSH. |
| *Pigment Red 48:4, (manganese)- - - - - | ACY, CGY, DUP, HRC, HSH. |
| Pigment Red 49, (sodium) - - - - - | BNS, SDH. |
| *Pigment Red 49:1, (barium) - - - - - | ACY, ALE, AMS, BAS, BNS, BOR, CIK, HRC, ICC, IDC, MRX, SDH, SNA, UHL. |
| *Pigment Red 49:2, (calcium)- - - - - | ACY, ALE, AMS, BNS, BOR, CIK, HRC, IDC, SDH. |
| *Pigment Red 52:1, (calcium)- - - - - | ACY, BAS, CGY, MGR, MRX, SNA, UHL. |
| *Pigment Red 52:2, (manganese)- - - - - | ACY, BAS, CGY, HSH, UHL. |
| *Pigment Red 53:1, (barium) - - - - - | ACY, ALE, AMS, APO, BAS, BOR, CIK, HSH, ICC, IDC, KON, MGR, MRX, SDH, SNA, UHL. |
| Pigment Red 57 - - - - - | BNS. |
| *Pigment Red 57:1, (calcium)- - - - - | ACY, ALE, AMS, APO, BAS, BNS, BOR, CGY, CIK, DUP, HSH, ICC, IDC, KON, MGR, SDH, SNA, UHL. |
| Pigment Red 63 - - - - - | HSH, KON, SNA. |
| *Pigment Red 81, (PMA)- - - - - | CGY, DUP, KON, LVR, MGR, MRX, SNA, UHL. |
| *Pigment Red 81, (PTA)- - - - - | CGY, KON, MGR, MRX, UHL. |
| Pigment Red 88 - - - - - | HRC. |
| Pigment Red 90 - - - - - | BOR, SDH. |
| Pigment Red 122- - - - - | HRC, SNA. |
| Pigment Red 123- - - - - | BAS, HRC. |
| Pigment Red 149- - - - - | HRC, HST. |
| Pigment Red 166- - - - - | CGY. |
| Pigment Red 168- - - - - | HRC. |
| Pigment Red 179- - - - - | HRC. |
| Pigment Red 181- - - - - | HST. |
| Pigment Red 190- - - - - | HRC. |
| Pigment Red 202- - - - - | DUP, HRC. |
| Pigment Red 206- - - - - | DUP. |
| Pigment Red 207- - - - - | DUP. |
| Pigment Red 224- - - - - | HRC. |

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| ORGANIC PIGMENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-----------------------------------|---|
| *RED TONERS--CONTINUED | |
| *RED PIGMENTS, OTHER--CONTINUED | |
| *Pigment red toners, all other | ACY, BAS, CGY, DUP, HST. |
| *VIOLET TONERS: | |
| Pigment Violet 1, (fugitive) | KCW, UHL. |
| *Pigment Violet 1, (PMA) | CGY, MGR, MRX, UHL. |
| *Pigment Violet 1, (PTA) | CGY, MGR, MRX, SNA, UHL. |
| Pigment Violet 3, (fugitive) | BAS, KCW, MGR, UHL. |
| *Pigment Violet 3, (PMA) | BAS, DUP, KON, MGR, MRX, SDH, UHL. |
| *Pigment Violet 3, (PTA) | BAS, MGR, MRX, UHL. |
| Pigment Violet 4, (fugitive) | KCW. |
| *Pigment Violet 19- | DUP, HRC, SNA. |
| Pigment Violet 23- | BAS, HRC, HST, ROM, SNA. |
| Pigment Violet 29- | HRC. |
| Pigment Violet 31- | HRC, VPC. |
| Pigment Violet 42- | DUP. |
| *Pigment violet toners, all other | BUC, ROM, X. |
| *BLUE TONERS: | |
| (Basic Blue 7) | KCW. |
| Pigment Blue 1, (PMA) | BMS, CGY, MGR, MRX, SDH, UHL. |
| Pigment Blue 2, (PMA) | LVR, UHL. |
| Pigment Blue 9, (PMA) | LVR. |
| Pigment Blue 10, (PMA) | SDH. |
| Pigment Blue 14, (PMA) | DUP, LVR, UHL. |
| *Pigment Blue 15, (α form) | ACY, BAS, CGY, DUP, HSH, SDH, TMS, USM. |
| *Pigment Blue 15:1, (α form) | ACY, BAS, CGY, DUP, HRC, HST, SDH, SNA, TMS, VPC. |
| *Pigment Blue 15:2, (α form) | ACY, BAS, CGY, DUP, HRC, SDH, SNA, TMS. |
| *Pigment Blue 15:3, (β form) | ACY, AMS, APO, BAS, BOR, BUC, CGY, CIK, CUS, DUP, HRC, ICC, IDC, IPP, MGR, POP, ROM, SDH, SNA. |
| Pigment Blue 15:4, (β form) | ACY, BAS, CGY, DUP, SNA. |
| Pigment Blue 19- | SW. |
| Pigment Blue 25- | GLX. |
| Pigment Blue 61- | BAS. |
| *Pigment blue toners, all other | CGY, UHL. |
| *GREEN TONERS: | |
| Pigment Green 1, (PMA) | LVR, MRX, UHL. |
| Pigment Green 2, (PMA) | MRX, UHL. |
| Pigment Green 2, (PTA) | ACY, KON, UHL. |
| Pigment Green 4, (PTA) | ACY. |
| *Pigment Green 7- | ALG, BAS, CGY, CIK, DUP, HRC, HST, POP, SDH, SNA, TMS. |
| Pigment Green 8- | CGY, KCW. |
| Pigment Green 10 | CGY, DUP. |
| *Pigment Green 36 | DUP, HRC, HST, SNA, VPC. |

TABLE 2.--ORGANIC PIGMENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| ORGANIC PIGMENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|-----------------------------------|---|
| TONERS--CONTINUED | |
| *GREEN TONERS--CONTINUED | |
| *Pigment green toners, all other- | CGY, UHL, X. |
| BROWN TONERS: | |
| Pigment Brown 1- | GLX. |
| Pigment Brown 3, (PMA) - | KON. |
| Pigment Brown 5- | GLX, HRC, ICC, ROM. |
| Pigment brown toners, all other- | SDH. |
| BLACK TONERS: | |
| Pigment black toners, all other- | UHL. |
| *LAKES: | |
| YELLOW LAKES: | |
| (Acid Yellow 23) - | KON, MRX. |
| ORANGE LAKES: | |
| Pigment Orange 17- | KCW. |
| *RED LAKES: | |
| (Acid Red 26)- | KCW. |
| (Basic Red 1)- | BNS. |
| *Pigment Red 60:1 - | HSH, KON, MRX, SDH, SNA. |
| Pigment Red 83 - | CGY, HSH, MRX, UHL. |
| VIOLET LAKES: | |
| (Basic Violet 1) - | BNS. |
| (Basic Violet 4) - | BNS. |
| (Basic Violet 10)- | BNS. |
| Pigment Violet 5:1 - | CGY, HRC, HSH, KON, MRX, UHL. |
| BLUE LAKES: | |
| Pigment Blue 24- - | SDH. |
| Pigment blue lakes, all other- | KON. |
| BROWN LAKES: | |
| Pigment brown lakes, all other - | KON. |

TABLE 3.--ORGANIC PIGMENTS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of organic pigments to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|---|
| ACY | American Cyanamid Co. | KCW | Keystone Color Works, Inc. |
| ALE | Alex Chemical Co. | KON | H. Kohnstamm & Co., Inc. |
| ALG | Allegheny Chemical Corp. | LVR | C. Lever Co., Inc. |
| AMS | Ridgway Color Co. | MGR | Magruder Color Co., Inc. |
| APO | Apollo Colors, Inc. | MRX | Max Marx Color & Chemical Co. |
| BAS | BASF Wyandotte Corp., Pigments Div. | POP | Pope Chemical Corp. |
| BNS | Binney and Smith, Inc. | ROM | Roma Chemical, Inc. |
| BOR | Borden, Inc., Printing Ink Div., Pigments Div. | SDH | Sterling Drug, Inc., Hilton Davis Chemical Co. Div. |
| BUC | Synalloy Corp., Blackman Uhler Chemical Div. | SNA | Sun Chemical Corp. |
| CGY | Ciba-Gaigy Corp. | SW | Sherwin-Williams Co. |
| CIK | Flint Ink Corp., Cal/Ink Div. | TMS | Sterling Drug, Inc., Thomasset Colors Div. |
| CUS | Customs Pigments Corp. | UHL | Paul Uhlich & Co., Inc. |
| DUP | E. I. duPont de Nemours & Co., Inc. | USM | Crown Metro, Inc. |
| GLX | Galaxie Chemical Corp. | VPC | Mobay Chemical Corp., Dyestuff Div. |
| HRC | Mobay Chemical Corp., Dyes & Pigments Div., Pigments Dept. | | |
| HSH | Harshaw Chemical Co. | | |
| HST | American Hoechst Corp., Industrial Chemicals Div. | | |
| ICC | Inmont Corp. Div. of United Technology Corp. | | |
| IDC | Industrial Color, Inc. | | |
| IND | Indol Color Co., Inc. | | |
| IPP | International Pigment & Processing Corp. | | |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 36 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Tedford C. Briggs

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.

The tables show 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 put up in pills, capsules, tablets, or other measured doses are excluded.¹ The difference between production and sales reflects inventory changes, processing losses, and captive consumption of medicinal chemicals processed into ethical and proprietary pharmaceutical products by the primary manufacturer. In some instances, the difference may also include quantities for medicinal grade products used as intermediates, for example, penicillin G salts used as intermediates in the manufacture of semisynthetic penicillins. All quantities are given in terms of 100-percent content of the pure bulk drug.

Total U.S. production of bulk medicinal chemicals in 1981 amounted to 244.7 million pounds. Total sales of bulk medicinal chemicals in 1981 amounted to 153.4 million pounds, valued at \$1,198.7 million. Beginning in 1980, methionine and other amino acids and their salts are reported in the section on Miscellaneous End-Use Chemicals and Chemical Products. Section totals are not, therefore, comparable with those of previous years.

Production of the larger groups of medicinal chemicals in 1981 was as follows: Antibiotics, 30.6 million pounds, 24.3 percent more than in 1980; anti-infective agents other than antibiotics 31.8 million pounds, 9.5 percent more than in 1980; central nervous system depressants and stimulants, 58.2 million pounds, 3.0 percent less than in 1980; and vitamins, 43.1 million pounds, 1.3 percent more.

¹Complementary 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.

Production of some of the more important individual products listed in the table was as follows: Choline chloride, 58.9 million pounds, 7.2 percent less than in 1980; aspirin, 29.7 million pounds, 12.1 percent less; acetaminophen, 20.2 million pounds, 17.0 percent more; penicillins (except semisynthetic), 7.4 million pounds, 13.0 percent more; vitamin E, 10.2 million pounds, 40.4 percent more; and tetracyclines, 6.8 million pounds, 4.3 percent more.

TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1981

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

| MEDICINAL CHEMICALS | PRODUCTION ¹ | SALES | | |
|--|-------------------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ² |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 244,682 | 153,430 | 1,198,692 | \$7.81 |
| Acyclic----- | 64,422 | 53,226 | 54,292 | 1.02 |
| Benzenoid ³ ----- | 125,285 | 76,242 | 705,226 | 9.25 |
| Cyclic nonbenzenoid ⁴ ----- | 54,975 | 23,962 | 439,174 | 18.33 |
| Antibiotics, total----- | 30,605 | 9,729 | 412,878 | 42.44 |
| Cephalosporins----- | 1,106 | ... | ... | ... |
| Penicillins, semisynthetic, total----- | 2,261 | 415 | 27,799 | 66.99 |
| Amoxicillin----- | 542 | ... | ... | ... |
| Ampicillin----- | 1,210 | ... | ... | ... |
| All other (semisynthetic) ⁵ ----- | 509 | 415 | 27,799 | 66.99 |
| Penicillins (except semisynthetic), total----- | 7,362 | 1,569 | 21,652 | 13.80 |
| Penicillin G, Potassium, for medicinal use----- | 3,038 | ... | ... | ... |
| All other for all uses ⁶ ----- | 4,324 | 1,569 | 21,652 | 13.80 |
| Tetracyclines, for all uses----- | 6,846 | 4,101 | 92,071 | 22.45 |
| Other antibiotics, total----- | 13,030 | 3,644 | 271,356 | 74.47 |
| For medicinal use ⁷ ----- | 4,284 | 2,084 | 241,837 | 116.04 |
| For nonmedicinal uses----- | 8,746 | 1,560 | 29,519 | 18.92 |
| Antihistamines, total----- | 356 | 181 | 8,237 | 45.51 |
| Antinauseants----- | 49 | 28 | 1,095 | 39.11 |
| Brompheniramine maleate----- | 25 | 28 | 1,579 | 56.39 |
| All other----- | 282 | 125 | 5,563 | 44.50 |
| Anti-infective agents (except antibiotics), total----- | 31,779 | 9,470 | 51,133 | 5.40 |
| Anthelmintics, total----- | 13,460 | 3,176 | 5,325 | 1.68 |
| Piperazine dihydrochloride----- | 731 | 715 | 1,101 | 1.54 |
| All other----- | 12,729 | 2,461 | 4,224 | 1.72 |
| Antiprotozoan agents, total----- | 9,831 | 2,024 | 13,117 | 6.48 |
| Arsenic and bismuth compounds----- | ... | 1,877 | 9,793 | 5.22 |
| All other ⁸ ----- | 9,831 | 147 | 3,324 | 22.61 |
| Sulfonamides, total ⁹ ----- | 3,885 | 736 | 9,970 | 13.55 |
| Sulfamethazine----- | 986 | ... | ... | ... |
| All other ¹⁰ ----- | 2,899 | 736 | 9,970 | 13.55 |
| Urinary antiseptics----- | 223 | ... | ... | ... |
| Other anti-infective agents ¹¹ ----- | 4,380 | 3,534 | 22,721 | 6.43 |
| Autonomic drugs, total----- | 1,109 | 706 | 15,101 | 21.39 |
| Sympathomimetic (adrenergic) agents, total----- | 1,036 | 696 | 13,959 | 20.06 |
| Phenylpropanolamine hydrochloride----- | 566 | 353 | 3,418 | 9.68 |
| All other----- | 470 | 343 | 10,541 | 30.73 |
| Other autonomic drugs----- | 73 | 10 | 1,142 | 114.20 |
| Central depressants and stimulants, total----- | 58,180 | 48,149 | 216,480 | 4.50 |
| Analgesics, antipyretics, and nonhormonal anti-inflammatory agents, total----- | 51,143 | 44,111 | 113,013 | 2.56 |
| Acetaminophen----- | 20,173 | ... | ... | ... |
| Aspirin----- | 29,656 | ... | ... | ... |
| All other ¹² ----- | 1,314 | 44,111 | 113,013 | 2.56 |
| Anticonvulsants, hypnotics, and sedatives----- | 1,307 | 338 | 5,610 | 16.60 |
| Antidepressants----- | 142 | 21 | 2,054 | 97.81 |
| Antitussives, total----- | 350 | 330 | 72,575 | 219.92 |
| Codeine----- | 139 | 136 | 50,745 | 373.13 |
| All other----- | 211 | 194 | 21,830 | 112.53 |

See footnotes at end of table.

TABLE 1.--MEDICINAL CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MEDICINAL CHEMICALS | PRODUCTION ¹ | SALES | | |
|--|-------------------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ² |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Central depressants and stimulants--Continued | | | | |
| Tranquilizers, total----- | 380 | ... | ... | ... |
| Phenothiazine derivatives----- | 61 | ... | ... | ... |
| All other----- | 319 | ... | ... | ... |
| Other central depressants and stimulants ¹³ ----- | 4,858 | 3,349 | 23,228 | \$6.93 |
| Dermatological agents----- | 5,305 | 5,259 | 6,044 | 1.15 |
| Expectorants and mucolytic agents----- | 1,570 | 1,305 | 8,965 | 6.88 |
| Gastrointestinal agents and therapeutic nutrients, total ¹⁴ ----- | 62,497 | 50,626 | 39,270 | .78 |
| Choline chloride, all grades----- | 58,946 | 48,515 | 29,368 | .61 |
| All other----- | 3,551 | 2,111 | 9,902 | 4.69 |
| Hematological agents----- | 98 | ... | ... | ... |
| Hormones and synthetic substitutes, total----- | 915 | 149 | 121,217 | 813.54 |
| Synthetic hypoglycemic agents----- | 737 | ... | ... | ... |
| All other ¹⁵ ----- | 178 | 149 | 121,217 | 813.54 |
| Local anesthetics----- | 80 | 49 | 1,326 | 27.06 |
| Renal-acting and edema-reducing agents----- | 1,337 | 187 | 7,541 | 40.33 |
| Smooth muscle relaxants ¹⁶ ----- | 261 | ... | ... | ... |
| Vitamins, total----- | 43,125 | 26,262 | 256,032 | 9.75 |
| Vitamin E----- | 10,188 | 5,480 | 93,465 | 17.06 |
| All other vitamins ¹⁷ ----- | 32,937 | 20,782 | 162,567 | 7.82 |
| Miscellaneous medicinal chemicals ¹⁸ ----- | 7,465 | 1,358 | 54,468 | 40.11 |

¹The data on production and sales are for bulk medicinal chemicals only. Methionine and 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.

²Calculated from rounded figures.

³Benzenoid, 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 atom and conjugated double bonds, except the pyrimidine ring.

⁴Includes antibiotics of unknown structure.

⁵Includes sales quantity and value of amoxicillin and ampicillin.

⁶Includes sales quantity and value of penicillin G, potassium.

⁷Includes production and sales of antifungal and antitubercular antibiotics; and sales quantity and value of cephalosporins.

⁸Includes production of arsenic and bismuth compounds.

⁹Does not include production of sulfaguanidine used as an intermediate in the production of anti-infective sulfonamides.

¹⁰Includes sales quantity and value of sulfamethazine.

¹¹Includes sales quantity and value of urinary antiseptics.

¹²Includes sales quantity and value of acetaminophen and aspirin.

¹³Includes sales quantity and value of tranquilizers. Also includes production and sales of amphetamines, general anesthetics, respiratory and cerebral stimulants, and skeletal muscle relaxants.

¹⁴Methionine and its salts are now reported in the section on Miscellaneous End-Use Chemicals and Chemical Products under amino acids.

¹⁵Includes sales quantity and value of synthetic hypoglycemic agents.

¹⁶Includes theophylline derivatives.

¹⁷Includes production and sales of vitamin A, vitamin B, vitamin C, vitamin D, and vitamin K.

¹⁸Includes production and sales of antineoplastic agents, cardiovascular agents, diagnostic agents, and unclassified medicinal chemicals. Also, includes sales quantity and value of hematological agents and smooth muscle relaxants.

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

(CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*). CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT.)

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *ANTIBIOTICS: | |
| *CEPHALOSPORINS: | |
| Cefaclor - - - - - | LIL. |
| Cefazolin, sodium - - - - - | LIL, SK. |
| Cefoxitin - - - - - | MRK. |
| Cephalexin - - - - - | LIL. |
| Cephaloridine - - - - - | LIL. |
| Cephalothin, sodium - - - - - | LIL. |
| Cephapirin - - - - - | BRS. |
| Cephapirin, sodium - - - - - | BRS. |
| Cephradine - - - - - | SK, TRD. |
| *PENICILLINS, SEMISYNTHETIC: | |
| *AMOXICILLIN: | |
| Amoxicillin (trihydrate) - - - - - | BEE, BOC, BRS. |
| Amoxicillin (anhydrous) - - - - - | BRS, WYT. |
| *AMPICILLIN: | |
| Ampicillin (anhydrous) - - - - - | BRS, WYT. |
| Ampicillin (trihydrate) - - - - - | BEE, BOC, BRS, TRD. |
| *OTHER SEMISYNTHETIC PENICILLINS: | |
| Ampicillin, sodium - - - - - | BEE, BRS, WYT. |
| Carbenicillin, disodium - - - - - | BEE, PFZ. |
| Carbenicillin indanyl, sodium - - - - - | PFZ. |
| Cloxacillin, sodium - - - - - | BEE, BOC, BRS. |
| Cyclacillin - - - - - | WYT. |
| Dicloxacillin, sodium - - - - - | BEE, BRS, WYT. |
| Epicillin - - - - - | TRD. |
| Metacillin - - - - - | BRS. |
| Metacillin, potassium - - - - - | BRS. |
| Methicillin, sodium - - - - - | BEE, BRS. |
| Nafcillin, sodium - - - - - | BRS, WYT. |
| Oxacillin, sodium - - - - - | BEE, BOC, BRS. |
| Ticarcillin, disodium - - - - - | BEE. |
| *PENICILLINS (EXCEPT SEMISYNTHETIC): | |
| FOR MEDICINAL USE: | |
| Penicillin V - - - - - | BRS, LIL, PFZ. |
| Penicillin G, benzathine - - - - - | BRS, WYT. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ANTIBIOTICS--CONTINUED | |
| *PENICILLINS (EXCEPT SEMISYNTHETIC)--CONTINUED | |
| FOR MEDICINAL USE--CONTINUED | |
| *Penicillin G, potassium- | LIL, OMS, PFZ, WYT. |
| Penicillin V, potassium- | BRS, LIL. |
| Penicillin G, procaine (medicinal grade)- | PFZ, WYT. |
| FOR NONMEDICINAL USES: | |
| Penicillin G, procaine (animal feed grade)- | MRK, OMS, PFZ. |
| *TETRACYCLINES: | |
| FOR MEDICINAL USE: | |
| Chlortetracycline (medicinal grade)- | ACY. |
| Demeclocycline- | ACY. |
| Doxycycline- | PFZ. |
| Methacycline- | PFZ. |
| Minocycline- | ACY. |
| Oxytetracycline (medicinal grade)- | PFZ. |
| Tetracycline- | ACY. |
| FOR NONMEDICINAL USES: | |
| Chlortetracycline (animal feed grade)- | ACY, RLS. |
| Oxytetracycline (animal feed grade)- | PFZ. |
| *OTHER ANTIBIOTICS: | |
| *FOR MEDICINAL USE: | |
| ANTIFUNGAL ANTIBIOTICS: | |
| Amphotericin B- | OMS, TRD. |
| Candididin- | PEN. |
| Nystatin (medicinal grade)- | ACY, OMS, TRD. |
| ANTITUBERCULAR ANTIBIOTICS: | |
| Dihydrostreptomycin- | PFZ. |
| Streptomycin (medicinal grade)- | PFZ. |
| OTHER ANTIBIOTICS FOR MEDICINAL USE: | |
| Bacitracin (medicinal grade)- | IMC. |
| Chloramphenicol- | PD, RLS. |
| Chloramphenicol palmitate- | PD. |
| Clindamycin- | UPJ. |
| Erythromycin- | ABB, LIL, UPJ. |
| Erythromycin estolate- | LIL. |
| Erythromycin stearate- | UPJ. |
| Gentamycin- | SCH. |
| Kanamycin- | BRS. |
| Lincomycin (medicinal grade)- | UPJ. |
| Moxalactam- | LIL. |
| Neomycin (medicinal grade)- | PFZ, UPJ. |
| Novobiocin, sodium- | MRK, UPJ. |
| Polymyxin B- | PFZ. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ANTIBIOTICS--CONTINUED | |
| *OTHER ANTIBIOTICS--CONTINUED | |
| *FOR MEDICINAL USE--CONTINUED | |
| OTHER ANTIBIOTICS FOR MEDICINAL USE--CONTINUED | |
| Spectinomycin (medicinal grade)- - - - - | ABB, UPJ. |
| Thiostrepton - - - - - | OMS. |
| Vancomycin - - - - - | LIL. |
| *FOR NONMEDICINAL USES: | |
| Bacitracin (animal feed grade) - - - - - | IMC. |
| Cycloheximide- - - - - | UPJ. |
| Hygromycin B - - - - - | LIL. |
| Lasalocid- - - - - | HOF. |
| Lincomycin (animal feed grade) - - - - - | UPJ. |
| Monesin- - - - - | LIL. |
| Neomycin (animal feed grade) - - - - - | PFZ, UPJ. |
| Novobiocin (animal feed grade) - - - - - | UPJ. |
| Nystatin (animal feed grade) - - - - - | OMS. |
| Streptomycin - - - - - | PFZ. |
| Tylosin- - - - - | LIL. |
| *ANTIHISTAMINES: | |
| *ANTINAUSEANTS: | |
| Cyclizine hydrochloride- - - - - | BUR. |
| Dimenhydrinate - - - - - | GAN, SRL. |
| Meclizine hydrochloride- - - - - | PFZ. |
| Metoclopramide hydrochloride - - - - - | LLI, X. |
| Trimethobenzamide hydrochloride- - - - - | GAN, HOF. |
| *OTHER ANTIHISTAMINES: | |
| Azatadine maleate- - - - - | SCH. |
| Bromodiphenhydramine hydrochloride - - - - - | PD. |
| *Brompheniramine maleate- - - - - | HEX, LLI, SCH. |
| Carbinoxamine maleate- - - - - | SCH. |
| Chlorcyclizine hydrochloride - - - - - | BUR. |
| Chlorpheniramine maleate - - - - - | HEX, SCH, SK. |
| Cyproheptadine hydrochloride - - - - - | GAN, MRK. |
| Dexbrompheniramine maleate - - - - - | SCH. |
| Dexchlorpheniramine maleate - - - - - | SCH. |
| Dimethindene maleate - - - - - | CGY. |
| Diphenhydramine hydrochloride- - - - - | PD. |
| Doxylamine succinate - - - - - | BJL, BKC, HOF. |
| Methdilazine - - - - - | BJL. |
| Phenindamine tartrate- - - - - | HOF. |
| Phenyltoloxamine citrate - - - - - | GAN, PD. |
| Pyrilamine maleate - - - - - | HEX. |
| Tripelennamine - - - - - | CGY. |
| Tripelennamine citrate - - - - - | CGY. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ANTIHISTAMINES--CONTINUED | |
| *OTHER ANTIHISTAMINES--CONTINUED | |
| Tripeleannamine hydrochloride - - - - - | CGY. |
| Triprolidine hydrochloride - - - - - | AMD, BUR. |
| *ANTI-INFECTIVE AGENTS (EXCEPT ANTIBIOTICS): | |
| *ANTHELMINTICS: | |
| Dichlorvos - - - - - | SHC. |
| Phenothiazine - - - - - | WAG. |
| Piperazine - - - - - | DOW, TX, UCC. |
| Piperazine citrate - - - - - | PCL. |
| *Piperazine dihydrochloride - - - - - | FLM, PCL, TX, WHL. |
| Piperazine hexahydrate - - - - - | PCL, TX. |
| Piperazine hydrochloride - - - - - | FLM, TX. |
| Piperazine phosphate - - - - - | PCL, TX. |
| Piperazine sulfate - - - - - | TX. |
| Pyrantel pamoate - - - - - | PFZ. |
| Pyrantel tartrate - - - - - | PFZ. |
| Rafoxanide - - - - - | MRK. |
| Thiabendazole - - - - - | MRK. |
| *ANTIPROTOZOAN AGENTS: | |
| *ARSENIC AND BISMUTH COMPOUNDS: | |
| Arsanilic acid - - - - - | FLM, WHL. |
| Bismuth subsalicylate - - - - - | NOR. |
| Carbarsone - - - - - | WHL. |
| Glycobiarsol - - - - - | PCL. |
| Nitarsons - - - - - | SAL. |
| Roxarsone - - - - - | SAL. |
| Roxarsone, sodium - - - - - | SAL. |
| *OTHER ANTIPROTOZOAN AGENTS: | |
| Aklomide - - - - - | SAL. |
| Amodiaquine hydrochloride - - - - - | PD. |
| Amprolium - - - - - | MRK. |
| Arprinocid - - - - - | MRK. |
| Dinitolmide - - - - - | SAL. |
| Ethopabate - - - - - | MRK. |
| Furazolidone - - - - - | NOR. |
| Hydroxychloroquine sulfate - - - - - | SDW. |
| Iodochlorhydroxyquin - - - - - | CGY. |
| Ipronidazole - - - - - | HOF. |
| Metronidazole - - - - - | RDA. |
| Nitromide - - - - - | SAL. |
| Ronidazole - - - - - | MRK. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ANTI-INFECTIVE AGENTS (EXCEPT ANTIBIOTICS)--CONTINUED | |
| *SULFONAMIDES: | |
| Acetyl sulfisoxazole - - - - - | ABB, HOF. |
| Mafenide - - - - - | SDW. |
| Mafenide acetate - - - - - | SDW. |
| Sulfabenzamide - - - - - | ACY. |
| Sulfacetamide, sodium- - - - - | SCH. |
| Sulfachloropyrazine, sodium- - - - - | ACY. |
| Sulfachloropyridazine - - - - - | ACY. |
| Sulfadiazine - - - - - | ACY. |
| Sulfadimethoxine - - - - - | HOF. |
| *Sulfamethazine - - - - - | ACY, RLS, SAL. |
| Sulfamethazine, sodium - - - - - | SAL. |
| Sulfamethizole - - - - - | ACY. |
| Sulfamethoxazole - - - - - | HOF. |
| Sulfanitran- - - - - | SAL. |
| Sulfaquinoxaline - - - - - | MRK. |
| Sulfasalazine- - - - - | SAL. |
| Sulfathiazole, sodium- - - - - | SAL. |
| Sulfisoxazole - - - - - | HOF. |
| *URINARY ANTISEPTICS: | |
| Methenamine hippurate- - - - - | LKL, RIK. |
| Methenamine mandelate- - - - - | ARN, PD. |
| Nitrofurantoin - - - - - | NOR. |
| *OTHER ANTI-INFECTIVE AGENTS: | |
| ANTIFUNGAL AGENTS: | |
| Benzoic acid - - - - - | MON. |
| Calcium undecylenate - - - - - | WTL. |
| Sodium caprylate - - - - - | LEM. |
| Zinc undecylenate- - - - - | WTL. |
| ANTILEPTIC AND ANTITUBERCULAR AGENTS: | |
| Aminosalicylic acid- - - - - | HXL. |
| Sulfoxone, sodium- - - - - | ABB. |
| ANTIVIRAL AGENTS: | |
| Vidarabine - - - - - | PD. |
| MERCURY COMPOUNDS: | |
| Merbromin- - - - - | HYN. |
| Nitromersol- - - - - | ABB. |
| GENERAL ANTISEPTICS AND ANTIBACTERIAL AGENTS: | |
| Carbadox - - - - - | PFZ. |
| Cetalkonium chloride - - - - - | HXL. |
| Cetylpyridinium chloride - - - - - | HEX, HXL, LKL. |
| Chlorobutanol- - - - - | SFS. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ANTI-INFECTIVE AGENTS (EXCEPT ANTIBIOTICS)--CONTINUED | |
| *OTHER ANTI-INFECTIVE AGENTS--CONTINUED | |
| GENERAL ANTISEPTICS AND ANTIBACTERIAL AGENTS--CONTINUED | |
| Chlorothymol - - - - - | OPC. |
| m-Cresyl acetate - - - - - | ADC. |
| 8-Hydroxy-5-quinolinesulfonic acid - - - - - | MRK. |
| Iodoform - - - - - | DPW, PEN. |
| Nalidixic acid - - - - - | X. |
| Ormetoprim - - - - - | HOF. |
| Povidone - iodine - - - - - | GAF. |
| Resorcinol - - - - - | LEM. |
| Thymol - - - - - | KPT. |
| Trimethoprim - - - - - | BUR, HOF. |
| *AUTONOMIC DRUGS: | |
| *SYMPATHOMIMETIC AGENTS: | |
| Dobutamine hydrochloride - - - - - | LIL. |
| Dopamine hydrochloride - - - - - | HEX. |
| Isoetharine hydrochloride - - - - - | SDW. |
| Isoproterenol hydrochloride - - - - - | SDW. |
| Isoproterenol sulfate - - - - - | ABB. |
| Mephentermine - - - - - | ARA. |
| Mephentermine sulfate - - - - - | ARA. |
| Methoxyphenamine hydrochloride - - - - - | HXL. |
| Naphazoline hydrochloride - - - - - | CGY. |
| Phenylephrine - - - - - | SDW. |
| Phenylephrine bitartrate - - - - - | GAN. |
| Phenylephrine hydrochloride - - - - - | GAN, SDW. |
| Phenylpropanolamine hydrochloride - - - - - | ARS, GAN, NEP, ORT, X. |
| Propylhexedrine - - - - - | PD, SK. |
| Pseudoephedrine hydrochloride - - - - - | BUR, GAN. |
| Pseudoephedrine sulfate - - - - - | GAN. |
| Terbutaline sulfate - - - - - | CGY. |
| *OTHER AUTONOMIC DRUGS: | |
| PARASYMPATHOLYTIC QUATERNARY AMMONIUM COMPOUNDS (EXCEPT TROPANE DERIVATIVES): | |
| Diphenamil methylsulfate - - - - - | SCH. |
| Glycopyrrolate - - - - - | X. |
| Hexocyclium methylsulfate - - - - - | ABB. |
| Isopropamide iodide - - - - - | SK. |
| Mepenzolate bromide - - - - - | LKL. |
| Pipenzolate bromide - - - - - | LKL. |
| Propantheline bromide - - - - - | SRL. |
| Tridihexethyl chloride - - - - - | ACY. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *AUTONOMIC DRUGS--CONTINUED | |
| *OTHER AUTONOMIC DRUGS--CONTINUED | |
| PARASYMPATHOLYTIC TERTIARY AMINES | |
| (EXCEPT TROPANE DERIVATIVES): | |
| Dicyclomine hydrochloride- | BKC. |
| Oxybutynin chloride- | PD. |
| Oxyphencyclimine hydrochloride- | PFZ. |
| Trihexyphenidyl hydrochloride- | ACY. |
| PARASYMPATHOLYTIC TROPANE DERIVATIVES: | |
| Anisotropine methylbromide- | ARA. |
| Benztropine mesylate- | ARA. |
| PARASYMPATHOMIMETIC AGENTS: | |
| Bethanechol chloride- | GAN. |
| Neostigmine bromide- | HOF. |
| Neostigmine methylsulfate- | HOF. |
| Pyridostigmine bromide- | HOF. |
| SYMPATHOLYTIC AGENTS: | |
| Timolol maleate- | MRK. |
| *CENTRAL DEPRESSANTS AND STIMULANTS: | |
| *ANALGESICS, ANTIPYRETICS, AND NONHORMONAL ANTI- | |
| INFLAMMATORY AGENTS: | |
| *Acetaminophen- | MAL, MON, PEN. |
| Aminobenzoic acid- | GAN, MAL. |
| *Aspirin- | DOW, MON, NOR, SDW. |
| Aurothioglucoase- | SCH. |
| Benoxaprofen- | LIL. |
| Choline magnesium salicylate- | LEM. |
| Diflunisal- | MRK. |
| Ethoheptazine citrate- | WYT. |
| Fenoprofen- | LIL. |
| Indomethacin- | MRK. |
| Indoprofen- | PD. |
| Meclofenamate, sodium- | PD. |
| Meclofenamic acid- | PD. |
| Mefenamic acid- | PD. |
| Meperidine hydrochloride- | PEN, SDW, WYT. |
| Methadone hydrochloride- | MAL, PEN. |
| Morphine sulfate (pentahydrate)- | MRK, PEN. |
| Morphine sulfate- | MAL. |
| Oxycodone hydrochloride- | EN, MAL, PEN. |
| Oxyphenbutazone- | CGY. |
| Phenylbutazone- | CGY. |
| Phenyl salicylate- | DOW. |
| Potassium aminobenzoate- | GAN. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *CENTRAL DEPRESSANTS AND STIMULANTS--CONTINUED | |
| *ANALGESICS, ANTIPYRETICS, AND NONHORMONAL ANTI-INFLAMMATORY AGENTS--CONTINUED | |
| Potassium salicylate | HN. |
| Propoxyphene hydrochloride | GAN, LIL. |
| Propoxyphene napsylate | GAN, LIL. |
| Salicylamide | PEN. |
| Salsalate | PD, RIK. |
| Sodium aminobenzoate | GAN. |
| Sodium salicylate | HN. |
| Sulindac | MRK. |
| Zomepirac, sodium | SDW. |
| *ANTICONVULSANTS, HYPNOTICS, AND SEDATIVES: | |
| ANTICONVULSANTS (EXCEPT BARBITURATES): | |
| Aminogluthethimide | CGY. |
| Carbamazepine | CGY. |
| Ethosuximide | PD. |
| Ethotoin | ABB. |
| Methsuximide | PD. |
| Phenacemide | ABB. |
| Phensuximide | PD. |
| Phenytoin | PD. |
| Phenytoin, sodium | PD. |
| Valproic acid | ABB, ARA. |
| BARBITURATES: | |
| Amobarbital | GAN. |
| Amobarbital, sodium | GAN. |
| Butabarbital | ABB, GAN. |
| Butabarbital, sodium | ABB, GAN. |
| Butalbital | GAN. |
| Butalbital, sodium | GAN. |
| Mephobarbital | SDW. |
| Methohexital, sodium | LIL. |
| Pentobarbital | ABB, GAN. |
| Pentobarbital, sodium | ABB, GAN. |
| Phenobarbital | GAN. |
| Phenobarbital, sodium | GAN. |
| Secobarbital, sodium | GAN. |
| Talbutal | GAN. |
| Thiopental, sodium | ABB. |
| HYPNOTICS AND SEDATIVES (EXCEPT BARBITURATES): | |
| Carbromal | PD. |
| Ethchlorvynol | ABB. |
| Glutethimide | CGY, GAN. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *CENTRAL DEPRESSANTS AND STIMULANTS--CONTINUED | |
| *ANTICONSULSANTS, HYPNOTICS, AND SEDATIVES--CONTINUED | |
| HYPNOTICS AND SEDATIVES | |
| (EXCEPT BARBITURATES)--CONTINUED | |
| Methaqualone - - - - - | X. |
| Methaqualone hydrochloride - - - - - | X. |
| Triclofos, sodium- - - - - | LKL. |
| *ANTIDEPRESSANTS: | |
| Amitriptyline hydrochloride- - - - - | MRK, PD. |
| Deanol - - - - - | RIK. |
| Desipramine hydrochloride- - - - - | LKL. |
| Doxepin hydrochloride- - - - - | PFZ, SK. |
| Imipramine hydrochloride - - - - - | CGY. |
| Maprotiline hydrochloride- - - - - | CGY. |
| Nortriptyline hydrochloride- - - - - | LIL. |
| Protriptyline hydrochloride- - - - - | MRK. |
| *ANTITUSSIVES: | |
| Benzonatate- - - - - | CGY. |
| Caramiphen edisylate - - - - - | SK. |
| Carbetapentane citrate - - - - - | PFZ. |
| *Codeine- - - - - | MAL, MRK, PEN. |
| Dextromethorphan hydrobromide- - - - - | AMD, HOF. |
| Hydrocodone bitartrate - - - - - | MAL, MRK. |
| Noscapine- - - - - | MAL, MRK, PEN. |
| Thebaine - - - - - | MAL, MRK, PEN. |
| *TRANQUILIZERS: | |
| *PHENOTHIAZINE DERIVATIVES: | |
| Acetophenazine maleate - - - - - | SCH. |
| Chlorpromazine hydrochloride - - - - - | SK. |
| Fluphenazine hydrochloride - - - - - | SCH. |
| Perphenazine - - - - - | SCH. |
| Prochlorperazine edisylate - - - - - | SK. |
| Prochlorperazine maleate - - - - - | AMD, SK. |
| Promazine hydrochloride- - - - - | WYT. |
| Promethazine hydrochloride - - - - - | WYT. |
| *OTHER TRANQUILIZERS: | |
| Bucizine hydrochloride- - - - - | PFZ. |
| Chlordiazepoxide hydrochloride - - - - - | SK. |
| Chlormezanone- - - - - | SDW. |
| Clorazepate dipotassium- - - - - | ABB. |
| Haloperidol- - - - - | SRL. |
| Hydroxyzine hydrochloride- - - - - | PFZ. |
| Hydroxyzine pamoate- - - - - | PFZ. |
| Lorazepam- - - - - | WYT. |
| Meprobamate- - - - - | BKL. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *CENTRAL DEPRESSANTS AND STIMULANTS--CONTINUED | |
| *TRANQUILIZERS--CONTINUED | |
| *OTHER TRANQUILIZERS--CONTINUED | |
| Oxazepam - - - - - | WYT. |
| Praxepam - - - - - | PD. |
| Tenazepam - - - - - | WYT. |
| Thiothixene hydrochloride - - - - - | PFZ. |
| *OTHER CENTRAL DEPRESSANTS AND STIMULANTS: | |
| AMPHETAMINES: | |
| Amphetamine - - - - - | ARN. |
| Amphetamine sulfate - - - - - | ARN. |
| Dextroamphetamine - - - - - | ARN, SK. |
| Dextroamphetamine sulfate - - - - - | ARN, SK. |
| Methamphetamine - - - - - | ARN. |
| Methamphetamine hydrochloride - - - - - | ARN. |
| GENERAL ANESTHETICS: | |
| Ketamine hydrochloride - - - - - | PD. |
| RESPIRATORY AND CEREBRAL STIMULANTS: | |
| CAFFEINE (NATURAL AND SYNTHETIC): | |
| Caffeine, natural - - - - - | CPR, GNF. |
| Caffeine, synthetic - - - - - | PFZ. |
| OTHER RESPIRATORY AND CEREBRAL STIMULANTS: | |
| Caffeine, citrated - - - - - | PCL. |
| Deanol acetamidobenzoate - - - - - | RIK. |
| Diethylpropion hydrochloride - - - - - | BKC. |
| Methylphenidate hydrochloride - - - - - | CGY. |
| Nikethamide - - - - - | CGY. |
| Phendimetrazine tartrate - - - - - | GAN. |
| SKELETAL MUSCLE RELAXANTS: | |
| Carisoprodol - - - - - | BKL. |
| Chlorphenesin carbamate - - - - - | UPJ. |
| Methocarbamol - - - - - | LLI. |
| Orphenadrine citrate - - - - - | PD, RIK. |
| Succinylcholine chloride - - - - - | ABB, BUR. |
| Tubocurarine - - - - - | ABB. |
| *DERMATOLOGICAL AGENTS: | |
| Allantoin - - - - - | HFT. |
| Aluminum phenolsulfonate - - - - - | SAL. |
| Ammonium phenolsulfonate - - - - - | SAL. |
| Salicylic acid - - - - - | DOW, MON. |
| Sodium phenolsulfonate - - - - - | SAL. |
| Zinc phenolsulfonate - - - - - | MAL, SAL. |
| *EXPECTORANTS AND MUCOLYTIC AGENTS: | |
| Ethylenediamine dihydriodide - - - - - | DPW, WAG, WHL. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *EXPECTORANTS AND MUCOLYTIC AGENTS--CONTINUED | |
| Guaiaccol - - - - - | PEN. |
| Guaifenesin - - - - - | GAN, LLI, PEN. |
| Iodinated glycerol - - - - - | X. |
| Potassium guaiacolsulfonate - - - - - | HM. |
| *GASTROINTESTINAL AGENTS AND THERAPEUTIC NUTRIENTS: | |
| GASTROINTESTINAL AGENTS: | |
| *CHOLINE CHLORIDE (ALL GRADES): | |
| Choline chloride (animal feed grade)- - - - - | HFT, IMC, NUT(E), TMH. |
| Choline chloride (medicinal grade)- - - - - | HFT. |
| OTHER GASTROINTESTINAL AGENTS: | |
| Betaine base - - - - - | HFT. |
| Betaine hydrochloride - - - - - | HFT. |
| Bisacodyl - - - - - | PD. |
| Calcium polycarbophil - - - - - | LLI. |
| Choline bicarbonate - - - - - | HFT, IMC. |
| Choline bitartrate - - - - - | HFT. |
| Choline citrate - - - - - | HFT. |
| Choline dihydrogen citrate - - - - - | HFT. |
| Cimetidine - - - - - | SK. |
| Cimetidine hydrochloride - - - - - | SK. |
| Colestipol hydrochloride - - - - - | UPJ. |
| Dextrothyroxine, sodium - - - - - | BAX. |
| Diphenoxylate - - - - - | MAL. |
| Docusate, calcium - - - - - | ACY. |
| Docusate, potassium - - - - - | ACY. |
| Docusate, sodium - - - - - | ACY, MAL. |
| Phenolphthalein - - - - - | SCH. |
| Sitosterols - - - - - | UPJ. |
| THERAPEUTIC NUTRIENTS: | |
| Copper gluconate - - - - - | PFZ. |
| Magnesium gluconate - - - - - | PFZ. |
| Manganese gluconate - - - - - | PFZ. |
| Potassium gluconate - - - - - | PFZ. |
| Zinc gluconate - - - - - | PFZ. |
| *HEMATOLOGICAL AGENTS: | |
| Ammonium heparin - - - - - | ABB, RIK, SPR. |
| Anisindione - - - - - | SCH. |
| Cellulose, oxidized - - - - - | EKT. |
| Dextran - - - - - | PHR. |
| Dicumarol - - - - - | ABB. |
| Diphenadione - - - - - | UPJ. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *HEMATOLOGICAL AGENTS--CONTINUED | |
| Lithium heparin - - - - - | RIK, SPR. |
| Potassium warfarin - - - - - | RSA. |
| Sodium heparin - - - - - | ABB, RIK, SPR. |
| Warfarin - - - - - | SDW. |
| *HORMONES AND SYNTHETIC SUBSTITUTES: | |
| ANABOLIC AGENTS AND ANDROGENS: | |
| Fluoxymesterone - - - - - | UPJ. |
| Methyltestosterone - - - - - | UPJ. |
| Oxandrolone - - - - - | SRL. |
| Testosterone - - - - - | SRL, UPJ. |
| Testosterone cypionate - - - - - | UPJ. |
| Testosterone enanthate - - - - - | UPJ. |
| Testosterone propionate - - - - - | SRL, UPJ. |
| Zeranol - - - - - | IMC. |
| CORTICOSTEROIDS: | |
| Beclomethasone - - - - - | SCH. |
| Betamethasone - - - - - | SCH. |
| Betamethasone dipropionate - - - - - | SCH. |
| Betamethasone sodium phosphate - - - - - | SCH. |
| Betamethasone valerate - - - - - | SCH. |
| Cortisone acetate - - - - - | UPJ. |
| Dexamethasone - - - - - | AMD, MRK, SCH. |
| Dexamethasone sodium phosphate - - - - - | MRK. |
| Diflorasone diacetate - - - - - | UPJ. |
| Fluorometholone - - - - - | UPJ. |
| Fluprednisolone - - - - - | UPJ. |
| Fluprednisolone acetate - - - - - | UPJ. |
| Halcinonide - - - - - | TRD. |
| Hydrocortisone - - - - - | UPJ. |
| Hydrocortisone acetate - - - - - | UPJ. |
| Meprednisone - - - - - | SCH. |
| Methylprednisolone - - - - - | ABB, UPJ. |
| Prednisolone - - - - - | MRK, UPJ. |
| Prednisolone acetate - - - - - | UPJ. |
| Prednisone - - - - - | UPJ. |
| Triamcinolone - - - - - | TRD, UPJ. |
| Triamcinolone acetonide - - - - - | TRD, UPJ. |
| Triamcinolone diacetate - - - - - | TRD. |
| Corticosteroids, all other - - - - - | X. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *HORMONES AND SYNTHETIC SUBSTITUTES--CONTINUED | |
| ESTROGENS AND PROGESTOGENS: | |
| ESTROGENS: | |
| Chlorotrianisene - - - - - | LKL. |
| Diethylstilbestrol diphosphate - - - - - | ARA. |
| Estradiol cypionate - - - - - | UPJ. |
| Estrogens, conjugated - - - - - | ORG. |
| Estrogens, all other - - - - - | ORG. |
| PROGESTOGENS: | |
| Ethisterone - - - - - | SRL, UPJ. |
| Hydroxyprogesterone caproate - - - - - | UPJ. |
| Medroxyprogesterone acetate - - - - - | UPJ. |
| Megestrol acetate - - - - - | UPJ. |
| Melengestrol acetate - - - - - | UPJ. |
| Norgestrel - - - - - | UPJ, WYT. |
| *SYNTHETIC HYPOGLYCEMIC AGENTS: | |
| Acetohexamide - - - - - | LIL. |
| Chlorpropamide - - - - - | PFZ. |
| Tolazamide - - - - - | UPJ. |
| Tolbutamide - - - - - | UPJ. |
| THYROID HORMONE AND ANTITHYROID AGENTS: | |
| Levothyroxine, sodium - - - - - | BAX. |
| Methimazole - - - - - | LIL. |
| Thiouracil - - - - - | ACY. |
| Thyroglobulin - - - - - | NEP. |
| OTHER HORMONES AND SYNTHETIC SUBSTITUTES: | |
| Calcitonin - - - - - | ARP. |
| Corticotropin - - - - - | ARP, ORG. |
| Dinoprost tromethamine - - - - - | UPJ. |
| Glucagon - - - - - | LIL. |
| Insulin - - - - - | ARP. |
| Oxytocin - - - - - | PD. |
| *LOCAL ANESTHETICS: | |
| Butamben - - - - - | ABB. |
| Butamben picrate - - - - - | ABB. |
| Cocaine - - - - - | MRK. |
| Dibucaine - - - - - | CGY. |
| Dibucaine hydrochloride - - - - - | CGY. |
| Lidocaine - - - - - | LEM, SDW. |
| Lidocaine hydrochloride - - - - - | LEM, SDW. |
| Oxethazaine - - - - - | WYT. |
| Pramoxine hydrochloride - - - - - | ABB. |
| Procaine hydrochloride - - - - - | PD. |
| Tetracaine - - - - - | SDW. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *LOCAL ANESTHETICS--CONTINUED | |
| Local anesthetics, all other - - - - - | LEM. |
| *RENAL-ACTING AND EDEMA-REDUCING AGENTS: | |
| BENZOTHIADIAZINE DERIVATIVES: | |
| Chlorothiazide - - - - - | MRK, PFZ. |
| Hydrochlorothiazide - - - - - | ABB, CGY, MRK. |
| Methyclothiazide - - - - - | ABB. |
| Trichloromethiazide - - - - - | SCH. |
| OTHER RENAL-ACTING AND EDEMA-REDUCING AGENTS: | |
| Acetazolamide - - - - - | ACY. |
| Amiloride hydrochloride - - - - - | MRK. |
| Dichlorphenamide - - - - - | MRK. |
| Ethacrynic acid - - - - - | MRK. |
| Probenecid - - - - - | MRK. |
| Spironolactone - - - - - | SRL. |
| Sulfinpyrazone - - - - - | CGY. |
| Triamterene - - - - - | GAN, SK. |
| *SMOOTH MUSCLE RELAXANTS: | |
| Aminophylline - - - - - | GAN, MAL, SRL. |
| Cinnamedrine hydrochloride - - - - - | SDW. |
| Flavoxate hydrochloride - - - - - | SK. |
| Oxtriphylline - - - - - | MEP, PD. |
| Papaverine hydrochloride - - - - - | LIL. |
| Theophylline sodium glycinate - - - - - | CHT. |
| *VITAMINS: | |
| VITAMIN A: | |
| Beta carotene (provitamin A) - - - - - | HOF. |
| Tretinoin (vitamin A acid) - - - - - | EK. |
| Vitamin A acetate (animal feed grade) - - - - - | HOF. |
| Vitamin A acetate (medicinal grade) - - - - - | HOF. |
| Vitamin A alcohol - - - - - | HOF. |
| Vitamin A palmitate (animal feed grade) - - - - - | HOF. |
| Vitamin A palmitate (medicinal grade) - - - - - | HOF. |
| Vitamin A propionate - - - - - | HOF. |
| VITAMIN B-COMPLEX: | |
| NIACIN AND DERIVATIVES: | |
| Niacin (animal feed grade) - - - - - | MEP. |
| Niacinamide (medicinal grade) - - - - - | MEP, RIL. |
| Niacinamide (animal feed grade) - - - - - | MEP, RIL. |
| PANTOTHENIC ACID DERIVATIVES: | |
| d-Calcium pantothenate (animal feed grade) - - - - - | DA(E). |
| d-Calcium pantothenate (medicinal grade) - - - - - | DAT. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *VITAMINS--CONTINUED | |
| VITAMIN B-COMPLEX--CONTINUED | |
| PANTOTHENIC ACID DERIVATIVES--CONTINUED | |
| dl-Calcium pantothenate (animal feed grade)- - - | HFT. |
| dl-Calcium pantothenate - calcium chloride complex- - - | HFT. |
| Dexpanthenol - - - | HOF. |
| Panthenol- - - | HOF. |
| OTHER B-COMPLEX VITAMINS: | |
| Biotin - - - | HOF. |
| Cyanocobalamin (animal feed grade) - - - | MRK. |
| Cyanocobalamin (medicinal grade) - - - | MRK. |
| Cyanocobalamin (U.S.P. crystalline)- - - | MRK. |
| Pyridoxine - - - | HOF. |
| Riboflavin (animal feed grade) - - - | HOF, MRK. |
| Riboflavin (medicinal grade) - - - | HOF, MRK. |
| Riboflavin-5-phosphate, sodium - - - | HOF. |
| Thiamine hydrochloride - - - | HOF. |
| Thiamine mononitrate - - - | HOF. |
| VITAMIN C: | |
| Ascorbic acid- - - | HOF, PFZ. |
| Sodium ascorbate - - - | HOF, PFZ. |
| VITAMIN D: | |
| Cholecalciferol (vitamin D ₃) - - - | DA(E), VTM. |
| Ergocalciferol (vitamin D ₂)- - - | VTM. |
| *VITAMIN E: | |
| DL-ALPHA TOCOPHERYL ACETATE (ALL GRADES): | |
| dl-α Tocopheryl acetate (animal feed grade)- - - | BAS, DA(E), HOF. |
| dl-α Tocopheryl acetate (medicinal grade)- - - | BAS, EKT, HOF. |
| OTHER VITAMIN E: | |
| d-α Tocopherol - - - | EKT, SCP. |
| dl-α Tocopherol- - - | HOF. |
| d-α Tocopheryl acetate - - - | EKT, SCP. |
| d-α Tocopheryl acid succinate- - - | EKT, SCP. |
| VITAMIN K: | |
| MENADIONE SODIUM BISULFITE: | |
| Menadione sodium bisulfite (anhydrous) - - - | ABB. |
| Menadione sodium bisulfite (trihydrate) - - - | HET. |
| OTHER VITAMIN K: | |
| Menadione- - - | ABB. |
| *MISCELLANEOUS MEDICINAL CHEMICALS: | |
| ANTINEOPLASTIC AGENTS: | |
| Amathioprine - - - | BUR. |
| Cytarabine - - - | UPJ. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *MISCELLANEOUS MEDICINAL CHEMICALS--CONTINUED | |
| ANTINEOPLASTIC AGENTS--CONTINUED | |
| Mercaptopurine - - - - - | BUR. |
| Streptozocin - - - - - | PFN, UPJ. |
| Thioguanine (hemihydrate)- - - - - | BUR. |
| Vinblastine sulfate- - - - - | LIL. |
| Vincristine sulfate- - - - - | LIL. |
| CARDIOVASCULAR AGENTS: | |
| ANTIHYPERTENSIVE AGENTS: | |
| Captopril- - - - - | TRD. |
| Diazoxide- - - - - | SCH. |
| Guanethidine sulfate - - - - - | CGY. |
| Hydralazine hydrochloride- - - - - | CGY. |
| Methyldopa - - - - - | MRK. |
| Metoprolol tartrate- - - - - | CGY. |
| Nadolol- - - - - | TRD. |
| Pargyline hydrochloride- - - - - | ABB. |
| Prazosin hydrochloride - - - - - | PFZ. |
| Rauwolfia serpentina - - - - - | PEN. |
| Reserpine- - - - - | PEN. |
| BIOFLAVONOIDS: | |
| Hesperidin - - - - - | SKG. |
| Lemon bioflavonoid complex - - - - - | SKG. |
| Naringin - - - - - | SKG. |
| Orange-lemon flavonate - - - - - | SKG. |
| VASODILATORS: | |
| Amyl nitrite - - - - - | BUR. |
| Isoxsuprine- - - - - | AMD. |
| Oxprenolol hydrochloride - - - - - | CGY. |
| OTHER CARDIOVASCULAR AGENTS: | |
| Disopyramide phosphate - - - - - | SRL. |
| Procainamide hydrochloride - - - - - | OMS, PD. |
| DIAGNOSTIC AGENTS: | |
| ROENTGENOGRAPHIC CONTRAST MEDIA: | |
| Diatrizoate, meglumine - - - - - | OMS, SDW. |
| Diatrizoate, sodium- - - - - | OMS, SDW. |
| Iodipamide, meglumine- - - - - | OMS. |
| Iopanoic acid- - - - - | SDW. |
| Iothalamate, meglumine - - - - - | MAL. |
| Meglumine- - - - - | SDW. |
| OTHER DIAGNOSTIC AGENTS: | |
| Albumin- - - - - | SPR. |
| Glutamyl-p-nitroaniline (liver function test)- - - | REG. |

TABLE 2.--MEDICINAL CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MEDICINAL CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *MISCELLANEOUS MEDICINAL CHEMICALS--CONTINUED | |
| DIAGNOSTIC AGENTS--CONTINUED | |
| OTHER DIAGNOSTIC AGENTS--CONTINUED | |
| Metyrapone - - - - - | CGY. |
| UNCLASSIFIED MEDICINAL CHEMICALS: | |
| Allopurinol (xanthine oxidase inhibitor) - - - - - | BUR, GAN. |
| Clomiphene citrate - - - - - | LXL. |

TABLE 3.--MEDICINAL CHEMICALS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of medicinal chemicals to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| ABB | Abbott Laboratories | MAL | Mallinckrodt, Inc. |
| ACY | American Cyanamid Co. | MON | Monsanto Co. |
| ADC | Anderson Development Co. | MRK | Merck & Co., Inc. |
| ARA | Arapahoe Chemicals, Inc., Sub/Syntex U.S.A., Inc. | NEP | Nepera Chemical Co., Inc. |
| ARN | Arenol Chemical Corp. | NOR | Morton-Norwich Products, Inc., Norwich Eaton Pharmaceutical Div. |
| ARP | Armour Pharmaceutical Co. | NUT | Nutris, Inc. |
| ARS | Arsyno, Inc. | OMS | E.R. Squibb & Sons, Inc. |
| BAS | BASF Wyandotte Corp. | OPC | Orbis Products Corp. |
| BAX | Baxter Travenol Laboratories, Inc. | ORG | Organics, Inc./LaGrange Laboratories, Inc. |
| BEE | Beecham, Inc., Beecham Laboratories Div. | ORT | Roehr Chemicals, Inc. |
| BJL | Burdick & Jackson Laboratories, Inc. | PCL | Polychemical Laboratories, Inc. |
| BKC | J.T. Baker Chemical Co. | PD | Warner-Lambert Co. |
| BKL | Millmaster Onyx Group, Millmaster Chemical Co. Div. | PEN | CPC International, Inc., Penick Corp. |
| BOC | Biocraft Laboratories, Inc. | PFN | Pfanstiehl Laboratories, Inc. |
| BRS | Bristol-Myers Co. | PFZ | Pfizer, Inc. & Pfizer Pharmaceuticals, Inc. |
| BUR | Burroughs-Wellcome Co. | PHR | Pharmachem Corp. |
| CGY | Ciba-Geigy Corp. | REG | Regis Chemical Co. |
| CHT | Chattem Corp. | RDA | Rhone-Poulenc, Inc. |
| CPR | Certified Processing Corp. | RIK | Riker Laboratories, Inc., Sub. of 3M Co. |
| DA | Diamond Shamrock Corp. | RIL | Reilly Tar & Chemical Corp. |
| DAT | Daitom, Inc. | RLS | Rachelle Laboratories, Inc. |
| DOW | Dow Chemical Co. | RSA | R.S.A. Corp. |
| DPW | Deepwater Chemical Co., Ltd. | SAL | Salsbury Laboratories, Inc. |
| EK | Eastman Kodak Co. | SCH | Schering Corp. |
| EKT | Tennessee Eastman Co. Div. | SCP | Henkel Corp. |
| EN | Endo Laboratories, Inc. | SDH | Hilton Davis Chemical Co. Div. |
| FLM | Fleming Laboratories, Inc. | SDW | Sterling Organics Div. |
| GAF | GAF Corp. | SFS | Stauffer Chemical Co., Specialty Div. |
| GAN | Gane's Chemicals, Inc. | SHC | Shell Oil Co., Shell Chemical Co. Div. |
| GNF | General Foods Corp., Maxwell House Coffee Div. | SK | SmithKline Beckman Corp., SmithKline Chemical Div. |
| HET | Heterochemical Corp. | SKG | Sunkist Growers, Inc. |
| HEX | Hexagon Laboratories, Inc. | SPR | Scientific Protein Laboratories, Inc. |
| HFT | Syntex Agribusiness, Inc. | SRL | G.D. Searle & Co., Searle Chemicals, Inc. |
| HN | Tenneco Chemicals, Inc. | TMH | Thompson-Hayward Chemical Co. |
| HOF | Hoffmann-LaRoche, Inc. | TRD | Squibb Manufacturing, Inc., Renesa, Inc., Ersana, Inc. |
| HXL | Hexcel Corp., Hexcel Chemical Products | TX | Texaco Chemical Co. |
| HYN | Hynson, Westcott & Dunning, Inc. | UCC | Union Carbide Corp. |
| IMC | International Minerals & Chemical Corp. | UPJ | Upjohn Co. |
| KPT | Koppers Co., Inc. | VTM | Vitamins, Inc. |
| LEM | Napp Chemicals, Inc. | WAG | West Agro-Chemical, Inc. |
| LIL | Eli Lilly & Co., U.S. and Puerto Rico | WHL | Whitmoyer Laboratories, Inc. |
| LKL | Merrell Dow Pharmaceutical, Inc. | WTL | Pennwalt Corp., Lucidol Div. |
| LLI | Lee Laboratories, Inc. | WYT | Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp. |

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

STATISTICAL HIGHLIGHTS

Eric Land

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 1981 amounted to 164.6 million pounds. Sales of these materials in 1981 amounted to 118.6 million pounds, valued at \$251.6 million, compared with 129.0 million pounds, valued at \$253.5 million, in 1980. These totals do not include benzyl alcohol, which, before 1973, was included in flavor and perfume materials but is now shown in the miscellaneous cyclic section of this series. U.S. production of flavor and perfume materials in 1981 declined by 5.8 percent from the level in 1980 while the quantity of sales decreased by 8.1 percent.

Production of cyclic flavor and perfume materials in 1981 amounted to 93.1 million pounds; sales amounted to 68.7 million pounds, valued at \$157.7 million. Individual publishable chemicals in the cyclic group produced in the greatest volume in 1981 were α -terpineol, anethole, and benzyl acetate.

U.S. output of acyclic flavor and perfume materials in 1981 amounted to 71.4 million pounds; sales of these materials amounted to 49.9 million pounds, valued at \$93.9 million. Monosodium glutamate was by far the most important of the acyclic chemicals in 1981, although the data are not publishable. Other important acyclic compounds included linalyl alcohol, citronellol, and linalyl acetate.

TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1981

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

| FLAVOR AND PERFUME MATERIALS | PRODUCTION | SALES | | |
|---|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 164,563 | 118,552 | 251,595 | \$2.12 |
| CYCLIC | | | | |
| Total----- | 93,136 | 68,673 | 157,708 | 2.30 |
| <i>Benzenoid and Naphthalenoid</i> | | | | |
| Total----- | 77,190 | 57,922 | 109,962 | 1.90 |
| 4-Allyl-2-methoxyphenol (Eugenol)----- | 401 | 261 | 989 | 3.78 |
| Benzyl acetate----- | 1,134 | ... | ... | ... |
| Benzyl propionate----- | 26 | ... | ... | ... |
| Cinnamyl acetate----- | 12 | 13 | 93 | 6.97 |
| Isobutyl phenylacetate----- | 33 | 23 | 69 | 3.03 |
| p-Methylanisole----- | 63 | 91 | 218 | 2.40 |
| 2-Phenethyl phenylacetate----- | 28 | 14 | 87 | 6.18 |
| p-Propenylanisole (Anethole)----- | 2,455 | 2,650 | 6,365 | 2.40 |
| All other benzenoid and naphthalenoid materials----- | 73,038 | 54,870 | 102,141 | 1.86 |
| <i>Terpenoid, Heterocyclic, and Alicyclic</i> | | | | |
| Total----- | 15,946 | 10,751 | 47,746 | 4.44 |
| Cedryl acetate----- | 250 | 145 | 611 | 4.20 |
| Dihydronordicyclopentadienyl acetate----- | 168 | 131 | 211 | 1.60 |
| Ionones----- | 130 | 106 | 961 | 9.11 |
| dl-Menthol, synthetic----- | 659 | 598 | 1,748 | 2.92 |
| Methylionine (α - and β -)----- | 748 | 584 | 4,709 | 8.06 |
| α -Terpineol----- | 3,426 | 2,937 | 2,330 | .79 |
| α -Terpinyl acetate----- | 985 | ... | ... | ... |
| Vetiveryl acetate----- | 38 | ... | ... | ... |
| All other terpenoid, heterocyclic, and alicyclic materials----- | 9,542 | 6,250 | 37,176 | 5.95 |
| ACYCLIC | | | | |
| Total----- | 71,427 | 49,879 | 93,887 | 1.88 |
| Allyl heptanoate----- | 3 | 4 | 28 | 6.18 |
| Allyl hexanoate----- | ... | 59 | 227 | 3.86 |
| Butyl butyryl lactate----- | 59 | 50 | 259 | 5.13 |
| Citronellyl acetate----- | 55 | 44 | 249 | 5.63 |
| Citronellyl formate----- | 24 | 13 | 126 | 9.37 |
| Citronellyl isobutyrate----- | ... | 5 | 43 | 8.17 |
| 3,7-Dimethyl-cis-2,6-octadien-1-ol (Nenol)----- | ... | 287 | 424 | 1.48 |
| 3,7-Dimethyl-cis-2,6-octadien-1-ol acetate (Neryl acetate)----- | 27 | 23 | 111 | 4.83 |
| 3,7-Dimethyl-1,6-octadien-3-ol (Linalool; linalyl alcohol)----- | 2,605 | ... | ... | ... |
| 3,7-Dimethyl-1,6-octadien-3-ol acetate (Linalyl acetate)----- | 856 | ... | ... | ... |
| 3,7-Dimethyl-6-octen-1-ol (Citronellol)----- | 2,399 | 1,753 | 7,115 | 4.06 |
| Ethyl heptanoate----- | 13 | 7 | 27 | 3.69 |
| Ethyl hexanoate (Ethyl caproate)----- | 18 | 11 | 42 | 3.91 |

See footnote at end of table.

TABLE 1.--FLAVOR AND PERFUME MATERIALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | PRODUCTION | SALES | | |
|----------------------------------|---------------------|---------------------|----------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | <i>1,000 pounds</i> | <i>1,000 pounds</i> | <i>1,000 dollars</i> | <i>Per pound</i> |
| ACYCLIC--Continued | | | | |
| Ethyl myristate----- | 9 | ... | ... | ... |
| Geranyl acetate----- | 193 | 146 | 684 | \$ 4.69 |
| Geranyl formate----- | 19 | 18 | 120 | 6.83 |
| Isopentyl butyrate----- | 99 | 89 | 169 | 1.91 |
| Isopentyl isovalerate----- | ... | 14 | 60 | 4.24 |
| N-Octyl acetate----- | ... | 1 | 6 | 5.88 |
| Rhodinol----- | 5 | ... | ... | ... |
| Undecanol----- | 8 | ... | ... | ... |
| All other acyclic materials----- | 65,035 | 47,355 | 84,197 | 1.78 |

¹Calculated from the unrounded figures.

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC | |
| CYCLIC: | |
| BENZENOID AND NAPHTHALENOID: | |
| Acetaldehyde, diphenethyl acetal (Phenylethyl acetal) | GIV. |
| 2'-Acetonaphthone (6-Methyl naphthyl ketone) | GIV. |
| 1-Acetoxy-2-sec-butyl-1-ethnycyclohexane | GIV. |
| p-Allylanisole | SCM, X. |
| Allyl anthranilate | RT. |
| 4-Allyl-1,2-dimethoxybenzene (4-Allylveratrole) | CI. |
| * 4-Allyl-2-methoxyphenol (Eugenol) | BDS, CI, ELN, FB, GIV, IFF, UMG. |
| 4-Allyl-2-methoxyphenol acetate (Eugenol acetate) | CI, ELN, IFF. |
| 4-Allyl-1,2-(methylenedioxy)-benzene (Safrole) | FB. |
| Allyl phenoxyacetate | GIV. |
| α-Amyl cinnamic aldehyde | IFF. |
| p-Anisaldehyde | GIV, OPC. |
| Anisyl acetate | ELN, OPC. |
| Anisyl butyrate | RT. |
| Anisyl caproate | RT. |
| aurantiol | BDS. |
| Benzaldehyde glyceryl acetal | GIV. |
| Benzophenone | CWN, PD. |
| * Benzyl acetate | GIV, MON, SBC. |
| Benzyl benzoate | CIN, MON. |
| Benzyl butyrate | ELN, FB, PFZ. |
| Benzyl cinnamate | FB. |
| Benzyl formate | ELN, GIV. |
| Benzyl isobutyrate | ELN. |
| Benzyl isopentyl ether | GIV. |
| Benzyl isovalerate | ELN, FB. |
| Benzyl laurate | GIV. |
| 1-(Benzylloxy)-2-methoxy-4-propenylbenzene (Benzyl isoeugenyl ether) | GIV. |
| Benzyl phenylacetate | ELN, GIV. |
| * Benzyl propionate | ELN, FB, SBC. |
| Benzyl salicylate | FB, GIV, IFF, MON, SBC. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| BENZENOID AND NAPHTHALENOID--CONTINUED | |
| 4-tert-Butyl-2',6'-dimethyl-3',5'- dinitroacetophenone (Musk ketone)- - - - - | GIV. |
| 6-tert-Butyl-3-methyl-2,4-dinitroanisole (Musk ambrette)- - - - - | GIV. |
| p-tert-Butyl- α -methylhydrocinnamalehyde- - - - - | GIV, RDA. |
| 1-tert-Butyl-3,4,5-trimethyl-2,6-dinitrobenzene (Musk tibetene)- - - - - | GIV. |
| 5-tert-Butyl-2,4,6-trinitro-m-xylene (Musk xylol)- - - - - | GIV. |
| Carvacrol- - - - - | GIV. |
| Cinnamaldehyde - - - - - | CI, FB. |
| Cinnamic aldehyde dimethyl acetal- - - - - | CI. |
| * Cinnamyl acetate - - - - - | ELN, FB, GIV. |
| Cinnamyl alcohol - - - - - | FB. |
| Cinnamyl anthranilate- - - - - | FEL, RT. |
| Cinnamyl butyrate- - - - - | FB. |
| Cinnamyl cinnamate - - - - - | FB. |
| Cinnamyl propionate- - - - - | ELN, FB. |
| Cinnamyl tiglate - - - - - | FB. |
| Coumarin - - - - - | RDA. |
| Cuminyl acetate- - - - - | IFF. |
| Cuminyl alcohol- - - - - | GIV, IFF. |
| Cuminyl formate- - - - - | IFF. |
| trans-Decahydro- β -naphthol - - - - - | IFF. |
| 2-4-Dibromo-6-nitro-m-cresyl methyl ether- - - - - | GIV. |
| 1,2-Dimethoxy-4-propenylbenzene (4- Propenylveratrole)- - - - - | FB. |
| Dimethyl benzene ethanol acetate - - - - - | IFF. |
| 3,7-Dimethyl-2,6-octadienyl phenylacetate (Geranyl phenylacetate)- - - - - | GIV, SBC. |
| α,α -Dimethylphenethyl acetate- - - - - | IFF. |
| α,α -Dimethylphenethyl alcohol- - - - - | IFF. |
| α,α -Dimethylphenethyl butyrate - - - - - | IFF. |
| Dimethyl phenylethyl carbinol- - - - - | IFF. |
| Dimethyl phenylethyl carbinyl acetate- - - - - | IFF. |
| Diphenylmethane (Benzylbenzene)- - - - - | PD. |
| 1,3-Diphenyl-2-propanone (Dibenzylketone)- - - - - | GIV. |
| p-Ethoxybenzaldehyde - - - - - | GIV. |
| 2-Ethoxynaphthalene- - - - - | GIV. |
| Ethyl anthranilate - - - - - | FB. |
| Ethyl benzoate - - - - - | ELN. |
| Ethyl cinnamate- - - - - | ELN. |
| Ethyl- α,β -epoxy- β -methylhydrocinnamate- - - - - | ELN. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| BENZENOID AND NAPHTHALENOID--CONTINUED | |
| 2-Ethyl hexyl salicylate - - - - - | FEL, OPC. |
| Ethyl phenylacetate - - - - - | ELN, GIV. |
| Ethyl phenylglycidate - - - - - | GIV. |
| Ethyl salicylate - - - - - | FB. |
| Geranyl benzoate - - - - - | GIV. |
| α -Hexylcinnamaldehyde - - - - - | CI, IFF. |
| Hexyl salicylate - - - - - | IFF. |
| Hydratropaldehyde - - - - - | GIV, IFF. |
| Hydratropaldehyde, dimethyl acetal - - - - - | GIV, IFF. |
| Hydrocinnamic acid - - - - - | ELN. |
| Hydrocoumarin - - - - - | GIV. |
| Hydroxycitronellal methyl anthranilate - - - - - | FB, GIV. |
| 4-Hydroxy-3-ethoxybenzaldehyde (Ethylvanillin) - - - - - | MON, RDA. |
| 4-Hydroxy-3-methoxybenzaldehyde [Vanillin] - - - - - | MON. |
| 4-(4-Hydroxy-3-methoxyphenyl)-2-butanone (Vanillylacetone) - - - - - | GIV. |
| Indole - - - - - | GIV. |
| Isoamyl phenylacetate - - - - - | ELN, FB. |
| Isoamyl salicylate - - - - - | IFF. |
| Isobutyl benzoate - - - - - | ELN, SBC. |
| p-Isobutyl- α -methylhydrocinnamaldehyde (Rhodial) - - - - - | RDA. |
| *Isobutyl phenylacetate - - - - - | ELN, FB, OPC. |
| Isobutylquinoline - - - - - | IFF. |
| Isobutyl salicylate - - - - - | FB. |
| Isohexenyl tetrahydrobenzaldehyde (Myrac aldehyde) - - - - - | IFF. |
| Isopentyl benzoate - - - - - | GIV. |
| Isopentyl salicylate - - - - - | FB, MON. |
| Isopropylbenzaldehyde (Cumaldehyde) - - - - - | GIV. |
| p-Isopropyl- α -methylhydrocinnamaldehyde (Cyclamen aldehyde) - - - - - | RDA. |
| p-Isopropyl- α -methylhydrocinnamyl alcohol - - - - - | GIV. |
| l-Limonene - - - - - | SCM. |
| Linalyl anthranilate - - - - - | BDS, FMT. |
| Linalyl benzoate - - - - - | GIV, HOF. |
| Linalyl cinnamate - - - - - | HOF. |
| p-Mentha-1,8-diene (Limonene) - - - - - | IFF, SKG. |
| Menthyl anthranilate - - - - - | FB, PFW. |
| p-Methoxybenzyl alcohol (Anisyl alcohol) - - - - - | ELN, GIV, OPC. |
| o-Methoxy cinnamic aldehyde - - - - - | FB. |
| o-Methoxy cinnamic aldehyde crystals - - - - - | CI. |
| 2-Methoxynaphthalene - - - - - | GIV. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| BENZENOID AND NAPHTHALENOID--CONTINUED | |
| 1-p-Methoxyphenyl penten-1-one-3 (α-Methyl-anisalacetone) | GIV. |
| 2-Methoxy-4-propenylphenol (Isoeugenol) | CI, IFF. |
| 2-Methoxy-4-propenylphenol, acetate | CI, ELN. |
| *p-Methylanisole | GIV, OPC, SW. |
| Methyl anthranilate | SW, UNG. |
| Methyl benzoate | HN, PFW, SBC. |
| α-Methylbenzyl acetate (Styralyl acetate) | CI, GIV. |
| α-Methylcinnamaldehyde | CI, FB. |
| Methyl cinnamate | FB. |
| 6-Methylcoumarin | GIV. |
| p-Methyl ethyl phenyl glycidate | PFW. |
| p-Methylhydratropaldehyde | GIV. |
| 1-Methyl-isohexyl-hexahydro benzaldehyde | GIV. |
| Methyl N-methylantranilate | SW. |
| Methyl phenylacetate | ELN, OPC. |
| Methyl salicylate | HN, MON. |
| Musk 89 | IFF. |
| 1,1,3,3,5-Pentamethyl-4,6-dinitroindan (Moskene) | GIV. |
| α-Pentylcinnamaldehyde | CI, FB. |
| Phenethyl acetate | IFF, OPC. |
| Phenethyl alcohol | IFF, OPC. |
| Phenethyl benzoate | IFF. |
| Phenethyl butyrate | IFF. |
| Phenethyl formate | ELN, IFF. |
| Phenethyl isobutyrate | ELN, GIV, IFF. |
| Phenethyl isovalerate | ELN, FB. |
| *2-Phenethyl phenylacetate | BDS, CI, ELN, GIV, IFF. |
| Phenethyl propionate | ELN, OPC. |
| Phenethyl salicylate | OPC. |
| 2-Phenoxyethyl isobutyrate | ELN, OPC. |
| Phenoxyethyl propionate | IFF. |
| Phenylacetaldehyde | GIV. |
| Phenylacetaldehyde, dimethyl acetal | ELN, GIV. |
| Phenylacetic acid | GIV. |
| Phenylacetic acid isopentyl ester | GIV. |
| α-Phenylanisole | GIV. |
| 4-Phenyl-3-buten-2-one | FB. |
| Phenylethyl anthranilate | RT. |
| Phenylethyl benzoate | OPC. |
| Phenylethyl 2-methyl butyrate | SCM. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| BENZENOID AND NAPHTHALENOID--CONTINUED | |
| Phenylethyl tiglate | FB. |
| 3-Phenyl-1-propanol (Hydrocinnamic alcohol) | ELN, FB. |
| 3-Phenylpropyl acetate | ELN, GIV. |
| 3-Phenylpropyl cinnamate | FB. |
| Phenyl propyl pyrazine acetate | IFF. |
| Piperonal (Heliotropin) | AMB. |
| *p-Propenylanisole (Anethole) | ARZ, HPC, MCI, SCM. |
| 4-Propenyl-1,2-dimethoxybenzene (Methyl isoeugenol) | CI. |
| p-Propylanisole (Dihydroanethole) | FB, GIV. |
| SWEETENERS, SYNTHETIC: | |
| Saccharin (1,2-Benzisothiazolin-3-one, -1,1- dioxide) | SW. |
| Saccharin, sodium salt | SW. |
| Synthetic sweetener material, all other | ABB. |
| p-Tolualdehyde | FB, GIV. |
| p-Tolylacetaldehyde | GIV. |
| p-Tolyl acetate | ELN. |
| p-Tolyl isobutyrate | GIV. |
| p-Tolylphenylacetate | GIV. |
| Trimethylcyclohexyl salicylate | ARS. |
| All other benzenoid or naphthalenoid chemicals | AIC, IFF, PFW. |
| TERPENOID, HETEROCYCLIC, AND ALICYCLIC: | |
| Acetyl-n-butyryl (2,3-Hexanedione) | FB. |
| Acetyl cedrene (Vertoflex) | BDS. |
| Acetyl isovaleryl (5-Methyl-2,3-hexanedione) | FB. |
| Acetyl propionyl (2,3-Pentanedione) | FB. |
| Allo-ocimene | IFF, X. |
| Allyl cyclohexyl P-opionate | GIV. |
| Amyris acetate | BDS, GIV. |
| Beta methyl ionone coevr | IFF. |
| Bornyl isovalerate | FB, RT. |
| 2-tert-Butylcyclohexanol | IFF. |
| p-tert-Butylcyclohexyl acetate (Verbeniax) | CI, IFF. |
| p-tert-Butylcyclohexanone | IFF. |
| 2-sec-Butylcyclohexanone | GIV. |
| o-tert-Butylcyclohexyl acetate | IFF. |
| Cadinene | FB. |
| Carvone oxide | OPC. |
| β-Caryophyllene | CI, GIV, SCM. |
| Caryophyllene acetate | CI. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| TERPENOID, HETEROCYCLIC, AND ALICYCLIC--CONTINUED | |
| α -Cedrene epoxide (Andrane)- | IFF. |
| Cedrenol - | BDS, ELN, IFF. |
| Cedrol - | ELN. |
| *Cedryl acetate - | BDS, ELN, IFF, UNG. |
| Cedryl formate - | IFF. |
| Cyclohexyl acetate - | RT. |
| 2-Cyclohexylcyclohexanone - | GIV. |
| Cyclohexyl isovalerate - | RT. |
| *Dihydronordicyclopentadienyl acetate (Cyclacet)- | CI, IFF, OPC. |
| Dihydronordicyclopentadienyl isobutyrate - | IFF. |
| Dihydronordicyclopentadienyl propionate (Cyclaprop) (Verdyl propionate extra)- | CI, IFF. |
| Dihydro terpineol - | IFF, NCI. |
| Dihydroterpinyl acetate - | IFF, NCI, SCM. |
| Furfural acetone - | RT. |
| Galaxolide (1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8- hexamethyl-cyclopenta-7-2-benzopyran)- | IFF. |
| Guaiacwood acetate - | ELN, FB, GIV, UNG. |
| Guaiene - | FB. |
| Dl-hydro-iso-jasmone - | FB. |
| 3-Hydroxy-2-ethyl-4-pyrone (Ethylmatol) - | PFZ. |
| 4-(4-Hydroxy-4-methyl pentyl)-3-cyclohexene-10- carboxaldehyde (Lyrall) - | IFF. |
| 3-Hydroxy-2-methyl-4-pyrone (Maltol) - | PFZ. |
| 4-Hydroxynonanonic acid, 7-lactone (7-Nonalactone) - | ELN. |
| 4-Hydroxyundecanoic acid, 7-lactone (7- Undecalactone) - | FB. |
| Ionone(α - and β)- | BDS, GIV, NCI. |
| α -Ionone - | BDS, GIV, HOF, IFF. |
| β -Ionone - | BDS, HOF. |
| Isoamyl furoate - | RT. |
| Isobornyl acetate - | NCI, RDA. |
| Isobornyl propionate - | ELN. |
| Isocamphyl cyclohexanols - | GIV. |
| Isojasmone - | FB. |
| Isomenthone - | GIV. |
| 2-Isopropylcyclohexanol - | GIV. |
| Isopulegyl acetate - | GIV. |
| Jasmal - | IFF. |
| p-Mentha-1,3-diene (α -Terpinene) - | SCM. |
| p-Mentha-1,4-diene (7-Terpinene) - | SCM. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| TERPENOID, HETEROCYCLIC, AND ALICYCLIC--CONTINUED | |
| p-Mentha-6,8-dien-2-ol (Laevo carveol) - - - - - | FB. |
| p-Mentha-6,8-dien-2-one (Dextro-carvone) (Carvol) - - - - - | FB. |
| l-p-Mentha-6,8-dien-2-yl acetate (Laevo-carvyl acetate) - - - - - | FB. |
| p-Menth-8-en-3-ol (Isopulegol) - - - - - | GIV. |
| p-Menth-1-en-3-one (Piperitone) - - - - - | GIV. |
| p-Menth-4-(8)-en-3-one (Pulegone) - - - - - | GIV. |
| l-l-p-Menthen-6-yl-1-propanone - - - - - | GIV. |
| d-Menthol - - - - - | SCM. |
| *dl-Menthol, synthetic - - - - - | GIV, HAR, NCI, SCM. |
| l-Menthol, synthetic - - - - - | HAR, SCM. |
| l-Menthone - - - - - | SCM. |
| Menthyl acetate - - - - - | GIV. |
| l-Menthyl acetate - - - - - | SCM. |
| Methyl furoate - - - - - | RT. |
| *Methylionone(α - and β -) - - - - - | BDS, GIV, IFF, NCI. |
| 7-Methylionone - - - - - | GIV, NCI. |
| 6-Methyl- α -ionone - - - - - | GIV. |
| Nopol - - - - - | NCI. |
| Nopyl acetate - - - - - | FEL, NCI. |
| 3-Pentyl tetrahydro-4-pyridine - - - - - | IFF. |
| Rose oxide - - - - - | AIC, FB. |
| α -Santalol - - - - - | GIV, IFF. |
| β -Santalol - - - - - | GIV. |
| Sassafrass oil, hydrogenated - - - - - | GIV. |
| Terpineol(α - and β -) - - - - - | GIV. |
| * α -Terpineol - - - - - | HPC, NCI, SCM. |
| * α -Terpinyl acetate - - - - - | IFF, NCI, SCM. |
| α -Terpinyl propionate - - - - - | ELN. |
| [4,4',4'',4'''-Tetraaminophthalocyaninato(2-)]- copper - - - - - | HPC. |
| 3,3,5-Trimethyl cyclohexanol (m-Homomenthol) - - - | ARS. |
| 1-(2,6,6-Trimethyl-2-cyclohexen-1-yl)-1,6-heptadien- 3-one (Allyl- α -ionone) - - - - - | IFF. |
| Vetivenol - - - - - | GIV. |
| *Vetivenyl acetate - - - - - | BDS, FB, GIV, IFF. |
| All other terpenoid, heterocyclic, or alicyclic flavor and perfume chemicals - - - - - | BDS, IFF, OPC, RT, SCM, VIK. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC | |
| Allyl heptanoate - - - - - | ELN, FB, RT. |
| *Allyl hexanoate - - - - - | ELN, FB, UNG. |
| Allyl isothiocyanate (Synthetic mustard oil) - - - - - | OPC. |
| Allyl isovalerate - - - - - | RT. |
| Allyl mercaptan - - - - - | RT. |
| Allyl octanoate (Allyl caprylate) - - - - - | RT. |
| Allyl sulfide - - - - - | RT. |
| Ammonium isovalerate - - - - - | RSA. |
| Butter acids - - - - - | RT. |
| Butter esters - - - - - | RT. |
| Butyl butyrate - - - - - | FB. |
| *Butyl butyryl lactate - - - - - | ARS, BJL, RT. |
| Butyl undecylenate - - - - - | FB, GIV. |
| Citral dimethyl acetal - - - - - | CI, GIV, IFF. |
| Citronellal - - - - - | PFM. |
| *Citronellyl acetate - - - - - | ELN, GIV, IFF, NCI. |
| Citronellyl butyrate - - - - - | GIV, IFF. |
| Citronellyl ethyl ether - - - - - | IFF. |
| *Citronellyl formate - - - - - | ELN, GIV, IFF. |
| *Citronellyl isobutyrate - - - - - | ELN, GIV, IFF. |
| Citronellyl nitrile - - - - - | CI. |
| Citronellyl oxyacetaldehyde - - - - - | IFF. |
| Citronellyl propionate - - - - - | GIV, IFF. |
| Crude acetate mixture (Linalyl, neryl, geranyl acetates, main components) - - - - - | X. |
| Decanal (Capraldehyde) - - - - - | CI, GIV. |
| Decyl acetate - - - - - | GIV. |
| Diethyl acetal - - - - - | FB. |
| Diethyl sebacate - - - - - | ELN. |
| Diethyl succinate - - - - - | ELN. |
| d-Dihydrocarveol - - - - - | SCM. |
| Dihydrocarvone - - - - - | SCM. |
| Dihydrolinalool - - - - - | SCM. |
| Dihydro myrcenol - - - - - | IFF. |
| 2,6 Dimethyl-5-hepten-1-al - - - - - | GIV. |
| Dimethyl hexanediol - - - - - | X. |
| Dimethyl hexynediol - - - - - | X. |
| 3,7-Dimethyl-2,3,6-nonadienenitrile - - - - - | GIV. |
| 3,7-Dimethyl-trans-2,6-octadienal (Citral A geranial) - - - - - | FB, FEL. |
| 3,7-Dimethyl-2,6-octadienal (citral a b) - - - - - | NCI, SCM. |
| *3,7-Dimethyl-cis-2,6-octadien-1-ol (Nerol) - - - - - | ELN, FB, GIV, IFF, NCI, SCM. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| 3,7-Dimethyl-trans-2,6-octadien-1-ol (Geraniol)- - - | ELN, FB, FEL, GIV, IFF, NCI, SCM. |
| *3,7-Dimethyl-1,6-octadien-3-ol (Linalool) (Linalyl alcohol)- - - - - | ELN, FB, FEL, GIV, IFF, NCI, SCM. |
| *3,7-Dimethyl-cis-2,6-octadienol, acetate (Neryl acetate)- - - - - | CI, ELN, GIV, IFF, NCI. |
| *3,7-Dimethyl-1,6-octadien-3-ol, acetate (Linalyl acetate)- - - - - | ELN, FB, GIV, NCI, SCM. |
| 3,7-Dimethyl-1,6-octadien-3-yl isobutyrate (Linalyl isobutyrate)- - - - - | ELN. |
| 3,7-Dimethyl-1,6-octadien-3-yl propionate (Linalyl propionate)- - - - - | ELN, GIV, HOF. |
| Dimethyloctanal- - - - - | SCM. |
| 3,7-Dimethyloctanol-1 [Tetrahydrogeraniol]- - - - - | GIV, NCI, SCM. |
| 3,7-Dimethyl-3-octanol - - - - - | GIV, HOF, IFF, SCM. |
| Dimethyloctanyl acetate- - - - - | IFF. |
| 3,7-Dimethyl-6-octen-1-ol (Citronellal)- - - - - | FB, GIV, SCM. |
| *3,7-Dimethyl-6-octen-1-ol (Citronellol)- - - - - | ELN, FB, GIV, IFF, NCI, SCM. |
| 3,7-Dimethyl-7-octenol 70%, 6-octenol isomer 30% - - - | GIV. |
| Dimyrcetol - - - - - | IFF. |
| Ethyl butyrate - - - - - | FB, NW. |
| Ethyl caprate- - - - - | ELN, FB. |
| Ethyl crotonate- - - - - | RT. |
| Ethyl formate- - - - - | FB, RT. |
| *Ethyl heptanoate - - - - - | ELN, FB, FEL, RT. |
| Ethyl heptenone- - - - - | HOF. |
| *Ethyl hexanoate- - - - - | ELN, FB, NW. |
| Ethyl isobutyrate- - - - - | FB. |
| Ethyl isovalerate- - - - - | ELN, FB. |
| Ethyl laurate- - - - - | ELN, FB. |
| Ethyl linalool (3,7-Dimethyl-1,6-nonadien-3-ol)- - - | HOF. |
| Ethyl linalyl acetate (3,7-Dimethyl-1,6-nonadien-3- ol, acetate)- - - - - | HOF. |
| Ethyl-2-methyl butyrate- - - - - | PFW, SCM. |
| Ethyl-2 methyl pentanoate- - - - - | PFW. |
| *Ethyl myristate- - - - - | ELN, PFW, RT. |
| Ethyl nonanoate- - - - - | ELN, FB. |
| Ethyl octanoate- - - - - | ELN, FB. |
| Ethyl oxyhydrate - - - - - | RT. |
| Ethyl propionate - - - - - | FB, NW. |
| Ethyl valerate - - - - - | ELN. |
| *Geranyl acetate- - - - - | CI, ELN, FEL, GIV, IFF, NCI, PFW, SCM. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| Geranyl butyrate - - - - - | ELN, GIV. |
| Geranyl crotonate - - - - - | FB. |
| Geranyl formate - - - - - | BDS, ELN, GIV. |
| Geranyl isobutyrate - - - - - | IFF. |
| Geranyl isovalerate - - - - - | FB. |
| Geranyl nitrile (Gerano nitrile) (Citralva) - - - - - | CI, IFF. |
| Geranyl propionate - - - - - | ELN, FB. |
| Geranyl tiglate - - - - - | FB. |
| Glutamic acid, monosodium salt (Monosodium glutamate) - - - - - | SFF. |
| Heptanolide - - - - - | FB. |
| N-hexanal - - - - - | SCM. |
| Hexanoic acid [Caproic acid] - - - - - | SCM. |
| 2-Hexenal - - - - - | FB, GIV. |
| cis-3-Hexen-1-ol - - - - - | GIV. |
| 2-Hexenol - - - - - | FB, SCM. |
| cis-3-Hexen-1-yl acetate - - - - - | BDS, GIV. |
| cis-3-Hexenyl butyrate - - - - - | SCM. |
| Hexyl caproate - - - - - | FB. |
| 3-Hexynol - - - - - | HOF. |
| 3-Hydroxy-2-butanone (Acetoin) - - - - - | FMT. |
| Hydroxycitronellol - - - - - | SCM. |
| 7-Hydroxy-3,7-dimethyl-1-octanal (Hydroxycitronellal) - - - - - | GIV, IFF, SCM. |
| 7-Hydroxy-3,7-dimethyl octanal, dimethyl acetal (Hydroxycitronellal, dimethyl acetal) - - - - - | GIV. |
| Hydroxy-2-propanone (Acetol) - - - - - | FB. |
| Isoamyl caproate - - - - - | FB. |
| Isoamyl caprylate - - - - - | FB. |
| Isoamyl propionate - - - - - | FB. |
| Isobutyl acetate - - - - - | ALD, FB. |
| Isobutyl butyrate - - - - - | FB. |
| Isodihydro lavandulol - - - - - | FB. |
| Isodihydro lavandulylacetate - - - - - | FB. |
| Isodihydro lavandulylaldehyde - - - - - | FB. |
| Isopentyl acetate (Isoamyl acetate) - - - - - | ELN, FB, MW, PFW. |
| * Isopentyl butyrate - - - - - | FB, GIV, NW. |
| Isopentyl formate - - - - - | ELN, FB, RT. |
| * Isopentyl isovalerate - - - - - | ELN, FB, PFW. |
| Lauraldehyde - - - - - | FB, GIV. |
| Linalyl formate - - - - - | HOF. |
| Methoxy citronellal - - - - - | SCM. |

TABLE 2.--FLAVOR AND PERFUME MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| FLAVOR AND PERFUME MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| Methyl butynol - - - - - | X. |
| Methyl crotonate - - - - - | FB, RT. |
| 3-Methyl-5-heptanone oxime - - - - - | GIV. |
| Methyl isobutyrate - - - - - | PFW. |
| Methyl isovalerate - - - - - | FB. |
| 3-Methyl-2-(and3)nonene nitrile - - - - - | GIV. |
| Methyl-2-nonenolate - - - - - | GIV, PFW. |
| Methyl-octyl aldehyde - - - - - | CI. |
| Methylol methyl hexyl ketone - - - - - | GIV. |
| 4-Methyl pentanoic acid - - - - - | PFW. |
| Methyl pentynol - - - - - | X. |
| # Methyl thiopropionaldehyde - - - - - | RT. |
| 2-Methylundecanal - - - - - | CI, GIV. |
| Myrcenyl acetate - - - - - | IFF. |
| Myristaldehyde - - - - - | GIV. |
| Nonanal - - - - - | CI, GIV. |
| 1,3-Nonanediol acetate - - - - - | CI, GIV. |
| Nonyl acetate - - - - - | CI, ELN. |
| Ocimenyl acetate - - - - - | IFF. |
| Octanal - - - - - | CI, GIV. |
| 3-Octanol - - - - - | SCM. |
| 3-Octanone (Ethyl amyl ketone) - - - - - | GIV. |
| *N-Octyl acetate - - - - - | ELN, FB, SCM. |
| N-Octyl alcohol - - - - - | GIV. |
| Pseudo linalyl acetate (Neoberganate) - - - - - | IFF. |
| Rhodinol - - - - - | BDS, FB, FEL, GIV, IFF. |
| Rhodinyll acetate - - - - - | GIV, IFF. |
| Tepyl acetate - - - - - | ELN. |
| Tetrahydro allo-ocimene - - - - - | IFF. |
| *Undecanal - - - - - | CI, GIV, IFF. |
| 9-Undecenal - - - - - | GIV, PD. |
| All other acyclic flavor and perfume materials - - - - - | ARS, BDS, CI, FB, FMT, HOF, IFF, PFW, SBC, SCM, X. |

TABLE 3.--FLAVOR AND PERFUME MATERIALS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of flavor and perfume materials to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--------------------------------------|------|---|
| ABB | Abbott Laboratories | IFF | International Flavors & Fragrances, Inc. |
| AIC | Albany International Corp. | MON | Monsanto Co. |
| ALD | Aldrich Chemical Co., Inc. | NCI | Union Carbide Corp., Terpene and Aromatics Div. |
| AMB | American Bio-Synthetics Corp. | NW | Northwestern Chemical Co. |
| ARS | Arsynco, Inc. | OPC | Orbis Products Group |
| ARZ | Arizona Chemical Co. | PD | Warner-Lambert Co. |
| BDS | Biddle Sawyer | PFW | Hercules, Inc., PFW Div. |
| BJL | Burdick & Jackson Laboratories, Inc. | PFZ | Pfizer, Inc. |
| CI | Chem-Fleur, Inc. | RDA | Rhone-Poulenc, Inc. |
| CIN | Stockhausen, Inc. | RSA | R.S.A. Corp. |
| CWN | Upjohn Co., Fine Chemical Div. | RT | Ritter International |
| ELN | Elan Chemical Co. | SBC | Scher Chemicals, Inc. |
| FB | Fritzsche Dodge & Olcott, Inc. | SCM | SCM Corp., Organic Chemicals Div. |
| FEL | Felton International, Inc. | SFF | Stauffer Chemical Co., Food Ingredients Div. |
| FMT | Fairmount Chemical Co., Inc. | SKG | Sunkist Growers, Inc. |
| GIV | Givaudan Corp. | SW | Sherwin-Williams Co. |
| HAR | Haarmann & Reimer Corp. | UNG | Ungerer & Co. |
| HN | Tenneco Chemicals, Inc. | VIK | Viking Chemical Co. |
| HOF | Hoffmann-LaRoche, Inc. | | |
| HPC | Hercules, Inc. | | |
| | | | |
| | | | |
| | | | |
| | | | |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 34 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Edward J. Taylor

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 1981 are given in table 1. U.S. production of plastics and resin materials in 1981 totaled 40,601 million pounds, or 6.3 percent more than the 38,186 million pounds produced in 1980. Sales in 1981 totaled 36,107 million pounds, valued at \$17,092 million, compared with 33,550 million pounds, valued at \$16,011 million, in 1980.

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 7,295 million pounds in 1981, compared with 7,064 million pounds in 1980. Production of the most important products in 1981 included phenolic resins (1,688 million pounds), amino (or urea and melamine) resins (1,495 million pounds), polyester resins, unsaturated (1,132 million pounds), and alkyd resins (717 million pounds).

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 33,306 million pounds in 1981 (or 82.0 percent of the total output for 1981), compared with 31,122 million pounds in 1980. Production of the most important products in 1981 included polyethylene (12,604 million pounds), vinyl resins (6,962 million pounds), and styrene type materials (5,915 million pounds).

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1981

[Quantities and values are given in terms of the total weight of the materials (dry basis). Listed below are all plastics and resin materials, urethane type elastomers, and certain precursors for which any reported data on production or sales may be published. (Leaders (...)) are used where the reported data are accepted in confidence and may not be published or where no data were reported.) Table 2 lists all products for which data on production and/or sales were reported and identifies the manufacturers of each]

| PLASTICS AND RESIN MATERIALS | PRODUCTION | SALES | | |
|--|---|---|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds dry basis ² | 1,000 pounds dry basis ² | 1,000 dollars | Per pound |
| Grand total----- | 40,601,020 | 36,106,551 | 17,092,269 | \$0.47 |
| Plastics and resin materials, benzenoid ³ ----- | 11,729,680 | 10,470,900 | 6,836,908 | .65 |
| Plastics and resin materials, nonbenzenoid----- | 28,871,340 | 25,635,651 | 10,255,361 | .40 |
| THERMOSETTING RESINS | | | | |
| Total----- | 7,295,480 | 5,775,068 | 3,414,752 | .59 |
| Alkyd resins, total----- | 717,018 | 419,600 | 272,759 | .65 |
| Alkyd-acrylate copolymer resins----- | 1,523 | ... | ... | ... |
| Phthalic anhydride type----- | 550,171 | 342,418 | 212,302 | .62 |
| Polybasic acid type----- | 74,488 | 26,147 | 23,237 | .89 |
| Styrenated-alkyds or copolymer alkyds----- | 16,302 | 11,555 | 9,027 | .78 |
| Vinyl toluene alkyds----- | 39,135 | 32,080 | 20,231 | .63 |
| Other copolymer alkyds----- | 35,399 | 7,400 | 7,962 | 1.08 |
| Dicyandiamide resins----- | 2,068 | 1,872 | 2,197 | 1.17 |
| Epoxy resins: ^{4,5} | | | | |
| Unmodified----- | 361,144 | 277,404 | 326,555 | 1.18 |
| Advanced----- | (120,116) | (96,185) | (128,020) | (1.33) |
| Purfuryl type resins----- | 23,581 | 23,323 | 16,858 | .72 |
| Glyoxal-formaldehyde resins----- | 12,424 | 7,708 | 6,178 | .80 |
| Melamine-formaldehyde resins (an amino resin)----- | 189,742 | 161,486 | 130,368 | .81 |
| Phenolic and other tar acid resins----- | 1,687,954 | 1,302,193 | 655,989 | .50 |
| Polyester resins, unsaturated ⁶ ----- | 1,132,398 | 1,001,013 | 664,837 | .66 |
| Polyether and polyester polyols for urethanes ⁷ ----- | 1,457,089 | 1,122,692 | 642,560 | .57 |
| Polyurethane elastomers and plastics products, total----- | 294,729 | 244,789 | 311,860 | 1.27 |
| Elastomers ⁸ ----- | 141,667 | 120,223 | 190,986 | 1.59 |
| Plastics----- | 153,062 | 124,566 | 120,874 | .97 |
| Silicone resins----- | 17,328 | 8,264 | 28,864 | 3.49 |
| Urea-formaldehyde resins (an amino resin)----- | 1,305,635 | 1,134,762 | 250,007 | .22 |
| Other thermosetting resins ⁹ ----- | 94,370 | 69,962 | 105,720 | 1.51 |
| THERMOPLASTIC RESINS | | | | |
| Total----- | 33,305,540 | 30,331,483 | 13,677,517 | .45 |
| Acrylic resins, total ¹⁰ ----- | 1,100,445 | 884,319 | 828,227 | .94 |
| Butylacrylate-ethyl acrylate copolymers resins----- | 19,560 | 12,776 | 9,452 | .74 |
| Polymethyl methacrylate----- | 433,194 | 317,676 | 312,090 | .98 |
| Thermosetting acrylics----- | 55,172 | 18,811 | 24,197 | 1.29 |
| Other acrylics----- | 592,519 | 535,056 | 482,488 | .90 |
| Engineering plastics ¹¹ ----- | 421,739 | 359,578 | 558,887 | 1.55 |
| Fluorocarbon resins----- | 34,870 | 31,488 | 200,970 | 6.38 |
| Petroleum hydrocarbon resins----- | 272,449 | 259,341 | 125,679 | .48 |
| Polyamide resins, total----- | 339,219 | 274,156 | 407,233 | 1.49 |
| Nylon type ^{11, 12} ----- | 290,223 | 227,445 | 358,193 | 1.57 |
| Non-nylon type----- | 48,996 | 46,711 | 49,040 | 1.05 |

See footnotes at end of table.

TABLE 1.--PLASTICS AND RESIN MATERIALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| PLASTICS AND RESIN MATERIALS | PRODUCTION | SALES | | |
|--|---|---|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds dry basis ² | 1,000 pounds dry basis ² | 1,000 dollars | Per pound |
| THERMOPLASTIC RESINS--Continued | | | | |
| Polyester resins, saturated, total ^{10, 13} | 720,039 | ... | ... | ... |
| Polyethylene terephthalate (PET) | 625,258 | ... | ... | ... |
| Polybutylene terephthalate (PBT) and other polyesters, saturated | 104,781 | 86,581 | 116,841 | \$1.35 |
| Polyethylene resins, total | 12,603,650 | 12,279,078 | 3,974,538 | 0.32 |
| Specific gravity 0.940 and below | 7,695,864 | 6,273,709 | 2,416,044 | .39 |
| Specific gravity over 0.940 | 4,907,786 | 6,005,369 | 1,558,494 | .26 |
| Polypropylene resins | 4,007,759 | 3,534,662 | 1,335,607 | .38 |
| Polyterpene resins | 35,919 | 35,485 | 27,532 | .78 |
| Rosin modifications, total | 275,357 | 266,457 | 131,411 | .49 |
| Modified rosins (unesterified) | 139,495 | 127,102 | 55,687 | .44 |
| Modified rosin esters | 106,080 | 102,936 | 53,234 | .52 |
| Rosin esters, unmodified (Ester gums) | 29,782 | 36,419 | 22,490 | .62 |
| Styrene plastics materials, total | 5,915,177 | 5,369,358 | 3,037,706 | .57 |
| Acrylonitrile-butadiene-styrene terpolymer (ABS) resins | 1,018,099 | 921,931 | 683,145 | .74 |
| Rubber modified polystyrene | 1,178,987 | 1,238,667 | 566,216 | .46 |
| Straight polystyrene ¹⁴ | 2,325,397 | 2,014,646 | 946,805 | .47 |
| Styrene-butadiene latexes | 585,478 | 570,296 | 342,132 | .60 |
| All other styrene copolymers | 435,766 | 318,081 | 253,965 | .80 |
| All other styrene latexes | 66,782 | 63,815 | 35,502 | .56 |
| All other styrene plastics materials ¹⁵ | 304,668 | 241,922 | 209,941 | .87 |
| Vinyl resins, total ¹⁶ | 6,962,135 | 6,144,620 | 2,173,868 | .35 |
| Polyvinyl acetate ¹⁷ | 636,409 | 582,027 | 282,741 | .49 |
| Polyvinyl alcohol ¹⁸ | ... | 133,250 | 122,618 | .92 |
| Polyvinyl chloride and copolymers | 5,618,365 | 4,982,558 | 1,463,182 | .29 |
| Polyvinylidene chloride latex resins | 25,754 | 25,052 | 18,945 | .76 |
| Vinyl acetate-acrylate copolymers | 253,109 | ... | ... | ... |
| Other vinyl and vinylidene resins ¹⁹ | 428,498 | 421,733 | 286,382 | .68 |
| All other thermoplastic resins ²⁰ | 606,782 | 806,360 | 759,018 | .94 |

¹Calculated from unrounded figures.²Dry 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.³Includes benzenoid plastics and resin materials as defined in part 1 of schedule 4 of the Tariff Schedules of the United States (TSUS); also includes urethane type elastomers which are not defined in part 1 of schedule 4 of the TSUS.⁴Includes 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.⁵Data shown for advanced epoxy resins are that part of the unmodified epoxy resins which is further processed; therefore, the totals in parentheses are not included in the grand total.⁶Polyester 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.⁷In 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.⁸The 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.⁹Includes acetone-formaldehyde resins, alkyl resins, polybutadiene resins, thiourea resins, and certain other thermosetting resins.¹⁰Does not include production or sales for fiber use.¹¹Engineering plastics: Includes acetal, polycarbonate, 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.

Footnotes--Continued

¹²Statistics for nylon 6 and nylon 6/6 which are used in plastic applications (e.g., molding, etc.) are included here.

¹³Statistics 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.

¹⁴Includes expandable polystyrene beads (EPS).

¹⁵Includes data for styrene-acrylonitrile copolymer (SAN) resins, α -methyl styrene polymers, methyl methacrylate-butadiene-styrene (MBS) resins, styrene-divinylbenzene copolymer resins, styrene-maleic anhydride copolymer resins, and styrene-methyl methacrylate copolymer resins.

¹⁶Data are on the basis of dry resin content, excluding the weight of plasticizers, extenders, fillers, coloring agents, stabilizers, or impact modifiers, unless otherwise noted.

¹⁷Data 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.

¹⁸Production and sales do not include polyvinyl alcohol used as a reactive intermediate for polyvinyl butyral or other vinyl resins.

¹⁹Includes polyvinyl alcohol production.

²⁰Includes cellulose plastics, coumarone-indene resins, polybutylene type resins, polyethylene terephthalate (PET) resins (sales only), polyphenyl aromatic ester resins, and 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.

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| PLASTICS AND RESIN MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| THERMOSETTING RESINS | |
| Acetone-formaldehyde resins - - - - - | ACY, AMR, BRU, GP. |
| *ALKYD RESINS: | |
| *Acrylate-alkyd copolymer resins - - - - - | DSO, FRE, MNP, OBC, SCM. |
| *Phthalic anhydride type alkyd resins - - - - - | ACO, APT, ASH, AZS, BAK, BAL, BEN, BLC, CGL, CJO, CPV, CRC, DEG, DRC, DSO, EW, FCD, FJI, FOC, FRE, GEI, GRV, HAN, ICF, JOB, JSC, KMP, KPT, LIC, MCC, MID, MNP, MCP, OBC, PER, PPG, PRT, RCI, REL, RH, SCH, SCN, SDH, SKT, SM, STT, SW, USS, X. |
| *Polybasic acid type alkyd resins - - - - - | ACY, BEN, CEL, CJO, DEG, DSO, DUP, EW, FJI, FOC, FRE, GEI, GRV, HAN, ICF, MCC, PPG, RCI, REL, SCH, SCM, SKT, SM, STT, SW. |
| *Styrenated-alkyds, or copolymer alkyds - - - - - | ACY, CJO, CPV, DSO, EW, FRE, GEI, GRV, HAN, KPT, MCC, MRT, OBC, REL, SCH, SKT, SM, STT, SW. |
| *Vinyl toluene alkyds - - - - - | BLC, CGL, CSD, FJI, FRE, GEI, JOB, MCC, MNP, OBC, PPG, PRT, REL, SCH, STT, SW. |
| *Alkyd copolymers, all other - - - - - | CGL, DEG, DRC, DSO, DUP, GEI, JOB, LIC, MCC, MNP, PPG, PRT, SW, X. |
| AMINO RESINS: | |
| *Melamine-formaldehyde resins - - - - - | ACY, AMR, AUX, BOR, CBD, CEL, CGL, CPV, DSO, DRC, GP, GRV, HAN, JSC, KPT, LIC, MID, MNP, MON, OCF, PKP, PLS, PMC, PPG, PPL, PST, RCI, REL, SM, SNW, STC, WPG, WRD. |
| Thiourea resins - - - - - | CMP. |
| *Urea-formaldehyde resins - - - - - | ACY, AMR, APX, ASH, AUX, BAS, BOR, CBD, CBM, CEL, CGL, CMP, CPV, DAN, DSO, GAF, GOC, GP, GRV, HNC, JSC, MMM, MNP, MON, NCJ, NTC, PC, PKP, PMC, PPG, PPL, PST, RCI, REL, SAC, SM, SNW, SOR, SW, USM, USO, VAL, VPC, X, X. |
| Amino resins, all other - - - - - | BAK, RTC. |
| *Dicyandiamide resins - - - - - | APX, CMP, ECC, JSC, S, STC, VPC. |
| *EPOXY RESINS: | |
| *Epoxy resins advanced - - - - - | ASH, AZS, BEN, CEL, CGL, CGY, CJO, CNI, DSO, EW, GE, GRV, ICF, ISM, LIC, MCC, MID, MMM, MNP, MRT, OCF, PPG, RCI, SCH, SCN, SM, STT, SW, WLM. |
| *Epoxy resins unmodified - - - - - | ADC, CEL, CGY, DA, DOW, ICF, JOB, PPG, PRT, RCI, SHC, SM, UCC, X. |

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PLASTICS AND RESIN MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| THERMOSETTING RESINS--CONTINUED | |
| *Furfuryl type resins - - - - - | ACR, CRC, HVG, IMC, NCP, STC, UNO, WRD. |
| *Glyoxal-formaldehyde resins - - - - - | AUX, CMP, QCP, STC, USM, USO, WPG. |
| *Phenolic and other tar acid resins - - - - - | ABS, ACR, AMR, ASH, BAK, BME, BOR, BSC, CBD, CBM, CLK, CLU, DA, DSO, EW, FAR, FOM, GE, GEI, GOC, GP, GRG, HER, HKD, HPC, HVG, ICF, IMC, INL, IRI, KPT, MCA, MID, MMM, MON, NCI, NCJ, NCP, OBC, OCF, PAI, PLS, PPG, PPL, PSL, PYZ, RAB, RCI, RGC, SCN, SIM, SKT, SPL, STC, SW, UCC, USR, VPC, VSV, WCA, WRD, X. |
| Polybutadiene resins - - - - - | ATR, CCS, CNI, LC. |
| *POLYESTER RESINS, UNSATURATED, AND ALLYL RESINS: | |
| Allyl resins - - - - - | FMP, GEI, PPG, SNW. |
| Diallyl isophthalate - - - - - | FMP, GEI. |
| Polyester resins, unsaturated - - - - - | ACY, ADC, AFP, APH, ASH, AZS, BLC, CGL, CPV, DOW, DSO, EW, FCD, FJI, FMP, FRE, GEI, GRG, GRV, ICI, IPC, KPT, LIC, MCC, MRT, OBC, OCF, PKP, PPG, PPL, RCI, RH, SCM, SCN, SDH, SHC, SIC, SLC, SM, SW, UCC, USS. |
| *Polyether and polyester polyols for urethanes - - - - - | ARK, BAS, CHC, CJO, CPV, DOW, FRE, GAF, HKP, ICI, INP, LIC, MMM, MOB, MRT, NTL, OCF, OMC, PPG, RCI, SKT, TX, UCC, UNO, UPJ, WTC. |
| *POLYURETHANE ELASTOMER AND PLASTIC PRODUCTS: | |
| *Polyurethane elastomers - - - - - | ACY, ADC, ARO, ASH, BAS, BFG, CNI, CWN, CXI, DA, DCC, DNS, DUP, EEP, EPI, FRE, GRD, HKP, HXL, ICF, INP, MMM, MOB, MON, MRT, PLN, PPG, PRC, SBC, SLC, TKL, UPJ, USR, WTC. |
| *Polyurethane resins - - - - - | BAS, CGL, CPV, DSO, DUP, EW, GEI, HYC, INP, JOB, MCC, MID, NTL, OMC, PEL, PTC, PVI, QUN, RCI, SCM, SCN, SW, UPJ, USM, WTC. |
| *Silicone resins - - - - - | CJO, DCC, LIC, MCC, MID, PEL, RCI, SCM, SM, SPB, USO. |
| Thermosetting resins, all other - - - - - | ACR, ACY, APX, BAK, BAS, CPV, DEG, DSO, FRE, LC, MCC, MOB, PPG, REL, S, SCM, SM, SYT, UCC, VAL, WPG. |
| THERMOPLASTIC RESINS | |
| ACRYLIC RESINS: | |
| COPOLYMER RESINS OF ACRYLIC AND/OR METHACRYLIC ACID | |
| RESINS: | |
| *Butyl acrylate ethyl acrylate copolymer resins - - - - - | DRB, DSO, QUN, RH, VAL. |
| 2-Ethylhexyl acrylate-methyl acrylate copolymer | |
| resins - - - - - | DSO. |

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PLASTICS AND RESIN MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| THERMOSETTING RESINS--CONTINUED | |
| ACRYLIC RESINS--CONTINUED | |
| COPOLYMER RESINS OF ACRYLIC AND/OR METHACRYLIC ACID RESINS--CONTINUED | |
| Other copolymer resins of acrylic and/or methacrylic acid esters | ACO, AZS, CLU, DRB, DRC, DSO, FLR, GAF, GRV, ICF, JNS, JSC, LIC, MSC, PPG, PRT, RAS, REL, RH, SCP, SM, STC, TX, UCC, UOC, VAL. |
| HOMOPOLYMER RESINS OF ACRYLIC AND/OR METHACRYLIC ACID RESINS: | |
| Polymethyl methacrylate- - - - - | CTP, CYR, DUP, ICF, IOC, MRT, PKL, PPG, PVI, RH, SAR, SNW, USS, X. |
| Other homopolymer resins of acrylic and/or methacrylic acid esters- - - - - | DUP, PPG. |
| *Thermosetting acrylics - - - - - | ACY, CEL, CHP, CPV, DSO, EFH, FRE, GLC, GRV, ICF, MNP, OBC, PPG, PVI, RH, SAR, SW, VAL, VPC. |
| CELLULOSE PLASTICS AND RESINS: | |
| Cellulose acetate- - - - - | EKT. |
| Cellulose acetate butyrate - - - - - | EKT. |
| Cellulose acetate propionate - - - - - | EKT. |
| Cellulose nitrate- - - - - | HPC. |
| Ethyl cellulose- - - - - | X. |
| Cellulose plastics, all other - - - - - | CRC, DOW, IFC. |
| Coumarone-indene resins- - - - - | HPC, NEV. |
| *ENGINEERING PLASTICS: | |
| Acetal resins- - - - - | CEL, DUP, PPG, SYT, WPG. |
| Polycarbonate resins - - - - - | MOB. |
| Polyimides and amide-imide polymers- - - - - | AMO, DUP, EW, GEI, MON, PDI. |
| Polyphenylene oxide type resins- - - - - | GE. |
| Polyphenylene sulfide resins - - - - - | PLC. |
| Polysulfone resins - - - - - | UCC. |
| *FLUOROCARBON RESINS: | |
| Polytetrafluoroethylene (PTFE) - - - - - | AFP, DUP, ICI. |
| Polyvinylidene fluoride resin- - - - - | PAS. |
| Fluorocarbon resins, all other- - - - - | DUP. |
| *Petroleum hydrocarbon resins - - - - - | BLC, EKX, ENJ, GYR, HPC, MCC, NEV, RCI, ZGL. |
| Phenoxyl (R) Resins (other than for coating and adhesives) - - - - - | MNP, UCC. |
| *POLYAMIDE RESINS: | |
| *Non-nylon type, polyamide resins- - - - - | AMR, AZS, CBY, COO, EFH, ENR, NYC, MCC, NCI, PAC, SCP, SM, SNW, STC, USM. |
| *Nylon type, polyamide resins - - - - - | AFP, AZS, BCM, CEL, CTR, DGO, DUP, FRF, HST, MON, RSM, SCP, USM, X. |
| Polybutylene type resins - - - - - | ENJ, GE, SHC. |
| POLYESTER RESINS, SATURATED: | |
| *Polybutylene terephthalate (PBT)- - - - - | EKT, GAF, GE, MID, USM. |
| *Polyethylene terephthalate (PET) - - - - - | COO, DUP, EK, EKT, GEI, GYR, ICF, ICI, MMM, MRT, SNW, USM. |

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PLASTICS AND RESIN MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| THERMOPLASTIC RESINS--CONTINUED | |
| POLYESTER RESINS, SATURATED--CONTINUED | |
| Polyester resins, saturated, all other - - - - - | DGO, DUP, EKT, MYC, ICF, ICI, MMP, REL, SCM. |
| POLYETHYLENE AND COPOLYMERS RESINS: | |
| Ethylene-vinyl acetate (EVA) copolymer resins - - - | NSC. |
| *Specific gravity 0.940 and below - - - - - | AFP, ATR, CBN, CPX, DOW, DUP, EKX, ELP, ENJ, GOC, NWP, SM, SNW, UCC, USI, X. |
| *Specific gravity 0.940 and below - - - - - | PLC, SM. |
| *Specific gravity over 0.940 - - - - - | AFP, AMO, ATR, CBN, CPX, DOW, DUP, GOC, HPC, MON, PLC, SLT, UCC, USI. |
| Polyphenyl aromatic ester resins - - - - - | HPC. |
| *Polypropylene polymer and copolymer resins - - - - | AMO, ATR, EKX, ELP, ENJ, GOC, HPC, NWP, PLC, SHC, SLT, USS. |
| *Polyterpene resins - - - - - | ARZ, CBY, HPC, RCI, SCM. |
| *ROSIN MODIFICATIONS: | |
| *Modified rosin (Unesterified) - - - - - | ARZ, CJO, CRC, DPP, HPC, NCI, SYL, ZGL. |
| *Modified rosin esters - - - - - | BAK, CBY, DPP, EW, FCD, FJI, FRP, GRV, HPC, MCC, NCI, RCI, SCM, SDH, SKT, STC, SW, ZGL. |
| *Rosin esters, unmodified (Ester gums) - - - - - | ARZ, CBY, FRP, HPC, NCI, RCI, SKT. |
| *STYRENE TYPE PLASTICS MATERIALS: | |
| *Acrylonitrile-butadiene-styrene (ABS) Terpolymer resins - - - - - | CSD, DOW, GOR, GRD, GYR, MCB, MON, SM, USS. |
| α-Methyl styrene polymers - - - - - | AMO, JNS. |
| Styrene-acrylonitrile copolymer resins (SAN) - - - | BAS, BFG, CSD, DOW, MON, SKT, SM. |
| POLYSTYRENE: | |
| Expandable polystyrene beads - - - - - | TXS. |
| *Rubber modified polystyrene - - - - - | ATR, DOW, GOC, GOR, MON, PLR, SHC, SM, USS. |
| *Straight polystyrene - - - - - | AEP, AMO, ATR, BAS, CSD, DOW, GAF, GOC, GOR, HGC, HST, JSC, MMM, MON, PLR, SHC, SM, TXS, USS. |
| *STYRENE LATEXES: | |
| *Styrene-butadiene latexes - - - - - | DOW, GNT, GRD, GYR, PLR, UOC, USS. |
| *All other Styrene latexes - - - - - | ADC, CRC, DOW, DSO, GNT, GRD, HKP, MON, PLR, PVI, UCC, UOC, USS. |
| OTHER STYRENE COPOLYMERS: | |
| Methyl methacrylate-butadiene styrene (MBS) resins - - - - - | CYR, MCB. |
| Styrene-divinylbenzene copolymer resins - - - - - | RH. |
| Styrene-maleic anhydride copolymer resins - - - - | ATR. |
| Styrene-methyl methacrylate copolymer resins - - - | RCD. |
| *Styrene copolymers, all other - - - - - | ARZ, BFG, DA, DOW, DSO, DUP, GRD, GYR, HPC, IOC, JNS, MON, MRT, PLC, RCD, RCI. |

TABLE 2.--PLASTICS AND RESIN MATERIALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PLASTICS AND RESIN MATERIALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| THERMOPLASTIC RESINS--CONTINUED | |
| VINYL RESINS: | |
| Polyvinyl acetate resins - - - - - | AIP, AZS, BAL, BLS, BOR, CEL, CRC, DAN, DSO, FJI, FLN, FLN, GLC, GRD, JOB, JSC, KMP, MCC, MON, NSC, RCI, SCM, SCO, UCC, UOC, X. |
| Polyvinyl alcohol resins - - - - - | AIP, DUP, MON. |
| Polyvinyl butyral resins - - - - - | CNI, DUP, MON. |
| Polyvinyl formal resin - - - - - | EW, MON, SCM. |
| Vinyl acetate-acrylate copolymers - - - - - | ACO, FLN, NCJ, OBC, SCM, SPC, UCC, UOC. |
| POLYVINYL CHLORIDE AND COPOLYMER RESINS: | |
| Polyvinyl chloride copolymer resins - - - - - | GNT, HKP, HN, SFP. |
| Polyvinyl chloride homopolymer resins - - - - - | AIP, BFG, BOR, CNT, CO, DA, GNT, GP, GRA, HKP, HN, KYS, PNT, RCO, SFP, SHT, TNA, TRA, UCC. |
| POLYVINYLIDINE CHLORIDE RESINS: | |
| Latex type polyvinylidene chloride resins - - - - - | BFG, DOW, GRD, MRT, UOC, USS. |
| Vinyl resins, all other - - - - - | CEL, DOW, DSO, DUP, RH, SCM, UCC. |
| Thermoplastic resins, all other - - - - - | ARA, EKY, MON, MRT, PPG, SW, X. |

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of plastics and resin materials to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| ABS | Abex Corp., Friction Products Group | CPX | Chemplex Co. |
| ACR | CPC International, Inc., Acme Resin Corp. | CRC | California Resin & Chemical Co., Inc. |
| ACO | Adco Chemical Co. | CSD | Cosden Oil & Chemical Co. |
| ACY | American Cyanamid Co. | CTP | Continental Polymers, Inc. |
| ADC | Anderson Development Co. | CTR | Custom Resins Div. of Bemis Co., Inc. |
| AEP | A & E Plastik Pak Co., Inc., A & E Plastics | CWN | Upjohn Co., Fine Chemical Div. |
| AFP | Allied Corp., Fibers & Plastics Co. Div. | CYR | CYRO Industries, Inc. |
| AMO | Standard Oil Co. (Indiana) | CXI | Chemical Exchange Industries, Inc. |
| AMR | Pacific Resins & Chemical, Inc. | | |
| APH | The Alpha Corp. | DA | Diamond Shamrock Corp. |
| APT | Whittaker Corp., Whittaker Coatings & Chemicals, Mol Rez Resins | DAN | Dan River, Inc., Chemical Products Div. |
| APX | Apex Chemical Co., Inc. | DCC | Dow Corning Corp. |
| ARA | Araphoe Chemicals, Inc., Sub/Syntex U.S.A., Inc. | DEG | Degan Oil & Chemical Co. |
| ARK | Armstrong World Industries, Inc. | DGO | Day-Glo Color Corp. |
| ARO | Araco | DNS | Dennis Chemical Co. |
| ARZ | Arizona Chemical Co. | DOW | Dow Chemical Co. |
| ASH | Ashland Oil, Inc. | DPP | Dixie Pine Chemicals, Inc. |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | DRB | The Derby Co., Inc. |
| AUX | Auralux Corp. | DRC | Dock Resins Corp. |
| AZS | AZS Corp.: AZ Products Co. Div. AZS Chemical Co. Div. | DSO | DeSoto, Inc. |
| | | DUP | E.I. duPont de Nemours & Co., Inc. |
| BAK | Baker International - Magna Corp. | | |
| BAL | Dutch Boy, Inc., Consumers Group, Sherwin-Williams Co. | ECC | Eastern Color & Chemical Co. |
| BAS | BASF Wyandotte Corp. | EEP | Eaton Corp., EEP Div. |
| BCM | Belding Cortecelli Industries | EPH | E.F. Houghton & Co. |
| BEN | Bennett's | EK | Eastman Kodak Co.: |
| BFG | B.F. Goodrich Co., B.F. Goodrich Chemical Group | EKT | Tennessee Eastman Co. Div. |
| BLC | Ball Chemical Co. | EKX | Texas Eastman Co. Div. |
| BLS | Life Savers, Inc. | ELP | El Paso Polyolifins Co. |
| BME | Bendix Corp., FM Div. | EMR | Emery Industries, Inc. |
| BOR | Borden Co., Borden Chemical Co. Div. | ENJ | Exxon Chemical Co. Americas |
| BRU | M.A. Bruder & Sons, Inc. | EPI | Eagle Pitcher Industries, Inc., Ohio Rubber Co. Div. |
| BSC | Brand-S Corp. | EW | Westinghouse Electric Corp., Insulating Materials Div. |
| | | | |
| CBD | Chembond Corp. | FAR | Syncon Resins, Inc. |
| CBM | Kennecott Corp. | FCD | Synres Chemical Corp. |
| CBN | Cities Service Co., Petrochemical Div. | FJI | Foy-Johnson, Inc. |
| CBY | Crosby Chemicals, Inc. | FLH | H.B. Fuller Co. |
| CCS | Colorado Chemical Specialties, Inc. | FLN | Franklin Chemical Industries |
| CEL | Celanese Corp., Celanese Plastics & Specialties Co. | FMP | FMC Corp., Industrial Chemical Div. |
| OGL | Cargill, Inc. | FOC | Handschy Industries, Inc., Farac Oil & Chemical Co. Div. |
| CGY | Ciba-Geigy Corp., Resins Dept. | FOM | Formica Corp., Sub. of American Cyanamid Co. |
| CHC | Carpenter Chemical Co. | FRE | Freeman Chemical Corp. |
| CHP | C.H. Patrick & Co., Inc. | FRF | Firestone Tire & Rubber Co., Firestone Fibers & Textile Co. |
| CJO | C. J. Osborn Chemicals, Inc. | FRP | FRP Company |
| CLK | Clark Oil & Refining Corp. | | |
| CLU | Core-Lube, Inc. | GAF | GAF Corp. |
| CMP | Commercial Products Co., Inc. | GE | General Electric Co.: |
| CNI | Frye Copsystems, Conap Div. | GEI | Laminated & Insulating Materials Business Dept. |
| CNT | Certainteed Corp. | GLC | General Latex & Chemical Corp. |
| CO | Conoco, Inc. | GNT | General Tire & Rubber Co., Chemical Div. |
| COO | The Terrell Corp. | GOC | Gulf Oil Corp., Gulf Oil Chemicals Co.-U.S. |
| CPV | Cook Paint & Varnish Co. | GOR | Carl Gordon Industries, Inc. |
| | | GP | Georgia-Pacific Corp.: |
| | | | Plaquemine Div. |
| | | | Resins Operations |

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|--|
| GRA | Great American Chemical Corp. | OBC | O'Brien Corp. |
| GRD | W.R. Grace & Co., Polymers & Chemicals Div. | OCF | Owens-Corning Fiberglas Corp. |
| GRG | P.D. George Co. | OMC | Olin Corp. |
| GRV | Guardman Chemicals, Inc. | | |
| GYR | Goodyear Tire & Rubber Co. | PAC | Pacific Anchor Chemical Corp. |
| | | PAI | Polymer Applications, Inc. |
| HAN | Hanna Chemical Coating Corp. | PAS | Pennwalt Corp. |
| HER | Heresite-Saekaphen, Inc. | PC | Proctor Chemical Co. |
| HGC | Huntsman Goodsons Chemical Corp. | PDI | Phelps Dodge Industries, Inc., Phelps Dodge |
| | Hooker Chemicals Corp.: | | Magnet Wire Co. Div. |
| | Hooker Chemicals & Plastics Corp.: | PEL | Pelron Corp. |
| HKD | Durez Div. | PER | Perry & Derrick Co., Inc. |
| HKP | PVC Div. | PKL | Plaskolite, Inc. |
| HN | Tenneco Chemicals, Inc. | PKP | Plaskon Products, Inc. |
| HNC | H & N Chemical Co. | PLC | Phillips Petroleum Co. |
| HPC | Hercules, Inc. | PLN | Disogrin Industries Corp. |
| HST | American Hoechst Corp., Petrochemical Div. | PLR | Polysar, Inc.: |
| HVG | Ametek, Inc., Haveg Div. | | Latex Div. |
| HXL | Hexcel Corp., Hexcel Products | | Polysar Latex Div. |
| HYC | Dexter Corp., Hysol Div. | PLS | Plastics Engineering Co. |
| | | PMC | Plastics Manufacturing Co. |
| ICF | Inmont Corp. | PNT | Pantasote, Inc., Film/Compound Div. |
| ICI | ICI Americas, Inc. and Chemical Specialties | PPG | PPG Industries, Inc. |
| | Co. | PPL | Pioneer Plastics Div. of LOF Plastics, Inc. |
| INL | Inland Steel Co., Island Steel Container Co. | PRC | Products Research & Chemical Corp. |
| | Div. | PRT | Pratt & Lambert, Inc. |
| INP | Synair Corp. | PSL | Plaslok Corp. |
| IOC | Sybron Corp., Sybron Chemical Div. | PST | Perstorp, Inc. |
| IPC | Interplastic Corp. | PTC | Polycast Technology Corp. |
| IRI | Ironsides Co. | PVI | Polyvinyl Chemical Industries |
| ISM | Isochem Resins Co. | PYZ | Polyrez Co., Inc. |
| | | | |
| JNS | S.C. Johnson & Son, Inc. | QCP | Quaker Chemical Corp. |
| JOB | Jones-Blair Co. | QUN | K.J. Quinn & Co., Inc. |
| JSC | Sybron Corp., Sybron Chemical Div. | | |
| | | RAB | Raybestos Manhattan, Industrial Div. |
| KMP | Kelly-Moore Paint Co., Inc. | RAS | Raffi and Swanson, Inc. |
| KPT | Koppers Co., Inc. | RCD | Richardson Co., Polymeric Systems Div. |
| KYS | Keysor Corp. | RCI | Reichhold Chemicals Inc. |
| | | RCO | Rico Chemical Corp. |
| LC | Lord Corp., Chemicals Products Group | REL | Reliance Universal, Inc., Louisville Resins |
| LIC | Lilly Industrial Coatings, Inc. | | Operations |
| | | RGC | Rogers Corp., Molding Materials Div. |
| MCA | Masonite Corp., Alpine Div. | RH | Rohm & Haas Co. |
| MCB | Borg-Warner Corp., Borg-Warner Chemicals | RSN | Rilsan Corp. |
| MCC | McCloskey Varnish Co. | RTC | Riegel Textile Corp., H.I.T. Chemicals Div. |
| MCC | McCloskey Varnish Co. of Northwest | | |
| MCC | McCloskey Varnish Co. of the West | S | Sandoz, Inc., Colors & Chemicals Div. |
| MID | Dexter Corp., Midland Div. | SAC | Southeastern Adhesives Co. |
| MMM | Minnesota Mining & Manufacturing Co. | SAR | Leski, Inc. |
| MNP | The Valspar Corp. | SCM | SCM Corp., Glidden Coatings & Resins Div. |
| MOB | Mobay Chemical Co., Pittsburgh Div. | SCN | Schenectady Chemicals, Inc. |
| MON | Monsanto Corp. | SCO | Scholler, Inc. |
| MRT | Morton Norwich Products, Inc., Morton | SCP | Henkel Corp. |
| | Chemical Co. Div. | SDH | Sterling Drug, Inc., Hilton Davis Chemical Co. |
| | | | Div. |
| NCI | Union Camp Corp., Chemical Products Div. | SFP | Stauffer Chemical Co., Plastics Div. |
| NCJ | National Casein of New Jersey | SHC | Shell Oil Co., Shell Chemical Co. Div. |
| NCP | Niles Chemical Paint Co. and Kordell | SHT | Shintech, Inc. |
| | Industries Div. | SIC | Vistron Corp., Silmar Div. |
| NEV | Neville Chemical Co. | SIM | Simpson Timber Co., Oregon Overlay Div. |
| NSC | National Starch & Chemical Corp. | SKT | Textron Inc., Spencer Kellogg Div. |
| NTC | National Casein Co. | SLC | Soluol Chem Co., Inc. |
| NTL | NL Industries, Inc. | SLT | Soltex Polymer Corp. |
| NWP | Northern Petrochemical Co. | | |
| | | | |

TABLE 3.--PLASTICS AND RESIN MATERIALS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|---|
| SM | Mobil Oil Corp.: | UPJ | Upjohn Co. |
| | Mobil Chemical Co.: | USI | National Distillers & Chemical Corp.: |
| | Chemical Coatings Div. | | U.S. Industrial Chemicals Co.: |
| | Petrochemical Div. | | National Petro Chemical Corp. |
| SNW | Sun Chemical Corp., Chemicals Div. | USM | Crown Metro, Inc. |
| SOR | MW Manufacturers, Southern Resin Div. | USM | Emhart Corp., Bostik Div. |
| SPC | Insilco Corp., Sinclair Paint Co. Div. | USO | U.S. Oil Co. |
| SPD | General Electric Co., Silicone Products Dept. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| SPL | Spaulding Fibre Co., Inc., Industrial Plastics | USS | USS Chemicals Div., U.S. Steel Corp. |
| | Div. | VAL | Valchem Div. of United Merchants & |
| STC | American Hoechst Corp., Sou-Tex Works | | Manufacturers, Inc. |
| STT | Standard T Chemical, Inc. | VPC | Mobay Chemical Corp., Dyestuff Div. |
| SW | Sherwin-Williams Co. | VSV | Valentine Sugars, Inc., Valite Div. |
| SYL | Sylvachem Corp. | | |
| SYT | Synthron, Inc. | WCA | West Coast Adhesives Co. |
| | | WLN | Wilmington Chemical Corp. |
| TKL | Thiokol Corp., Specialty Chemicals Div. | WPG | West Point-Pepperill, Inc., Grifftex Chemical |
| TNA | Ethyl Corp., Polymer Div. | | Co. Sub. |
| TRA | Talleryrand Chemicals, Inc. | WRD | Weyerhaeuser Co. |
| TX | Texaco, Inc. | WTC | Witco Chemical Corp. |
| TXS | Texstyrene Plastics, Inc. | | |
| | | ZGL | Carolina Processing Corp. |
| UCC | Union Carbide Corp. | | |
| UNO | United-Erie, Inc. | | |
| UOC | Union Oil Co. of California | | |
| | | | |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 264 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Sharon Kay Thompson

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, blowing agents, and peptizers. Data on production and sales of rubber-processing chemicals in 1981 are given table 1.¹

Production of rubber-processing chemicals as a group in 1981 amounted to 280 million pounds, or 4.0 percent less than the 291 million pounds in 1980. Sales of rubber-processing chemicals in 1981 amounted to 182 million pounds, valued at \$298 million, compared with 194 million pounds, valued at \$296 million in 1980.

The production of cyclic rubber-processing chemicals in 1981 amounted to 246 million pounds, or 4.7 percent less than the 258 million pounds in 1980. Sales in 1981 were 158 million pounds, valued at \$271 million, compared with 168 million pounds, valued at \$270 million of cyclic rubber-processing chemicals in 1981, accelerators, activators, and vulcanizing agents accounted for 33.6 percent and antioxidants, antiozonants, and stabilizers for 60.6 percent. Production of antioxidants, antiozonants, and stabilizers, which amounted to 149 million pounds in 1981, included 91 million pounds of amino compounds and 58 million pounds of phenolic and phosphite compounds. Sales of amino antioxidants, antiozonants, and stabilizers in 1981 amounted to 61 million pounds, valued at \$105 million; sales of phenolic and phosphite antioxidants, antiozonants, and stabilizers, were 35 million pounds, valued at \$55 million.

Production of acyclic rubber processing chemicals in 1981 amounted to 33 million pounds, or approximately the same amount as reported for 1980. Sales in 1981 totaled 24 million pounds, valued at \$27 million, compared with 26 million pounds, valued at \$26 million, in 1980. Dithiocarbamic acid derivatives accounted for 28.1 percent of sales (based on quantity) of acyclic rubber-processing chemicals in 1981.

¹See also table 2 which lists these producers and identifies the manufacturers by codes. These codes are given in table 3.

TABLE 1.--RUBBER-PROCESSING CHEMICALS: U.S. PRODUCTION AND SALES, 1981

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

| RUBBER-PROCESSING CHEMICALS | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 279,628 | 181,540 | 298,353 | \$1.64 |
| CYCLIC | | | | |
| Total----- | 246,268 | 157,591 | 270,934 | 1.72 |
| Accelerators, activators, and vulcanizing agents, total----- | 82,702 | 48,286 | 80,638 | 1.67 |
| Aldehyde-amine reaction products----- | 712 | 799 | 1,958 | 2.45 |
| Thiazole derivatives, total----- | 74,764 | 41,386 | 61,239 | 1.48 |
| 2,2'-Dithiobis(benzothiazole)----- | 12,152 | 7,621 | 8,938 | 1.17 |
| 2-Mercaptobenzothiazole----- | 2,328 | 2,495 | 2,825 | 1.13 |
| 2-Mercaptobenzothiazole, zinc salt----- | 1,581 | 1,547 | 2,045 | 1.33 |
| All other thiazole derivatives----- | 58,703 | 29,723 | 47,431 | 1.60 |
| All other accelerators, activators, and vulcanizing agents ^{2 3} ----- | 7,226 | 6,101 | 17,441 | 2.86 |
| Antioxidants, antiozonants, and stabilizers, total----- | 149,225 | 95,397 | 159,760 | 1.67 |
| Amino compounds, total----- | 90,890 | 60,699 | 105,131 | 1.73 |
| Substituted p-phenylenediamines, total----- | 61,930 | 32,617 | 66,081 | 2.03 |
| N',N'-Bis(1,4-dimethylpentyl)-p-phenylenedi- amine----- | 5,155 | 4,668 | 9,007 | 1.93 |
| Other substituted p-phenylenediamines----- | 56,775 | 27,949 | 57,074 | 2.04 |
| All other amino compounds ⁴ ----- | 28,960 | 28,082 | 39,050 | 1.39 |
| Phenolic and phosphite compounds, total----- | 58,335 | 34,698 | 54,629 | 1.57 |
| Nonylphenyl phosphite, mixed----- | 15,639 | 10,174 | 7,595 | .75 |
| Phenolic compounds: | | | | |
| Polyphenolics (including bisphenols)----- | 9,367 | 8,266 | 27,455 | 3.32 |
| Phenol, alkylated----- | 6,179 | 2,974 | 5,750 | 1.93 |
| Phenol, styrenated----- | 1,009 | 834 | 857 | 1.03 |
| All other phenolic and phosphite compounds----- | 26,141 | 12,450 | 12,972 | 1.04 |
| All other cyclic rubber-processing chemicals ⁵ ----- | 14,341 | 13,908 | 30,536 | 2.20 |
| ACYCLIC | | | | |
| Total----- | 33,360 | 23,949 | 27,419 | 1.14 |
| Dithiocarbamic acid derivatives, total ³ ----- | 9,955 | 6,726 | 11,561 | 1.72 |
| Dimethyldithiocarbamic acid, zinc salt----- | 1,880 | 1,779 | 2,471 | 1.39 |
| All other dithiocarbamic acid derivatives----- | 8,075 | 4,947 | 9,090 | 1.84 |
| Thiurams, xanthates and sulfides----- | 2,531 | 2,406 | 4,107 | 1.71 |
| All other acyclic rubber-processing chemicals ⁶ ----- | 20,874 | 14,817 | 11,751 | .79 |

¹Calculated from unrounded figures.

²Includes guanidines, dithiocarbamates, and other uses not separately shown.

³Data 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 report on "Pesticides and Related Products."

⁴Includes aldehyde- and acetone-amine reactions products.

⁵Includes blowing agents, peptizers, and other uses not separately shown.

⁶Includes "other" conditioning and lubricating agents, polymerization regulators, shortstops, and other uses not separately shown.

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3.]

| RUBBER-PROCESSING CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC | |
| *ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS: | |
| *ALDEHYDE-AMINE REACTION PRODUCTS: | |
| Bis(cinnamylidene)hexamethylenediamine - - - - - | DUP. |
| n-Butyraldehyde-aniline condensate - - - - - | DUP, RCD. |
| Heptaldehyde-aniline condensate - - - - - | USR. |
| Triethyltrimethylenetriamine - - - - - | USR. |
| Aldehyde-amine reaction products, cyclic, other - - - | RBC. |
| DITHIOCARBAMIC ACID DERIVATIVES: | |
| Dibenzylidithiocarbamic acid, sodium salt - - - - - | USR. |
| Dibenzylidithiocarbamic acid, zinc salt - - - - - | USR. |
| Dibutylidithiocarbamic acid, N,N-dimethylcyclohexylamine salt - - - - - | RBC. |
| Piperidinecarbodithioic acid, piperidinium potassium salts, mixed - - - - - | DUP. |
| GUANIDINES: | |
| Dicatechol borate, di-o-tolylguanidine salt - - - | DUP. |
| 1,3-Diphenylguanidine - - - - - | ACY. |
| 1,3-Di-o-tolylguanidine - - - - - | ACY. |
| *THIAZOLE DERIVATIVES: | |
| 1,3-Bis(2-benzothiazolylmercaptomethyl) urea - - - | MON, RBC. |
| N-tert-Butyl-2-benzothiazolesulfonamide - - - - - | BFG, USR. |
| N-Cyclohexyl-2-benzothiazolesulfenamide - - - - - | ACY, MON, USR. |
| N,N-Diisopropyl-2-benzothiazolesulfenamide - - - | ACY. |
| *2,2'-Dithiobis (Benzothiazole) - - - - - | ACY, BFG, GYR, MON, USR. |
| *2-Mercaptobenzothiazole - - - - - | ACY, GYR, USR. |
| 2-Mercaptobenzothiazole, copper salt - - - - - | ACY, MON. |
| 2-Mercaptobenzothiazole, zinc chloride - - - - - | DUP. |
| *2-Mercaptobenzothiazole, zinc salt - - - - - | ACY, GYR, USR. |
| 4-Morpholinyl 2-benzothiazyl disulfide - - - - - | GYR. |
| N-Oxydiethylene-2-benzothiazolesulfenamide - - - | ACY, BFG, USR. |
| Thiazole derivatives, cyclic, other - - - - - | USR, VNC. |
| *ALL OTHER CYCLIC ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS: | |
| Bis(morpholinothiocarbamoyl) disulfide - - - - - | ACY. |
| Dibenzylamine - - - - - | HXL, USR. |

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| RUBBER-PROCESSING CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| <p>-----</p> <p>CYCLIC--CONTINUED</p> <p>ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS--CONTINUED</p> <p>ALL OTHER CYCLIC ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS--CONTINUED</p> <p>Di-N,N'-pentamethylenethiuram tetrasulfide - - - - -</p> <p>4,4'-Dithiodimorpholine - - - - -</p> <p>m-Phenylenebismaleimide - - - - -</p> <p>Tetramethylthiuram disulfide - - - - -</p> <p>Tetramethylthiuram tetrasulfide - - - - -</p> <p>Accelerators, activators, and vulcanizing agents, cyclic, other - - - - -</p> <p>*ANTIOXIDANTS, ANTIOZONANTS, AND STABILIZERS:</p> <p>*AMINO ANTIOXIDANTS, ANTIOZONANTS, AND STABILIZERS:</p> <p>ALDEHYDE AND ACETONE-AMINE REACTION PRODUCTS:</p> <p>Butyraldehyde-aniline condensate - - - - -</p> <p>Diphenylamine-acetone aldehyde - - - - -</p> <p>Diphenylamine-acetone condensate - - - - -</p> <p>*SUBSTITUTED P-PHENYLENEDIAMINES:</p> <p>Alkylaryl-p-phenylamine-diamines - - - - -</p> <p>*N,N'-Bis(1,4-dimethylpentyl)-p-phenylenediamine - - - - -</p> <p>N,N'-Bis(1-ethyl-3-methylpentyl)-p-phenylenediamine - - - - -</p> <p>N,N'-Bis(1-methylheptyl)-p-phenylenediamine - - - - -</p> <p>N-Cyclohexyl-N'-phenyl-p-phenylenediamine - - - - -</p> <p>Diarylenediamines, mixed - - - - -</p> <p>N,N-Dicyclohexyl-p-phenylenediamine - - - - -</p> <p>N-(1,3-Dimethylbutyl)-N-phenyl-p-phenylenediamine - - - - -</p> <p>N,N'-Di-2-naphthyl-p-phenylenediamine - - - - -</p> <p>N,N'-Diphenyl-p-phenylenediamine - - - - -</p> <p>N-Isopropyl-N'-phenyl-p-phenylenediamine - - - - -</p> <p>N-(1-Methylheptyl)-N'-phenyl-p-phenylenediamine - - - - -</p> <p>N-(1-Methylpentyl)-N'-phenyl-p-phenylenediamine - - - - -</p> <p>*OTHER AMINES:</p> <p>p-Anilinophenol - - - - -</p> <p>1,2-Dihydro-6-dodecyl-2,2,4-trimethylquinoline - - - - -</p> <p>1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline - - - - -</p> <p>1,2-Dihydro-2,2,4-trimethylquinoline - - - - -</p> <p>Diphenylamine-styrenated - - - - -</p> <p>Diphenylamine, substituted - - - - -</p> <p>Nonyldiphenylamine mixture (Mono-, di-, and tri-) - - - - -</p> <p>Octyldiphenylamine - - - - -</p> <p>Octyldiphenylamine, alkylated - - - - -</p> <p>p-(p-Toluenesulfonamido)diphenylamine - - - - -</p> | <p>VNC.</p> <p>MON.</p> <p>DUP.</p> <p>DUP.</p> <p>GYR.</p> <p>DUP, RBC.</p> <p></p> <p></p> <p></p> <p>DUP.</p> <p>USR.</p> <p>BFG, USR.</p> <p></p> <p>MON.</p> <p>MON, UPM, USR.</p> <p></p> <p>UPM.</p> <p>UPM.</p> <p>USR.</p> <p>GYR.</p> <p>UPM.</p> <p></p> <p>GYR, UPM, USR.</p> <p>BFG.</p> <p>BFG, USR.</p> <p>USR.</p> <p>UPM.</p> <p>USR.</p> <p></p> <p>BFG.</p> <p>MON.</p> <p>MON.</p> <p>BFG, MON, USR.</p> <p>GYR.</p> <p>USR.</p> <p></p> <p>USR.</p> <p></p> <p>BFG, USR.</p> <p>BFG.</p> <p>USR.</p> |

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| RUBBER-PROCESSING CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| ANTIOXIDANTS, ANTIOZONANTS, AND STABILIZERS--CONTINUED | |
| *PHENOLIC AND PHOSPHITE ANTIOXIDANTS AND STABILIZERS: | |
| PHOSPHITES: | |
| Alkylaryl phosphites mixed - - - - - | FER, MCB. |
| *Monylphenyl phosphites, mixed - - - - - | FER, MCB, OMC, USR. |
| Polymeric phosphites - - - - - | MCB, OMC. |
| Polyphenolic phosphite, polyalkylated - - - - - | BFG, MCB. |
| Triaryl phosphites - - - - - | MCB. |
| *POLYPHENOLICS (INCLUDING BISPHEOLS): | |
| Bisphenol, hindered - - - - - | DUP, GYR, USR. |
| 4,4'-Butylidenebis(6-tert-butyl-m-cresol) - - - - - | MON. |
| 2,5-Di-sec-butyldecylhydroquinone - - - - - | USR. |
| 2,5-Di-(1,1-dimethylpropyl)hydroquinone - - - - - | MON. |
| 2,2'-Methylenebis(6-tert-butyl-p-cresol) - - - - - | ACY. |
| 2,2'-Methylenebis(6-tert-butyl-4-ethylphenol) - - - - - | ACY. |
| 2,2'-Methylenebis[6-(1-methylcyclohexyl)-p-cresol] - - - - - | ACY, ICI. |
| 4,4'-Thiobis(6-tert-butyl-m-cresol) - - - - - | MON. |
| Thiobisphenol, alkylated - - - - - | USR. |
| 1,1,3-Tri(2-methyl-4-hydroxy-5-tert-butylphenyl) butane - - - - - | ICI. |
| ALL OTHER PHENOLIC ANTIOXIDANTS AND STABILIZERS: | |
| o-Cresol, alkylated - - - - - | PIT. |
| *Phenol, alkylated - - - - - | ACY, BFG, GYR, NEV, RCI. |
| Phenol, hindered - - - - - | USR. |
| *Phenol, styrenated, mixtures - - - - - | GYR, NEV, USR. |
| N-Stearoyl-p-aminophenol - - - - - | HXL. |
| BLOWING AGENTS: | |
| Dinitrosopentamethylenetetramine - - - - - | OMC. |
| p,p'-Oxybis(benzenesulfonhydrazide) - - - - - | USR. |
| p-Toluenesulfonyl hydrazide - - - - - | USR. |
| p-Toluenesulfonylsemicarbazide - - - - - | USR. |
| Blowing agents, cyclic, all other - - - - - | USR. |
| PEPTIZERS: | |
| 2',2''-Dithiobis(benzanilide) - - - - - | ACY. |
| Dixylal disulfides, mixed - - - - - | PIT. |
| ALL OTHER CYCLIC RUBBER-PROCESSING CHEMICALS: | |
| p-tert-Amylphenol sulfide (Tackifier) - - - - - | PAS. |
| 4-Chloro-2,6-bis(2,4-dihydroxybenzyl)phenol - - - - - | ICI. |
| N-(Cyclohexylthio)phthalimide - - - - - | MON. |
| Diphenyl-4,4'-diphenylmethylenedicarbamate - - - - - | USR. |
| N-(2-Methyl-2-nitropropyl)-4-nitrosoaniline - - - - - | MON. |

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| RUBBER-PROCESSING CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| ALL OTHER CYCLIC RUBBER-PROCESSING CHEMICALS--CONTINUED | |
| Nitrosodiphenylamine (Retarder) - - - - - | GYR, USR. |
| Rubber-processing chemicals, acyclic, all other- - - - - | VNC. |
| Waxes and paraffinic products- - - - - | DUP, RCI. |
| Zinc laurate (Activator, physical property improver and processing auxiliary) - - - - - | USR. |
| Rubber processing chemicals, cyclic, all other - - - - - | ACY, KPI. |
| ACYCLIC | |
| ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS: | |
| *DITHIOCARBAMIC ACID DERIVATES: | |
| Dibutyldithiocarbamic acid, nickel salt- - - - - | DUP, USR, VNC. |
| Dibutyldithiocarbamic acid, sodium salt- - - - - | DUP, USR, VNC. |
| Dibutyldithiocarbamic acid, zinc salt- - - - - | RBC, VNC. |
| Diethyldithiocarbamic acid, cadmium salt and bis(diethylthiocarbamoyl)disulfide, mixture- - - - - | VNC. |
| Diethyldithiocarbamic acid, selenium salt- - - - - | VNC. |
| Diethyldithiocarbamic acid, sodium salt- - - - - | ALC, EK, VNC. |
| Diethyldithiocarbamic acid, tellurium salt- - - - - | VNC. |
| Diethyldithiocarbamic acid, zinc salt- - - - - | ALC, GYR. |
| Dimethyldithiocarbamic acid, bismuth salt- - - - - | VNC. |
| Dimethyldithiocarbamic acid, copper salt- - - - - | VNC. |
| Dimethyldithiocarbamic acid, lead salt- - - - - | VNC. |
| Dimethyldithiocarbamic acid, selenium salt- - - - - | VNC. |
| Dimethyldithiocarbamic acid, sodium salt and sodium polysulfide - - - - - | BFG. |
| *Dimethyldithiocarbamic acid, zinc salt- - - - - | ALC, FMN, GYR, USR, VNC. |
| Dithiocarbamic acid derivatives, acyclic, other | DUP, EK. |
| THIURAMS: | |
| Bis(diethylthiocarbamoyl)disulfide - - - - - | GYR. |
| Bis(dimethylthiocarbamoyl) disulfide - - - - - | GYR, VNC. |
| Bis(dimethylthiocarbamoyl) sulfide - - - - - | GYR, USR. |
| N,N'-Dioctadecyl-N,N'-diisopropyl thiuram disulfide- - - - - | USR. |
| XANTHATES AND SULFIDES: | |
| Di-n-butylxantho disulfide - - - - - | USR. |
| Diisopropylxantho disulfide- - - - - | BFG. |
| Zinc diisopropyl xanthate- - - - - | VNC. |
| ALL OTHER ACYCLIC ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS: | |
| p-Aminocyclohexylmethane carbonate - - - - - | DUP. |
| n-Butyraldehyde-butylamine condensate- - - - - | DUP. |
| Ethylenediamine carbamate- - - - - | DUP. |

TABLE 2.--RUBBER-PROCESSING CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| RUBBER-PROCESSING CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS--CONTINUED | |
| ALL OTHER ACYCLIC ACCELERATORS, ACTIVATORS, AND VULCANIZING AGENTS--CONTINUED | |
| Methacrylic acid, zinc salt- - - - - Accelerators, activators, and vulcanizing agents, acyclic, other- - - - - | USR. RBC, VNC. |
| CONDITIONING AND LUBRICATING AGENTS: | |
| Mono- and dialkyl phosphate ammonium salts, mixed- - - - - | DUP. |
| Sodium alkyl sulfates- - - - - | DUP. |
| POLYMERIZATION REGULATORS: | |
| Alkyl mercaptans, mixed- - - - - | PLC. |
| n Dodecyl mercaptans - - - - - | PAS, PLC. |
| tert-Hexadecyl mercaptan - - - - - | PLC. |
| N-Hexyl mercaptan- - - - - | PLC. |
| tert-Nonyl mercaptan - - - - - | PAS, PLC. |
| n-Octyl mercaptan- - - - - | PLC. |
| tert-Octyl mercaptan - - - - - | PAS, PLC. |
| Tetradecyl mercaptan - - - - - | PLC. |
| SHORTSTOPS: | |
| Dimethyldithiocarbamic acid, potassium salt- - - - - | USR. |
| Dimethyldithiocarbamic acid, sodium salt - - - - - | ALC, USR, VNC. |
| ALL OTHER ACYCLIC RUBBER-PROCESSING CHEMICALS: | |
| Alkyl alcohols, mixed- - - - - | DUP. |
| 3,7-Dioctylphenothiazine - - - - - | USR. |

TABLE 3.--RUBBER-PROCESSING CHEMICALS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of rubber-processing chemicals to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|--|
| ACY | American Cyanamid Co. | MCB | Borg-Warner Corp., Borg-Warner Chemicals |
| ALC | Alco Chemical Corp. | MON | Monsanto Co. |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical Group | NEV | Neville Chemical Co. |
| DUP | E. I. duPont de Nemours & Co., Inc. | OMC | Olin Corp. |
| EK | Eastman Kodak Co. | PAS | Pennwalt Corp. |
| FER | Ferro Corp., Ferro Chemical Div. | PIT | Pitt-Consol Chemical Co. |
| FMN | FMC Corp., Agricultural Chemical Div. | PLC | Phillips Petroleum Co. |
| GYR | Goodyear Tire & Rubber Co. | RBC | Fike Chemicals, Inc. |
| HXL | Hexcel, Inc., Hexcel Chemical Products | RCD | Richardson Co. |
| ICI | ICI Americas Inc., Chemical Specialties Co. | RCI | Reichhold Chemicals, Inc. |
| KPI | Kenrich Petrochemicals, Inc. | UPM | UOP, Inc. |
| | | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| | | VNC | Vanderbilt Chemical Corp. |

Note.--Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 28 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Sharon Kay Thompson

Elastomers (synthetic rubber) are high polymeric materials with properties similar to those of natural rubber. The term "elastomers" as used in this report, means a substance, whether in bale, crumb, powder, latex, and other crude form, which can be vulcanized or similarly processed into a material that can be stretched to at least twice its original length and, after having been so stretched and the stress removed, will return with force to approximately its original length. U.S. production and sales of elastomers in 1981 are shown in table 1.¹

Total U.S. production² of synthetic rubber in 1981 amounted to 4,849 million pounds, an increase of 1.7 percent from that produced in 1980.³ Total sales² of elastomers in 1981 amounted to 3,256 million pounds, approximately the same as that sold in 1980.³

Styrene-butadiene rubber (SBR, or S-type rubber) in 1981 continued to be the elastomer produced in the greatest quantity as it has been for more than a quarter of a century. U.S. production of S-type rubber, including 21 million pounds of its vinylpyridine sub-type, amounted to 2,268 million pounds in 1981.⁴ Solution polymerized butadiene rubber, a stereo type elastomer, was produced domestically in 1981 in the next largest amount--767 million pounds.⁴ Other principal types of synthetic elastomers for which U.S. production data are reported separately are ethylene-propylene rubber, production of which was 401 million pounds in 1981; acrylonitrile-butadiene (N-type) rubber, production of which was 127 million pounds; and silicone type elastomers, production of which was 106 million pounds.⁴

Sales of S-type rubber by U.S. producers in 1981 (excluding its vinylpyridine sub-type) amounted to 1,326 million pounds.⁴ Sales of solution polymerized butadiene rubber amounted to 418 million pounds, and those of ethylene-propylene rubber to 292 million pounds.⁴ Sales of N-type rubber in 1981 amounted to 105 million pounds.⁴

¹See also table 2 which lists these products and indicates the manufacturers of each by code. The codes are identified by company name in table 3.

²Does not include urethane type elastomers.

³Calculated by using the estimated figures for production and sales in 1980.

⁴Data for 1980 are not available.

TABLE 1.--ELASTOMERS (SYNTHETIC RUBBER):¹ U.S. PRODUCTION AND SALES, 1981

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

| ELASTOMERS | PRODUCTION ² | SALES | | |
|---|-------------------------|-----------------------|------------------|-------------------------|
| | | QUANTITY ² | VALUE | UNIT VALUE ³ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 4,849,457 | 3,255,832 | 2,505,096 | \$0.77 |
| Cyclic----- | 2,487,145 | 1,552,530 | 848,554 | .55 |
| Acyclic----- | 2,362,312 | 1,703,302 | 1,656,542 | .97 |
| Acrylonitrile-butadiene type (N-type)----- | 126,846 | 105,159 | 72,280 | .69 |
| Ethylene-propylene type----- | 400,526 | 292,238 | 227,240 | .78 |
| Polyacrylate ester type----- | (⁴) | 3,679 | 7,436 | 2.02 |
| Silicone type----- | 106,118 | (⁴) | (⁴) | (⁴) |
| Stereo elastomers: Butadiene (solution polymerized) type----- | 766,743 | 418,277 | 242,280 | .58 |
| Styrene-butadiene type (S-type)----- | 2,246,695 | 1,326,484 | 631,096 | .48 |
| Styrene-butadiene-vinylpyridine type----- | 20,845 | (⁴) | (⁴) | (⁴) |
| All other elastomers ⁵ ----- | 1,181,684 | 1,109,995 | 1,324,764 | 1.19 |

¹The term "elastomers" is defined as substance 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.

²Includes oil content of oil-extended elastomers.

³Calculated from unrounded figures.

⁴Included in "All other elastomers."

⁵Includes production and/or sales data for acrylic ester, butyl, chloroprene, epichlorohydrin, fluorinated, isobutylene, isoprenes, polysulfide, and silicone-type elastomers, certain solution elastomers, chlorinated rubber, chlorosulfonated polyethylene, thermoplastic rubber, and miscellaneous elastomers.

Note.--Data on production and sales of urethane elastomers are now reported in the section "Plastics and Resin Materials" with urethane plastics and polyols.

TABLE 2.--ELASTOMERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3.]

| ELASTOMERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC | |
| BUTADIENE-STYRENE TYPE: | |
| *Butadiene-styrene (S-Type) - - - - - | ASY, BFG, CPY, FRS, GNT, GRD, GYR, MMM, PLC, PLR, USR. |
| *Butadiene-styrene-vinylpyridine - - - - - | BFG, FRS, GNT, GYR. |
| Polyester elastomer - - - - - | DUP. |
| Polyisoprene, cyclized - - - - - | WAY. |
| Butadiene-styrene type elastomers, other - - - - - | ASY, PLC. |
| ALL OTHER CYCLIC ELASTOMERS: | |
| Elastomers, cyclic, all other - - - - - | HPC, SHC. |
| ACYCLIC | |
| POLYACRYLATE ESTER TYPE: | |
| *Polyacrylate ester, type elastomers - - - - - | ACY, BFG, DUP. |
| Polyalkalene oxide - - - - - | PRC. |
| POLYALKALENE SULFIDE TYPE: | |
| Butadiene-acrylic acid-acrylonitrile - - - - - | ASY. |
| Polyalkalene sulfide, type elastomers - - - - - | TKL. |
| BUTADIENE-ACRYLONITRILE TYPE (N-TYPE): | |
| *Butadiene-acrylonitrile type (N-Type) - - - - - | BFG, CPY, GYR, MMM, USR. |
| POLYBUTADIENE TYPE (EMULSION): | |
| Polybutadiene type (Emulsion) - - - - - | BFG, GYR, TKL. |
| POLYCHLOROPRENE TYPE (NEOPRENE): | |
| Epichlorohydrin rubbers - - - - - | BFG, HPC. |
| Fluoroelastomers - - - - - | DUP, MMM. |
| Polychloroprene type (Neoprene) - - - - - | DKA, DUP. |
| Polyethylene, chlorosulfonated - - - - - | DUP. |
| POLYISOBUTYLENE TYPE: | |
| Polisobutylene, type elastomers - - - - - | ENJ. |
| ISOBUTYLENE-ISOPRENE TYPE (BUTYL): | |
| Isobutylene-isoprene type (Butyl) - - - - - | CBN, ENJ. |
| PRODUCTS OF NATURAL RUBBER: | |
| Polymerized chlorinated rubbers - - - - - | HPC, ICI. |
| SILICONE TYPE: | |
| *Silicone type elastomers - - - - - | DCC, SPD, SWS. |
| STEREOISOMER TYPE: | |
| *Ethylene-propylene rubber - - - - - | BFG, CPY, DUP, ENJ, USR. |
| *Polybutadiene (Solution polymerized) - - - - - | ASY, BFG, FRS, GNT, GYR, PLC. |
| Polyisoprene (Solution polymerized) - - - - - | GYR. |

TABLE 2.--ELASTOMERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

| ELASTOMERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| STEREoisomer TYPE--CONTINUED | |
| Stereoisomer type, all other - - - - - | ADC. USR. |
| Thermoplastic elastomers, acyclic- - - - - | ASY. |
| ALL OTHER ACYCLIC ELASTOMERS: | |
| Elastomers, acyclic, all other - - - - - | PLC. |

TABLE 3.--ELASTOMERS (SYNTHETIC RUBBER): DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of elastomers to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|--|
| ACY | American Cyanamid Co. | HPC | Hercules, Inc. |
| ADC | Anderson Development Co. | | |
| ASY | American Synthetic Rubber Corp. | ICI | ICI Americas Inc., Chemical Specialties Co. |
| | | | |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical Group | MMM | Minnesota Mining and Manufacturing Co. |
| | | | |
| CBN | Cities Service Co., Columbian Div. | PLC | Phillips Petroleum Co. |
| CPY | Copolymer Rubber & Chemical Corp. | PLR | Polysar, Inc., Polysar Latex Div. |
| | | PRC | Products Research & Chemical Corp. |
| | | | |
| DCC | Dow Corning Corp. | SHC | Shell Oil Co., Shell Chemical Co. Div. |
| DKA | Denka Chemical Corp. | SPD | General Electric Co., Silicone Products Dept. |
| DUP | E. I. duPont de Nemours & Co., Inc. | SWS | Stauffer Chemical Co., SWS Silicones Div. |
| | | | |
| ENJ | Exxon Chemical Americas | TKL | Thiokol Chemical Corp., Specialty Chemical Div. |
| | | | |
| FRS | Firestone Tire & Rubber Co., Firestone Synthetic Rubber & Latex Co. Div. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| | | | |
| GNT | General Tire & Rubber Co., Chemical Div. | WAY | Philip A. Hunt Chemical Corp., Organic Chemical Div. |
| GRD | W. R. Grace & Co., Polymers & Chemical Div. | | |
| GYR | Goodyear Tire & Rubber Co. | | |
| | | | |

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

STATISTICAL HIGHLIGHTS

J. Lawrence Johnson

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 1 presents statistics on U.S. production and sales of plasticizers in as great a detail as is possible without revealing the operations of individual producers.

U.S. production of plasticizers totaled 1,866 million pounds in 1981, an increase of 4.5 percent from the 1,784 million pounds reported for 1980. Sales of plasticizers totaled 1,567 million pounds, valued at \$894 million, in 1981, compared with 1,574 million pounds, valued at \$858 million, in 1980.

Production of cyclic plasticizers in 1981, which consisted chiefly of the esters of phthalic anhydride, phosphoric acid, and trimellitic acid, amounted to 1,458 million pounds, an increase of 5.0 percent from the 1,389 million pounds reported for 1980. Sales of cyclic plasticizers in 1981 totaled 1,209 million pounds, valued at \$622 million, compared with 1,220 million pounds, valued at \$608 million, in 1980. The most important cyclic plasticizers were the dioctyl phthalates, with production of 304 million pounds, in 1981.

Production of acyclic plasticizers in 1981 totaled 407 million pounds, an increase of 3.0 percent from the 396 million pounds reported for 1980. Sales of acyclic plasticizers totaled 358 million pounds, valued at \$271 million, in 1981, compared with 354 million pounds, valued at \$250 million, in 1980. Epoxidized soya oils were the most important acyclic plasticizer in 1981 with production of 83 million pounds.

TABLE 1.--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1981

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

| PLASTICIZERS | PRODUCTION | SALES | | |
|--|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ² |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 1,865,539 | 1,566,503 | 893,633 | \$0.57 |
| Benzenoid ³ ----- | 1,600,552 | 1,316,501 | 713,276 | .54 |
| Nonbenzenoid----- | 264,987 | 250,002 | 180,357 | .72 |
| CYCLIC | | | | |
| Total----- | 1,458,323 | 1,208,976 | 622,474 | .51 |
| Phosphoric acid esters ⁴ ----- | 68,807 | 60,101 | 57,091 | .95 |
| Phthalic anhydride esters, total----- | 1,119,823 | 1,059,046 | 511,244 | .48 |
| Butyl octyl phthalates----- | 11,473 | 10,091 | 5,049 | .50 |
| Dibutyl phthalates (including diisobutyl phthalates)----- | 19,864 | 21,487 | 10,715 | .50 |
| Diethyl phthalate----- | 19,994 | 16,113 | 18,181 | 1.13 |
| Diisodecyl phthalate ⁵ ----- | 140,395 | 117,880 | 56,016 | .48 |
| Dimethyl phthalate----- | 6,933 | 7,541 | 4,506 | .60 |
| Dioctyl phthalates, total ⁵ ----- | 303,834 | 291,965 | 132,870 | .46 |
| Di(2-ethylhexyl) phthalate----- | 285,399 | ... | ... | ... |
| All other dioctyl phthalates----- | 18,435 | 291,965 | 132,870 | .46 |
| Di-tridecyl phthalate----- | 27,839 | 17,277 | 10,489 | .61 |
| All other phthalic anhydride esters----- | 589,491 | 576,692 | 273,418 | .47 |
| Trimellitic acid esters, total----- | 31,629 | 29,675 | 22,079 | .74 |
| Triisooctyl trimellitate----- | 1,478 | ... | ... | ... |
| Tri-n-octyl-n-decyl trimellitate----- | ... | 673 | 590 | .88 |
| Trioctyl trimellitate----- | 19,158 | 17,666 | 12,345 | .70 |
| All other trimellitic acid esters----- | 10,993 | 11,336 | 9,144 | .81 |
| All other cyclic plasticizers ⁶ ----- | 238,064 | 60,154 | 32,060 | .53 |
| ACYCLIC | | | | |
| Total----- | 407,216 | 357,527 | 271,159 | .76 |
| Adipic acid esters, total----- | 80,419 | 71,923 | 52,445 | .73 |
| Di(2-ethylhexyl) adipate----- | 22,567 | 26,032 | 16,498 | .63 |
| Diisodecyl adipate----- | 1,817 | 1,594 | 1,335 | .84 |
| Diisopropyl adipate----- | ... | 1,066 | 906 | .85 |
| All other adipic acid esters----- | 56,035 | 43,231 | 33,706 | .78 |
| Complex linear polyesters and polymeric plasticizers, total----- | 45,789 | 41,631 | 41,629 | 1.00 |
| Adipic acid type----- | 20,035 | 16,779 | 16,780 | 1.00 |
| All other----- | 25,754 | 24,852 | 24,849 | 1.00 |
| Epoxidized esters, total----- | 115,463 | 116,355 | 62,425 | .54 |
| Epoxidized linseed oils----- | 6,706 | 7,296 | 5,907 | .81 |
| Epoxidized soya oils----- | 83,324 | 83,317 | 42,138 | .51 |
| All other epoxidized esters----- | 25,433 | 25,742 | 14,380 | .56 |
| Isopropyl myristate----- | 2,397 | 2,469 | 2,537 | 1.03 |
| Oleic acid esters, total----- | 12,551 | 12,451 | 6,976 | .56 |
| Butyl oleate----- | 1,324 | 1,359 | 776 | .57 |
| All other oleic acid esters----- | 11,227 | 11,092 | 6,200 | .56 |

See footnotes at end of table.

TABLE 1.--PLASTICIZERS:¹ U.S. PRODUCTION AND SALES, 1981--CONTINUED

| PLASTICIZERS | PRODUCTION | SALES | | |
|---|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ² |
| ACYCLIC--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Palmitic acid esters, total----- | 7,700 | 6,120 | 4,914 | \$0.80 |
| Isopropyl palmilate----- | 4,728 | ... | ... | ... |
| All other palmitic acid esters----- | 2,972 | 6,120 | 4,914 | .80 |
| Stearic acid esters, total----- | 12,466 | 11,422 | 7,837 | .69 |
| n-Butyl stearate----- | 7,601 | 7,466 | 4,146 | .56 |
| Isobutyl stearate----- | 951 | 970 | 716 | .74 |
| All other stearic acid esters----- | 3,914 | 2,986 | 2,975 | 1.00 |
| All other acyclic plasticizers ⁷ ----- | 130,431 | 95,156 | 92,396 | .97 |

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

²Calculated from unrounded figures.

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

⁴Includes data for cresyl diphenyl phosphate, dibutyl phenyl phosphate, diphenyl octyl phosphate, tricresyl phosphate, triphenyl phosphate, and other cyclic phosphoric acid esters.

⁵The 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), 1981, results from a combination of incorrect reporting by some companies, end-of-year inventory adjustments, and rounding.

⁶Includes data for glycol dibenzoates, toluenesulfonamides, tetrahydrofurfuryl oleate, and other cyclic plasticizers.

⁷Includes data for azelaic acid esters, citric and acetylcitric acid esters, myristic acid esters except isopropyl myristate, pelargonic acid esters, ricinoleic and acetylricinoleic acid esters, glyceryl and glycol esters, phosphoric acid esters, sebacic acid esters and other acyclic plasticizers.

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| PLASTICIZERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC | |
| Diethylene glycol dibenzoate - - - - - | VEL. |
| Dipropenediol dibenzoate (Dipropylene glycol dibenzoate)- - - - - | KLM, VEL. |
| M-Ethyl-p-toluenesulfonamide - - - - - | MON, NES. |
| Isopropylidenediphenoxypropanol- - - - - | DOW. |
| *PHOSPHORIC ACID ESTERS: | |
| Dibutyl phenyl phosphate - - - - - | MON. |
| Diphenyl octyl phosphate - - - - - | MON. |
| Tricresyl phosphate- - - - - | FMP, SFS. |
| Triphenyl phosphate- - - - - | EK, MON. |
| Phosphoric acid esters, all other- - - - - | MON. |
| *PHTHALIC ANHYDRIDE ESTERS: | |
| Alkyl benzyl phthalates- - - - - | MON. |
| Bis(2-ethylhexyl)terephthalate - - - - - | EKT. |
| Butyl benzyl phthalate - - - - - | MON. |
| Butyl cyclohexyl phthalate - - - - - | CPS. |
| *Butyl octyl phthalates - - - - - | DBC, RCI, TEK, USS. |
| Di(2-butoxyethyl) phthalate- - - - - | HAL. |
| *Dibutyl phthalate (Including diisobutyl phthalate) - - - - - | DBC, EKT, HCC, RCI, SHX, USS, WTH. |
| Dicyclohexyl phthalate - - - - - | PFZ. |
| Diethyl isophthalate - - - - - | PFZ. |
| *Diethyl phthalate- - - - - | EKT, KF, MON, PFZ. |
| *Diisodecyl phthalate - - - - - | CO, DBC, ENJ, HCC, HN, RCI, TEK, USS. |
| Diisohexyl phthalate - - - - - | ENJ. |
| Diisononyl phthalate - - - - - | ENJ, USS. |
| Di(2-methoxyethyl) phthalate - - - - - | EKT. |
| Dimethyl isophthalate- - - - - | PFZ. |
| *Dimethyl phthalate - - - - - | EKT, KF, PFZ. |
| Dinonyl phthalate- - - - - | ENJ. |
| *Di-tridecyl phthalate- - - - - | ENJ, HCC, HN, RCI, SM, TEK, USS. |
| Diundecyl phthalate- - - - - | MON. |
| Hexyl n-decyl phthalate- - - - - | CO, HN, PFZ. |
| n-Octyl n-decyl phthalate- - - - - | RCI, TEK, USS. |
| *DIOCTYL PHTHALATES: | |
| *Di(2-ethylhexyl) phthalate - - - - - | CO, DBC, EKT, HCC, HN, RCI, TEK, USS. |
| Diiso-octyl phthalate- - - - - | HCC, RCI, TEK, USS. |

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| PLASTICIZERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| *PHTHALIC ANHYDRIDE ESTERS--CONTINUED | |
| *DIOCTYL PHTHALATES--CONTINUED | |
| Di-n-octyl phthalate - - - - - | EK. |
| *Diocetyl phthalates, all other - - - - - | WTH. |
| GLYCOL PHTHALATE ESTERS: | |
| Butyl phthalyl butyl glycolate - - - - - | PFZ. |
| Phthalic anhydride esters, all other - - - - - | HCC, HN, MON, PFZ, TEK, TNA. |
| Polyethylene glycol dibenzoate - - - - - | VEL. |
| Tetrahydrofurfuryl oleate - - - - - | EMR. |
| Toluenesulfonamide o-, p-mixtures - - - - - | MON. |
| *TRIMELLITIC ACID ESTERS: | |
| Tri(2-ethylhexyl) trimellitate - - - - - | HCC, TEK. |
| Triisodecyl trimellitate - - - - - | PFZ. |
| Triisononyl trimellitate - - - - - | ENJ. |
| *Triisooctyl trimellitate - - - - - | ENJ, HKP, RCI, TEK, USS. |
| *Tri-n-octyl n-decyl trimellitate - - - - - | HKP, PFZ, RCI. |
| *Triocetyl trimellitate - - - - - | DBC, EKT, HKP, HN, RCI, USS, WTH. |
| *All other Trimellitic acid esters - - - - - | HCC, MON, PFZ, TEK, USS, X. |
| *Cyclic plasticizers, all other - - - - - | HN, MON, NEV, TNA, WTH. |
| ACYCLIC | |
| *ADIPIC ACID ESTERS: | |
| Di(2-(2-butoxyethoxy)ethyl) adipate - - - - - | EKT, HAL, RCI, TKL. |
| *Di(2-ethylhexyl) adipate - - - - - | DBC, EKT, HAL, HCC, HKP, HN, MON, PFZ, RCI, RH, TEK, USS, WM, WTH. |
| Diisobutyl adipate - - - - - | HAL, HCC. |
| *Diisodecyl adipate - - - - - | HAL, HCC, PFZ, RCI, RH, SM. |
| Diiso-octyl adipate - - - - - | HAL, HCC, RH. |
| *Diisopropyl adipate - - - - - | VND, WM, WTH. |
| Di-n-octyl adipate - - - - - | DA. |
| Di-tridecyl adipate - - - - - | EMR, HCC, SM. |
| n-Hexyl n-decyl adipate - - - - - | TEK. |
| n-Octyl n-decyl adipate - - - - - | MON, RCI, RH, USS. |
| *Adipic acid esters, all others - - - - - | ARC, EKT, ENJ, HAL, HCC, MON, PFZ, TEK, USS, WTH. |
| AZELAIC ACID ESTERS: | |
| Di(2-ethylhexyl) azelate - - - - - | EKT, EMR, HAL, RCI. |
| Diiso-octyl azelate - - - - - | EMR. |
| Azelaic acid esters, all others - - - - - | EMR, HAL, PFZ, TCH. |
| CITRIC AND ACETYLCITRIC ACID ESTERS: | |
| Tributyl acetylcitrate - - - - - | PFZ. |
| Triethyl acetylcitrate - - - - - | PFZ. |
| Triethyl citrate - - - - - | PFZ. |
| Citric and acetylcitric acid esters, all other - - - | PFZ. |

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| PLASTICIZERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *COMPLEX LINEAR POLYESTERS AND POLYMERIC PLASTICIZERS: | |
| *Adipic acid type complex linear polyesters and polymeric plasticizers | DUP, HAL, RH, SHX, TEK, WTH. |
| *Complex linear polyesters and polymeric plasticizers, all other | ARZ, DRC, EKT, EKX, EMR, HCC, MN, HPC, MON, PFZ, RCI, RH, SM, VND, WTH. |
| Di(2-(2-butoxyethoxy)ethyl) methane- | TKL. |
| *EPOXIDIZED ESTERS: | |
| *Epoxidized linseed oils | SHX, SWT, UCC, VIK, WTC. |
| *Epoxidized soya oils | FER, FMP, RH, SHX, SWT, UCC, USS, VIK, WTC. |
| Epoxidized tall oils | FER. |
| Epoxy oleates, mixed | RH. |
| 2-Ethylhexyl epoxytallates | UCC. |
| Octyl epoxystearates | WTC. |
| Octyl epoxytallates | RH, WTC. |
| *Epoxidized esters, all other | UCC, VIK. |
| Glyceryl tripropionate | EKT. |
| MYRISTIC ACID ESTERS: | |
| *Isopropyl myristate | ARC, SHX, TCH, WM, WTH. |
| Myristyl ethoxy myristate | SCP. |
| *OLEIC ACID ESTERS: | |
| *Butyl oleate | ARC, CHL, EMR, GRO, HAL, WTH. |
| Decyl oleate | SBC, SCP, VND. |
| Glyceryl trioleate (Triolein) | EMR, GRO, TCH. |
| Isobutyl oleate | DA. |
| Methyl oleate | ARC, EMR, GRO, TCH, WTC. |
| PROPYL OLEATES: | |
| n-Propyl oleate | CHL, EMR, GRO, TCH. |
| *Oleic acid esters, all other | EMR, HAL, SBC. |
| *PALMITIC ACID ESTERS: | |
| 2-Ethylhexyl palmitate | VND, WTH. |
| Isobutyl palmitate | ARC. |
| Iso-octyl palmitate | ARC. |
| *Isopropyl palmitate | ARC, SHX, WM, WTH. |
| 2-Methoxyethyl palmitate | EKT. |
| *Palmitic acid esters, all other | EKT, SCP. |
| PELARGONIC ACID ESTERS: | |
| Glycol pelargonate | EMR. |
| Isodecyl pelargonate | EMR. |
| PHOSPHORIC ACID ESTERS: | |
| Triethyl phosphate | EKT. |
| Trioctyl phosphate | NN. |

TABLE 2.--PLASTICIZERS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981
--CONTINUED

| PLASTICIZERS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| RICINOLEIC AND ACETYLRICINOLEIC ACID ESTERS: | |
| n-Butyl acetylricinoleate - - - - - | NTL. |
| Butyl ricinoleate - - - - - | NTL. |
| Glyceryl tri(acetylricinoleate)- - - - - | NTL. |
| Methyl ricinoleate - - - - - | NTL. |
| Ricinoleic and acetylricinoleic acid esters, all other - - - - - | NTL, RH. |
| *SEBACIC ACID ESTERS: | |
| Dibutoxyethyl sebacate - - - - - | HAL. |
| Dibutyl sebacate - - - - - | EKT. |
| Di(2-ethylhexyl) sebacate - - - - - | HCC, RH. |
| Diisopropyl sebacate - - - - - | SBC. |
| Sebacic acid esters, all other - - - - - | HAL. |
| *STEARIC ACID ESTERS: | |
| Butoxyethyl stearate - - - - - | ARC. |
| *n-Butyl stearate - - - - - | ARC, CHL, EMR, GRO, SCP, SHX, TCH, WM, WTH. |
| 2-Ethylhexyl stearate - - - - - | SCP, TCH. |
| Glyceryl triacetyl stearate - - - - - | NTL. |
| Hexadecyl stearate - - - - - | ARC. |
| *Isobutyl stearate - - - - - | ARC, DA, WM, WTH. |
| Isopropyl stearate - - - - - | SBC, TCH, WTH. |
| Methyl pentachlorostearate - - - - - | VDM. |
| Stearic acid esters, all other - - - - - | GRO, HPC, SBC, SCP, TCH, VND, WM. |
| Sucrose acetate isobutyrate - - - - - | EKT. |
| Tetraethylene glycol di(2-ethylhexanoate)- - - - - | HAL, UCC. |
| Triethylene glycol di(caprylate-caprate) - - - - - | HAL, WM. |
| Triethylene glycol di(2-ethylbutyrate) - - - - - | UCC. |
| Triethylene glycol di(2-ethylhexanoate)- - - - - | EKT, HAL. |
| 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate - - - - - | EKK. |
| *Acyclic plasticizers, all other - - - - - | ARC, EMR, HAL, HPC, SM, TCH, UCC, WM, WTH. |

TABLE 3.--PLASTICIZERS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of plasticizers to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|---|
| ARC | Arnak Co., Industrial Chemical Div. | NES | Ruetgers-Nease Chemical Co. |
| ARZ | Arizona Chemical Co. | NEV | Neville Chemical Co. |
| CHL | Chemol, Inc. | NTL | NL Industries, Inc. |
| CO | Conoco, Inc. | PFZ | Pfizer, Inc. |
| CPS | CPS Chemical Co. | RCI | Reichhold Chemicals, Inc. |
| DA | Diamond Shamrock Corp. | RH | Rohm & Haas Co. |
| DCB | Badische Corp. | SBC | Scher Chemicals, Inc. |
| DOW | Dow Chemical Co. | SCP | Henkel, Inc. |
| DRC | Dock Resins Corp. | SFS | Stauffer Chemical Co., Specialty Div. |
| DUP | E. I. duPont de Nemours & Co., Inc. | SHX | Sherex Chemical Co., Inc. |
| EK | Eastman Kodak Co.: | SM | Mobil Oil Corp., Mobil Chemical Co., Chemical |
| EKT | Tennessee Eastman Co. Div. | | Coatings Div. |
| EKX | Texas Eastman Co. Div. | SWT | Eschem Inc., Swift Technical Products Div. |
| EMR | Emery Industries, Inc. | TCH | Emery Industries, Inc., Trylon Div. |
| ENJ | Exxon Chemical Americas | TEK | Teknor Apex Co. |
| FER | Ferro Corp., Ferro Chemical Div. | TKL | Thiokol Corp., Specialty Chemicals Div. |
| FMP | PMC Corp., Industrial Chemical Group | TNA | Ethyl Corp. |
| GRO | A. Gross & Co., Millmaster Onyx Group, | UCC | Union Carbide Corp. |
| | Kewanee Industries, Inc. | USS | USS Chemicals Div. of U.S. Steel Corp. |
| HAL | C. P. Hall Co. | VDM | Van De Mark Chemical Co., Inc. |
| HCC | Hatco Chemical Corp. | VEL | Velsicol Chemical Corp. |
| HKD | Hooker Chemicals Corp., PVC Div. | VIK | Viking Chemical Co. |
| HN | Tenneco Chemicals, Inc. | VND | Van Dyk & Co., Inc. |
| HPC | Hercules, Inc. | WM | American Can Co., Inolex Chemical Div. |
| KF | Kay-Fries Inc., Member Dynamit Nobel Group | WTC | Witco Chemical Corp. |
| KLM | Kalama Chemical, Inc. | WTH | Union Carbide Corp. |
| MON | Monsanto Co. | | |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 52 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Eric Land

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 are grouped by ionic class and by chemical class and subclass. All quantities are reported in terms of 100-percent organic surface-active ingredient and thus exclude all inorganic salts, water, and other diluents. Sales statistics reflect sales of bulk surface-active agents only; sales of formulated products are excluded.

Total U.S. production of surface-active agents in 1981 amounted to 5,078 million pounds, or 4.6 percent greater than the 4,853 million pounds reported for 1980. Sales of bulk surface-active agents in 1981 amounted to 3,104 million pounds, valued at \$1,477 million, compared with sales in 1980 of 2,928 million pounds, valued at \$1,296 million. In terms of quantity, sales in 1981 were 6.0 percent greater than in 1980.

Production of anionic surface-active agents in 1981 amounted to 3,353 million pounds, or 66.0 percent of the total surfactant output reported for 1981. Sales of anionics in 1981 amounted to 1,655 million pounds, valued at \$541 million.

Production of cationic surface-active agents in 1981 amounted to 337 million pounds, 8.5 percent more than the 311 million pounds reported in 1980. Production of nonionic surface-active agents amounted to 1,369 million pounds in 1981, 3.7 percent more than the 1,320 million pounds reported in 1980. Sales of cationic surface-active agents in 1981 increased by 7.8 percent in terms of quantity and increased by 14.3 percent in terms of value when compared with sales in 1980. Sales of nonionics in 1981 increased by 10.0 percent in terms of quantity and increased by 14.3 percent in terms of value when compared with sales in 1980.

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 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1981

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

| SURFACE-ACTIVE AGENTS | PRODUCTION ¹ | SALES ² | |
|---|-------------------------|-----------------------|-------------------------|
| | | QUANTITY ¹ | UNIT VALUE ³ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars Per pound |
| Grand total----- | 5,078,208 | 3,104,293 | 1,476,519 \$0.48 |
| Benzenoid ⁴ ----- | 1,229,201 | 665,700 | 366,860 .55 |
| Nonbenzenoid ⁵ ----- | 3,849,007 | 2,438,593 | 1,109,659 .46 |
| AMPHOTERIC | | | |
| Total----- | 18,795 | 17,082 | 23,595 1.38 |
| ANIONIC | | | |
| Total----- | 3,352,944 | 1,655,306 | 540,841 .33 |
| Carboxylic acids (and salts, thereof), total----- | 846,523 | 141,417 | 81,999 .58 |
| Amine salts of fatty, rosin, and tall oil acids----- | 1,863 | 508 | 756 1.49 |
| Carboxylic acids having amide, ester, or ether linkages----- | 4,106 | 3,400 | 5,077 1.49 |
| Coconut oil acids, potassium salt----- | 2,385 | 990 | 778 .79 |
| Coconut oil acids, sodium salt----- | 133,534 | 1,920 | 667 .35 |
| Oleic acid, potassium salt----- | 1,832 | ... | |
| Stearic acid, potassium salt----- | 481 | ... | |
| Tall oil acids, potassium salt----- | 6,244 | 3,264 | 1,598 .49 |
| Tallow acids, sodium salt----- | 385,952 | 17,279 | 4,769 .28 |
| All other carboxylic acids (and salts thereof)----- | 310,126 | 114,056 | 68,354 .60 |
| Phosphoric and polyphosphoric acid esters (and salts thereof), total----- | 42,486 | 31,655 | 28,964 .91 |
| Alcohols and phenols, alkoxyated and phosphated, total----- | 27,952 | 24,006 | 19,747 .82 |
| Mixed linear alcohols, ethoxylated and phosphated----- | 3,858 | 2,942 | 2,781 .95 |
| Nonylphenol, ethoxylated and phosphated----- | 15,123 | 14,123 | 9,497 .67 |
| Phenol, ethoxylated and phosphated----- | 2,498 | 2,272 | 2,440 1.07 |
| Tridecyl alcohol, ethoxylated and phosphated----- | 740 | ... | |
| All other----- | 5,733 | 4,669 | 5,029 1.08 |
| All other phosphoric and polyphosphoric acid esters (add salts thereof), total----- | 14,534 | 7,649 | 9,217 1.20 |
| 2-Ethylhexyl phosphate, sodium salt----- | 292 | ... | |
| Mixed alkyl phosphate----- | 3,146 | ... | |
| All other----- | 11,096 | 7,649 | 9,217 1.20 |
| Sulfonic acids (and salts thereof), total----- | 1,847,986 | 1,241,931 | 274,793 .22 |
| Alkylbenzenesulfonates, total----- | 640,219 | 164,509 | 86,488 .53 |
| Dodecylbenzenesulfonic acid----- | 200,845 | 101,412 | 47,156 .46 |
| Dodecylbenzenesulfonic acid, calcium salt----- | 13,429 | 9,574 | 8,654 .90 |
| Dodecylbenzenesulfonic acid, isopropylamine salt----- | 3,141 | 3,072 | 2,536 .83 |
| Dodecylbenzenesulfonic acid, sodium salt----- | 283,628 | 36,751 | 18,473 .50 |
| Dodecylbenzenesulfonic acid, triethanolamine salt----- | 6,504 | 5,722 | 3,451 .60 |
| All other----- | 132,672 | 7,978 | 6,218 .78 |
| Benzene-, cumene-, toluene-, and xylenesulfonates, total----- | 109,273 | 94,959 | 23,695 .25 |
| Xylenesulfonic acid, ammonium salt----- | 21,422 | 21,308 | 5,857 .27 |
| Xylenesulfonic acid, sodium salt----- | 60,131 | 52,707 | 11,108 .21 |
| All other----- | 27,720 | 20,944 | 6,730 .32 |

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | PRODUCTION ¹ | SALES ² | | |
|---|-------------------------|-----------------------|---------------|-------------------------|
| | | QUANTITY ¹ | VALUE | UNIT VALUE ³ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| <i>ANIONIC--Continued</i> | | | | |
| Sulfonic acids (and salts thereof)--Continued | | | | |
| Ligninsulfonates, total----- | 958,248 | 881,806 | 78,032 | \$0.09 |
| Ligninsulfonic acid, calcium salt----- | 634,679 | 570,819 | 28,546 | .05 |
| Ligninsulfonic acid, chromium salt----- | 124,027 | 123,225 | 22,229 | .18 |
| Ligninsulfonic acid, sodium salt----- | 149,766 | 138,641 | 19,383 | .14 |
| All other----- | 49,776 | 49,121 | 7,874 | .16 |
| Naphthalenesulfonates----- | 21,918 | 19,883 | 13,267 | .67 |
| Sulfonic acids having amide linkages, total----- | 6,199 | 4,448 | 6,025 | 1.35 |
| Sulfosuccinamic acid derivatives----- | 2,973 | 2,275 | 2,353 | 1.03 |
| Taurine derivatives----- | 2,925 | 1,919 | 3,495 | 1.82 |
| All other----- | 301 | 254 | 177 | .70 |
| Sulfonic acids having ester or ether linkages, total----- | 67,114 | 31,724 | 44,149 | 1.39 |
| Sulfosuccinic acid esters, total----- | 24,794 | 19,712 | 22,203 | 1.13 |
| Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt----- | 19,050 | 14,822 | 18,419 | 1.24 |
| All other----- | 5,744 | 4,890 | 3,784 | .77 |
| Other sulfonic acids having ester or ether linkages----- | 42,320 | 12,012 | 21,946 | 1.83 |
| All other sulfonic acids (and salts thereof)----- | 45,015 | 44,602 | 23,137 | .52 |
| Sulfuric acid esters (and salts thereof), total----- | 569,446 | 217,937 | 145,789 | .67 |
| Acids, amides, and esters, sulfated, total----- | 21,493 | 16,383 | 11,066 | .68 |
| Butyl oleate, sulfated, sodium salt----- | 1,077 | ... | ... | ... |
| Oleic acid, sulfated, disodium salt----- | 4,354 | 4,333 | 2,043 | .47 |
| Propyl oleate, sulfated, sodium salt----- | 297 | 153 | 116 | .76 |
| Tall oil sulfated, sodium salt----- | 1,890 | 1,161 | 368 | .32 |
| All other----- | 13,875 | 10,736 | 8,539 | .80 |
| Alcohols, sulfated, total----- | 261,771 | 61,365 | 59,467 | .97 |
| Dodecyl sulfate, magnesium salt----- | 229 | 152 | 173 | 1.14 |
| Dodecyl sulfate, sodium salt----- | 20,486 | 19,939 | 19,295 | .97 |
| Dodecyl sulfate, triethanolamine salt----- | 10,552 | 6,751 | 6,674 | .99 |
| Mixed linear alcohols, sulfated, ammonium salt----- | 44,006 | 5,795 | 5,654 | .98 |
| Mixed linear alcohols, sulfated, sodium salt----- | ... | 8,936 | 7,581 | .85 |
| Mixed linear alcohols, sulfated, triethanolamine salt----- | 14,367 | 3,388 | 3,466 | 1.02 |
| Octyl sulfate, sodium salt----- | 337 | 287 | 390 | 1.36 |
| All other----- | 171,794 | 16,117 | 16,234 | 1.01 |
| Castor oil, sulfated, sodium salt----- | 4,984 | 4,338 | 2,513 | .58 |
| Cod oil, sulfated, sodium salt----- | 1,954 | 1,625 | 521 | .32 |
| Ethers, sulfated, total----- | 269,185 | 126,437 | 69,582 | .55 |
| Alkylphenols, ethoxylated and sulfated----- | 5,322 | 4,073 | 4,033 | .99 |
| Dodecyl alcohol, ethoxylated and sulfated, ammonium salt----- | 4,275 | 3,641 | 2,468 | .68 |
| Dodecyl alcohol, ethoxylated and sulfated, sodium salt----- | 15,728 | 14,738 | 13,268 | .90 |
| Mixed linear alcohols, ethoxylated and sulfated, sodium salt----- | 135,919 | 26,208 | 15,175 | .58 |
| All other----- | 107,941 | 77,777 | 34,638 | .45 |
| Herring oil, sulfated, sodium salt----- | 1,435 | 1,111 | 385 | .35 |
| Mixed fish oils, sulfated, sodium salt----- | 4,318 | 4,006 | 1,385 | .35 |
| Neat's foot oil, sulfated, sodium salt----- | 1,488 | ... | ... | ... |
| Soybean oil, sulfated, sodium salt----- | 529 | 537 | 199 | .37 |
| Tallow sulfated, sodium salt----- | 2,289 | 2,135 | 671 | .31 |
| Other anionic surface-active agents ⁶ ----- | 46,503 | 22,366 | 9,296 | .42 |

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | PRODUCTION ¹ | SALES ² | | |
|--|-------------------------|-----------------------|---------------|-------------------------|
| | | QUANTITY ¹ | VALUE | UNIT VALUE ³ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| CATIONIC | | | | |
| Total----- | 337,241 | 256,045 | 228,146 | \$0.89 |
| Amine oxides and oxygen-containing amines (except those having amide linkages), total----- | 80,365 | 27,307 | 28,510 | 1.04 |
| Acyclic, total----- | 68,514 | 18,690 | 18,190 | .97 |
| (Coconut oil alkyl)amine, ethoxylated----- | 2,246 | ... | ... | ... |
| (Mixed alkyl)amine, ethoxylated----- | 2,060 | ... | ... | ... |
| (Tallow alkyl)amine, ethoxylated----- | 2,117 | 1,572 | 1,316 | .84 |
| All other----- | 62,091 | 17,118 | 16,874 | .93 |
| Cyclic (including imidazoline and oxazoline derivatives), total----- | 11,851 | 8,617 | 10,320 | 1.20 |
| 1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline----- | ... | 145 | 201 | 1.38 |
| 1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2-imidazoline----- | 146 | ... | ... | ... |
| 1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2-imidazoline----- | 872 | ... | ... | ... |
| All other----- | 10,833 | 8,472 | 10,119 | 1.19 |
| Amines and amine oxides having amide linkages, total----- | 46,984 | 36,091 | 28,700 | .80 |
| Stearic acid-diethylenetriamine condensate----- | 327 | 306 | 376 | 1.23 |
| Tall oil acids polyalkylenepolyamine condensate----- | 21,907 | 18,141 | 13,653 | .75 |
| All other----- | 24,750 | 17,644 | 14,671 | .83 |
| Amines, not containing oxygen (and salts thereof), total----- | 81,722 | 75,118 | 68,433 | .91 |
| Diamines, polyamines, and amine salts, total----- | 30,791 | 25,966 | 22,442 | .86 |
| Imidazoline derivatives----- | 1,146 | 880 | 1,489 | 1.69 |
| N-(9-Octadecenyl)trimethylenediamine----- | 3,874 | 3,503 | 3,724 | 1.06 |
| N-(Tallow alkyl)dipropylenetriamine----- | 217 | ... | ... | ... |
| N-(Tallow alkyl)trimethylenediamine----- | 8,367 | 6,691 | 5,378 | .80 |
| All other----- | 17,187 | 14,892 | 11,851 | .80 |
| Primary monoamines, total----- | 24,205 | 22,259 | 18,510 | .83 |
| 9-Octadecenylamine----- | 5,488 | 5,373 | 4,708 | .88 |
| Octadecylamine----- | 728 | ... | ... | ... |
| (Tallow alkyl)amine----- | 8,505 | 7,412 | 5,058 | .68 |
| All other----- | 9,484 | 9,474 | 8,744 | .92 |
| Secondary and tertiary monoamines, total----- | 26,726 | 26,893 | 27,481 | 1.02 |
| N,N-Dimethyl(coconut oil alkyl)amine----- | 158 | ... | ... | ... |
| N,N-Dimethylhexadecylamine----- | 397 | 371 | 441 | 1.19 |
| N,N-Dimethyloctadecylamine----- | 1,239 | 1,285 | 1,618 | 1.26 |
| All other----- | 24,932 | 25,237 | 25,422 | 1.01 |
| Quaternary ammonium salts, not containing oxygen, total----- | 103,296 | 97,380 | 82,949 | .85 |
| Acyclic, total----- | 74,250 | 70,465 | 50,716 | .72 |
| Bis(hydrogenated tallow alkyl)dimethylammonium chloride----- | 47,765 | 47,118 | 26,674 | .57 |
| Trimethyl(tallow alkyl)ammonium chloride----- | 1,335 | 1,322 | 1,160 | .88 |
| All other----- | 25,150 | 22,025 | 22,882 | 1.04 |
| Benzenoid, total----- | 29,046 | 26,915 | 32,233 | 1.20 |
| Benzyl(coconut oil alkyl)dimethylammonium chloride----- | 417 | 267 | 383 | 1.43 |
| Benzyltrimethyl(mixed alkyl)ammonium chloride----- | 12,392 | 12,531 | 16,461 | 1.31 |
| Benzyltrimethyloctadecylammonium chloride----- | 2,962 | 2,559 | 4,575 | 1.79 |
| Benzyltrimethylammonium chloride----- | 3,487 | 3,669 | 2,105 | .57 |
| All other----- | 9,788 | 7,889 | 8,709 | 1.10 |
| Other cationic surface-active agents ⁷ ----- | 24,874 | 20,149 | 19,554 | .97 |

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | PRODUCTION ¹ | SALES ² | | |
|---|-------------------------|-----------------------|------------------|-------------------------|
| | | QUANTITY ¹ | VALUE | UNIT VALUE ³ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| NONIONIC | | | | |
| Total----- | 1,369,228 | 1,175,860 | 683,937 | \$0.58 |
| Carboxylic acid amides, total----- | 66,366 | 50,828 | 37,451 | .74 |
| Diethanolamine condensates (amine/acid ratio=2/1), total----- | 19,551 | 14,566 | 10,272 | .71 |
| Coconut oil acids----- | 10,315 | 8,115 | 5,397 | .66 |
| Coconut oil and tallow acids----- | 1,971 | 1,886 | 1,252 | .66 |
| Lauric acid----- | 143 | ... | ... | ... |
| Lauric and myristic acids----- | 1,732 | 1,146 | 1,043 | .91 |
| Oleic acid----- | 664 | ... | ... | ... |
| Tall oil acids----- | 931 | 274 | 210 | .76 |
| All other----- | 3,795 | 3,145 | 2,370 | .75 |
| Diethanolamine condensates (other amine/acid ratios), total----- | 30,368 | 28,201 | 21,024 | .75 |
| Coconut oil acids (amine/acid ratio=1/1)----- | 21,562 | 20,439 | 14,409 | .70 |
| Lauric acid (amine/acid ratio=1/1)----- | 3,685 | 2,789 | 2,541 | .91 |
| Lauric and myristic acids (amine/acid ratio=1/1)----- | 2,965 | 2,896 | 2,388 | .82 |
| Linoleic acid (amine/acid ratio=1/1)----- | 1,031 | 988 | 819 | .83 |
| Stearic acid (amine/acid ratio=1/1)----- | 88 | 69 | 40 | .58 |
| All other----- | 1,037 | 1,020 | 827 | .81 |
| All other carboxylic acid amides----- | 16,447 | 8,061 | 6,155 | .76 |
| Carboxylic acid esters, total----- | 242,583 | 189,190 | 143,614 | .76 |
| Anhydrosorbitol esters, total----- | 30,603 | 20,015 | 16,397 | .82 |
| Anhydrosorbitol mono-oleate----- | 5,133 | 3,212 | 2,894 | .90 |
| All other----- | 25,470 | 16,803 | 13,503 | .80 |
| Diethylene glycol esters, total----- | 2,521 | 711 | 654 | .92 |
| Diethylene glycol monolaurate----- | 81 | 78 | 68 | .86 |
| Diethylene glycol mono-oleate----- | 59 | 42 | 38 | .91 |
| Diethylene glycol monostearate----- | ... | 172 | 173 | 1.00 |
| All other----- | 2,381 | 419 | 375 | .89 |
| Ethoxylated anhydrosorbitol mono-oleate----- | 3,744 | 3,172 | 2,594 | .82 |
| Ethylene glycol distearate----- | ... | 2,658 | 1,448 | .54 |
| Ethylene glycol monostearate----- | 2,954 | 2,820 | 2,072 | .73 |
| Glycerol esters of chemically defined acids, total | 22,163 | 18,594 | 13,680 | .74 |
| Glycerol mono-oleate----- | 3,791 | 2,825 | 2,204 | .78 |
| Glycerol monoricinoleate----- | 65 | 67 | 84 | 1.25 |
| Glycerol monostearate----- | 17,360 | 14,812 | 10,377 | .70 |
| All other----- | 947 | 890 | 1,015 | 1.14 |
| Glycerol esters of mixed acids----- | 39,794 | 34,034 | 24,860 | .73 |
| Natural fats and oils, ethoxylated, total----- | 18,802 | 13,806 | 10,750 | .78 |
| Castor oil, ethoxylated----- | 8,297 | 5,528 | 4,133 | .75 |
| Hydrogenated castor oil, ethoxylated----- | 3,916 | ... | ... | ... |
| Lanolin, ethoxylated----- | 1,302 | 981 | 874 | .89 |
| All other----- | 5,287 | 7,297 | 5,743 | .79 |
| Polyethylene glycol esters, total----- | 48,869 | 39,405 | 23,374 | .59 |
| Polyethylene glycol dilaurate----- | 1,090 | 1,008 | 1,079 | 1.07 |
| Polyethylene glycol dioleate----- | 2,402 | 907 | 754 | .83 |
| Polyethylene glycol distearate----- | 2,624 | ... | ... | ... |
| Polyethylene glycol monolaurate----- | 4,662 | 3,986 | 3,289 | .83 |
| Polyethylene glycol mono-oleate----- | 5,345 | 4,483 | 3,309 | .74 |
| Polyethylene glycol monostearate----- | 7,101 | 5,106 | 4,361 | .85 |
| Polyethylene glycol sesquiesther of tall oil acids----- | 16,752 | ... | ... | ... |
| All other----- | 8,893 | 23,915 | 10,582 | .44 |
| Polyglycerol esters----- | 866 | 791 | 1,017 | 1.29 |
| Propanediol esters----- | 2,754 | 2,296 | 2,446 | 1.07 |
| All other carboxylic acid esters----- | 69,513 | 50,888 | 44,322 | .87 |

See footnotes at end of table.

TABLE 1.--SURFACE-ACTIVE AGENTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | PRODUCTION ¹ | SALES ² | | |
|--|-------------------------|-----------------------|---------|-------------------------|
| | | QUANTITY ¹ | VALUE | UNIT VALUE ³ |
| | 1,000 | 1,000 | 1,000 | Per |
| | pounds | pounds | dollars | pound |
| <i>NONIONIC--Continued</i> | | | | |
| Ethers, total----- | 1,021,752 | 924,841 | 494,087 | \$0.53 |
| Benzenoid ethers, total----- | 372,506 | 318,079 | 166,018 | .52 |
| Dinonylphenol, ethoxylated----- | 6,239 | 4,929 | 3,811 | .77 |
| Dodecylphenol, ethoxylated----- | 14,365 | 13,297 | 7,436 | .56 |
| Nonylphenol, ethoxylated----- | 268,498 | 243,018 | 117,724 | .48 |
| Phenol, ethoxylated----- | 1,909 | 1,154 | 856 | .74 |
| All other----- | 81,495 | 55,681 | 36,191 | .65 |
| Nonbenzenoid ethers, total----- | 575,508 | 540,376 | 278,243 | .51 |
| Chemically-defined linear alcohols, alkoxyated, total----- | 15,531 | 10,412 | 9,932 | .95 |
| Decyl alcohol, ethoxylated----- | 5,391 | 3,138 | 1,854 | .59 |
| Dodecyl alcohol, ethoxylated----- | 3,046 | 2,831 | 2,450 | .87 |
| 9-Octadecenyl alcohol, ethoxylated----- | 1,465 | 561 | 623 | 1.11 |
| Oleyl alcohol, ethoxylated----- | 823 | 725 | 1,329 | 1.83 |
| All other----- | 4,806 | 3,157 | 3,676 | 1.16 |
| Mixed linear alcohols, alkoxyated, total----- | 559,977 | 529,964 | 268,311 | .51 |
| Mixed linear alcohols, ethoxylated----- | 498,165 | 473,021 | 244,383 | .52 |
| Mixed linear alcohols, ethoxylated and pro- | | | | |
| poxylated----- | 27,086 | 24,131 | 15,624 | .65 |
| Tallow alcohol, ethoxylated----- | 5,937 | ... | ... | ... |
| All other----- | 28,789 | 32,812 | 8,304 | .25 |
| Other ethers and thioethers, total----- | 73,738 | 66,386 | 49,826 | .75 |
| Mixed alcohols, ethoxylated----- | 427 | ... | ... | ... |
| Tridecyl alcohol, ethoxylated----- | 12,742 | 8,660 | 5,619 | .65 |
| All other----- | 60,569 | 57,726 | 44,207 | .77 |
| Other nonionic surface-active agents----- | 38,527 | 11,001 | 8,785 | .80 |

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

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

³Calculated from unrounded figures.

⁴The term "benzenoid" used in this report, describes any surface-active agents, 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).

⁵Includes ligninsulfonates.

⁶Includes all other natural fats and oils, sulfated.

⁷Includes quaternary ammonium salts, containing oxygen.

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| AMPHOTERIC | |
| 1,1-Bis(carboxymethyl)-2-undecyl-2-imidazolinium hydroxide, disodium salt - - - - - | BRD. |
| (1-Carboxyheptadecyl)trimethylammonium hydroxide, inner salt - - - - - | DUP. |
| (Carboxymethyl)[3-(coconut oil amide)propyl]-dimethylammonium chloride, sodium salt - - - - - | X. |
| (Carboxymethyl)[3-(coconut oil amide)propyl]-dimethylammonium hydroxide, inner salt - - - - - | CYL, HLI, JOR, WM. |
| 1-Carboxymethyl-2-heptadecyl-1-(2-hydroxyethyl)-2-imidazolinium hydroxide, sodium derivative, sodium salt - - - - - | MIR. |
| 1-Carboxymethyl-1-(2-hydroxyethyl)-2-nonyl-2-imidazolinium hydroxide, sodium derivative, sodium salt - - - - - | MIR. |
| 1-Carboxymethyl-1-(2-hydroxyethyl)-2-undecyl-2-imidazolinium hydroxide, sodium derivative, sodium salt - - - - - | MIR, X. |
| N-(Coconut oil alkyl)- β -alanine, sodium salt - - - - - | DUP, SCP. |
| N-Dodecyl-3-iminodipropionic acid - - - - - | SCP. |
| N-Dodecyl-3-iminodipropionic acid, disodium salt - - - - - | SCP. |
| Mixed acyclic primary amines, ethoxylated and sulfated, sodium salt - - - - - | RH. |
| (Mixed alkyl)sulfobetaine - - - - - | MOA. |
| Polypeptide ammonium salt - - - - - | STP. |
| Polypeptide, sodium salt - - - - - | STP. |
| N-(Tallow alkyl)-3-iminedipropionic acid, disodium salt - - - - - | SCP. |
| Amphoteric surface-active agents, all other - - - - - | ARC, BRD, CRD, MIR, MOA, SBC, SCP, TCH. |
| ANIONIC | |
| *CARBOXYLIC ACIDS (AND SALTS THEREOF): | |
| *AMINE SALTS OF FATTY, ROSIN, AND TALL OIL ACIDS: | |
| Coconut oil acids, ethanolamine salt - - - - - | SBP. |
| Mixed fatty acids, ethanolamine salt - - - - - | SBP. |
| Oleic acid, butylamine salt - - - - - | DYS. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| ANIONIC--CONTINUED | |
| *CARBOXYLIC ACIDS (AND SALTS THEREOF)--CONTINUED | |
| *AMINE SALTS OF FATTY, ROSIN, AND TALL OIL | |
| ACIDS--CONTINUED | |
| Oleic acid, diethylamine salt - - - - - | WTC. |
| Rosin acids, triethanolamine salt - - - - - | AES, ONX. |
| Stearic acid, N,N,N',N'-tetrakis(2-hydroxyethyl)- ethylenediamine salt - - - - - | ICI. |
| Stearic acid, triethanolamine salt - - - - - | GLY. |
| Tall oil acids, diethanolamine salt (Condensate) - | CYL. |
| Tallow acids, ethanolamine salt - - - - - | SBP. |
| Tallow acids, triethanolamine salt - - - - - | SBP. |
| Amine salts of fatty, rosin, and tall oil acids, all other - - - - - | WM, X. |
| *CARBOXYLIC ACIDS HAVING AMIDE, ESTER, OR ETHER LINKAGES: | |
| N-(Coconut oil acyl)polypeptide, potassium salt - | STP. |
| N-(Coconut oil acyl)polypeptide, sodium salt - - | STP. |
| N-(Coconut oil acyl)polypeptide, triethanolamine salt - - - - - | STP. |
| N-(Coconut oil acyl)sarcosine, sodium salt - - - | HMP. |
| N-Lauroylsarcosine - - - - - | HMP. |
| N-Lauroylsarcosine, sodium salt - - - - - | HMP, ONX. |
| N-Oleoylpolypeptide, sodium salt - - - - - | LMI. |
| N-Oleoylsarcosine - - - - - | HMP. |
| N-Oleoylsarcosine, sodium salt - - - - - | GAF. |
| Tridecyloxypoly(ethyleneoxy)acetic acid, sodium salt - - - - - | BRD, STC. |
| Carboxylic acids with amide, ester or ether linkage, other - - - - - | CHP, HMP, S, STC, STP. |
| POTASSIUM AND SODIUM SALTS OF FATTY, ROSIN, AND TALL OIL ACIDS: | |
| Castor oil acids, potassium salt - - - - - | NTL, SEA. |
| Castor oil acids, sodium salt - - - - - | HEW. |
| *Coconut oil acids, potassium salt - - - - - | AES, COM, CYL, DYS, ESS, HEW, HIP, HNT, LUR, NMC, PEK, PG, PNX, SOP, X. |
| *Coconut oil acids, sodium salt - - - - - | AGP, BSW, COM, CP, HEW, JRG, LEV, NMC, NPR, PG, SOP. |
| Corn oil acids, potassium salt - - - - - | HNT, NMC. |
| Fish oil acids, sodium salt - - - - - | PG. |
| Mixed vegetable fatty acids, potassium salt - - | AES, DYS, GRL, QCP. |
| *Oleic acid, potassium salt - - - - - | AES, DA, HAL, HNT, USR, WBG, X. |
| Oleic acid, sodium salt - - - - - | BSW, USR, WBG, WTC. |
| Olive oil acids, sodium salt - - - - - | HNT. |
| Palm oil acids, sodium salt - - - - - | BSW, HEW. |
| Rosin acids, potassium salt - - - - - | NPC, PEK. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ANIONIC--CONTINUED | |
| *CARBOXYLIC ACIDS (AND SALTS THEREOF)--CONTINUED | |
| POTASSIUM AND SODIUM SALTS OF FATTY, ROSIN, AND | |
| TALL OIL ACIDS--CONTINUED | |
| Rosin acids, - - - - - | HPC, HRT, SLM. |
| Soybean oil acids, potassium salt- - - - - | LUR, PEK, PNK. |
| *Stearic acid, potassium salt- - - - - | CCC, CON, DA, HEW, WTC. |
| Stearic acid, sodium salt- - - - - | CCC, WTC. |
| *Tall oil acids, potassium salt- - - - - | AES, ASY, CON, DAN, DYS, ESS, HIP, HNT, NPC, PEK, PNK, SOP, X. |
| Tall oil acids, sodium salt- - - - - | AES, CON, GDC, HPC, NMC, WVA. |
| Tallow acids, potassium salt- - - - - | AES, AGP, ASY, DYS, PG, PNK. |
| *Tallow acids, sodium salt- - - - - | BSW, CON, CP, HEW, JRG, LEV, NMC, NPR, PG, PRX. |
| Potassium and sodium salts of fatty, rosin, and tall oil acids, all other- - - - - | ARZ, DYS, HEW, NMC, PG, USR. |
| OTHER CARBOXYLIC ACIDS: | |
| Carboxylic acids, all other- - - - - | BSW, KPI, MRV, SCP. |
| *PHOSPHORIC AND POLYPHOSPHORIC ACID ESTERS (AND SALTS | |
| THEREOF): | |
| *ALCOHOLS AND PHENOLS, ALKOXYLATED AND PHOSPHATED: | |
| Butyl alcohol, ethoxylated and phosphated- - - - - | GAF. |
| Dinonylphenol, ethoxylated and phosphated- - - - - | GAF, MOA, TCH, WAY, WTC. |
| Dodecyl alcohol, ethoxylated and phosphated- - - - - | GAF, JOR. |
| Dodecylphenol, ethoxylated and phosphated- - - - - | GAF. |
| 2-Ethylhexanol, ethoxylated and phosphated- - - - - | DA, WAY. |
| *Mixed linear alcohols, ethoxylated and phosphated- - - - - | AZS, BRD, CHP, CRT, CTL, CYL, FER, GAF, HIP, HRT, MOA, MRV, SCP, SHX, STC, TCH, WTC. |
| *Nonylphenol, ethoxylated and phosphated- - - - - | ARL, AZS, BRD, CRT, CTL, CYL, DA, DEX, GAF, GDC, HRT, MCP, MET, MOA, SCP, SOP, STC, TCC, VPC, WAY, WTC, WVA, X. |
| 9-Octadecenyl alcohol, ethoxylated and phosphated- - - - - | GAF. |
| 9-Octadecyl alcohol, ethoxylated and phosphated- - - - - | GAF. |
| Octylphenol, ethoxylated and phosphated- - - - - | RH. |
| Octylphenol, ethoxylated and phosphated, magnesium salt- - - - - | ONX. |
| *Phenol, ethoxylated and phosphated- - - - - | GAF, MOA, RH, TCH, WTC, X. |
| Polyhydric alcohol, ethoxylated and phosphated- - - - - | DEX, GAF, SCP. |
| Polypropylene glycol, phosphated- - - - - | CYL. |
| *Tridecyl alcohol, ethoxylated and phosphated- - - - - | DAN, GAF, HIP, MIL, SNW, VPC, X. |
| Alcohols and phenols, alkoxyated and phosphated or polyphosphated, all other- - - - - | CHP, DA, GAF, MCP, MIL, MOA, TCH, X. |
| ALCOHOLS, PHOSPHATED OR POLYPHOSPHATED: | |
| Butyl phosphate, potassium salt- - - - - | DUP. |
| Decyl and octyl phosphate- - - - - | DA. |
| 2-Ethylhexyl phosphate- - - - - | CHP, GAF. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ANIONIC--CONTINUED | |
| *PHOSPHORIC AND POLYPHOSPHORIC ACID ESTERS (AND SALTS THEREOF)--CONTINUED | |
| ALCOHOLS, PHOSPHATED OR POLYPHOSPHATED--CONTINUED | |
| *2-Ethylhexyl phosphate, sodium salt - - - - - | CHP, DAN, WTC. |
| 2-Ethylhexyl polyphosphate - - - - - | X. |
| 2-Ethylhexyl polyphosphate, sodium salt - - - - - | X. |
| Hexyl phosphate - - - - - | ICI, SFS. |
| Hexyl phosphate, potassium salt - - - - - | ICI. |
| Hexyl polyphosphate, potassium salt - - - - - | DEX. |
| *Mixed alkyl phosphate - - - - - | CTL, DUP, SCP, SFS, STC, X. |
| Mixed alkyl phosphate, diethanolamine salt - - - - - | DUP, SCP. |
| 9-Octadecenyl phosphate - - - - - | DA. |
| Octyl decyl phosphate - - - - - | DUP. |
| Octyl phosphate - - - - - | FTX, SCP, WTC. |
| Octyl phosphate, alkylamine salt - - - - - | SCP. |
| Octyl phosphate, potassium salt - - - - - | DEX. |
| Octyl polyphosphate - - - - - | DEX. |
| Octyl polyphosphate, potassium salt - - - - - | SNW, X. |
| Phosphated and polyphosphated alcohols, all other - - - - - | BAS, CCC, CHP, HRT, KPI, MIL, RCD, X. |
| OTHER PHOSPHORIC AND POLYPHOSPHORIC ACID ESTERS: | |
| Glycerol monoester of mixed fatty acids, phosphated - - - - - | QCP, WTC. |
| Phosphoric and polyphosphoric acid esters, all other - - - - - | MIL, SCP, X. |
| *SULFONIC ACIDS (AND SALTS THEREOF): | |
| *ALKYLBENZENESULFONATES: | |
| DODECYLBENZENESULFONATES: | |
| *Dodecylbenzenesulfonic acid - - - - - | AAC, ARC, CMT, CO, CRT, CTL, EMK, FTX, HLI, LEV, MON, PIL, PLX, PRX, RCD, STP, TCI, TEN, WTC, WVA, X. |
| Dodecylbenzenesulfonic acid, (Mixed alkyl)amine salt - - - - - | ECC, HIP, X. |
| Dodecylbenzenesulfonic acid, ammonium salt - - - - - | AES, CCC. |
| *Dodecylbenzenesulfonic acid, calcium salt - - - - - | DA, ICI, RCD, RH, STC, STP, TMH, WTC, WVA, X. |
| Dodecylbenzenesulfonic acid, diethanolamine salt - - - - - | CYL. |
| Dodecylbenzenesulfonic acid, isopropanolamine salt - - - - - | FTX, PIL. |
| *Dodecylbenzenesulfonic acid, isopropylamine salt - - - - - | CIM, CMT, CTL, ICI, RCD, STP, TCH, WTC. |
| Dodecylbenzenesulfonic acid, potassium salt - - - - - | AES, MRV, SVC, WVA. |
| *Dodecylbenzenesulfonic acid, sodium salt - - - - - | AAC, AES, APX, BLA, CMT, CO, CP, CTL, CYL, DUP, ECC, GDC, HLI, LEV, NMC, PEK, PG, PIL, PLX, PRX, RCD, SOP, STP, TEN, WTC. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ANIONIC--CONTINUED | |
| *SULFONIC ACIDS (AND SALTS THEREOF)--CONTINUED | |
| ALKYLBENZENESULFONATES--CONTINUED | |
| DODECYLBENZENESULFONATES--CONTINUED | |
| *Dodecylbenzenesulfonic acid, triethanolamine salt - - - - - | AAC, ARL, BRD, CCC, CIM, CTL, CYL, ESS, HLI, HRV, PIL, RCD, STP, WTC, X. |
| Dodecylbenzene sulfonates, all other - - - - - | DA, KPI, WTC. |
| OTHER ALKYLBENZENESULFONATES: | |
| Decylbenzenesulfonic acid, sodium salt - - - - - | CRT. |
| Didodecylbenzenesulfonic acid - - - - - | WTC. |
| Pentadecylbenzenesulfonic acid, potassium salt - - - - - | STP. |
| Tridecylbenzenesulfonic acid - - - - - | PLX, RCD. |
| Tridecylbenzenesulfonic acid, sodium salt - - - - - | BLA, CP, NPR, PG, RCD, WTC. |
| Undecylbenzene sulfonic acid - - - - - | SCP. |
| Undecylbenzene sulfonic acid, sodium salt - - - - - | SCP, WTC. |
| Undecylbenzene sulfonic acid, triethanolamine salt - - - - - | SCP. |
| Alkylbenzene sulfonates, all other - - - - - | PIL, SCP. |
| *BENZENE-, CUMENE-, TOLUENE-, AND XYLENESULFONATES: | |
| Cumenesulfonic acid, ammonium salt - - - - - | NES, WTC. |
| Cumenesulfonic acid, sodium salt - - - - - | CP, NES, WTC. |
| Toluenesulfonic acid, potassium salt - - - - - | NES. |
| Toluenesulfonic acid, sodium salt - - - - - | CO, NES, PG. |
| *Xylenesulfonic acid, ammonium salt - - - - - | CO, NES, STP, WTC. |
| *Xylenesulfonic acid, sodium salt - - - - - | CO, ICI, NES, PIL, SDC, STP, WTC. |
| *LIGNINSULFONATES: | |
| Ligninsulfonic acid, ammonium salt - - - - - | CRZ, MAR, SPA. |
| *Ligninsulfonic acid, calcium salt - - - - - | CRZ, CWP, FPC, LKY, MAR, PSP. |
| *Ligninsulfonic acid, chromium salt - - - - - | MAR, PSP, RAY. |
| Ligninsulfonic acid, iron salt - - - - - | CRZ, MAR, PSP. |
| Ligninsulfonic acid, magnesium salt - - - - - | MAR. |
| *Ligninsulfonic acid, sodium salt - - - - - | CRZ, MAR, PSP, RAY, WVA. |
| Ligninsulfonic acid, zinc salt - - - - - | MAR, PSP. |
| Ligninsulfates, all other - - - - - | PSP. |
| *NAPHTHALENESULFONATES: | |
| Butylnaphthalenesulfonic acid, sodium salt - - - - - | DA, ECC, UDI. |
| Dibutylnaphthalenesulfonic acid - - - - - | UDI. |
| Diisopropylnaphthalenesulfonic acid, sodium salt - - - - - | DA, DUP, UDI. |
| Isopropylnaphthalenesulfonic acid - - - - - | DA, UDI. |
| Methylenebis(2-naphthalenesulfonic acid) - - - - - | SYT. |
| Methylenebis(2-naphthalenesulfonic acid), sodium salt - - - - - | DUP. |
| Methylnaphthalenesulfonic acid, sodium salt - - - - - | DA, UDI. |
| Methylnonylnaphthalenesulfonic acid, sodium salt - - - - - | UDI. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| ANIONIC--CONTINUED | |
| *SULFONIC ACIDS (AND SALTS THEREOF)--CONTINUED | |
| *NAPHTHALENESULFONATES--CONTINUED | |
| Naphthalenesulfonates, all other - - - - - | ICI, UDI, X. |
| *SULFONIC ACIDS HAVING AMIDE LINKAGES: | |
| *SULFOSUCCINAMIC ACID DERIVATIVES: | |
| N-(1,2-Dicarboxyethyl)-N-octadecylsulfosuccinamic acid, tetrasodium salt - - - - - | ACY, MOA. |
| N-Octadecylsulfosuccinamic acid, disodium salt - - - - - | ACY. |
| N-(Oleoyloxyisopropyl)sulfosuccinamic acid - - - - - | WTC. |
| Sulfosuccinamic acid derivatives, all other - - - - - | TCH. |
| *TAURINE DERIVATIVES: | |
| N-(Coconut oil acyl)-N-methyltaurine, sodium salt - - - - - | FTX, GAF, STC, TNI. |
| N-Cyclohexyl-N-palmitoyltaurine, sodium salt - - - - - | GAF. |
| N-Methyl-N-oleoyltaurine, sodium salt - - - - - | GAF, HRT, STC. |
| N-Methyl-N-palmitoyltaurine, sodium salt - - - - - | GAF. |
| N-Methyl-N-(tall oil acyl)taurine, sodium salt - - - - - | CCC, FTX, GAF, WVA. |
| *ALL OTHER SULFONIC ACIDS HAVING AMIDE LINKAGES: | |
| *Sulfonic acids having amide linkages, all other - - - - - | S, STC, TCH, WTC. |
| *SULFONIC ACIDS HAVING ESTER OR ETHER LINKAGES: | |
| *SULFOSUCCINIC ACID ESTERS: | |
| *Sulfosuccinic acid, bis(2,6-dimethyl-4-heptyl)-ester, sodium salt - - - - - | MOA, PC. |
| *Sulfosuccinic acid, bis(2-ethylhexyl)ester, sodium salt - - - - - | ACY, ARI, CHP, CRT, DA, DAN, ECC, EMK, FTX, HDG, HIP, HRT, MCP, MOA, MRV, RH, SCO, STC, WTC. |
| Sulfosuccinic acid, dihexyl ester, sodium salt - - - - - | ACY. |
| Sulfosuccinic acid, diisodecyl ester, sodium salt - - - - - | ACY. |
| Sulfosuccinic acid, diisooctyl ester, sodium salt - - - - - | CCC, CIN, MOA, SOS. |
| Sulfosuccinic acid, dipentyl ester, sodium salt - - - - - | ACY. |
| Sulfosuccinic acid, ditiidecyl ester, sodium salt - - - - - | ACY, MOA. |
| Sulfosuccinic acid esters, all other - - - - - | CYL, MOA, RH, SCP, TCH, WTC. |
| *ALL OTHER SULFONIC ACIDS HAVING ESTER OR ETHER LINKAGES: | |
| Coconut oil acids, 2-sulfoethyl ester, sodium salt - - - - - | GAF, HDG, LEV. |
| Dodecyldiphenyloxidedisulfonic acid, disodium salt - - - - - | CTL, DOW, X. |
| Dodecyl sulfoacetate, sodium salt - - - - - | STP. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| 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 | |
| Glycerol monostearate sulfoacetate, sodium salt- | WTC. |
| Iso-octylphenol, ethoxylated and sulfonated, sodium salt- | GAF, RH. |
| n-Octylphenol, ethoxylated and sulfonated, sodium salt- | CRT. |
| Sulfonic acid with ester linkages, all other- | STC. |
| Sulfonic acids with ether linkages, all other- | PG, VPC, WTC, X. |
| *OTHER SULFONIC ACIDS: | |
| Mixed alkane sulfonic acid, sodium salt- | AAC, DUP, QCP, X. |
| Petroleum sulfonic acid, water soluble (Acid layer), sodium salts- | WTC. |
| Sulfonic acids, all other- | CLU, SLM, STP, USR, WTC, WVA. |
| *SULFURIC ACID ESTERS (AND SALTS THEREOF): | |
| *ACIDS, AMIDES, AND ESTERS, SULFATED: | |
| Coconut oil acids-ethanolamine salt, sulfated, potassium salt- | EMK. |
| CARBOXYLIC ACID ESTERS (EXCEPT NATURAL FATS AND OILS), SULFATED: | |
| ESTERS OF SULFATED OLEIC ACID: | |
| *Butyl oleate, sulfated, sodium salt- | AKS, HIP, ICI, MRV, PC. |
| Butyl and propyl oleate, sulfated, sodium salt- | CRT, MCP. |
| Isobutyl oleate, sulfated, sodium salt- | DA. |
| Isopropyl oleate, sulfated, sodium salt- | DEX, HRT. |
| Methyl oleate, sulfated, sodium salt- | DUP, ICI. |
| *Propyl oleate, sulfated, sodium salt- | AKS, CHP, MRV. |
| Esters of sulfated oleic acid, all other- | ARI, CHP. |
| OTHER SULFATED ESTERS: | |
| Glycerol monoester of coconut oil acids, sulfated, sodium salt- | CP, X. |
| 9-Octadecenyl acetate, sulfated, sodium salt- | DUP. |
| Sulfated esters, all other- | DA. |
| OTHER SULFURIC ACID ESTERS: | |
| *Oleic acid, sulfated, disodium salt- | ACT, CIN, DA, MCP, SCO, TEN. |
| Sulfuric acid esters, all other- | BFP, SCO, SLM, TEN. |
| *Tall oil, sulfated, sodium salt- | ACT, APX, CHP, CRT, ICI, SEA, SOS, WHW. |
| Carboxylic acid-alkanolamine condensates, sulfated, all other- | STC. |
| *ALCOHOLS, SULFATED: | |
| Decyl and octyl sulfate, sodium salt- | TCH. |
| Decyl sulfate, ammonium salt- | HLI. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ANIONIC--CONTINUED | |
| *SULFURIC ACID ESTERS (AND SALTS THEREOF)--CONTINUED | |
| *ALCOHOLS, SULFATED--CONTINUED | |
| Decyl sulfate, sodium salt - - - - - | HLI, RBC, SCP. |
| DODECYLSULFATE SALTS: | |
| Dodecyl sulfate, ammonium salt - - - - - | AAC, CTL, CYL, HLI, JRG, ONX, STP, TCH, TNI. |
| Dodecyl sulfate, diethanolamine salt - - - - - | AAC, CYL, DUP, JRG, ONX, TCH. |
| Dodecyl sulfate, diethylamine salt - - - - - | AAC, STP. |
| Dodecyl sulfate, N,N-diethylcyclohexylamine salt - - - - - | DUP. |
| Dodecyl sulfate, isopropanolamine salt - - - - - | JRG, TCH. |
| *Dodecyl sulfate, magnesium salt - - - - - | AAC, HLI, ONX, RCD, STP. |
| Dodecyl sulfate, potassium salt - - - - - | PG. |
| *Dodecyl sulfate, sodium salt - - - - - | AAC, DUP, HLI, ONX, STP, TCH, WVA. |
| *Dodecyl sulfate, triethanolamine salt - - - - - | AAC, CTL, CYL, HLI, ONX, STP, TCH, TNI. |
| 3,9-Diethyl-6-tridecyl sulfate, sodium salt - - - - - | NCC. |
| 2-Ethylhexyl sulfate, sodium salt - - - - - | AAC, BRD, NCC, SCP, TCH, WTC. |
| 7-Ethyl-2-methyl-4-undecyl sulfate, sodium salt - - - - - | NCC. |
| Hexadecyl sulfate, sodium salt - - - - - | AAC, CTL. |
| Hexyl sulfate, potassium salt - - - - - | DEX. |
| Linear alcohols, sulfated, all other - - - - - | AZS, BRD, CYL, DUP, RCD, SCP. |
| *Mixed linear alcohols, sulfated, ammonium salt - - - - - | BRD, CP, PG, RCD, S, SCP, VAL. |
| *Mixed linear alcohols, sulfated, sodium salt - - - - - | BRD, DUP, NTL, PG, RCD, SCP, WTC. |
| *Mixed linear alcohols, sulfated, triethanolamine salt - - - - - | BRD, PG, RCD, SCP. |
| 1-Octadecenyl-2-naphthenyl tetrahydropyrimidine - - - - - | EMK, ONX, RCD. |
| *Octyl sulfate, sodium salt - - - - - | AAC, DUP, RCD. |
| Tridecyl sulfate, sodium salt - - - - - | AAC, DA. |
| *ETHERS, SULFATED: | |
| *ALKYLPHENOLS, ETHOXYLATED AND SULFATED: | |
| Nonylphenol, ethoxylated and sulfated, ammonium salt - - - - - | GAF, STP. |
| Nonylphenol, ethoxylated and sulfated, sodium salt - - - - - | GAF, WTC. |
| Nonylphenol, ethoxylated and sulfated, triethanolamine salt - - - - - | ARL, WTC. |
| Sulfated cyclic ethers, all other - - - - - | TCH. |
| Decyl alcohol, propoxylated and sulfated, sodium salt - - - - - | APX. |
| *Dodecyl alcohol, ethoxylated and sulfated, ammonium salt - - - - - | AAC, CTL, HLI, MOA, ONX, STP. |
| *Dodecyl alcohol, ethoxylated and sulfated, sodium salt - - - - - | AAC, CTL, CYL, HLI, ONX, SCP, STP, TCH. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ANIONIC--CONTINUED | |
| *SULFURIC ACID ESTERS (AND SALTS THEREOF)--CONTINUED | |
| *ETHERS, SULFATED--CONTINUED | |
| Dodecyl and tetradecyl alcohols, ethoxylated and sulfated, ammonium salt - - - - - | HLI, LEV. |
| Hexyl alcohol, propoxylated and sulfated, sodium salt - - - - - | APX. |
| Mixed linear alcohols, ethoxylated and sulfated, ammonium salt - - - - - | AAC, BRD, CO, PG, PIL, RCD, SCP, SHC, STP, WTC, X. |
| *Mixed linear alcohols, ethoxylated and sulfated, sodium salt - - - - - | AAC, BRD, CO, DA, DUP, GAF, PG, PIL, RCD, SCP, STP, TCI, TX, WTC, WVA. |
| Tridecyl alcohol, ethoxylated and sulfated, sodium salt - - - - - | AAC, ARL, ONX. |
| Sulfated ethers, all other - - - - - | MOA, SCP. |
| NATURAL FATS AND OILS, SULFATED: | |
| *Castor oil, sulfated, sodium salt - - - - - | ACT, ACY, AKS, APX, ARI, ARL, CRT, DA, DEX, FTX, HIP, HRT, ICI, LEA, LUR, MRV, SCO, SCP, SEA, SLM, WHW. |
| Coconut oil, sulfated, sodium salt - - - - - | ACY, DA, MRD. |
| *Cod oil, sulfated, sodium salt - - - - - | ARI, CIN, SEA, WHI, WHW. |
| Grease, other than wool, sulfated, sodium salt - - - - - | WHI. |
| *Herring oil, sulfated, sodium salt - - - - - | ARI, SEA, SLM, WHW. |
| Lard, sulfated, sodium salt - - - - - | MRD, WHW. |
| *Mixed fish oils, sulfated, sodium salt - - - - - | ACT, DA, MRD, SLM, WHW. |
| Mixed vegetable oils, sulfated, sodium salt - - - - - | CIN, LUR. |
| Mustard seed oil, sulfated, sodium salt - - - - - | DA. |
| *Neat's foot oil, sulfated, sodium salt - - - - - | ACT, ARI, CIN, MRD, SLM, WHI. |
| Pecan oil, sulfated, sodium salt - - - - - | CRT. |
| *Soybean oil, sulfated, sodium salt - - - - - | ACT, SEA, WHW. |
| Sperm oil, sulfated, sodium salt - - - - - | ARI. |
| Sulfated animal fats and oils, all other - - - - - | WHI. |
| *Tallow, sulfated, sodium salt - - - - - | ACT, ACY, ARI, CCC, DA, ECC, LUR, MRD, PC, SID, SLM, SOS, WHI. |
| Vegetable oils, sulfated, all other - - - - - | ARI, AZS, SCM. |
| OTHER ANIONIC SURFACE-ACTIVE AGENTS: | |
| Lignin, sodium salt - - - - - | WVA. |
| Mixed linear olefin sulfonate - - - - - | X. |
| Polyethylene-vinyl alcohol copolymer, potassium salt - - - - - | X. |
| Tridecyl alcohol, ethoxylated and carbonated, sodium salt - - - - - | S. |
| Anionic surface-active agents, all other - - - - - | CJO, CMT, DAN, MIL, MIR, S, SLM. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CATIONIC | |
| *AMINE OXIDES AND OXYGEN-CONTAINING AMINES (EXCEPT THOSE HAVING AMIDE LINKAGES): | |
| *ACYCLIC: | |
| N,N-Bis(2-hydroxyethyl)octadecylamine - - - - - | ARC, HXL. |
| N,N-Bis(2-hydroxyethyl)(tallow alkyl)amine - - - - - | ARC. |
| *(Coconut oil alkyl)amine, ethoxylated - - - - - | ARC, SHX, SVC, TCH, X. |
| N,N-Dimethyl dodecylamine oxide - - - - - | HLI, JOR, PG. |
| N,N-Dimethylhexadecylamine oxide - - - - - | ARC, ONX. |
| Ethylenediamine, propoxylated - - - - - | DUP. |
| N-(2-Hydroxyethyl)-N,N',N'-tris(2-hydroxypropyl)- ethylenediamine - - - - - | WTC, X. |
| *(Mixed alkyl)amine, ethoxylated - - - - - | ICI, RH, X. |
| (9-Octadecenyl)amine, ethoxylated - - - - - | ARC, GAF, MET, TCH. |
| Octadecylamine, ethoxylated - - - - - | ARC, TCH. |
| (Soybean oil alkyl)amine, ethoxylated - - - - - | ARC, SHX, SVC. |
| *(Tallow alkyl)amine, ethoxylated - - - - - | ARC, DA, DUP, GAF, MRV, S, SHX, TCH. |
| N-(Tallow alkyl)trimethylenediamine, ethoxylated - - - - - | ARC. |
| N,N,N',N'-Tetrakis(2-hydroxyethyl)ethylenediamine - - - - - | X. |
| Triethanolamine, ethoxylated - - - - - | MIL. |
| Amine oxides and oxygen-containing amines (Except those with amide linkages), acyclic, all other - - - - - | ARC, AZS, BAK, BRD, CGY, KPI, MOA, PG, S, SBC, SCP, SDH, SVC, TCH, TX. |
| *CYCLIC: | |
| N-Hexadecylmorpholine - - - - - | BRD. |
| 1-(2-Hydroxyethyl)-2-heptadecyl-2-imidazoline - - - - - | MOA. |
| *1-(2-Hydroxyethyl)-2-nonyl-2-imidazoline - - - - - | DA, MIR, SCP, SHX. |
| *1-(2-Hydroxyethyl)-2-nor(coconut oil alkyl)-2- imidazoline - - - - - | CGY, MOA, TCH. |
| *1-(2-Hydroxyethyl)-2-nor(tall oil alkyl)-2- imidazoline - - - - - | HDG, MOA, X. |
| 1-(2-Hydroxyethyl)-2-tridecyl-2-imidazoline | |
| hydrochloride - - - - - | CGY. |
| Lignin amines - - - - - | WVA. |
| Rosin amine, ethoxylated - - - - - | BAK. |
| Amine oxides and oxygen-containing amines (Except those having amine linkages), cyclic, all other - - - - - | ARC, BAK, CGY, HPC, MOA, STC, X. |
| *AMINES AND AMINE OXIDES HAVING AMIDE LINKAGES: | |
| CARBOXYLIC ACID - DIAMINE AND POLYAMINE CONDENSATES: | |
| Carboxylic acid-diamine and polyamine condensates, | |
| all other - - - - - | GAF, GDC, ICI, S, SBC, STC, WVA, X. |
| Coconut oil acids-N,N-dimethyltrimethylenediamine condensate - - - - - | CYL, SCP. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CATIONIC--CONTINUED | |
| *AMINES AND AMINE OXIDES HAVING AMIDE LINKAGES--CONTINUED: | |
| CARBOXYLIC ACID - DIAMINE AND POLYAMINE CONDENSATES--CONTINUED | |
| Mixed fatty acids-polyalkylenepolyamine condensate | QCP, TCH. |
| Oleic acid-diethylenetriamine condensate | ICI, TCH. |
| Oleic acid-N,N-dimethyltrimethylenediamine condensate | CCW. |
| Oleic acid-ethylenediamine condensate, monoethoxylated- | DEX, SOC. |
| Palm oil acids-ethylenediamine condensate, monoethoxylated- | DA. |
| Pelargonic acid-tetraethylenepentamine condensate | FER, ICI. |
| *Stearic acid-diethylenetriamine condensate | ARI, JOR, S. |
| Stearic acid-diethylenetriamine condensate, polyethoxylated- | APX. |
| Stearic acid-ethylenediamine condensate, monoethoxylated- | DEX, ICI, MRV, SLC. |
| Stearic acid-tetraethylenepentamine condensate | ONX, X. |
| Tall oil acids-diethylenetriamine condensate | ARI, AZS, SCP, STC, X. |
| *Tall oil acids-polyalkylenepolyamine condensate | AZS, BRD, NCW, QCP, SCP, WVA, X. |
| Carboxylic acid-diamine and polyamine condensates, alkoxylated, all other- | BAK, CLD, GAF, GDC, MIR. |
| OTHER AMINES AND AMINE OXIDES HAVING AMIDE LINKAGES: | |
| 3-Lauramido-N,N-dimethylpropylamine oxide | HLI, ONX, SNW. |
| Stearic acid, diethanolamine condensate, methyl sulfate- | DUP. |
| Amines and amine oxides having amide linkages, all other- | BAK, ONX, SCP, STC. |
| *AMINES, NOT CONTAINING OXYGEN (AND SALTS THEREOF): | |
| AMINE SALTS: | |
| (Coconut oil alkyl)amine acetate | ARC. |
| (Hydrogenated tallow alkyl)amine acetate | ARC. |
| Octadecylamine acetate | ARC, BAK, SHX. |
| (Tallow alkyl)amine acetate | ARC. |
| N-(Tallow alkyl)trimethylenediamine acetate | ARC. |
| N-(Tallow alkyl)trimethylenediamine oleate | ARC, JTO. |
| Amine salts (Not containing oxygen), all other | ARC, TCC. |
| DIAMINES AND POLYAMINES: | |
| *IMIDAZOLINE DERIVATIVES: | |
| 1-(2-Aminoethyl)-2-nor(tall oil alkyl)-2-imidazoline- | SCP. |
| N-(Docosyl and eicosyl)trimethylenediamine | ENO. |
| 2-Heptadecyl-2-imidazoline | CGY, SCO. |
| N-(Coconut oil alkyl)trimethylenediamine | ARC, JTO. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CATIONIC--CONTINUED | |
| AMINES, NOT CONTAINING OXYGEN (AND SALTS THEREOF)--CONTINUED | |
| DIAMINES AND POLYAMINES--CONTINUED | |
| N-(Mixed alkyl)polyethylenepolyamine - - - - - | CCW. |
| N-(9-Octadecenyl)trimethylenediamine - - - - - | ARC, JTO, SCP, SHX. |
| N-(Soybean oil alkyl)trimethylenediamine - - - - - | ENO. |
| N-(Tallow - alkyl)dipropylenetriamine - - - - - | ARC, JOR, JTO. |
| N-(Tallow alkyl)trimethylenediamine - - - - - | ARC, JTO, NCW, SHX. |
| Diamines and polyamines, all other - - - - - | ARC, ENO, ICI, JOR, NCW, STC, X, X. |
| PRIMARY MONOAMINES: | |
| (Coconut oil alkyl)amine - - - - - | ARC, ENO, JTO, SHX. |
| (Docosyl and eicosyl)amine - - - - - | ENO. |
| Dodecylamine - - - - - | ARC, SHX. |
| Hexadecylamine - - - - - | ARC, ENO. |
| (Hydrogenated tallow alkyl)amine - - - - - | ARC, ENO, JTO, SHX. |
| *9-Octadecenylamine - - - - - | ARC, ENO, JTO, SHX. |
| *Octadecylamine - - - - - | ARC, ENO, SHX. |
| (Soybean oil alkyl)amine - - - - - | ARC, ENO, JTO. |
| (Tall oil alkyl)amine - - - - - | NCW, SHX. |
| *(Tallow alkyl)amine - - - - - | ARC, ENO, JTO, SHX. |
| Primary monoamines, all other - - - - - | ARC, ENO. |
| SECONDARY AND TERTIARY MONOAMINES: | |
| Bis(coconut oil alkyl)amine - - - - - | ARC. |
| Bis(hydrogenated tallow alkyl)amine - - - - - | ARC, SHX. |
| *N,N-Dimethyl(coconut oil alkyl)amine - - - - - | AAC, ARC, BRD, ENO. |
| N,N-Dimethyldodecylamine - - - - - | ARC, BRD. |
| *N,N-Dimethylhexadecylamine - - - - - | ARC, BRD, SHX. |
| N,N-Dimethyl(hydrogenated tallow alkyl)amine - - - - - | ARC. |
| N,N-Dimethyl(mixed alkyl)amine - - - - - | ONX, TNA. |
| N,N-Dimethyl-9-octadecenylamine - - - - - | ENO. |
| *N,N-Dimethyloctadecylamine - - - - - | ARC, BRD, ENO, SHX. |
| N,N-Dimethyl(soybean oil alkyl)amine - - - - - | ARC, ENO. |
| N,N-Dimethyltetradecylamine - - - - - | ARC. |
| N-Methylbis(coconut oil alkyl)amine - - - - - | ARC, SHX. |
| N-Methylbis(hydrogenated tallow alkyl)amine - - - - - | ARC, ENO, SHX. |
| Triisododecylamine - - - - - | SCP. |
| Trilaurylamine - - - - - | SCP. |
| Trioctylamine - - - - - | SCP. |
| Secondary and tertiary monoamines, all other - - - - - | ARC, AZS, BRD, ENO, JTO, PEL. |
| OXYGEN-CONTAINING QUATERNARY AMMONIUM SALTS: | |
| Benzyl(coconut oil alkyl)bis(2-hydroxyethyl)- | |
| ammonium chloride - - - - - | X. |
| Benzyl(coconut oil alkyl,ethoxylated)- | |
| dimethylammonium chloride - - - - - | DUP, SCP. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CATIONIC--CONTINUED | |
| OXYGEN-CONTAINING QUATERNARY AMMONIUM SALTS--CONTINUED | |
| Benzyl(tallow alkyl)bis(2-hydroxyethyl)ammonium chloride | DUP. |
| Bis(2-hydroxyethyl, ethoxylated)methyl(9-octadecenyl)-ammonium chloride | ARC, GAF. |
| Bis(2-hydroxyethyl, ethoxylated)-methyloctadecylammonium chloride | ARC, SVC. |
| (Coconut oil alkyl)bis(2-hydroxyethyl, ethoxylated)-methylammonium chloride | ARC, GAF. |
| (Ethoxybenzyl)dimethyl(octylphenoxy)ammonium chloride | RH. |
| (Ethoxybenzyl)dimethyl(octyltolylloxy)ammonium chloride | RH. |
| 1-Ethyl-2-(8-heptadecenyl)-1-(2-hydroxyethyl)-2-imidazolinium ethyl sulfate | ICI, SBC. |
| N-Ethyl-N-hexadecylmorpholinium ethyl sulfate | ICI. |
| N-Ethyl-N-(soybean oil alkyl)morpholinium ethyl sulfate | ICI. |
| (2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium dihydrogen phosphate | ACY. |
| (2-Hydroxyethyl)dimethyl(3-stearamidopropyl)-ammonium nitrate | ACY. |
| (3-Lauramidopropyl)trimethylammonium methyl sulfate | ACY. |
| 2-(2-Lauroyloxyethyl)carbamoyl-1-methylpyridinium chloride | WTC. |
| 1-Methyl-2-(2-stearyloxyethyl)carbamoylpyridinium chloride | WTC. |
| Oxygen-containing quaternary ammonium salts (Except those having amide linkages), all other | ARC, BAK, DA, ICI, MIR, MOA, SBC, TCH, X. |
| Quaternary ammonium salts having amide linkages, all other | BAK, BRD, SHX, SHW, SVC, VND. |
| QUATERNARY AMMONIUM SALTS, NOT CONTAINING OXYGEN: ACYCLIC: | |
| Bis(coconut oil alkyl)dimethylammonium chloride | ARC, ENO, ONX, SCP, SHX. |
| *Bis(hydrogenated tallow alkyl)dimethylammonium chloride | ARC, ENO, SHX, SVC, WTC. |
| Bis(hydrogenated tallow alkyl)-dimethylammoniummethyl sulfate | ARC, SVC. |
| (Coconut oil alkyl)trimethylammonium chloride | ARC, JTO, ONX. |
| Didecyldimethylammonium chloride | HNT. |
| Dimethyldioctadecylammonium chloride | SHX. |
| Dodecyltrimethylammonium chloride | ARC. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER.
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CATIONIC--CONTINUED | |
| QUATERNARY AMMONIUM SALTS, NOT CONTAINING OXYGEN--CONTINUED ACYCLIC--CONTINUED | |
| Ethyltrimethyl(mixed alkyl)ammonium ethyl sulfate | DEX, JOR. |
| Ethyltrimethyl(9-octadecenyl)ammonium bromide - - - | ONX. |
| Ethylhexadecyldimethylammonium bromide - - - - - | HXL. |
| Hexadecyltrimethylammonium bromide - - - - - | HXL. |
| Hexadecyltrimethylammonium chloride - - - - - | ARC. |
| Hexadecyltrimethylammonium p-toluenesulfonate - - - | HXL. |
| (Hydrogenated tallow alkyl)trimethylammonium chloride - - - - - | ARC. |
| Methyltriocetylammmonium chloride - - - - - | SCP, SHX. |
| (Mixed linear alkyl)trimethyl ammonium bromide | DUP. |
| N,N,N',N',N'-Pentamethyl-N-(tallow alkyl)- | |
| trimethylene-bis[ammonium chloride] - - - - - | ARC, JTO. |
| Trimethyloctadecylammonium chloride - - - - - | ARC. |
| Trimethyl(soybean oil alkyl)ammonium chloride - - - | ARC, JTO. |
| * Trimethyl(tallow alkyl)ammonium chloride - - - - - | ARC, ENO, JTO, SHX. |
| Trimethyltetradecylammonium bromide - - - - - | HXL. |
| Quaternary ammonium salts, not containing oxygen, acyclic, all other - - - - - | ARC, CRD, ENO, ONX, RSA, X. |
| BENZENOID: | |
| * Benzyl(coconut oil alkyl)dimethylammonium chloride - - - - - | ARC, CCL, CRT, ENO, GDC, SCP, TCC. |
| * Benzyltrimethyl(mixed alkyl)ammonium chloride - - - | BKM, BRD, HNT, HXL, ONX, RH, SDH, TCC. |
| * Benzyltrimethyloctadecylammonium chloride - - - - | AAC, BRD, CRD, HLI, HXL, ONX, RH, SCP, TNI. |
| Benzyltrimethyl(tallow alkyl)ammonium chloride - - - | ENO. |
| Benzyltrimethyltetradecylammonium chloride - - - - | HXL. |
| Benzyldecyldimethylammonium chloride - - - - - | HXL, ONX, X. |
| Benzylhexadecyldimethylammonium chloride - - - - - | ONX. |
| Benzyl(hydrogenated tallow alkyl)dimethylammonium chloride - - - - - | ARC, ENO. |
| 1-Benzyl-2-picolinium bromide - - - - - | HXL. |
| * Benzyltrimethylammonium chloride - - - - - | CIN, CRT, HIP, HXL, SHX, TCC. |
| (Dodecylbenzyl)triethylammonium chloride - - - - | ONX. |
| 2-Dodecylisoquinolinium bromide - - - - - | ONX. |
| (Dodecylmethylbenzyl)trimethylammonium chloride | RH, TCC. |
| 1-Dodecylpyridinium chloride - - - - - | CCL, DAN. |
| (Ethylbenzyl)dimethyl(mixed alkyl)ammonium chloride - - - - - | HNT. |
| 1-Phenethyl-2-picolinium bromide - - - - - | HXL. |
| Quaternary ammonium salts not containing oxygen, cyclic, all other - - - - - | AKS, ARC, BAK, BRD, DEX, ENO, GDC, HXL, ICI, MIL, ONX, X. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| CATIONIC--CONTINUED | |
| OTHER CATIONIC SURFACE-ACTIVE AGENTS: | |
| Tallow amine, ethoxylated and propoxylated, methyl sulfate - - - - - | DUP. |
| Tallow amine, ethoxylated, quarternary ammonium salt - - - - - | DUP. |
| Cationic surface-active agents, all other- - - - - | BAK, HXL, MIR, SCP, WTC. |
| NONIONIC | |
| CARBOXYLIC ACID AMIDES: | |
| (AMINE/ACID RATIO = 2/1): | |
| Capric acid (Ratio = 2/1)- - - - - | SCP, TCH. |
| Castor oil acids (Ratio = 2/1) - - - - - | CLI, FTX, NTL. |
| *Coconut oil acids (Ratio = 2/1) - - - - - | AKS, ARL, BRD, CCL, CIN, CLI, COM, CPC, CRD, CTL, CYL, DA, ECC, EFH, FTX, HLI, HNT, HRT, HTN, JOR, LUR, MOA, MRV, ONX, PC, PEK, PNK, RCD, SBC, SCP, SHX, SOP, STP, TCH, VAL, WTC, X. |
| Coconut oil and tallow acids (Ratio = 2/1)- - - - - | CLI, CRT, CTL, ESS, MOA, SBC, SVC, UNN. |
| *Lauric acid (Ratio = 2/1) - - - - - | CLI, CRD, CTL, CYL, TCH. |
| *Lauric and myristic acids (Ratio = 2/1) - - - - - | CRD, HRT, MOA, PG, RCD, SBC, STP. |
| Linoleic acid (Ratio = 2/1) - - - - - | KNP, MOA, VND. |
| *Oleic acid (Ratio = 2/1)- - - - - | CLI, EMR, HRT, SBC, STP, TMH. |
| Pelargonic acid (Ratio = 2/1) - - - - - | TCH. |
| Stearic acid (Ratio = 2/1)- - - - - | CLI, CTL, RCD, VAL. |
| *Tall oil acids (Ratio = 2/1)- - - - - | ECC, FER, MOA, WTC, WVA. |
| Tallow acids (Ratio = 2/1)- - - - - | CLI, FER, MOA. |
| Diethanolamine condensates (Amine/acid = 2/1), all other- - - - - | CLD, FER, MOA, SCP, SOS. |
| OTHER AMINE/ACID RATIOS: | |
| *Coconut oil acids (Ratio = 1/1) - - - - - | BRD, CGY, CLI, CTL, CYL, DA, EMK, FTX, GAF, HLI, HNT, HTN, JOR, JRG, MOA, ONX, PIL, SBC, SCP, STP, TCC, WTC. |
| *Lauric acid (Ratio = 1/1) - - - - - | BRD, CLI, CYL, MOA, ONX, SBC, TNI. |
| *Lauric and myristic acids (Ratio = 1/1)- - - - - | BRD, CLI, CPC, CYL, HLI, HTN, PG, SBC. |
| *Linoleic acid (Ratio = 1/1) - - - - - | CLI, CYL, DA, MOA, SBC, TCH, VND. |
| Oleic acid (Ratio = 1/1)- - - - - | HLI, SBC. |
| Palmitic and stearic acids (Ratio = 1/1)- - - - - | VPC. |
| Soybean oil acids (Ratio=1/1) - - - - - | MOA. |
| *Stearic acid (Ratio = 1/1)- - - - - | ECC, FTX, HIP, MRV. |
| Tallow acids - - - - - | TCH, VPC. |
| Diethanolamine condensates, amine/acid ratio=1/1, all other- - - - - | CYL, MOA, SBC. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| NONIONIC--CONTINUED | |
| CARBOXYLIC ACID AMIDES--CONTINUED | |
| ALL OTHER CARBOXYLIC ACID AMIDES: | |
| Alkanolamine condensates, all other - - - - - | CLD, SBC, TCH, VND. |
| Carboxylic acid-alkanocamine condensate, | |
| alkoxylated, all other - - - - - | ROB. |
| Coconut oil acids (Specify amine/acid ratio) - - - | STP. |
| Coconut oil acids (Ratio = 1/1) - - - - - | CYL, MOA, PG, VND, WTC. |
| Coconut oil acids (Ratio = 2/1) - - - - - | STP, TCH. |
| Coconut oil acids, other code - - - - - | CCC. |
| Coconut oil acids-N,N-dimethyltrimethylene- | |
| diamine condensate (amine/acid ratio=1/2 - - - - | JRG. |
| Coconut oil acids-ethanolamine condensate, | |
| ethoxylated - - - - - | BRD, STP. |
| Diethanolamine condensate, all other - - - - - | EFH. |
| Ethanolamine condensates, amine/acid ratio = 1/1, | |
| all other - - - - - | CYL, GAF, TCH, VND. |
| Ethanolamine condensates, amine/acid ratio = 2/1, | |
| all other - - - - - | MOA. |
| Isopropanolamine condensates, all other - - - - | CRN, SBC, WTC. |
| Lauric acid (Specify amine/acid ratio) - - - - - | CLI, HTN, MOA. |
| Lauric and myristic acids (Ratio = 1/1) - - - - | HLI, MOA, SCP. |
| Oleic acid-ethanolamine condensate, ethoxylated | ONX. |
| Oleic acid-methanolamine condensate, ethoxylated | ARC. |
| Stearic acid (Ratio = 1/1) - - - - - | MOA, VND, WTC. |
| Stearic acid (Ratio = 1/2) - - - - - | HAL, WTC. |
| Stearic acid (Ratio = 2/1) - - - - - | AKS, CLI, ECC. |
| Stearic acid-ethylenediamine condensate | |
| amine/acid ratio=1/2 - - - - - | TCH. |
| Carboxylic acid amides, all other - - - - - | BAK, BKM, MOA, WTC, X. |
| CARBOXYLIC ACID ESTERS: | |
| ANHYDROSORBITOL ESTERS: | |
| Anhydrosorbitol dioleate - - - - - | ICI. |
| Anhydrosorbitol monolaurate - - - - - | BRD, GLY, ICI, TCH. |
| * Anhydrosorbitol mono-oleate - - - - - | BRD, GLY, HDG, ICI, TCH. |
| Anhydrosorbitol monopalmitate - - - - - | ICI, TCH. |
| Anhydrosorbitol monostearate - - - - - | GLY, HDG, ICI, TCH. |
| Anhydrosorbitol sesquioleate - - - - - | GLY, TCH. |
| Anhydrosorbitol triester of tall oil acids - - - | GLY. |
| Anhydrosorbitol trioleate - - - - - | GLY, ICI, TCH. |
| Anhydrosorbitol tristearate - - - - - | GLY, ICI. |
| Anhydrosorbitol esters, all other - - - - - | BRD, ICI, TCH. |
| DIETHYLENE GLYCOL ESTERS: | |
| Diethylene glycol distearate - - - - - | ARC, GLY, VAL. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| NONIONIC--CONTINUED | |
| CARBOXYLIC ACID ESTERS--CONTINUED | |
| DIETHYLENE GLYCOL ESTERS--CONTINUED | |
| Diethylene glycol monoester of coconut oil acids | DA, WTC. |
| *Diethylene glycol monolaurate | ECC, GLY, HDG. |
| *Diethylene glycol mono-oleate | ARC, HAL, VND. |
| Diethylene glycol monoricinoleate | DA. |
| *Diethylene glycol monostearate | ARC, CLI, ECC, VND. |
| Diethylene glycol sesquiester of tall oil acids | ECC. |
| Diethylene glycol sesquilaurate | GLY. |
| Diethylene glycol sesquisteate | WTC. |
| Diethylene glycol esters, all other | BKM, WVA. |
| ETHOXYLATED ANHYDROSORBITOL ESTERS: | |
| Ethoxylated anhydrosorbitol monolaurate | BRD, GLY, ICI, SVC, TCH. |
| *Ethoxylated anhydrosorbitol mono-oleate | BRD, EMR, GLY, HDG, ICI, TCH. |
| Ethoxylated anhydrosorbitol monopalmitate | ICI, SVC. |
| Ethoxylated anhydrosorbitol monostearate | GLY, HDG, ICI, TCH. |
| Ethoxylated anhydrosorbitol monotallate | TCH. |
| Ethoxylated anhydrosorbitol triester of tall oil acids | GLY, ICI. |
| Ethoxylated anhydrosorbitol trioleate | GLY, HDG, ICI, TCH. |
| Ethoxylated anhydrosorbitol tristearate | GLY, ICI, TCH. |
| Ethoxylated anhydrosorbitol esters, all other | GLY. |
| ETHOXYLATED SORBITOL ESTERS: | |
| Ethoxylated sorbitol beeswax ester | ICI. |
| Ethoxylated sorbitol esters, all other | BAK, ICI. |
| Ethoxylated sorbitol hexaester of tall oil acids | TCH. |
| Ethoxylated sorbitol hexaoleate | ICI, TCH. |
| Ethoxylated sorbitol lanolin ester | ICI. |
| Ethoxylated sorbitol mono-oleate | ICI, TCH. |
| Ethoxylated sorbitol pentalaurate | ICI. |
| Ethoxylated sorbitol tetraester of lauric and oleic acids | ICI. |
| Ethoxylated sorbitol tetraester of tall oil acids | WTC. |
| Ethoxylated sorbitol tetraoleate | ICI, MET. |
| ETHYLENE GLYCOL ESTERS: | |
| *Ethylene glycol distearate | CYL, EMR, HAL, ICI, TCH, WM, WTC. |
| Ethylene glycol mono-oleate | CGY, EFM. |
| *Ethylene glycol monostearate | ARC, CLI, CYL, GLY, HAL, HDG, KNP, TCH, VND, WM. |
| GLYCEROL ESTERS: | |
| COMPLEX GLYCEROL ESTERS: | |
| Glycerol diacetyltartrate monostearate | EKT. |
| Glycerol monoester of mixed fatty acids, acetylated | EKT. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| NONIONIC--CONTINUED | |
| CARBOXYLIC ACID ESTERS--CONTINUED | |
| GLYCEROL ESTERS--CONTINUED | |
| COMPLEX GLYCEROL ESTERS--CONTINUED | |
| Glycerol monoester of mixed fatty acids, succinylated - - - - - | EKT. |
| Glycerol mono-oleate, acetylated - - - - - | TCH. |
| Complex glycerol esters, all other - - - - - | GLY, SCP. |
| GLYCEROL ESTERS OF CHEMICALLY DEFINED ACIDS: | |
| Glycerol dilaurate - - - - - | VND. |
| Glycerol dioleate - - - - - | ARC, HAL. |
| Glycerol distearate - - - - - | ARC. |
| Glycerol monocaprylate - - - - - | GLY. |
| Glycerol monolaurate - - - - - | GLY, HAL, HDG. |
| *Glycerol mono-oleate - - - - - | ARC, EFH, EMR, GLY, GRO, HAL, HDG, TCH, WTC. |
| *Glycerol monoricinoleate - - - - - | GLY, HDG, NTL. |
| *Glycerol monostearate - - - - - | ARC, ARI, BLS, CCC, CHL, CIN, CLD, CFC, EMR, GLY, GRO, HAL, HRT, LUR, SOS, TCH, VND, WM, WTC. |
| Glycerol esters of chemically defined acids, all other - - - - - | HDG, SVC. |
| GLYCEROL ESTERS OF MIXED ACIDS: | |
| Glycerol monoester of coconut oil acids - - - - - | GLY. |
| Glycerol monoester of cottonseed oil acids - - - - - | EKT. |
| Glycerol monoester of hydrogenated cottonseed oil acids - - - - - | EKT, LEV, WM. |
| Glycerol monoester of hydrogenated soybean oil acids - - - - - | BFP, CYL, EKT, SVC, WTC. |
| Glycerol monoester of lard acids - - - - - | EKT. |
| Glycerol monoester of mixed vegetable oil acid - - - - - | EKT, LEV. |
| Glycerol monoester of palm oil acids - - - - - | EKT. |
| Glycerol monoester of safflower oil acids - - - - - | EKT. |
| Glycerol monoester of tall oil acids - - - - - | FER, WTC. |
| Glycerol esters of mixed acids, all other - - - - - | BFP, EKT, HDG, ICI, SLM, WTC. |
| NATURAL FATS AND OILS, ETHOXYLATED: | |
| *Castor oil, ethoxylated - - - - - | BRD, DA, GAF, HTN, ICI, MIL, NTL, STC, SVC, TCH, TMH, WTC, X. |
| *Hydrogenated castor oil, ethoxylated - - - - - | DA, ICI, MET, MIL, TCH. |
| *Lanolin, ethoxylated - - - - - | AAC, CRD, CRN, TCH. |
| Natural fats and oils, ethoxylated, all other - - - - - | DA, GAF, MIL, SVC, TCH. |
| POLYETHYLENE GLYCOL ESTERS: | |
| POLYETHYLENE GLYCOL ESTERS OF CHEMICALLY DEFINED ACIDS: | |
| *Polyethylene glycol dilaurate - - - - - | ARC, CYL, DA, GLY, HDG, TCH, WM. |
| *Polyethylene glycol dioleate - - - - - | ARC, CGY, CLD, DA, EFH, GLY, HAL, MIL, TCH. |
| *Polyethylene glycol distearate - - - - - | ARC, CHP, CRT, CYL, GLY, HDG, SBC, TCH. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| NONIONIC--CONTINUED | |
| CARBOXYLIC ACID ESTERS--CONTINUED | |
| POLYETHYLENE GLYCOL ESTERS--CONTINUED | |
| POLYETHYLENE GLYCOL ESTERS OF CHEMICALLY DEFINED ACIDS--CONTINUED | |
| * Polyethylene glycol monolaurate- - - - - | ARC, CCA, CGY, CLD, DA, ECC, GLY, HAL, ICI, TCH, VND, WM. |
| * Polyethylene glycol mono-oleate- - - - - | ARC, BRD, CCA, CCC, CLD, CPC, CRT, DA, DEX, ECC, EFH, GAF, GDC, GLY, HAL, HDG, ICI, MET, MRT, MRV, ONX, STC, SVC, TCH, WM, WTC. |
| Polyethylene glycol monopalmitate- - - - - | GLY, KNP. |
| * Polyethylene glycol monostearate- - - - - | AKS, ARC, ARI, ARL, CHP, CRT, DA, EFH, GAF, GDC, GLY, HRT, ICI, MCP, SLC, SOS, STC, SVC, TCH, VND, WTC, CCC, TCH, WTC. |
| Polyethylene glycol sesquinoate- - - - - | |
| Polyethylene glycol esters of chemically defined acids, all other- - - - - | CCA, HDG, ICI, TCH. |
| POLYETHYLENE GLYCOL ESTERS OF MIXED ACIDS: | |
| Polyethylene glycol diester of tall oil acids | CCC, EFH, X. |
| Polyethylene glycol monoester of soybean oil acids- - - - - | GLY. |
| Polyethylene glycol monoester of tall oil acids | EFH. |
| Polyethylene glycol monoester of tall oil acids, ethoxylated- - - - - | X. |
| Polyethylene glycol sesquiester of coconut oil acids- - - - - | AKS, MRT. |
| Polyethylene glycol sesquiester of rosin acids | MVA. |
| * Polyethylene glycol sesquiester of tall oil acids- - - - - | AZS, ICI, SLM, WTC, MVA. |
| Polyethylene glycol esters of mixed acids, all other- - - - - | ARC, BKM, ECC, EFH, FER, GAF, ICI, SOS, STC, TCH. |
| POLYGLYCEROL ESTERS: | |
| Polyglycerol distearate- - - - - | GLY, SVC. |
| Polyglycerol mono-oleate- - - - - | HDG, WTC. |
| Polyglycerol monostearate- - - - - | GLY, WTC. |
| Polyglycerol esters, all other- - - - - | GLY, SVC, TCH, WTC. |
| PROPANEDIOL ESTERS: | |
| 1,2-Propanediol monolaurate- - - - - | ARC, SBC. |
| 1,2-Propanediol mono-oleate- - - - - | EFH. |
| 1,2-Propanediol monostearate- - - - - | ARC, EKT, GLY, HAL, SBC, TCH, WM. |
| Propanediol esters, all other- - - - - | ARC. |
| OTHER CARBOXYLIC ACID ESTERS: | |
| Di-isobutylene maleate- - - - - | RH. |
| Ethoxylated 1,2-propanediol monostearate- - - - - | ICI. |
| Lauric acid ester of glycerol and ethoxylated nonylphenol- - - - - | TCC. |
| Methylglucoside laurate- - - - - | HDG. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| NONIONIC--CONTINUED | |
| CARBOXYLIC ACID ESTERS--CONTINUED | |
| OTHER CARBOXYLIC ACID ESTERS--CONTINUED | |
| Polyalkylene glycol adipate - - - - - | X. |
| Carboxylic acid esters, all other - - - - - | AAC, BAK, CHP, CLD, CRN, DUP, EMR, HAL, HDG, MOA, PEL, PG, ROB, STC, SVC, SYL, TCH, VND, X. |
| ETHERS: | |
| BENZENOID ETHERS: | |
| Alkylphenol-formaldehyde condensates, alkoxylated, all other - - - - - | X. |
| * Dinonylphenol, ethoxylated - - - - - | BRD, CPC, GAF, HTN, RH, TCH, WTC. |
| * Dodecylphenol, ethoxylated - - - - - | DA, GAF, MON, OMC, STC, TCH, TMH. |
| Iso-octylphenol, ethoxylated - - - - - | AAC, DA, GAF, RH, TMH. |
| (Mixed alkyl)phenol, ethoxylated - - - - - | MIL, NTL, X. |
| (Mixed alkyl)phenol, ethoxylated, butyl ether - - - - - | RH. |
| (Mixed alkyl)phenol-formaldehyde - - - - - | NTL, WTC, X. |
| (Mixed alkyl)phenoxypoly(ethyleneoxy)ethyl chloride - - - - - | GAF. |
| * Nonylphenol, ethoxylated - - - - - | ARC, BRD, CPC, DA, GAF, HDG, HTN, ICI, MET, MIL, MON, MRV, OMC, RH, S, STC, STP, TCH, TMH, TX, UCC, WTC, WVA, X. |
| Nonylphenol, ethoxylated and propoxylated - - - - - | GAF, RH. |
| Nonylphenol-formaldehyde, alkoxylated - - - - - | WTC, X. |
| n-Octylphenol, ethoxylated - - - - - | TCH. |
| tert-Octylphenol-formaldehyde, ethoxylated - - - - - | DA, SDW. |
| * Phenol, ethoxylated - - - - - | BRD, DA, GAF, ICI, MIL, STC, TCH. |
| Tetradecylphenol ethoxylated - - - - - | ORO. |
| Tridecylphenol, ethoxylated - - - - - | TCH. |
| Phenols, ethoxylated, all other - - - - - | DA, PEL, RH, STC, SVC, X. |
| NONBENZENOID ETHERS: | |
| LINEAR ALCOHOLS, ALKOXYLATED: | |
| *Decyl alcohol, ethoxylated - - - - - | GAF, ICI, MET, MIL, MRV, STC, TCH. |
| Decyloxypoly(ethyleneoxy)ethyl chloride - - - - - | GAF. |
| *Dodecyl alcohol, ethoxylated - - - - - | AAC, HDG, ICI, MET, MIL. |
| Hexadecyl alcohol, ethoxylated - - - - - | ICI, TCH. |
| *9-Octadecenyl alcohol, ethoxylated - - - - - | AAC, GAF, ICI, TCH. |
| Octadecyl alcohol, ethoxylated - - - - - | DUP, GAF, ICI. |
| *Oleyl alcohol, ethoxylated - - - - - | CRD, CRN, HDG, HTN, STC. |
| Wool wax alcohols, ethoxylated - - - - - | CRD. |
| Chemically defined linear alcohol, alkoxylated, all other - - - - - | GAF, ICI, MIL, WTC. |
| Coconut oil alcohol, ethoxylated - - - - - | GAF, GLY, STC, TX. |
| Decyl and octyl alcohols, ethoxylated - - - - - | BRD, GAF. |
| *Mixed linear alcohols, ethoxylated - - - - - | BRD, CO, DA, DUP, GAF, HDG, ICI, MIL, PG, RH, S, SHC. |

TABLE 2.--SURFACE-ACTIVE AGENTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| SURFACE-ACTIVE AGENTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| NONIONIC--CONTINUED | |
| ETHERS--CONTINUED | |
| NONBENZENOID ETHERS--CONTINUED | |
| *Mixed linear alcohols, ethoxylated and propoxylated - - - - - | SHX, STC, STP, SVC, TCH, TX, UCC, WTC, X. BAS, DUP, GAF, MIL, OMC, PG, S, STP, SVC, TCH, TX, UCC, WTC, WVA. |
| *Tallow alcohol, ethoxylated- - - - - | AAC, PG, STC, TX. |
| Mixed linear alcohols, alkoxylated, all other- - - | CRN, DA, GLY, TCH, X. |
| OTHER ETHERS AND THIOETHERS: | |
| tert-Dodecyl mercaptan, ethoxylated- - - - - | AAC, GAF, MET. |
| Isodecyl alcohol, ethoxylated- - - - - | MET, S, TCH. |
| Iso-octyl alcohol, ethoxylated - - - - - | DA. |
| *Mixed alcohols, ethoxylated- - - - - | CRN, MIL, RH, X. |
| Poly(mixed ethylene, propylene)glycol- - - - - | BAS, DA, UCC, X. |
| Polyoxyalkylene glycols, alkoxylated - - - - - | X. |
| Polypropylene glycol, ethoxylated- - - - - | WTC. |
| 2,4,7,9-Tetramethyl-5-decyne-4,7-diol, ethoxylated- - - - - | TCH. |
| *Tridecyl alcohol, ethoxylated- - - - - | AAC, BRD, DUP, GAF, HTN, ICI, MIL, OMC, S, STC, TCH, TX, WTC, X. |
| Tridecyl alcohol, propoxylated and ethoxylated | TX. |
| Trimethylheptanol, ethoxylated - - - - - | TCH. |
| Trimethylnonyl alcohol, ethoxylated- - - - - | TCH, UCC. |
| Trimethylolpropane, alkoxylated- - - - - | BAS, WTC. |
| Ethers and thioethers, all other - - - - - | AAC, ARC, DA, GAF, ICI, MIL, RH, S, SVC, TCH. |
| OTHER NONIONIC SURFACE-ACTIVE AGENTS: | |
| Octyl phosphate, ethoxylated - - - - - | DUP. |
| Tri(castor oil alkyl)phosphate - - - - - | GLY. |
| Trimethylalpropane, ethoxylated- - - - - | DUP. |
| Nonionic surface-active agents, all other- - - - - | CRN, EMR, KPI, MIL, PEL, PG, RH, TCH, X. |

TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of surface-active agents to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|---|
| AAC | Alcolac, Inc. | EK | Eastman Kodak Co., Tennessee Eastman Co. Div. |
| ACT | Southland Corp., Chemical Div. | EMK | Emkay Chemical Co. |
| ACY | American Cyanamid Co. | EMR | Emery Industries, Inc. |
| AES | Penetone Corp. | ENO | Enenco, Inc. |
| AGP | Armour-Dial, Inc. | ESS | Essential Chemicals Corp. |
| AKS | Arkansas Co., Inc. | FER | Ferro Corp., Keil Chemical Div. |
| APX | Apex Chemical Co., Inc. | FPC | Flambeau Paper Corp. |
| ARC | Armak Co., Industrial Chemical Div. | FTX | Finetex, Inc. |
| ARI | Atlas Refining, Inc. | GAF | GAF Corp. |
| ARL | Arol Chemical Products Co. | GDC | Gresto, Inc. |
| ARZ | Arizona Chemical Co. | GLY | Glyco, Inc. |
| ASY | American Synthetic Rubber Corp. | GRL | Chemed Corp., Vestal Laboratories Div. |
| AZS | AZS Corp.: AZ Products Co. Div. AZS Chemical Co. | GRO | A. Gross & Co., Millmaster Onyx Group, Kewanee Industries, Inc. |
| BAK | Baker International - Magna Corp. | HAL | C.P. Hall Co. |
| BAS | BASF Wyandotte Corp. | HDG | Hodag Chemical Corp. |
| BFP | Breddo Food Products Corp., Inc. | HEW | Hewitt Soap Co., Inc. |
| BKM | Buckman Laboratories, Inc. | HIP | High Point Chemical Corp. |
| BLA | Astor Products, Inc., Blue Arrow Div. | HLI | Onyx Chemical Co. |
| BLS | Life Savers, Inc. | HMP | W.R. Grace & Co., Organic Chemicals Div. |
| BRD | Lonza, Inc. | HNT | Huntington Laboratories, Inc. |
| BSW | Original Bradford Soap Works, Inc. | HPC | Hercules, Inc. |
| CCA | Interstab Chemicals, Inc. | HRT | Hart Products Corp. |
| CCC | C.N.C. Chemical Corp. | HTN | Heterene Chemical Co., Inc. |
| CCL | Catawba-Charlalab, Inc. | HXL | Hexcel Corp., Hexcel Chemical Products |
| CCW | Carstab Corp. | ICI | ICI Americas Inc., Chemical Specialties Co. |
| CGY | Ciba-Geigy Corp. | JOR | Jordan Chemical Co. |
| CHL | Chemol, Inc. | JRG | Andrew Jergens Co. |
| CHP | C.H. Patrick & Co., Inc. | JTO | Jetco Chemicals, Inc. |
| CIN | Stockhausen, Inc. | KNP | Knapp Products, Inc. |
| CJO | C. J. Osborn Chemicals, Inc. | KPI | Kenrich Petrochemicals, Inc. |
| CLD | Colloids, Inc. | LEA | Leatex Chemical Co. |
| CLI | Clintwood Chemical Co. | LEV | Lever Brothers Co. |
| CLU | Core-Lube, Inc. | LKY | Lake States Div. of Rhineland Paper Co. |
| CMT | Chemithon Corp. | LMI | North American Chemical Co. |
| CO | Conoco, Inc. | LUR | Laurel Products Corp. |
| CON | Concord Chemical Co., Inc. | MAR | American Can Co., Lignin Chemicals Div. |
| CP | Colgate-Palmolive Co. | MCP | Moretex Chemical Products, Inc. |
| CPC | Grant Chemical Co. | MIL | Milliken & Co., Milliken Chemical Div. |
| CRD | Croda, Inc. | MIR | Miranol Chemical Co., Inc. |
| CRN | CPC International, Inc., Amerchol Corp. | MOA | Mona Industrial, Inc. |
| CRT | Crest Chemical Corp. | MON | Monsanto Co. |
| CRZ | Crown Zellerbach Corp. | MRD | Marden-Wild Corp. |
| CTL | Continental Chemical Co. | MRT | Morton-Norwich Products, Inc., Morton Chemical Co. Div. |
| CWP | Consolidated Papers, Inc. | MRV | Marlowe-Van Loan Corp. |
| CYL | Cyclo Chemicals Corp. | NCC | Niacet Corp. |
| DA | Diamond Shamrock Corp. | NCW | Nostrup Chemical Works, Inc. |
| DAN | Dan River, Inc., Chemical Products Div. | | |
| DEX | Dexter Chemical Corp. | | |
| DOW | Dow Chemical Corp. | | |
| DUP | E.I. duPont de Nemours & Co., Inc. | | |
| DYS | Davies-Young Co. | | |
| ECC | Eastern Color & Chemical Co. | | |
| EFH | E.F. Houghton & Co. | | |

TABLE 3.--SURFACE-ACTIVE AGENTS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|--|
| NES | Reutgers-Nease Chemical Co. | SHX | Sherex Chemical Co., Inc. |
| NMC | National Milling & Chemical Co. | SID | George F. Siddal Co., Inc. |
| NPR | Safeway Stores, Inc. | SLC | Soluol Chemical Co., Inc. |
| NTL | NL Industries, Inc. | SLM | Salem Oil & Grease Co. |
| OMC | Olin Corp. | SNW | Sun Chemical Corp., Chemicals Div. |
| ONX | Onyx Chemical Co. | SOC | Standard Oil Co. of California, Chevron Chemical Co. |
| ORA | M & T Chemicals, Inc. | SOP | Southern Chemical Products Co. |
| ORO | Chevron Chemical Co. | SOS | SSC Industries, Inc. |
| PC | Proctor Chemical Co., Inc. | SPA | Scott Paper Co. |
| PEK | Peck's Products Co. | STC | American Hoechst Corp., Sou-Tex Works |
| PEL | Pelron Corp. | STP | Stepan Chemical Co. |
| PG | Procter & Gamble Co., Procter & Gamble Mfg. Co. | SVC | Stokely-Van Camp, Inc., Industrial Products Group |
| PIL | Pilot Chemical Co. | SYL | Sylvachem Corp. |
| PLX | Plex Chemical Corp. | SYT | Synthron, Inc. |
| PNX | Murphy-Phoenix Co. | TCC | Sybron Corp., Chemical Division/Tanatex |
| PRX | Purex Corp. | TCH | Emery Industries, Inc., Tylon Div. |
| PSP | Georgia-Pacific Corp., Bellingham Div. | TCI | Morton-Norwich Products, Inc., Texize Div. |
| QCP | Quaker Chemical Corp. | TEN | Cities Service Co., Copperhill Operations |
| RAY | ITT Rayonier, Inc. | TMH | Thompson Hayward Chemical Co. |
| RBC | Fike Chemicals, Inc. | TNA | Ethyl Corp. |
| RCD | Richardson Co. | TNI | Gillette Co., Chemical Div. |
| RH | Rohm & Haas Co. | TX | Texaco, Inc. |
| ROB | Robeco Chemicals, Inc. | UCC | Union Carbide Corp. |
| RSA | R.S.A. Corp. | UDI | Petrochemicals Co., Inc. |
| S | Sandoz, Inc., Colors & Chemicals Div. | UNN | United Chemical Corp. of Norwood |
| SBC | Scher Chemicals, Inc. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| SBP | Sugar Beet Products Co. | VAL | Valchem Div. of United Merchants & Manufacturers, Inc. |
| SCM | SCM Corp., Organic Chemical Div. | VND | Van Dyk & Co., Inc. |
| SCO | Scholler, Inc. | VPC | Mobay Chemical Corp., Dyestuff Div. |
| SCP | Henkel Corp. | WAY | Philip A. Hunt Chemical Corp., Organic Chemical Div. |
| SDC | Martin-Marietta Corp., Sodyeco Div. | WBG | White & Bagley Co. |
| SDH | Hilton Davis Chemical Co. Div. | WHI | White & Hodges, Inc. |
| SDW | Sterling Organics Div. | WHW | Whittemore-Wright Co., Inc. |
| SEA | Seaboard Chemicals, Inc. | WM | American Can Co., Inolex Chemicals Co. |
| SFS | Stauffer Chemical Co., Specialty Div. | WTC | Witco Chemical Corp. |
| SHC | Shell Oil Co., Shell Chemical Co. | WVA | Westvaco Corp., Polychemicals Dept. |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 176 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Edmund Cappuccilli

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 1981 amounted to 1,430 million pounds--2.6 percent less than the 1,468 million pounds reported for 1980 (table 1).¹ Sales in 1981 were 1,291 million pounds, a decline of 8.2 percent, as compared with 1,406 million pounds reported in 1980; the value of sales was \$4,652 million in 1981, compared with \$4,078 million in 1980--an increase of 14.1 percent.

The output of cyclic pesticides and related products amounted to 1,012 million pounds in 1981--4.0 percent less than the 1,054 million pounds produced in 1980. Sales in 1981 were 907 million pounds, valued at \$3,504 million, compared with 1,017 million pounds, valued at \$3,080 million in 1980. Production of acyclic pesticides and related products in 1981 amounted to 418 million pounds, compared with 414 million pounds reported for 1980. Sales in 1981 were 383 million pounds compared with 389 million pounds reported in 1980; the value of sales were 1,148 million in 1981, compared with \$999 million in 1980--an increase of 15.0 percent.

¹See also table 2 which lists these products and identifies the manufacturers by codes. These codes are given in table 3.

TABLE 1.--PESTICIDES AND RELATED PRODUCTS: U.S. PRODUCTION AND SALES, 1981

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

| PESTICIDES AND RELATED PRODUCTS | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand Total----- | 1,430,075 | 1,290,641 | 4,652,382 | \$3.61 |
| Benzenoid----- | 792,733 | 723,495 | 2,890,076 | 4.00 |
| Nonbenzenoid----- | 637,342 | 567,146 | 1,762,306 | 3.11 |
| CYCLIC | | | | |
| Total----- | 1,012,429 | 907,365 | 3,503,886 | 3.86 |
| Fungicides, total----- | 117,016 | 118,330 | 322,215 | 2.72 |
| Naphthenic acid, copper salt----- | 352 | 325 | 343 | 1.06 |
| All other cyclic fungicides ² ----- | 116,664 | 118,005 | 321,872 | 2.74 |
| Herbicides and plant growth regulators, total----- | 677,280 | 570,394 | 2,297,898 | 4.03 |
| 2,4-Dichlorophenoxyacetic acid----- | 12,916 | 7,221 | 7,489 | 1.04 |
| 2,4-Dichlorophenoxyacetic acid, dimethylamine salt----- | 19,814 | 17,642 | 22,478 | 1.27 |
| Dinitrobutylphenol----- | 11,623 | 8,818 | 12,255 | 1.39 |
| All other cyclic herbicides ³ ----- | 632,927 | 536,713 | 2,255,676 | 4.20 |
| Insecticides and rodenticides, total----- | 218,133 | 218,641 | 883,773 | 4.04 |
| Organophosphorus insecticides ⁴ ----- | 89,134 | 81,245 | 311,880 | 3.84 |
| All other cyclic insecticides and rodenticides ⁵ ----- | 128,999 | 137,396 | 571,893 | 4.16 |
| ACYCLIC | | | | |
| Total----- | 417,646 | 383,276 | 1,148,496 | 3.00 |
| Fungicides, total----- | 25,659 | 25,819 | 40,877 | 1.58 |
| Dithiocarbamic acid salts ⁶ ----- | 22,185 | 23,095 | 33,972 | 1.47 |
| All other acyclic fungicides----- | 3,474 | 2,724 | 6,905 | 2.54 |
| Herbicides and plant growth regulators ⁷ ----- | 161,800 | 153,621 | 611,068 | 3.98 |
| Insecticides, rodenticides, soil conditioners and fumigants, total----- | 230,187 | 203,836 | 496,551 | 2.44 |
| Organophosphorus insecticides ⁸ ----- | 67,316 | 68,616 | 267,009 | 3.89 |
| Trichloronitromethane (Chloropicrin)----- | ... | 5,661 | 5,122 | .90 |
| All other acyclic insecticides, rodenticides, soil conditioners and fumigants ⁹ ----- | 162,871 | 129,559 | 224,420 | 1.73 |

¹Calculated from unrounded figures.

²Includes benomyl, captafol, captan, chlorothalonil, dinocap, DMTT, folpet, PCNB, PCP, PMA, sodium pentachlorophenate, and others.

³Includes alachlor, atrazine, benefin, bensulide, other 2,4-D esters and salts, 2,4-DB, dicamba, dinitrophenol compounds, diuron, isopropyl phenylcarbamates (IPC and CIPC), MCPA, molinate, NPA, picloram, propanil, triazines, trifluralin, uracils, plant growth regulators, and others.

⁴Includes carbophenothion, diazinon, dioxathion, methyl parathion, and other phosphorothioates and phosphorodithioates.

⁵Includes carbaryl, carbofuran, chlorinated insecticides (chlordan, chlorobenzilate, DDT, heptachlor, toxaphene, and others), insect attractants, DEET and other insect repellents, small amounts of rodenticides, and others.

⁶Includes maneb, nabam, and zineb, plus the remaining dithiocarbamates which are used chiefly as fungicides.

⁷Includes butylate, dalapon, EPTC, methanearsonic acid salts, thiocarbamates, and organophosphorus herbicides, and others.

Footnotes--Continued

⁸Includes acephate, DDVP, disulfoton, ethion, malathion, phorate, and other organophosphorus insecticides.

⁹Includes methomyl, methyl bromide, soil conditioners and fumigants, aldicarb, 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.

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC | |
| *FUNGICIDES: | |
| 2-Bromo-4'-hydroxyacetophenone - - - - - | BKM. |
| 5-Chloro-2-methyl-4-isothiazolin-3-one - - - - - | RH. |
| α-(2-Chlorophenyl)-α-(4-chlorophenyl)-5-pyrimidinemethanol - - - - - | LIL. |
| α-(2-Chlorophenyl)-α-(4-fluorophenyl)-5-pyrimidinemethanol - - - - - | LIL. |
| 2,4-Dichloro-6-(o-chloroanilino)-s-triazine - - - - - | CHG. |
| 1,4-Dichloro-2,5-dimethoxybenzene (Chloroneb) - - - - - | DUP. |
| 3-(3,5-Dichlorophenyl)-5-ethenyl-5-methyl-2,4-oxazolidinedione - - - - - | BAS. |
| 1,2-Dihydro-6-ethoxy-2,2,4-trimethylquinoline (Ethoxyquin) - - - - - | MON. |
| 5-Ethoxy-3-(trichloromethyl)-1,2,4-thiadiazole - - - - - | OMC. |
| Hexahydro-1,3,5-triethyl-s-triazine - - - - - | VNC. |
| Mercaptobenzothiazole, zinc salt - - - - - | VNC. |
| Methyl-1-(butylcarbamoyl)-2-benzimidazolecarbamate (Benomyl)- - - - - | DUP. |
| 2-(1-Methyl-n-heptyl)-4,6-dinitrophenyl crotonate (Dinocap)- - - - - | MCI, RH. |
| 3-(2-Methylpiperidino)propyl 3,4-dichlorobenzoate (Piperalin)- - - - - | LIL. |
| *Naphthenic acid, copper salt - - - - - | CCA, FER, TRO, WTC. |
| 2-n-Octyl-4-isothiazolin-3-one - - - - - | FER, RH. |
| Pentachloronitrobenzene (PCNB) - - - - - | OMC. |
| Pentachlorophenol (PCP)- - - - - | DOW, FRO, RCI. |
| Pentachlorophenol, sodium salt - - - - - | DOW. |
| Phenylmercuric acetate (PMA) - - - - - | CLY, COS, TRO, |
| Phenylmercuric ammonium acetate - - - - - | TRO. |
| Phenylmercuric oleate - - - - - | COS, TRO, |
| 8-Quinolinol - - - - - | SOL. |
| 8-Quinolinol, citrate salt - - - - - | SOL. |
| 8-Quinolinol(8-hydroxyquinoline), copper salt - - - - - | DOW, FER, SOL. |
| 8-Quinolinol, sulfate salt - - - - - | SOL. |
| cis-N-[(1,1,2,2-Tetrachloroethyl)thio]-1-cyclohexene-1,2-dicarboximide (Captafol)- - - - - | SOC. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| *FUNGICIDES--CONTINUED | |
| 2,4,5,6-Tetrachloroisophthalonitrile - - - - - | DA. |
| Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (DMTT) - - - - - | MRK, VCC. |
| 2-(Thiocyanomethylthio)benzothiazole - - - - - | BKM. |
| N-Trichloromethylthio-4-cyclohexene-1,2-dicarboximide (Captan) - - - - - | SFA, SFC. |
| N-Trichloromethylthiophthalamide (Folpet) - - - - - | SFA, SFC. |
| 1,3,5-Tri(2-isopropanol)-s-triazine - - - - - | EFH. |
| Cyclic fungicides, all other - - - - - | LIL, RH. |
| *HERBICIDES AND PLANT GROWTH REGULATORS: | |
| 3-Amino-2,5-dichlorobenzoic acid, ammonium salt (2,5-Dichloro-3-aminobenzoic acid, ammonium salt) - - - - - | GAF, UCC. |
| 4-Amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5-(4H)-one - - - - - | CHG, DUP. |
| 4-Amino-3,5,6-trichloropicolinic acid (Picloram) - - - - - | DOW. |
| 4,6-Bis(isopropylamino)-2-methoxy-s-triazine (Prometon) - - - - - | CGY. |
| 2,4-Bis(isopropylamino)-6-(methylthio)-s-triazine (Prometryn) - - - - - | CGY. |
| 5-Bromo-3-sec-butyl-6-methyluracil (Bromacil) - - - - - | DUP. |
| 2-(tert-Butylamino)-4-chloro-6-(ethylamino)-s-triazine - - - - - | CGY. |
| 2-(tert-Butylamino)-4-ethylamino-6-(methylthio)-s-triazine - - - - - | CGY. |
| 3-tert-Butyl-5-chloro-6-methyluracil - - - - - | DUP. |
| N-Butyl-N-ethyl- α,α,α -trifluoro-2,6-dinitro-p-toluidine (Benefin) - - - - - | LIL. |
| N-(Chloroacetyl)-N-(2,6-diethylphenyl)glycine, ethyl ester - - - - - | BHA. |
| 2-Chloro-4,6-bis(ethylamino)-s-triazine (Simazine) - - - - - | CGY. |
| 2-Chloro-4,6-bis(isopropylamino)-s-triazine (Propazine) - - - - - | CGY. |
| 2-Chloro-4-(cyclopropylamino)-6-(isopropylamino)-s-triazine (Cyprazine) - - - - - | SHC. |
| 2-Chloro-2',6'-diethyl-N-(n-butoxymethyl)acetanilide (Butachlor) - - - - - | MON. |
| 2-Chloro-2',6'-diethyl-N-(methoxymethyl)acetanilide (Alachlor) - - - - - | MON. |
| 2-Chloro-1-(3-ethoxy-4-nitrophenoxy)-4-(trifluoromethyl)benzene (Oxyfluorfen) - - - - - | RH. |
| 2-Chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine (Atrazine) - - - - - | CGY, FRI, SHC. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| *HERBICIDES AND PLANT GROWTH REGULATORS--CONTINUED | |
| M-(2-Chloroethyl)- α,α,α -trifluoro-2,6-dinitro-N-propyl-p-toluidine (Fluchloralin) | BAS. |
| 2-Chloro-N-isopropylacetanilide (Propachlor) | DOW, MON. |
| 4-Chloro-5-(methylamino)-2-(α,α,α -trifluoro-m-tolyl)-3-(2H)-pyridazinone (Norflurazon) | S. |
| 2-(4-Chloro-2-methylphenoxy)propionic acid (MCPFP) | DA. |
| 2-(4-Chloro-2-methylphenoxy)propionic acid, dimethylamine salt | DA. |
| 5(2-Chloro-4-trifluoromethylphenoxy)-2-nitrobenzoic acid, sodium salt | SDC. |
| 3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1H,3H)-dione | DUP. |
| N-(Cyclopropylmethyl)- α,α,α -trifluoro-2,6-dinitro-N-propyl-p-toluidine (Profluralin) | CGY. |
| 3,5-Dibromo-4-hydroxybenzonitrile, octanoic acid esters (Bromoxynil octanoate) | RDA. |
| 3,6-Dichloro-2-anisic acid (Dicamba) | VEL. |
| 4-(2,4-Dichlorophenoxy)butyric acid (2,4-DB Acid) | RDA. |
| 4-(2,4-Dichlorophenoxy)butyric acid, iso-octyl ester | RDA. |
| 3-(3,4-Dichlorophenyl)-1,1-dimethylurea (Diuron) | DUP. |
| 3-(3,4-Dichlorophenyl)-1-methoxy-1-methylurea (Linuron) | DUP. |
| 2,4-Dichlorophenyl p-nitrophenyl ether | RH. |
| 3',4'-Dichloropropionanilide (Propanil) | CYT, RH, VTC. |
| S-(O,O-Diisopropyl phosphorodithioate) ester of N-(α -mercaptoethyl)benzenesulfonamide (Bensulide) | SFA. |
| 1,1'-Dimethyl-4,4'-bipyridinium dichloride | X. |
| N,N-Dimethyl-2,2-diphenylacetamide (Diphenamid) | CWN. |
| N-(1,1-Dimethyl-2-propynyl)-3,5-dichlorobenzamide (Pronamide) | RH. |
| Dimethyl-2,3,5,6-tetrachloroterephthalate (DCPA) | DA. |
| *Dinitrobutylphenol (DNBP) | DOW, USR, VTC. |
| Dinitrobutylphenol, ammonium salt | DOW. |
| Dinitrobutylphenol, triethanolamine salt | DOW, VTC. |
| 2,6-Dinitro-N,N-dipropyl cumidine | LIL. |
| 3,5-Dinitro-N,N,N,N-dipropylsulfanilamide | LAK, SDC. |
| 2-(Ethylamino)-4-(isopropylamino)-6-(methylthio)-s-triazine (Ametryne) | CGY. |
| 5-Ethyl cyclohexylethylthiocarbamate | SFA. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| *HERBICIDES AND PLANT GROWTH REGULATORS--CONTINUED | |
| 5-Ethyl-hexahydro-1H-azepine-1-carbothioate (Molinate) - - - - - | SFA. |
| 2-(Ethylthio)-4,6-bis(isopropylamino)-s-triazine | CGY. |
| 3-Isopropyl-1H-2,1,3-benzothiadiazin-4(3H)-one 2,2- dioxide - - - - - | BAS. |
| Isopropyl N-(3-chlorophenyl)carbamate (CIPC) - - - | PPG, RBC. |
| Isopropyl N-phenylcarbamate (IPC) - - - - - | PPG, RBC. |
| 1-(2-Methylcyclohexyl)-3-phenylurea (Siduron) - - - | DUP. |
| Methyl 5-(2',4'-dichlorophenoxy)-2-nitrobenzoate | SM. |
| 1-Naphthylphthalamic acid (NPA) - - - - - | USR. |
| 7-Oxabicyclo-[2.2.1]-heptane-2,3-dicarboxylic acid, disodium salt (Endothall) - - - - - | PAS. |
| PHENOXYACETIC ACID DERIVATIVES: | |
| 4-Chloro-2-methylphenoxyacetic acid (MCPA) - - - | DA. |
| 4-Chloro-2-methylphenoxyacetic acid, dimethylamine salt - - - - - | DA. |
| 2,4-DICHLOROPHENOXYACETIC ACID, ESTERS AND SALTS: | |
| *2,4-Dichlorophenoxyacetic acid (2,4-D) - - - - | DA, DOW, RDA. |
| 2,4-Dichlorophenoxyacetic acid, butoxyethanol ester - - - - - | DOW. |
| 2,4-Dichlorophenoxyacetic acid, butoxypolypropyleneglycol ester - - - - - | DOW. |
| 2,4-Dichlorophenoxyacetic acid, sec-butyl ester | DOW. |
| *2,4-Dichlorophenoxyacetic acid, dimethylamine salt - - - - - | DA, DOW, PBI, RDA, RIV. |
| 2,4-Dichlorophenoxyacetic acid, ethanolamine and isopropanolamine salts - - - - - | DOW. |
| 2,4-Dichlorophenoxyacetic acid, isobutyl ester | RDA. |
| 2,4-Dichlorophenoxyacetic acid, iso-octyl ester | DOW, RDA, RIV. |
| 2,4-Dichlorophenoxyacetic acid, isopropyl ester | AMV. |
| 2,4-Dichlorophenoxyacetic acid, lithium salt - - - | GTH. |
| 2,4-Dichlorophenoxyacetic acid, sodium salt - - - | RIV. |
| 2,4-Dichlorophenoxyacetic acid, esters and salts, all other - - - - - | VEL. |
| 2,4,5-TRICHLOROPHENOXYACETIC ACID, ESTERS AND SALTS: | |
| 2,4,5-Trichlorophenoxyacetic acid, butoxyethanol ester - - - - - | DOW. |
| 2,4,5-Trichlorophenoxyacetic acid, butoxypolypropyleneglycol ester - - - - - | DOW. |
| 2,4,5-Trichlorophenoxyacetic acid, triethylamine salt - - - - - | DOW. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| *HERBICIDES AND PLANT GROWTH REGULATORS--CONTINUED | |
| PLANT GROWTH REGULATORS: | |
| 2-Chloro-6-(trichloromethyl)pyridine - - - - - | DOW. |
| 1,2-Dihydro-3,6-pyridazinedione (Maleic hydrazide) (MH) - - - - - | FMT, USR. |
| 1,1-Dimethylpiperidinium chloride - - - - - | BAS. |
| Gibberellic acid - - - - - | ABB. |
| 3-Indolebutyric acid - - - - - | MRK. |
| 1-Naphthaleneacetic acid (NAA) - - - - - | GNW. |
| 1-Naphthaleneacetic acid, sodium salt - - - - - | GNW. |
| Plant growth regulators, cyclic, all other - - - - - | ABB, USR. |
| Sodium 5-[2-chloro-4-(trifluoromethyl)-phenoxy]-2-nitrobenzoate - - - - - | RH. |
| 2-(2,4,5-Trichlorophenoxy)propionic acid, 2-butoxypolypropylene ester - - - - - | DOW. |
| α, α, α-Trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine (Trifluralin) - - - - - | ACY, LIL. |
| 1,1,1-Trifluoro-N-(2-methyl-4-(phenylsulfonyl)-phenyl)methanesulfonamide - - - - - | CGY. |
| Cyclic herbicides, all other - - - - - | MMM. |
| INSECT ATTRACTANTS AND REPELLENTS: | |
| N,N-Diethyltoluamide (DEET) - - - - - | PFZ, TNA, VGC. |
| Insect attractants, all other - - - - - | AIC. |
| *INSECTICIDES: | |
| Bacillus thuringiensis - - - - - | ABB, S. |
| (5-Benzyl-3-furyl)methyl-2,2-dimethyl-3-(2-methylpropenyl)cyclopropane carboxylate (Resmethrin) - - - - - | PEN. |
| 2,3,4,5-6 ² -Butenylene-tetrahydrofurfural - - - - - | PLC. |
| 2-(p-tert-Butylphenoxy)cyclohexyl-2-propynyl sulfite - - - - - | USR. |
| CHLORINATED INSECTICIDES: | |
| Ethyl 4,4'-dichlorobenzilate (Chlorobenzilate) - - - - - | CGY. |
| Heptachloro-tetrahydro-endo-methanoindene (Heptachlor) - - - - - | VEL. |
| Hexachloroepoxyoctahydro-endo-endo-dimethanophthalene (Endrin) - - - - - | VEL. |
| Octachlorohexahydro-4,7-methanoindene (Chlordan) - - - - - | VEL. |
| Toxaphene (Chlorinated camphene) - - - - - | BHA, VTC. |
| 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane (DDT) - - - - - | MTO. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| *INSECTICIDES--CONTINUED | |
| CHLORINATED INSECTICIDES--CONTINUED | |
| 1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane (Methoxychlor) - - - - - | CHF, DUP. |
| Cyano(3-phenoxyphenyl)methyl-4-chloro- α -(1- methylethyl)benzeneacetate - - - - - | SHC. |
| 2,3-Dihydro-2,2-dimethyl-7- benzofuranyl(dibutylamino)thio(methyl carbamate | FMM. |
| 2,3-Dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate - - - - - | FMM. |
| 2,2-Dimethyl-1,3-benzodioxol-4-yl N-methylcarbamate | FSM. |
| 5,6-Dimethyl-2-dimethylamino-4-pyrimidinyl dimethyl carbamate - - - - - | X. |
| Di-n-propylisocinchomeronate - - - - - | MGK. |
| Distinnaxane, hexakis(2-methyl-2-phenylpropyl) - - - | SHC. |
| N-(Mercaptomethyl)phthalimide 5-(0,0- dimethylphosphorodithioate - - - - - | SFA. |
| Methyl 3-(2,2-dichlorovinyl)-2,2- dimethylcyclopropane carboate - - - - - | FMM. |
| 1-Naphthyl N-methylcarbamate (Carbaryl) - - - - - | UCC. |
| ORGANOPHOSPHORUS INSECTICIDES: | |
| S-[[[p-Chlorophenyl]thio(methyl) 0,0-diethyl phosphorodithioate (Carbophenothion) - - - - - | SFA. |
| 2-Chloro-1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate (Tetrachlorvinphos) - - - - - | SHC. |
| O-(2,4-Dichlorophenyl) O-ethyl S-propyl phosphorodithioate - - - - - | CHG. |
| 2-(Diethoxyphosphinyloxy)-4-methyl-1,3- dithiolane - - - - - | ACY, LAK. |
| O,O-Diethyl O-(2-isopropyl-4-methyl-6-pyrimidinyl) phosphorothioate (Diazinon) - - - - - | CGY, VEL. |
| O,O-Diethyl O-[4-(methylsulfinyl)phenyl]- phosphorothioate - - - - - | CHG. |
| O,O-Diethyl O-(p-nitrophenyl)phosphorothioate (Parathion) - - - - - | MON. |
| O,O-Diethyl O-3,5,6-trichloro-2-pyridyl phosphorothioate - - - - - | DOW. |
| O,O-Dimethyl O-[4-(methylthio)-m-tolyl]- phosphorothioate (Fenthion) - - - - - | CHG. |
| O,O-Dimethyl O-(p-nitrophenyl)phosphorothioate (Methyl parathion) - - - - - | MON. |
| O,O-Dimethyl O-(4-nitro-m-tolyl)phosphorothioate (fenitrothion) - - - - - | MTP. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| *INSECTICIDES--CONTINUED | |
| ORGANOPHOSPHORUS INSECTICIDES--CONTINUED | |
| O,O-Dimethyl O-(2,4,5-trichlorophenyl)- phosphorothioate (Ronnel) | DOW. |
| O,O-Dimethyl S-[(4-oxo-1,2,3-benzotriazin-3(4H)-yl)- methyl]phosphorodithioate (Aminphos-methyl) | CHG. |
| 2,3-p-Dioxanedithiol S,S-bis-(O,O-diethyl phosphorodithioate (Dioxathion) | BHA. |
| O-Ethyl O-[4-(methylthio)phenyl] S-propyl phosphorodithioate | CHG. |
| O-Ethyl O-(p-nitrophenyl)phenylphosphonothioate (EPN) | DUP, SFA, VEL. |
| O-Ethyl-S-phenylethylphosphonodithioate | SFA. |
| O,O,O',O'-Tetramethyl-O,O'-thiodi-p-phenylene phosphorothioate | ACY. |
| Organophosphorus insecticides, cyclic, all other | S. |
| Permethrin | X. |
| Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone[3-[4- (trifluoromethyl)phenyl]-1-[2-[4-trifluoromethyl)- phenyl]ethenyl]-2-propenylidene]hydrazonone | ACY. |
| Cyclic insecticides, all other | FMN, PEN, S, VTC, X, X. |
| NEMATOCIDES: | |
| O,O-Diethyl O-(2,4-dichlorophenyl)phosphorothioate (Dichlofenthion) | RDA, SM. |
| RODENTICIDES: | |
| 3-(α-Acetylbenzyl)-4-hydroxycoumarin (Warfarin) | MOT. |
| 2-Diphenylacetyl-1,3-indandione and sodium salt | MOT. |
| 2-Pivaloyl-1,3-indandione (Pindone) | MOT. |
| Rodenticides, cyclic, all other | X. |
| CYCLIC PESTICIDES, ALL OTHER: | |
| 4-Bromoacetoxymethyl-N-dioxoline | EFH. |
| α-[2-(2-n-Butoxyethoxy)-ethoxy]-4,5-methylenedioxy- 2-propyltoluene (Piperonyl butoxide) | ALP, TNA. |
| N-(2-Ethylhexyl)bicyclo(2.2.1)-5-heptene-2,3- dicarboximide | MGK. |
| ACYCLIC | |
| *FUNGICIDES: | |
| Bis-1,4-bromoacetoxy-2-butene | VIN. |
| Chloromethoxypropylmercuric acetate | TRO. |
| 1,2-Dibromo-2,4-dicyanobutane | MRK. |
| Disodium cyanodithioimidocarbonate | BKM. |
| n-Dodecylguanidine acetate (Dodine) | ACY. |
| Dodecylguanidine hydrochloride | MRK. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *FUNGICIDES--CONTINUED | |
| Methylene bis(thiocyanate) - - - - - | MRK, VCC. |
| *DITHIOCARBAMIC ACID FUNGICIDES: | |
| Dimethyldithiocarbamic acid, ferric salt (Ferbam) - - - - - | FMN. |
| Dimethyldithiocarbamic acid, potassium salt - - - - - | BKM. |
| Dimethyldithiocarbamic acid, sodium salt - - - - - | VCC. |
| Ethylene bis(dithiocarbamic acid), disodium salt (Nabam) - - - - - | ALC, VCC. |
| Ethylene bis(dithiocarbamic acid), manganese salt (Maneb) - - - - - | RH. |
| Ethylene bis(dithiocarbamic acid), manganese salt with zinc ions - - - - - | RH. |
| Ethylene bis(dithiocarbamic acid), zinc salt (Zineb) - - - - - | FMN, RH. |
| N-Methyldithiocarbamic acid, potassium salt - - - - - | BKM. |
| Dithiocarbamic acid fungicides, acyclic, all other - - - - - | BKM, FMN, VNC, X. |
| Acyclic fungicides, all other - - - - - | BKM. |
| *HERBICIDES AND PLANT GROWTH REGULATORS: | |
| N,N-Bis(phosphonomethyl)glycine - - - - - | MON. |
| 2-Chloroallyl diethyldithiocarbamate (CDEC) - - - - - | MON. |
| 2-Chloro-N,N-diallylacetamide (CDAA) - - - - - | MON. |
| S-(2,3-Dichloroallyl) diisopropylthiocarbamate (Diallate) - - - - - | MON. |
| 2,2-Dichloropropionic acid, sodium salt (Dalapon) - - - - - | DOW. |
| Dimethylarsinic acid (Cacodylic acid) - - - - - | CYT. |
| N-[5-(1,1-Dimethylethyl)-1,3,4-thiadiazol-2-yl]-N, N'-dimethylurea (Tebuthiuron) - - - - - | MRT. |
| Ethyl carbamoylphosphonate, ammonium salt - - - - - | DUP. |
| S-Ethyl diisobutylthiocarbamate (Butylate) - - - - - | SFA. |
| S-Ethyl dipropylthiocarbamate (EPTC) - - - - - | SFA. |
| Methanearsonic acid, disodium salt (DSMA) - - - - - | CLY, VIN. |
| Methanearsonic acid, dodecyl and octyl ammonium salts - - - - - | CLY. |
| Methanearsonic acid, monosodium salt (MSMA) - - - - - | CYT, DA. |
| N-(Phosphonomethyl)glycine, isopropylamine salt - - - - - | MON. |
| S-Propyl butylethylthiocarbamate (Pebulate) - - - - - | SFA. |
| S-Propyl dipropylthiocarbamate (Vernolate) - - - - - | SFA. |
| S,S,S-Tributyl phosphorotrithioate - - - - - | PLC. |
| Tributyl phosphorotrithioate (Merphos) - - - - - | RDA, SM. |
| S-(1,2,3-Trichloroallyl) diisopropylthiocarbamate (Triallate) - - - - - | MON. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *HERBICIDES AND PLANT GROWTH REGULATORS--CONTINUED | |
| PLANT GROWTH REGULATORS: | |
| 2-(Chloroethyl)phosphonic acid - - - - - | GAF, UCC. |
| Succinic acid, 2,2-dimethylhydrazide - - - - - | USR. |
| Plant growth regulators, acyclic, all other - - - - - | MON. |
| Acyclic herbicides - - - - - | S. |
| INSECTICIDES: | |
| 2-(2-Butoxyethoxy)ethyl thiocyanate - - - - - | RH. |
| Methyl N',N'-dimethyl-N-[(methylcarbamoyl)oxy]-1-thiooxamate - - - - - | DUP. |
| S-Methyl-N-[(methylcarbamoyl)oxy]thioacetimidate (Methomyl) - - - - - | DUP, SHC. |
| 2-Methyl-2-(methylthio)propionaldehyde O-(methylcarbamoyl)oxime (Aldicarb) - - - - - | UCC. |
| *ORGANOPHOSPHORUS INSECTICIDES: | |
| S-[1,2-Bis(ethoxycarbonyl)ethyl]O,O-dimethyl phosphorodithioate (Malathion) - - - - - | ACY. |
| 2-Carbomethoxy-1-propen-2-yl dimethyl phosphate - - - - - | AMV, SHC. |
| 1,2-Dibromo-2,2-dichloroethyl dimethyl phosphate (Naled) - - - - - | AMV, SHC. |
| O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate (Disulfoton) - - - - - | CHG. |
| O,O-Diethyl O-[2-(ethylthio)ethyl] phosphorothioate (Demeton O) - - - - - | CHG. |
| O,O-Diethyl S-[(ethylthio)methyl] phosphorodithioate (Phorate) - - - - - | ACY. |
| 3-(Dimethoxyphosphinyloxy)-N,N-dimethyl-cis-crotonamide - - - - - | SHC. |
| O,S-Dimethylacetylphosphoramidothioate (Acephate) - - - - - | SOC. |
| O,O-Dimethyl-O-2,2-dichlorovinyl phosphate (DDVP) - - - - - | AMV, CLO, SHC. |
| S-[(1,1-Dimethylethyl)thio]methyl O,O-diethyl phosphorodithioate (Turbafos) - - - - - | ACY. |
| O,O-Dimethyl S-(N-methylcarbamoylmethyl) phosphorodithioate (Dimethoate) - - - - - | ACY. |
| Dimethyl phosphate of 3-hydroxy-N-methyl-cis-crotonamide - - - - - | SHC. |
| O,S-Dimethyl phosphoramidothioate - - - - - | CHG. |
| O,O-Dimethyl phosphorochloridothioate - - - - - | CHG. |
| O,O,O',O'-Tetraethyl S,S'-methylene bisphosphorodithioate (Ethion) - - - - - | FMN. |
| Organophosphorus insecticides, acyclic, all other - - - - - | X. |
| Acyclic insecticides, all other - - - - - | X. |

TABLE 2.--PESTICIDES AND RELATED PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| PESTICIDES AND RELATED PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| RODENTICIDES: | |
| 2-Hydroxyethyl n-octyl sulfide - - - - - | PLC. |
| Sodium fluoroacetate - - - - - | TUL. |
| Rodenticides, acyclic, all other - - - - - | RBC. |
| SOIL CONDITIONERS: | |
| Polycrylonitrile, hydrolyzed, sodium salt - - - - - | ACY. |
| SOIL FUMIGANTS: | |
| 1,3-Dichloropropene - - - - - | DOW. |
| 1,3-Dichloropropene, 1,2-dichloropropane - - - - - | DOW, SHC. |
| O-Ethyl S,S-dipropyl phosphorodithioate - - - - - | RDA, SM. |
| Methyl bromide (Bromomethane) - - - - - | DOW, GTL, VEL. |
| N-Methyldithiocarbamic acid, sodium salt (Metham) - - - - - | SFA. |
| Methyl isothiocyanate - - - - - | MRT. |
| *Trichloronitromethane (Chloropicrin) - - - - - | DOW, IMC, NLO. |
| ACYCLIC PESTICIDES, ALL OTHER: | |
| Diamino acetate - - - - - | X. |
| 2-[(Hydroxymethyl)amino]-2-methylpropanol - - - - - | TRO. |
| 2-[(Hydroxymethyl)ethanol - - - - - | TRO. |
| 3-Iodo-2-propynyl butylcarbamate - - - - - | TRO. |
| Pesticides and related products, acyclic, all other | ARA, PAS, PCW, RBC, SHC, VIN, X. |

TABLE 3.--PESTICIDES AND RELATED PRODUCTS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of pesticides and related products to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| ABB | Abbott Laboratories | MOT | Motomoco, Inc. |
| ACY | American Cyanamid Co. | MRK | Merck & Co., Inc. |
| AIC | Albany International Corp. | MRT | Morton-Norwick Products, Inc., Morton Chemical Co. Div. |
| ALC | Alco Chemical Corp. | MTO | Montrose Chemical Corp. of California |
| ALP | Alpha Laboratories, Inc. | MTP | Mount Pleasant Chemical Co. |
| AMC | Amvac Chemical Corp. | NLO | Niklor Chemical Co., Inc. |
| ARA | Araphoe Chemical, Inc., Sub/Syntec U.S.A., Inc. | OMC | Olin Corp., Specialty Chemicals Dept. |
| BAS | BASF Wyandotte Corp. | PAS | Pennwalt Corp. |
| BHA | Boots Hercules Agrochemicals Co. | PBI | PBI-Gordon Corp. |
| BKM | Buckman Laboratories, Inc. | PCW | Pfister Chemical, Inc. |
| CCA | Interstab Chemicals, Inc. | PEN | CPC International, Inc., Penick Div. |
| CGY | Ciba-Geigy Corp., Agricultural Div. | PFZ | Pfizer, Inc. |
| CHF | Kincaid Enterprises, Inc. | PLC | Phillips Petroleum Co. |
| CHG | Mobay Chemical Corp., Agricultural Chemicals Div. | PPG | PPG Industries, Inc. |
| CLO | Colorado Organic Chemical Co., Inc. | RBC | Fike Chemicals, Inc. |
| CLY | W. A. Cleary Corp. | RCI | Reichhold Chemicals, Inc. |
| COS | Cosan Chemical Corp. | RDA | Rhone-Poulenc, Inc. |
| CWN | Upjohn Co., Fine Chemical Div. | RH | Rohm & Haas Co. |
| CYT | Crystal Chemical Co. | RIV | Riverdale Chemical Co. |
| DA | Diamond Shamrock Corp. & Diamond Shamrock Agriculture Chemical, Inc., Phenoxy Plant | S | Sandoz Inc., Crop Protection Dept. |
| DOW | Dow Chemicals Co. | SDC | Martin-Marietta Corp., Sodyeco Div. |
| DUP | E. I. duPont de Nemours & Co., Inc. | | Stauffer Chemical Co.: Agricultural Div. |
| EFH | E. F. Houghton & Co. | SFA | Calhio Chemicals, Inc. |
| FER | Ferro Corp., Ferro Chemical Div. | SFC | Shell Oil Co., Shell Chemical Co. Div. |
| FMN | FMC Corp., Agricultural Chemical Div. | SHC | Mobil Oil Corp., Mobil Chemical Co., Phosphorus Div. |
| FMT | Fairmount Chemical Co. | SM | Standard Oil Co. of California, Chevron Chemical Co. |
| FRI | Farmland Industries, Inc. | SOC | Southland Corp., Fine Chemicals Div. |
| FRO | Vulcan Materials Co., Chemicals Div. | SOL | |
| FSN | BPC Chemicals Inc. | TNA | Ethyl Corp. |
| GAF | GAF Corp. | TRO | Troy Chemical Corp. |
| GNW | Greenwood Chemical Co. | TUL | Tull Chemical Co., Inc. |
| GTH | Guth Corp. | UCC | Union Carbide Corp. |
| GTL | Great Lakes Chemical Corp. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| IMC | International Minerals & Chemicals Corp. | VCC | Vinings Chemical Co. |
| LAK | Bofors Nobel, Inc. & Lakeway, Inc. | VEL | Velsicol Chemical Corp. |
| LIL | Eli Lilly & Co. | VGC | Virginia Chemicals, Inc. |
| MCI | Mooney Chemical, Inc. | VIN | Vineland Chemical Co., Inc. |
| MGK | McLaughlin Goralely King Co. | VNC | Vanderbilt Chemical Corp. |
| MMM | Minnesota Mining & Manufacturing Co. | VTC | Vertac Chemical Corp. |
| MON | Monsanto Co. | WTC | Witco Chemical Corp. |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 85 reporting companies and company divisions for which permission to publish was not restricted.

SECTION XIV -- MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS

225

STATISTICAL HIGHLIGHTS

David G. Michels

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. With the exception of methionine and its salts, photographic chemicals, water soluble polymers, and tanning materials, both production and sales of all other end-use groups contained within this section decreased from 1980 levels.

In 1981, the production of miscellaneous end-use chemicals exceeded 22.1 billion pounds, a decrease of 6.1 percent from the more than 23.6 billion pounds of production reported for 1980. Sales in 1981 totaled 12.9 billion pounds, valued at \$3.9 billion. The sales quantity decreased 8.0 percent from that of 1980 with the value of sales increasing by 14 percent. Polymers for fibers and urea collectively accounted for 83 percent of the 1981 production of these miscellaneous end-use chemicals. Urea accounted for 73 percent of the 1981 sales quantity of these chemicals.

In 1981, the production of lubricating oil and grease additives totaled 1.5 billion pounds, a decrease of 10 percent, compared with 1980. Total sales quantity for 1981 was 1.1 billion pounds, 7 percent less than the 1980 sales quantity of 1.2 billion pounds, while the value of sales increased 2.4 percent to \$895 million.

Production of fuel additives for 1981 totaled 1.4 billion pounds, a decrease of 5.2 percent from the previous year. Total sales quantity for 1981 was 1.1 billion pounds, down 14 percent from the 1980 sales quantity of 1.3 billion pounds, with the sales value decreasing 4 percent to \$669 million.

TABLE 1.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS: U.S. PRODUCTION AND SALES, 1981

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

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | PRODUCTION | SALES | | |
|--|------------------|------------------|------------------|----------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 22,158,278 | 12,953,915 | 3,975,194 | \$0.31 |
| Chelating agents, nitriloacids and salts, total----- | 217,761 | 198,793 | 110,549 | .36 |
| (Diethylenetrinitrilo)pentaacetic acid, penta- sodium salt----- | 6,604 | 10,080 | 3,844 | .38 |
| (Ethylenedinitrilo)tetraacetic acid (EDTA)----- | 10,191 | 6,645 | 7,177 | 1.08 |
| (Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate----- | ... | 265 | 293 | 1.10 |
| (Ethylenedinitrilo)tetraacetic acid, disodium salt-- | 1,187 | ... | ... | ... |
| (Ethylenedinitrilo)tetraacetic acid, manganese salt-- | 1,384 | ... | ... | ... |
| (Ethylenedinitrilo)tetraacetic acid, tetrasodium salt----- | 81,959 | 71,417 | 26,606 | .37 |
| (Ethylenedinitrilo)tetraacetic acid, trisodium salt-- | ... | 2,925 | 3,212 | 1.10 |
| (N-Hydroxyethylethylenedinitrilo)triacetic acid, iron salt----- | ... | 1,520 | 1,361 | .90 |
| (N-Hydroxyethylethylenedinitrilo)triacetic acid, trisodium salt----- | 5,337 | 5,424 | 3,175 | .59 |
| Nitrilo-tris-methylene triphosphonic acid, sodium salt----- | 1,056 | ... | ... | ... |
| All other----- | 110,043 | 100,517 | 64,881 | .65 |
| Chemical indicators----- | 11 | 16 | 857 | 52.20 |
| Enzymes, total----- | (²) | (²) | 45,768 | (²) |
| Hydrolytic enzymes, total----- | (²) | (²) | 39,042 | (²) |
| Amylases----- | (²) | (²) | 10,252 | (²) |
| Proteases, total----- | (²) | (²) | 20,931 | (²) |
| Rennin----- | (²) | (²) | 9,980 | (²) |
| All other proteases----- | (²) | (²) | 10,951 | (²) |
| All other hydrolytic enzymes----- | (²) | (²) | 7,859 | (²) |
| Non-hydrolytic enzymes----- | (²) | (²) | 6,726 | (²) |
| Flotation reagents----- | 6,200 | 3,530 | 6,402 | 1.81 |
| Fuel additives, total ³ ----- | 1,405,017 | 1,111,109 | 668,611 | .60 |
| N,N'-Disalicylidene-1,2-propanediamine----- | 1,587 | 1,116 | 3,603 | 3.23 |
| Ethylenedibromide----- | 168,588 | ... | ... | ... |
| Methyl-t-butyl ether----- | 760,052 | ... | ... | ... |
| Tetraethyl lead----- | 274,890 | 208,939 | 277,236 | 1.33 |
| Tetra(methyl-ethyl) lead, (TEL-TML, reacted)----- | 131,923 | 129,995 | 172,592 | 1.33 |
| All other fuel additives----- | 67,977 | 771,059 | 215,180 | .28 |
| Lubricating oil and grease additives, total----- | 1,544,540 | 1,136,471 | 895,222 | .79 |
| Chlorosulfurized and sulfurized compounds----- | 6,999 | 6,007 | 5,296 | .88 |
| Oil soluble petroleum sulfonate, calcium salt----- | 244,165 | 200,858 | 158,804 | .79 |
| Oil soluble petroleum sulfonate, sodium salt----- | 80,880 | 75,978 | 42,503 | .56 |
| Phenol salts, total----- | 126,297 | 119,754 | 74,368 | .62 |
| Nonylphenol, barium salt----- | 6,195 | ... | ... | ... |
| All other----- | 120,102 | 119,754 | 74,368 | .62 |
| Sulfur compounds----- | 356,358 | 257,734 | 216,016 | .84 |
| Zinc dialkyldithiophosphate----- | 28,487 | 10,231 | 9,842 | .96 |
| All other lubricating oil and grease additives----- | 701,354 | 465,909 | 388,393 | .83 |
| Methionine and its salts----- | 82,806 | 74,435 | 98,840 | 1.33 |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | PRODUCTION | SALES | | |
|---|-----------------|-----------------|------------------|----------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Paint driers, naphthenic acid salts, total ⁴ 5----- | 10,702 | 8,446 | 13,628 | \$1.61 |
| Calcium naphthenate----- | 494 | 496 | 548 | 1.10 |
| Cobalt naphthenate----- | 2,146 | 1,964 | 8,473 | 4.31 |
| Lead naphthenate----- | 3,970 | 4,127 | 2,888 | .70 |
| Manganese naphthenate----- | ... | 407 | 399 | .98 |
| Zinc naphthenate----- | 1,345 | 1,199 | 1,009 | .84 |
| All other----- | 2,747 | 253 | 311 | 1.23 |
| Photographic chemicals, total----- | ... | 1,849 | 10,412 | 5.63 |
| p-Diethylaminobenzenediazonium chloride----- | 139 | 135 | 759 | 5.62 |
| p-Dimethylaminobenzenediazonium chloride----- | 126 | 123 | 648 | 5.26 |
| All other photographic chemicals----- | ... | 1,591 | 9,005 | 5.66 |
| Polymers for fibers, total----- | ... | 654,123 | 651,445 | 1.00 |
| Nylon 6 and 6/6----- | 1,957,925 | ... | ... | ... |
| Polyacrylonitrile and acrylonitrile copolymers----- | 615,226 | ... | ... | ... |
| Polyethylene terephthalate----- | 3,128,855 | 274,409 | 170,148 | .62 |
| All other polymers for fiber----- | ... | 379,714 | 481,297 | 1.27 |
| Polymers, water soluble, total----- | 335,140 | 286,536 | 417,528 | 1.46 |
| Cellulose ethers and esters----- | 164,695 | 157,976 | 268,319 | 1.70 |
| Polyacrylamide----- | 76,082 | 55,066 | 63,834 | 1.16 |
| Polyacrylic acid salts, total----- | 50,457 | 35,352 | 25,362 | .72 |
| Sodium polyacrylate----- | 28,021 | 20,114 | 7,239 | .36 |
| All other polyacrylic acid salts----- | 22,436 | 15,238 | 18,123 | 1.19 |
| All other water soluble polymers----- | 43,906 | 38,142 | 60,013 | 1.57 |
| Tanning materials, synthetic----- | 61,361 | 53,137 | 35,254 | .66 |
| Textile chemicals, other than surface-active agents, total----- | 12,413 | 9,131 | 7,251 | .79 |
| Dimethylolhydroxyethylene urea----- | 6,308 | 4,151 | 2,862 | .69 |
| Urea polymers with formaldehyde and methanol----- | 1,131 | ... | ... | ... |
| All other textile chemicals----- | 4,974 | 4,980 | 4,389 | .88 |
| Urea, total----- | 11,877,044 | ... | ... | ... |
| In feed compounds----- | 315,580 | 289,661 | 26,852 | .09 |
| In liquid fertilizer----- | 3,352,760 | 2,818,109 | 272,200 | .10 |
| In solid fertilizer----- | 7,841,870 | 5,968,004 | 633,140 | .11 |
| In plastics----- | 309,951 | 267,157 | 24,252 | .09 |
| All other----- | 56,883 | ... | ... | ... |
| All other miscellaneous end-use chemicals and chem- ical products ⁶ ----- | 903,012 | 73,408 | 56,983 | .78 |

¹Calculated from unrounded figures.²Not available.³Statistics exclude production and sales of tricresyl phosphate. Statistics on tricresyl phosphate are given with the section on "Plasticizers."⁴Quantities are given on the basis of solid naphthenate.⁵Statistics exclude production and sales of copper naphthenate. Statistics for copper naphthenate are given in the section on "Pesticides and Related Products."⁶Includes all other items listed in table 2 which are not individually publishable or publishable as groups.

XIV -- MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS

229

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| Biological stains - - - - - | ALD, EK, MMC. |
| *CHELATING AGENTS, NITRILOACIDS AND SALTS: | |
| N-alkylamine bismethylenephosphonic acid - - - - - | SCP. |
| N-alkylaminobismethylene phosphonic acid salts - - - - - | RPC. |
| Aminotrimethyl phosphonic acid - - - - - | SCP. |
| Diethylenetriaminepenta(methylenephosphonic acid)- - - - - | WAY. |
| (Diethylenetriamine)pentamethylenephosphonic acid, sodium salt - - - - - | WAY. |
| (Diethylenetrinitrilo)pentaaacetic acid - - - - - | CGY, HMP. |
| (Diethylenetrinitrilo)pentaaacetic acid, monosodium hydrogen ferric salt - - - - - | CGY. |
| *(Diethylenetrinitrilo)pentaaacetic acid, pentasodium salt - - - - - | CGY, DAN, DOW, HMP, RPC. |
| (Diethylenetrinitrilo)pentamethylene phosphonic acid, pentasodium salt - - - - - | EKT. |
| N,N-Dihydroxyethylglycine, sodium salt - - - - - | HMP. |
| [(Dimethylamino)methylene]bisphosphoric acid, trisodium salt - - - - - | BKM. |
| Ethanol diglycine, disodium salt - - - - - | HMP. |
| Ethylenebis(α-amino-2-hydroxyphenol) acetic acid, hydrogenferric salt - - - - - | CGY. |
| (Ethylene-bis-nitrilo)dimethylene phosphonic acid, potassium salt - - - - - | WAY. |
| *(Ethylenedinitrilo)tetraacetic acid (Ethylenediaminetetraacetic acid) (EDTA) - - - - - | CGY, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, calcium disodium salt - - - - - | CGY, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, diammonium salt - - - - - | CGY, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, diethanolamine salt - - - - - | DOW. |
| *(Ethylenedinitrilo)tetraacetic acid, disodium copper salt, dihydrate - - - - - | CGY, DAN, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, disodium magnesium salt - - - - - | DOW. |
| *(Ethylenedinitrilo)tetraacetic acid, disodium salt - - - - - | CGY, DOW, HMP. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *CHELATING AGENTS, NITRILACIDS AND SALTS--CONTINUED | |
| (Ethylenedinitrilo)tetraacetic acid, disodium zinc salt, dihydrate - - - - - | CGY, DOW, HMP. |
| *(Ethylenedinitrilo)tetraacetic acid, manganese salt | CGY, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, monoammonium ferric salt - - - - - | HMP. |
| (Ethylenedinitrilo)tetraacetic acid, monosodium iron salt - - - - - | CGY, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, tetraammonium salt - - - - - | CGY, DOW, HMP. |
| (Ethylenedinitrilo)tetraacetic acid, tetrapotassium salt - - - - - | CGY, HMP. |
| *(Ethylenedinitrilo)tetraacetic acid, tetrasodium salt | CGY, CRT, DAN, DOW, HMP, RPC. |
| *(Ethylenedinitrilo)tetraacetic acid, trisodium salt | CGY, HMP, WAY. |
| Glucosheptonic acid, sodium salt - - - - - | BLZ. |
| Hexamethylenediaminetetra(methylenephosphonic acid), potassium salt - - - - - | WAY. |
| Hexamethylenediaminetetra(methylenephosphonic acid) | WAY. |
| Hydroxyethane-1-diphosphonic acid - - - - - | MYO. |
| (N-Hydroxyethylethylenedinitrilo) triacetic acid - - - | HMP. |
| (N-Hydroxyethylethylenedinitrilo) triacetic acid, copper salt - - - - - | HMP. |
| *(N-Hydroxyethylethylenedinitrilo) triacetic acid, iron salt - - - - - | CGY, DOW, HMP. |
| (N-Hydroxyethylethylenedinitrilo) triacetic acid, magnesium salt - - - - - | HMP. |
| *(N-Hydroxyethylethylenedinitrilo) triacetic acid, trisodium salt - - - - - | CGY, CRT, DAN, DOW, HMP, RPC. |
| Nitriloacetic acid, zinc salt - - - - - | HMP. |
| Nitrilotriacetic acid - - - - - | HMP. |
| Nitrilotriacetic acid, trisodium salt - - - - - | DAN, HMP, MON. |
| Nitrilo-tris-methylene triphosphonic acid - - - - - | BKM, MYO, WAY. |
| *Nitrilo-tris-methylene triphosphonic acid, sodium salt - - - - - | BAK, MYO, WAY, X. |
| Polyamine polymethane phosphonic acid - - - - - | SCP, WTC. |
| Chelating agents, nitriloacids and salts, all other | HMP, X. |
| *Chemical indicators - - - - - | ALD, EK, GFS, HXL, MMC. |
| Chemical reagents - - - - - | EK, GFS, RSA, X. |
| *ENZYMES: | |
| *HYDROLYTIC ENZYMES: | |
| *AMYLASES: | |
| Bacterial amylase - - - - - | GBF, PMP. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *ENZYMES--CONTINUED | |
| *HYDROLYTIC ENZYMES--CONTINUED | |
| *AMYLASES--CONTINUED | |
| Glucosylase | CRM. |
| Amylases, all other | GBF, PFZ, RH. |
| *PROTEASES: | |
| Bromelain | DOL. |
| Papain | GBF, PFZ. |
| Pepsin | CHH, SPR. |
| Protease (bacterial) | GBF, MLS. |
| Rennet (microbial) | GBF, PFZ. |
| *Rennin | CHH, GBF, MLS, PFZ. |
| Proteases, all other | PIC, PMP, SPR. |
| Pectinase | GBF. |
| Hydrolytic enzymes including pectic enzymes and lipase, all other | BCK, JFR, MLS, RH, WBC. |
| NON-HYDROLYTIC ENZYMES: | |
| Cholesterol oxidase | BCK, UPJ. |
| Glucose oxidase | BCK. |
| Glucose-6-phosphate dehydrogenase | BCK. |
| Glycerol kinase | BCK. |
| Urease | BCK. |
| Nonhydrolytic enzymes | OMS, PLB. |
| *FLOTATION REAGENTS: | |
| PHOSPHORODITHIOATES (DITHIOPHOSPHATES): | |
| Dicresylphosphorodithioic acid | ACY. |
| Dicresylphosphorodithioic acid, ammonium salt | ACY. |
| Dicresylphosphorodithioic acid, sodium salt | KCU. |
| Phosphorodithioates used as floatation reagents, all other | ESX. |
| OTHER FLOTATION REAGENTS: | |
| Allyl n-butyl trithiocarbonate | PLC. |
| Rosin amines | HPC. |
| Thiocarbanilide (Diphenylthiourea) | ACY. |
| Xanthates and sulfides | PFZ. |
| Flotation reagents, all other | KCU. |
| *FUEL ADDITIVES: | |
| N,N'-Di-sec-butyl-p-phenylenediamine | USR. |
| Diesel fuel additives | DUP, TNA. |
| N,N'-Diisopropyl-p-phenylenediamine | DUP, USR. |
| *N,N'-Disalicylidene-1,2-propanediamine | DUP, FER, GCM, SM, TX. |
| *Ethylene dibromide | DOW, GTL, PPG, TNA. |
| Hexyl nitrate | TNA. |
| *Methyl-t-butyl ether | ATR, ENJ, PTT, X. |
| Methylcyclopentadienylmanganese tricarbonyl | TNA. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *FUEL ADDITIVES--CONTINUED | |
| 4,4'-Methylenebis(2,6-di-tert-butylphenol) - - - - - | TNA. |
| Mixed aryl diimides - - - - - | SM. |
| Phenyl acid phosphate - - - - - | HDG. |
| N-Phenyl-1-naphthylamine - - - - - | USR. |
| Polybutylether carbanate - - - - - | ORO. |
| Rust preventing additives - - - - - | DUP. |
| *Tetraethyl lead - - - - - | DUP, PPG, TNA. |
| *Tetra(methyl-ethyl)lead, (Tel-tml, reacted) - - - - - | DUP, PPG, TNA, X. |
| Tetramethyl lead - - - - - | DUP, TNA, X. |
| Fuel additives, all other - - - - - | DUP, GLY, TNA. |
| *LUBRICATING OIL AND GREASE ADDITIVES: | |
| *CHLOROSULFURIZED AND SULFURIZED COMPOUNDS: | |
| di-t-Amyl acid phosphate - - - - - | SM. |
| Heterocyclic compounds, sulfurized - - - - - | ORO. |
| Methylene-bridged polyalkyl phenols - - - - - | TNA. |
| Oleyl acid phosphate - - - - - | SM. |
| Chlorosulfurized and sulfurized compounds: used as lubricating oil and grease additives, all other | DUP, FER, GLY, SM, WTC. |
| OIL-SOLUBLE PETROLEUM SULFONATES: | |
| Oil-soluble petroleum sulfonate, ammonium salt - - - | NTL. |
| Oil-soluble petroleum sulfonate, barium salt - - - | PAR, X. |
| *Oil-soluble petroleum sulfonate, calcium salt - - - | ORO, PAR, PLC, TNA, TX, WTC, X. |
| Oil-soluble petroleum sulfonate, magnesium salt - - - | WTC, X. |
| *Oil-soluble petroleum sulfonate, sodium salt - - - | DA, ENJ, MOR, PAR, SHC, WTC, X. |
| Oil-soluble petroleum sulfonate, zinc salt - - - | SM. |
| Oil-soluble petroleum sulfonate, all other - - - | SHC, SM. |
| *PHENOL SALTS: | |
| Alkylphenol, calcium salt - - - - - | ORO. |
| *Nonylphenol, barium salt - - - - - | CCA, ENJ, FER, WTC. |
| Phenol salts, all other - - - - - | TNA, TX, WTC, X. |
| PHOSPHORODITHIOATES (DITHIOPHOSPHATES): | |
| Di-2-ethylhexylphosphorodithioic acid - - - - - | ELC, SFA. |
| Di-N-propylphosphorodithioic acid - - - - - | ELC, SFA. |
| *Zinc dialkyldithiophosphate - - - - - | ELC, ORO, TNA, TX. |
| Zinc dialkylphenol dithiophosphate - - - - - | ORO. |
| Zinc hydrocarbon dithiophosphate - - - - - | X. |
| Phosphorodithioates used as lubricating oil and grease additives, all other - - - - - | ELC, TX. |
| SUCCINIMIDES: | |
| Alkenyl succinimide - - - - - | TX. |
| N,N-di(C ₁₁ -C ₁₉)-sec-Alkylasparagine - - - - - | TX. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *LUBRICATING OIL AND GREASE ADDITIVES--CONTINUED | |
| SUCCINIMIDES--CONTINUED | |
| Dodecenyl-oleyl succinimide- - - - - | SM. |
| N-2-Hydroxyethyl-n-tetradecenyl succinimide- - - - - | TX. |
| Polyisobutenyl succinimide, polypropylene glycol salt - - - - - | SM. |
| *SULFUR COMPOUNDS: | |
| Aliphatic hydrocarbon sulfides - - - - - | ELC, FER, X. |
| Aliphatic imides, sulfur compounds - - - - - | ORO. |
| Chlorosulfurized sperm oil - - - - - | ELC. |
| Diisobutylene polysulfide- - - - - | TX. |
| Di-tertiary nonylpolysulfide - - - - - | PAS. |
| Phosphosulfurized terpene- - - - - | SM. |
| Sulfurized lard oil- - - - - | CCW, FER, QCP, WBG. |
| Sulfurized sperm oil substitutes - - - - - | CCW, ELC, FER. |
| Sulfur compounds, all other- - - - - | CCW, ELC, TNA, TX. |
| ALL OTHER LUBRICATING OIL AND GREASE ADDITIVES: | |
| Alkene thiophosphonate - - - - - | TX. |
| Alkyl imidazoline- - - - - | ORO. |
| Aminonaphthenic acid salts - - - - - | SHC. |
| Butadiene styrene copolymer- - - - - | PLC. |
| Dimer acid esters and polyesters - - - - - | EMR. |
| Dodecenyl succinic acid, benzotriazole salt- - - - - | SM. |
| Ethylene-propylene copolymer - - - - - | ORO. |
| Oleic acid, tosyltriazole salt - - - - - | SM. |
| Oxidized hydrocarbon mixture - - - - - | ALX, X. |
| Lubricating oil and grease additives, all other- - - - - | ELC, ENJ, HCC, SM, TX, WTC, X. |
| *PAINT DRIERS, NAPHTHENIC ACID SALTS: | |
| Barium naphthenate - - - - - | CCA. |
| Cadmium naphthenate- - - - - | CCA. |
| *Calcium naphthenate- - - - - | CCA, FER, HN, MCI, TRO, WTC. |
| Chromium naphthenate - - - - - | MCI. |
| *Cobalt naphthenate - - - - - | CCA, FER, HN, MCI, SHP, TRO, WTC. |
| Iron naphthenate - - - - - | HN, MCI. |
| *Lead naphthenate - - - - - | CCA, FER, HN, MCI, SHP, SW, TRO, WTC. |
| Lithium naphthenate- - - - - | CCA. |
| *Manganese naphthenate- - - - - | CCA, FER, HN, MCI, SM, SW, TRO, WTC. |
| Rare earths naphthenate- - - - - | CCA. |
| *Zinc naphthenate - - - - - | CCA, FER, HN, MCI, SW, TRO, WTC. |
| Paint dryers, naphthenic acid salts, all other - - - - - | MCI, SHP, SW. |
| *PHOTOGRAPHIC CHEMICALS: | |
| N-(2-Acetamidophenethyl)-1-hydroxy-2-naphthamide - - - - - | X. |
| 3-Amino-1,2,4-triazole (5-Amino-1,3,4-triazole)- - - - - | FMT. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *PHOTOGRAPHIC CHEMICALS--CONTINUED | |
| Benzotriazole- | FMT. |
| 3-Chloro-4-diethylaminobenzenediazonium chloride (p-Diazo-2-chloro-N,N-diethylaniline zinc chloride)- | ESA. |
| Chlorohydroquinone- | EK. |
| 4,4'-Diazido-dibenzalmethyl cyclohexanone- | FMT. |
| 4-Diazo-2,5-diethoxymorpholinobenzene- | ESA. |
| 4-Diazo-3,5-diethoxythiocresol salts- | FMT. |
| 2,5-Diethoxy-4-morpholinobenzenediazonium chloride | ALL, ESA. |
| *p-Diethylaminobenzenediazonium chloride (p-Diazo-N,N-diethylaniline zinc chloride)- | ALL, ESA, FMT. |
| N,N-Diethyltoluene-2,5-diamine, monohydrochloride- | EKT. |
| *p-Dimethylaminobenzenediazonium chloride (p-Diazo-N,N-dimethylaniline zinc chloride)- | ALL, ESA, FMT. |
| p-Diphenylaminediazonium sulfate- | ESA, FMT. |
| p-(N-Ethylbenzimidazo)benzenediazonium chloride (p-Diazo-N-benzyl-N-ethylaniline)-zinc chloride- | ESA. |
| p-[ethyl(2-hydroxyethyl)amino]benzenediazonium chloride (p-Diazo-N-hydroxyethylylaniline zinc chloride)- | ESA, FMT. |
| N-Ethyl-N-hydroxyethyl-p-phenylenediamine sulfate- | WAY. |
| Hydroquinone (Hydroquinol)- | EKT. |
| p-[(2-Hydroxyethyl)methylamino]benzenediazonium chloride (p-Diazo-N-hydroxyethyl-N-methylaniline)-zinc chloride- | ESA, FMT. |
| 2-Hydroxynaphthoic ethylamide- | FMT. |
| 4-Methoxy-1-naphthol- | X. |
| p-Methylaminophenol sulfate (Metol)- | EK. |
| 5-Methylbenzotriazole- | EK. |
| 5-Methyl-1,7-dihydroxy-1,3,4-triazaindolizine- | FMT. |
| 4,4-Methylenedibis-1(p-sulfophenyl)3-methylpyrazolone- | FMT. |
| 4-Methyl-1-phenyl-3-pyrazolidione- | WAY. |
| p-Morpholinyl-2,5-dibutoxybenzene diazonium chloride | ALL. |
| 6-Nitrobenzimidazole- | FMT. |
| Phenyl-5-mercaptotetrazole- | FMT. |
| 1-Phenyl-3-pyrazolidione- | EK. |
| 4-N-(1-Pyrrolidyl)-m-toluenediazonium chloride- | ALL, ESA. |
| Photographic chemicals, all other- | DIX, DUP, EK, FMT, WAY, X. |
| POLYALFMAOLEFINS: | |
| Poly- α -olefins- | CO, SM. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| *POLYMERS FOR FIBERS: | |
| Cellulose acetate- | CEL, EKT, MIL. |
| Copolyurethane urea- | DUP. |
| *Nylon 6 (Polymer for fiber, only) and 6/6- | AFP, DUP, FND, FRF, MON, SKP |
| Polyacrylonitrile and acrylonitrile copolymers | ACY, DUP, MON. |
| *Polyethylene terephthalate | DUP, EKT, FND, FRF, GYR, MON. |
| Poly-m-phenylene isophthalamide | DUP. |
| Poly-p-phenylene terephthalamide | DUP. |
| Polymers for fibers, all other | EKT, MON, SYT. |
| *POLYMERS, WATER SOLUBLE: | |
| *CELLULOSE ETHERS AND ESTERS: | |
| Hydroxyethylcellulose- | HPC, UCC. |
| Methylcellulose- | DOW. |
| Sodium carboxymethylcellulose (100%) | BUK, HPC, MAK. |
| Cellulose ethers and esters, all other | HPC, UCC. |
| Ethyl acrylate methacrylic acid copolymer- | ALC. |
| *Polyacrylamide | ACY, BKM, DA, DOW, HPC, MRK, X. |
| *POLYACRYLIC ACID SALTS: | |
| Adipic acid-crosslinked polycrylamide- | S. |
| Polyacrylate methacrylate copolymers | BFG, CRN. |
| Polyacrylate poly(hydroxypropylacrylate) copolymer | X. |
| Sodium ammonium polyacrylate and copolymers- | ALC, BAK. |
| *Sodium polyacrylate- | ALC, BAK, BFG, BKM, DA, MYO, RH, X. |
| Polyacrylic acid salts, all other- | ACY, DA, X. |
| Polyacrylonitrile, hydrolyzed- | ALC, BKM. |
| Polyacrylonitrile, starch hydrolyzed polymer | GPC, SCP. |
| Polymethacrylic acid, sodium salt- | ALC, GRD, X. |
| Poly(1,1'-(methylimino)bis(3-chloro-2-propanol))- tetramethylethylenediamine- | BKM. |
| Rare sugars- | ONX, PFN. |
| 1-Vinyl-2-pyrrolidinone, polymers- | DAN, GAF, UCC. |
| Polymers, water soluble, all other | BAK, BKM, CRN, MRK, PFN, X, X. |
| Silicone greases | DCC, SPD, SWS. |
| *TANNING MATERIALS, SYNTHETIC: | |
| Acrylate emulsions | MIL. |
| Mineral oil/surfactant blend | MIL. |
| 1-Naphthalenesulfonic acid, formaldehyde condensate and salt | DA. |
| 2-Naphthalenesulfonic acid, formaldehyde condensate and salt | AKS, DA, GRD, RH. |

TABLE 2.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| *TANNING MATERIALS, SYNTHETIC--CONTINUED | |
| 1-Phenol-2-sulfonic acid, formaldehyde condensate (Phenol-formaldehyde.sulfonated) - - - - - | RH. |
| Polyoxyalkylated cyclic amines - - - - - | MIL. |
| Tanning materials, synthetic, all other- - - - - | DA, MIL. |
| *TEXTILE CHEMICALS, OTHER THAN SURFACE-ACTIVE AGENTS: | |
| N,N-Dibenzylhydroxylamine- - - - - | CCC. |
| Dicyanodiamide formaldehyde ammonium chloride polymer - - - - - | CCC, DAN, RPC. |
| *Dimethyldihydroxyethylene urea - - - - - | CCC, CHP, DAN, RPC. |
| N',N'-Diphenyl-1,2-propanediamine- - - - - | CCC. |
| N,N-Ethylene-urea formaldehyde resin - - - - - | CCC. |
| Product from the reaction of stearyl nitrile, candelilla wax, paraformaldehyde, phosphorous, trichloride, and picoline- - - - - | CCC. |
| Tri(behenoyloxymethyl)trimethoxymethylmelamine - - - - - | DUP. |
| Urea formaldehyde resin/surfactant blend - - - - - | MIL. |
| *Urea polymers with formaldehyde and methanol - - - - - | CCC, MIL, RPC. |
| Textile chemicals, other than surface active agents, all other- - - - - | CCC, CHP, DA, DUP, RPC. |
| *UREA, BY END-USE MARKETS: | |
| Urea, primary solution (Report on 100% urea-content basis) - - - - - | ACS, AGY, APD, ARM, BNP, BOR, CAC, CFA, CFI, CHN, CNC, FRI, GCC, GPI, HKY, HPC, MSC, OMC, PLC, SMP, SNI, SOH, TER, TRI, TVA, UOC, VLN, WLC, WYC, X. |
| *UREA IN COMPOUNDS OR MIXTURES (100% BASIS): | |
| *Urea in feed compounds (100% Basis) - - - - - | AGY, APD, CAC, SNI, SOH, TER, TRI, VLN, WYC. |
| *Urea in liquid fertilizer (100% Basis)- - - - - | ACS, AGY, ARM, BNP, CFA, CFI, CHN, CNC, FRI, GPI, HKY, HPC, MSC, ORO, PLC, SMP, SNI, SOH, TER, TRI, TVA, VLN, WLC, X. |
| *Urea in plastics (100% Basis) - - - - - | BOR, OMC, SOH, TRI. |
| *Urea in solid fertilizer (100% Basis) - - - - - | AGY, APD, CAC, CFA, CFI, CNC, FRI, GCC, HPC, MSC, OMC, SOH, TER, TRI, TVA, UOC, VLN, WLC. |
| *Urea in compounds and mixtures (100% Basis), all other- - - - - | BNP, PFN, SOH, TER, WYC. |
| AMINO ACIDS AND THEIR SALTS: | |
| *METHIONINE AND ITS SALTS: | |
| Methionine (animal feed grade)- - - - - | DGC. |
| Methionine, hydroxy analogue, calcium salt - - - - - | DUP, MON. |
| Amino acids and salts, all other - - - - - | BRS, IMC, MRK, PFN. |
| Glutamic acid hydrochloride- - - - - | LEM. |
| Glycine (aminoacetic acid), non-medical - - - - - | CHT. |
| Levodopa (antiparkinsonian)- - - - - | MON. |
| Potassium glutamate- - - - - | LEM. |

TABLE 3.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of miscellaneous end-use chemicals to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| ACS | Allied Corp., Allied Chemical Co. | FER | Ferro Corp.: |
| ACY | American Cyanamid Co. | | Ferro Chemical Div. |
| AGY | Agway, Inc., Olean Nitrogen Complex | | Keil Chemical Div. |
| AKS | Arkansas Co., Inc. | FMT | Fairmount Chemical Co., Inc. |
| ALC | Alco Chemical Corp. | FND | Fiber Industries, Inc. |
| ALD | Aldrich Chemical Co., Inc. | FOR | Formiso Plastics |
| ALL | Alliance Chemical Corp. | FRF | Firestone Tire & Rubber Co., Firestone |
| ALX | Alox Corp. | | Fibers & Textiles Co. |
| APD | Atlas Powder Co. Sub. of Tyler Corp. | FRI | Farmland Industries, Inc. |
| ARM | USS Steel, Agri-Chemicals Div. | | |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | GAF | GAF Corp. |
| | | | |
| BAK | Baker International-Magna Corp. | GBF | GBF Fermentation Industries, Inc. |
| BCK | Beckman Microbics | GCC | W. R. Grace & Co., Agricultural Chemicals |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical | | Group, Memphis Plant |
| | Group | GCM | Cardinal Chemical Co. |
| BKM | Buckman Laboratories, Inc. | GFS | G. Frederick Smith Chemical Co. |
| BLZ | Belzak Corp. | GLY | Glyco, Inc. |
| BNP | Bison Nitrogen Products Co. | GPC | Grain Processing Corp. |
| BOR | Borden, Inc., Borden Chemical Div. | GPI | Goodpasture, Inc. |
| BRS | Bristol-Meyers Co. | GRD | W. R. Grace & Co., Polymers & Chemical Div. |
| BUK | Buckeye Cellulose Corp. | GTL | Great Lakes Chemical Corp. |
| | | GYR | Goodyear Tire & Rubber Co. |
| | | | |
| CAC | Cominco American, Inc., Camex Operation | | |
| CCA | Interstab Chemicals, Inc. | HCC | Hatco Chemical Corp. |
| CCC | C.N.C. Chemical Corp. | HDG | Hodag Chemical Corp. |
| CCW | Carstab Corp. | HKY | Hawkeye Chemical Co. |
| CEL | Celanese Corp., Celanese Fibers Co. | HMP | W. R. Grace & Co., Organic Chemicals Div. |
| CFA | Cooperative Farm Chemicals Association | HN | Tenneco Chemicals, Inc. |
| CFI | CF Industries, Inc. | HPC | Hercules, Inc. |
| CGY | Ciba-Geigy Corp. | HXL | Hexcel Corp., Hexcel Chemical Products |
| CHH | CHR. Hansen's Laboratory, Inc. | | |
| CHN | N-ReN Corp., Cherokee Nitrogen Div. | IMC | International Minerals & Chemicals Corp., IMC |
| CHP | C. H. Patrick & Co., Inc. | | Chemicals Group |
| CHT | Chattem, Inc. | | |
| CNC | Columbia Nitrogen Corp. | JFR | George A. Jeffreys & Co., Inc. |
| CO | Conoco, Inc. | | |
| CRN | CPC International, Inc., Amerchol Corp. | KCU | Kennecott Minerals Co., Utah Copper Div. |
| CRT | Crest Chemical Corp. | | |
| | | LEM | Napp Chemicals, Inc. |
| | | | |
| DA | Diamond Shamrock Corp. | | |
| DAN | Dan River, Inc., Chemical Products Div. | MAK | MAK Chemical Corp. |
| DCC | Dow Corning Corp. | MCI | Mooney Chemicals, Inc. |
| DGC | Degussa Corp. | MIL | Milliken & Co., Milliken Chemical Co. |
| DIX | Dixie Chemical Co., Inc. | MLS | Miles Laboratories, Inc., Biotechnology Group |
| DOL | Castle & Cooke, Inc., Castle & Cooke Foods, | MMC | EM Industries, Inc., EM Science Div. |
| | Hawaii Pineapple Div. | MON | Monsanto Co. |
| DOW | Dow Chemical Co. | MOR | Marathon Morco, Co. |
| DUP | E. I. duPont de Nemours & Co., Inc. | MRK | Merck & Co., Inc. |
| | | MSC | Mississippi Chemical Corp. |
| EK | Eastman Kodak Co.: | MYO | Mayo Chemicals Co. |
| EKT | Tennessee Eastman Co. Div. | | |
| ELC | Elco Corp. Sub. of Detrex Chemical | NLT | NL Industries, Inc. |
| | Industries, Inc. | | |
| EMR | Emery Industries, Inc. | OMC | Olin Corp. |
| ENJ | Exxon Chemical Americas | OMS | E. R. Squibb & Sons, Inc. |
| ESA | East Shore Chemical Co. | ONX | Onyx Chemical Corp. |
| ESX | Essex Industrial Chemicals, Inc., Essex | ORO | Chevron Chemical Co. |
| | Chemical Corp. | | |
| | | | |

TABLE 3.--MISCELLANEOUS END-USE CHEMICALS AND CHEMICAL PRODUCTS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| PAR | Pennzoil Co., Penreco Div. | SOH | Vistron Corp. |
| PAS | Pennwalt Corp. | SPD | General Electric Co., Silicone Products Dept. |
| PFN | Pfanstiehl Laboratories, Inc. | SPR | Scientific Protein Laboratories, Inc. |
| PFZ | Pfizer, Inc. | SW | Sherwin-Williams Co. |
| PIC | Pierce Chemical Co. | SWS | Stauffer Chemical Co., SWS Silicones Div. |
| PLB | P-L Biochemicals, Inc. | SYT | Synthron, Inc. |
| PLC | Phillips Petroleum Co. | | |
| PMP | Premier Malt Products, Inc. | TER | Terra Chemicals International, Inc. |
| PPG | PPG Industries, Inc. | TER | Terra Nitrogen, Inc. |
| PTT | Petro-Tex Chemical Corp. | TNA | Ethyl Corp. |
| | | TRI | Triad Chemical |
| QCP | Quaker Chemical Corp. | TRO | Troy Chemical Corp. |
| | | TVA | Tennessee Valley Authority |
| RH | Rohm & Haas Co. | TX | Texaco, Inc. |
| RPC | Millmaster Onyx Group, Kewanee Industries, Inc. | | |
| RSA | R.S.A. Corp. | UCC | Union Carbide Corp. |
| | | UOC | Union Oil Co. of California, Union Chemicals Div. |
| S | Sandoz, Inc., Colors & Chemicals Div. | UPJ | Upjohn Co. |
| SCP | Henkel Corp. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| SFA | Stauffer Chemical Co., Agricultural Div. | | |
| SHC | Shell Co., Shell Chemical Co. Div. | VLN | Simcal Chemical Co. |
| SHP | Shepherd Chemical Co. | | |
| SKP | Shakespeare Co., Monofilaments Div. | WAY | Phillip A. Hunt Chemical Corp., Organic Chemical Div. |
| SM | Mobil Oil Corp. | WBC | Worthington Diagnostic Div. of Millipore Corp. |
| | Mobil Chemical Co. | WBG | White & Bagley Co. |
| | Chemical Coatings Div. | WLC | Agrico Chemical Co. |
| | Phosphous Div. | WTC | Witco Chemical Co. |
| SMP | J.R. Simplot Co., Minerals & Chemical Div. | WYC | Wycon Chemical Co. |
| SNI | Kaiser Aluminum & Chemicals Corp., Kaiser Agricultural Chemicals Div. | | |

Note.—Complete names, telephone numbers, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 152 reporting companies and company divisions for which permission to publish was not restricted.

STATISTICAL HIGHLIGHTS

Kenneth J. Conant, III and David G. Michels

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 uses. The number of chemicals used extensively for only one purpose is not large. Among the products covered are those used for refrigerants, aerosols, solvents, and a wide range of chemical intermediates.

U.S. production of miscellaneous cyclic and acyclic chemicals in 1981 amounted to 95.0 billion pounds, an increase of 0.7 percent, compared with production in 1980. U.S. sales for 1981 totaled 36.1 billion pounds, valued at \$11.7 billion. Compared with 1980, sales quantity decreased 0.2 percent, while sales value increased by 0.6 percent. Production of miscellaneous cyclic chemicals comprised only 2.5 percent of this section's total production.

The group among miscellaneous acyclic chemicals with the greatest volume of production and sales is the halogenated hydrocarbons. Production of chlorinated hydrocarbons (not otherwise halogenated), the largest segment of this group, decreased from 22.9 billion pounds in 1980 to 22.0 billion pounds in 1981, or by 4.3 percent. Sales of chlorinated hydrocarbons declined from 7.5 billion pounds in 1980 to 7.0 billion pounds in 1981, or by 7.0 percent. Production of fluorinated hydrocarbons increased in 1981.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981

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

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|--|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Grand total----- | 95,039,129 | 36,082,863 | 11,744,402 | \$0.33 |
| CYCLIC | | | | |
| Total----- | 2,380,733 | 1,062,456 | 989,586 | .93 |
| Benzoic acid, sodium salt----- | 18,010 | 16,132 | 11,573 | .72 |
| Benzoyl peroxide----- | 7,130 | 7,027 | 20,603 | 2.93 |
| Caprolactam----- | 927,881 | ... | ... | ... |
| 2,6-Di-tert-butyl-p-cresol (BHT): | | | | |
| Food grade----- | 7,714 | 8,502 | 10,077 | 1.19 |
| Tech. grade----- | 9,217 | 8,402 | 13,975 | 1.66 |
| Dioxane----- | ... | 7,434 | 6,020 | .81 |
| Furan derivatives, all other----- | 99 | 69 | 147 | 2.13 |
| Hexamethylenetetramine, tech. grade----- | 92,111 | 37,671 | 14,956 | .40 |
| Maleic anhydride----- | 293,185 | 217,052 | 91,363 | .42 |
| α-Pinene----- | 102,648 | 3,276 | 1,103 | .34 |
| β-Pinene----- | 45,061 | 3,298 | 1,920 | .58 |
| Tall oil, chemically modified----- | 1,289 | ... | ... | ... |
| Terpene hydrocarbons, monocyclic (Solvenol)----- | 51,954 | 31,042 | 8,938 | .29 |
| All other miscellaneous cyclic chemicals----- | 824,434 | 722,551 | 808,911 | 1.12 |
| ACYCLIC | | | | |
| Total----- | 92,658,396 | 35,020,407 | 10,754,816 | .31 |
| NITROGENOUS COMPOUNDS | | | | |
| Total----- | 7,467,084 | 2,091,645 | 1,122,555 | .54 |
| Amides, total----- | 292,765 | 109,705 | 95,351 | .87 |
| Acrylamide----- | 81,469 | ... | ... | ... |
| All other amides----- | 211,296 | 109,705 | 95,351 | .87 |
| Amines, total ² ----- | 1,469,945 | 493,831 | 385,911 | .78 |
| Butylamines, total----- | 57,010 | 50,879 | 37,406 | .74 |
| n-Butylamine, mono----- | 2,278 | ... | ... | ... |
| Di-n-butylamine----- | 6,279 | 5,346 | 4,700 | .88 |
| Tri-n-butylamine----- | 1,134 | 917 | 1,129 | 1.23 |
| All other butylamines----- | 47,319 | 44,616 | 31,577 | .71 |
| n-Butylethylamine----- | ... | 1,628 | 1,909 | 1.17 |
| Diethylamine----- | 15,932 | 6,839 | 5,673 | .83 |
| Diisopropylamine----- | 5,371 | ... | ... | ... |
| Di-n-propylamine----- | 26,439 | ... | ... | ... |
| 1,6-Hexanediamine (Hexamethylenediamine)----- | ... | 33,220 | 34,325 | 1.03 |
| Isopropylamine, mono----- | 44,474 | 47,416 | 24,431 | .52 |
| Methylamines, total----- | 160,201 | 95,985 | 44,157 | .45 |
| Dimethylamine----- | 77,538 | 67,138 | 31,385 | .47 |
| Methylamine, mono----- | 48,106 | ... | ... | ... |
| Trimethylamine----- | 34,557 | 28,847 | 12,772 | .44 |
| Triethylamine----- | 16,084 | 13,333 | 13,027 | .98 |
| All other----- | 1,144,434 | 244,531 | 224,983 | .92 |
| 2-Diethylaminoethyl methacrylate----- | 926 | ... | ... | ... |
| 2-Dimethylaminoethanol (N,N-Dimethylethanolamine)----- | 11,801 | 9,444 | 8,521 | .90 |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|---|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ACYCLIC--Continued | | | | |
| NITROGENOUS COMPOUNDS--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Dimethylaminoethyl methacrylate----- | 2,846 | 2,265 | 4,032 | \$1.78 |
| Dimethylaminoethyl methacrylate, methyl chloride, quaternary salt----- | 432 | 431 | 613 | 1.42 |
| Ethanolamines, total----- | 428,868 | 381,729 | 162,830 | .43 |
| 2,2'-Aminodiethanol (Diethanolamine)----- | 150,362 | 130,138 | 56,160 | .43 |
| 2-Aminoethanol (Monoethanolamine)----- | 150,367 | 134,217 | 55,546 | .41 |
| 2,2',2''-Nitrilotriethanol (Triethanolamine)----- | 128,139 | 117,374 | 51,124 | .44 |
| Nitriles, total----- | 4,084,403 | 856,420 | 255,602 | .30 |
| Acetonitrile----- | 70,825 | ... | ... | ... |
| Acrylonitrile----- | 1,996,385 | 645,325 | 219,001 | .34 |
| 2-Methylactonitrile (Acetone cyanohydrin)----- | 1,091,116 | 45,062 | 12,219 | .27 |
| Nitriles, all other----- | 926,077 | 166,033 | 24,382 | .15 |
| All other nitrogenous compounds----- | 1,175,098 | 237,820 | 209,695 | .89 |
| ACIDS, ACYL HALIDES, AND ANHYDRIDES | | | | |
| Total----- | 12,157,077 | 1,720,883 | 685,688 | .40 |
| Acetic acid, recovered----- | 4,477,012 | ... | ... | ... |
| Acetic acid, synthetic, 100%----- | 2,705,109 | 450,466 | 79,112 | .18 |
| Acetic anhydride, 100%----- | ... | 114,161 | 35,876 | .31 |
| Acrylic acid----- | 560,280 | 79,279 | 35,994 | .45 |
| Adipic acid----- | ... | 155,607 | 81,258 | .52 |
| Dodecenylsuccinic anhydride----- | 5,227 | 5,033 | 5,175 | 1.03 |
| Fumaric acid----- | 35,209 | 25,408 | 13,873 | .55 |
| Propionic acid----- | 90,325 | 58,909 | 16,205 | .28 |
| All other acids, acyl halides, and anhydrides----- | 4,283,915 | 832,020 | 418,195 | .51 |
| SALTS OF ORGANIC ACIDS | | | | |
| Total----- | 343,787 | 264,499 | 234,226 | .89 |
| Acetic acid salts, total----- | 30,384 | 27,072 | 19,443 | .72 |
| Magnesium acetate----- | ... | 77 | 120 | 1.55 |
| Potassium acetate----- | ... | 3,407 | 2,399 | .70 |
| Sodium acetate----- | 19,233 | 17,710 | 7,911 | .45 |
| Sodium diacetate----- | 1,874 | 1,675 | 761 | .45 |
| Zinc acetate----- | 594 | 482 | 623 | 1.29 |
| All other----- | 8,683 | 3,721 | 7,629 | 2.05 |
| Calcium neodecanoate----- | 85 | 73 | 120 | 1.63 |
| Calcium propionate----- | 20,298 | ... | ... | ... |
| 2-Ethylhexanoic acid (α -Ethylcaproic acid) salts, total----- | 14,131 | 12,096 | 28,128 | 2.33 |
| Calcium 2-ethylhexanoate----- | 1,787 | 1,705 | 1,817 | 1.07 |
| Cobalt 2-ethylhexanoate----- | 2,441 | 2,251 | 11,075 | 4.92 |
| Lead 2-ethylhexanoate----- | 1,194 | 1,199 | 1,229 | 1.03 |
| Manganese 2-ethylhexanoate----- | 871 | 807 | 801 | .99 |
| Zinc 2-ethylhexanoate----- | 1,089 | 758 | 847 | 1.12 |
| Zirconium 2-ethylhexanoate----- | 2,484 | 2,309 | 5,197 | 2.25 |
| All other----- | 4,265 | 3,067 | 7,162 | 2.34 |
| Maleic acid salts----- | 619 | 564 | 2,504 | 4.44 |
| Oxalic acid salts----- | 399 | 394 | 737 | 1.87 |
| Sodium formate----- | 70,125 | ... | ... | ... |
| Sodium propionate----- | 3,862 | ... | ... | |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|--|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ACYCLIC--Continued | | | | |
| SALTS OF ORGANIC ACIDS--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Stearic acid salts, total ³ | 99,637 | 93,798 | 76,260 | \$0.81 |
| Aluminum distearate | 1,243 | 1,239 | 1,495 | 1.21 |
| Aluminum mono- and tristearates | 809 | 992 | 3,323 | 3.35 |
| Ammonium stearate | 4,118 | 2,752 | 2,794 | 1.02 |
| Barium stearate | 1,026 | 1,022 | 963 | .94 |
| Calcium stearate | 45,827 | 44,539 | 29,088 | .65 |
| Magnesium stearate | 14,927 | 13,468 | 11,327 | .84 |
| Zinc stearate | 23,251 | 21,669 | 19,215 | .89 |
| All other | 8,436 | 8,117 | 8,055 | .99 |
| All other salts of organic acids | 104,247 | 130,502 | 107,034 | .82 |
| ALDEHYDES | | | | |
| Total | 8,291,707 | 2,207,508 | 284,844 | .13 |
| Butyraldehyde | 1,004,383 | ... | ... | ... |
| Formaldehyde (37% by weight) | 5,720,678 | 1,848,506 | 144,443 | .08 |
| Isobutyraldehyde | 303,142 | 10,117 | 2,424 | .24 |
| Propionaldehyde | 225,700 | 10,716 | 3,089 | .29 |
| All other | 1,037,804 | 338,169 | 134,888 | .40 |
| KETONES | | | | |
| Total | 3,271,665 | 2,467,992 | 687,268 | .28 |
| Acetone: | | | | |
| From cumene | 1,546,877 | 1,302,775 | 276,147 | .21 |
| From isopropyl alcohol | 597,172 | 313,648 | 80,041 | .26 |
| 2-Butanone (Methyl ethyl ketone) | 610,964 | 584,689 | 209,394 | .36 |
| 4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol) | ... | 23,599 | 10,620 | .45 |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) | 217,953 | 148,514 | 62,950 | .42 |
| 4-Methyl-3-penten-2-one (Mesityl oxide) | ... | 11,609 | 6,252 | .54 |
| All other | 298,699 | 83,158 | 41,864 | .51 |
| ALCOHOLS, MONOHYDRIC, UNSUBSTITUTED | | | | |
| Total | 15,779,923 | 8,905,057 | 1,842,022 | .21 |
| Alcohols, C ₁₁ or lower, unmixed, total | 14,935,152 | 8,336,093 | 1,530,208 | .18 |
| Butyl alcohols, total | 2,225,261 | 1,320,949 | 289,067 | .22 |
| n-Butyl alcohol (n-Propylcarbinol) | 808,890 | 426,772 | 123,093 | .29 |
| Isobutyl alcohol (Isopropylcarbinol) | 141,955 | ... | ... | ... |
| All other | 1,274,416 | 894,177 | 165,974 | .19 |
| Ethyl alcohol, synthetic ⁴ | 1,317,185 | 1,255,364 | 348,525 | .28 |
| 2-Ethyl-1-hexanol | 389,061 | 227,884 | 84,480 | .37 |
| n-Hexyl alcohol | 50,112 | 26,105 | 11,747 | .47 |
| Isopropyl alcohol | 1,669,104 | 1,025,034 | 261,453 | .26 |
| Methanol, synthetic | 8,576,597 | 4,129,085 | 389,457 | .09 |
| Propyl alcohol (Propanol) | 154,044 | 108,740 | 36,622 | .34 |
| All other | 553,788 | 242,932 | 108,857 | .45 |
| Alcohols, C ₁₂ and higher, unmixed | 182,022 | 73,883 | 50,291 | .68 |
| Mixtures of alcohols, total | 662,749 | 495,081 | 261,523 | .53 |
| C ₁₁ or lower only | 112,712 | 126,524 | 62,247 | .49 |
| C ₁₂ or higher only | 512,720 | 325,608 | 182,010 | .56 |
| All other | 37,317 | 42,949 | 17,266 | .40 |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|---|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ACYCLIC--Continued | | | | |
| ESTERS OF MONOHYDRIC ALCOHOLS | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Total----- | 5,048,813 | 2,537,612 | 1,189,668 | \$0.47 |
| Butyl acetates: | | | | |
| n-Butyl acetate----- | 124,457 | 102,162 | 41,056 | .40 |
| Isobutyl acetate----- | 67,287 | 42,417 | 14,897 | .35 |
| Butyl acrylate----- | 318,701 | 149,168 | 73,289 | .49 |
| tert-Butyl peroxy acetate----- | 626 | ... | ... | ... |
| tert-Butyl peroxy-2-ethylhexanoate----- | 2,020 | 1,959 | 7,220 | 3.69 |
| tert-Butyl peroxyisopropyl carbonate----- | ... | 14 | 112 | 8.19 |
| tert-Butyl peroxy-pivalate----- | 1,762 | ... | ... | ... |
| Di(2-ethyl-1-hexyl) maleate----- | 1,493 | ... | ... | ... |
| Dilauryl-3,3'-thiodipropionate ⁵ ----- | 2,823 | 2,804 | 4,807 | 1.71 |
| Distearyl-3,3'-thiodipropionate----- | 2,331 | 2,609 | 3,062 | 1.17 |
| Ethyl acetate (85%)----- | 277,066 | 162,096 | 46,076 | .28 |
| Ethyl acrylate----- | 283,465 | 148,289 | 66,475 | .45 |
| 2-Ethyl-1-hexyl acrylate----- | 64,666 | 54,626 | 31,158 | .57 |
| Fatty acid esters, not included with plasticizers or surface-active agents, total----- | 23,489 | 23,284 | 14,416 | .62 |
| Myristyl myristate----- | 566 | 513 | 800 | 1.56 |
| All other----- | 22,923 | 22,771 | 13,616 | .60 |
| Methyl methacrylate----- | 891,149 | 276,270 | 149,074 | .54 |
| Phosphorus acid esters, not elsewhere specified----- | 78,409 | 70,178 | 80,194 | 1.14 |
| Propyl acetate----- | 54,515 | 52,263 | 21,477 | .41 |
| Vinyl acetate----- | 1,935,680 | ... | ... | ... |
| All other----- | 918,874 | 1,449,023 | 636,355 | .44 |
| POLYHYDRIC ALCOHOLS | | | | |
| Total ⁶ ----- | 5,549,983 | 3,573,043 | 1,241,382 | .35 |
| 1,4-Butanediol----- | 157,415 | ... | ... | ... |
| Ethylene glycol----- | 4,142,740 | 2,485,428 | 685,931 | .28 |
| Glycerol, synthetic only ⁷ ----- | ... | 156,804 | 99,090 | .63 |
| Pentaerythritol----- | 118,297 | 106,894 | 66,184 | .62 |
| Propylene glycol----- | 472,778 | 439,205 | 166,814 | .38 |
| Sorbitol (70% by weight)----- | 211,670 | 167,641 | 86,279 | .51 |
| All other----- | 447,083 | 217,071 | 137,084 | .63 |
| POLYHYDRIC ALCOHOL ESTERS | | | | |
| Total----- | 180,552 | 149,771 | 94,820 | .63 |
| POLYHYDRIC ALCOHOL ETHERS | | | | |
| Total----- | 1,793,031 | 1,230,984 | 497,415 | .40 |
| 2-Butoxyethanol----- | 226,932 | 215,656 | 85,004 | .39 |
| 2-(2-Butoxyethoxy)ethanol (Diethylene glycol mono- butyl ether)----- | 50,234 | 39,657 | 17,416 | .44 |
| 2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether)----- | 7,840 | 2,649 | 1,268 | .48 |
| Diethylene glycol----- | 364,023 | 238,892 | 57,377 | .24 |
| Dipropylene glycol----- | 46,673 | 43,790 | 14,477 | .33 |
| 2-Ethoxyethanol----- | 205,598 | 85,614 | 35,103 | .41 |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|---|--------------|--------------|---------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ACYCLIC--Continued | | | | |
| POLYHYDRIC ALCOHOL ETHERS--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| 2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether)----- | 31,700 | 23,670 | 9,381 | \$0.40 |
| 2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)----- | 14,698 | ... | .. | ... |
| 2-Methoxyethanol (Ethylene glycol monomethyl ether)--- | 93,397 | 88,743 | 30,642 | .35 |
| 2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)----- | 28,555 | 23,833 | 9,315 | .39 |
| 2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)----- | 26,740 | ... | ... | ... |
| Polyethylene glycol----- | 76,566 | 78,614 | 40,798 | .52 |
| Polypropoxy ethers----- | 12,202 | 10,260 | 9,781 | .95 |
| Polypropylene glycol----- | 24,700 | 16,274 | 8,707 | .54 |
| Tetraethylene glycol----- | 23,255 | 19,371 | 9,938 | .51 |
| Triethylene glycol----- | 119,607 | 106,150 | 45,361 | .43 |
| All other----- | 440,311 | 237,811 | 122,847 | .52 |
| HALOGENATED HYDROCARBONS | | | | |
| Total----- | 23,020,636 | 7,778,054 | 1,852,305 | .24 |
| Chlorinated hydrocarbons, total----- | 22,009,046 | 7,007,100 | 1,273,849 | .18 |
| Carbon tetrachloride----- | 726,481 | 385,619 | 48,785 | .13 |
| Chlorinated paraffins (C ₁₀ -C ₃₀): | | | | |
| 35%-64% chlorine----- | 76,087 | 78,800 | 29,867 | .38 |
| 65% or more chlorine----- | 18,572 | 13,580 | 7,649 | .56 |
| Chloroethane (Ethyl chloride)----- | 324,275 | 145,069 | 61,061 | .42 |
| Chloroform----- | 405,246 | 387,747 | 86,728 | .22 |
| Chloromethane (Methyl chloride)----- | 405,259 | 190,504 | 33,318 | .17 |
| 1,2-Dichloroethane (Ethylene dichloride)----- | 9,973,553 | 844,869 | 68,684 | .08 |
| Dichloromethane (Methylene chloride)----- | 592,043 | 372,901 | 82,438 | .22 |
| Tetrachloroethylene (Perchloroethylene)----- | 690,815 | 557,659 | 89,069 | .16 |
| 1,1,1-Trichloroethane (Methyl chloroform)----- | 613,993 | 625,658 | 159,706 | .26 |
| Trichloroethylene----- | 258,182 | 243,759 | 48,450 | .20 |
| Vinyl chloride, monomer (Chloroethylene)----- | 6,873,592 | 3,045,395 | 503,729 | .17 |
| All other chlorinated hydrocarbons----- | 1,050,948 | 115,540 | 54,365 | .47 |
| Chlorodifluoromethane (F-22)----- | 251,719 | 164,132 | 179,353 | 1.09 |
| Dichlorodifluoromethane (F-12)----- | 325,479 | 294,313 | 177,567 | .60 |
| Trichlorofluoromethane (F-11)----- | 162,716 | 134,615 | 66,474 | .49 |
| All other halogenated hydrocarbons----- | 271,676 | 177,894 | 155,062 | .87 |
| ALL OTHER MISCELLANEOUS ACYCLIC CHEMICALS | | | | |
| Total----- | 9,508,397 | 1,898,672 | 916,706 | .48 |
| 2-Butanone peroxide----- | 5,131 | 5,183 | 10,505 | 2.03 |
| Carbon disulfide----- | 387,742 | 293,798 | 41,274 | .14 |
| Epoxides, ethers, and acetals, total----- | 7,064,262 | 1,311,870 | 396,170 | .30 |
| Ethylene oxide----- | 4,936,548 | 343,973 | 116,526 | .34 |
| All other epoxides, ethers, and acetals----- | 2,127,714 | 967,897 | 279,644 | .29 |
| Hydrocarbons, not elsewhere specified----- | ... | 4,946 | 5,548 | 1.12 |
| Organo-tin compounds----- | 26,451 | ... | ... | ... |
| Pine oil, synthetic----- | 44,296 | 46,361 | 25,577 | .55 |
| Phosgene (Carbonyl chloride)----- | 1,116,757 | ... | ... | ... |
| Silicone fluids----- | 252,275 | 70,789 | 157,919 | 2.23 |

See footnotes at end of table.

TABLE 1.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: U.S. PRODUCTION AND SALES, 1981--CONTINUED

| MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS | PRODUCTION | SALES | | |
|--|-----------------|-----------------|------------------|-------------------------|
| | | QUANTITY | VALUE | UNIT VALUE ¹ |
| ACYCLIC--Continued | | | | |
| ALL OTHER MISCELLANEOUS ACYCLIC CHEMICALS--Continued | 1,000 pounds | 1,000 pounds | 1,000 dollars | Per pound |
| Sodium methoxide (Sodium methylate)----- | 16,018 | 15,491 | 10,442 | \$0.67 |
| All other miscellaneous acyclic chemicals----- | 595,465 | 150,234 | 269,271 | 1.79 |
| MIXTURES NOT SPECIFICALLY ITEMIZED | | | | |
| Total----- | 245,741 | 194,687 | 105,917 | .54 |

¹Calculated from rounded figures.²Statistics exclude production and sales of fatty amines. Statistics on fatty amines are included in the section "Surface-Active Agents."³Statistics exclude production and sales of potassium and sodium stearates. Statistics on these stearates are included in the section "Surface-Active Agents."⁴Statistics for production of specially denatured alcohol, 209,852,956 wine gallons, and completely denatured alcohol, 20,442,774 wine gallons, for calendar year 1981 are compiled from data supplied by the Bureau of Alcohol, Tobacco, and Firearms. Production of ethyl alcohol for fuel use is estimated to have been 700 million gallons in 1981.⁵The production data for 1980 were overstated.⁶Some polyols which are used as intermediates for urethanes have been included in the section "Plastics and Resin Materials."⁷1981 production of glycerol, both natural and synthetic, was 280 million pounds, as reported by the U.S. Department of Commerce.

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981

[CHEMICALS FOR WHICH SEPARATE STATISTICS ARE GIVEN IN TABLE 1 ARE MARKED BELOW WITH AN ASTERISK (*) CHEMICALS NOT SO MARKED DO NOT APPEAR IN TABLE 1 BECAUSE THE REPORTED DATA ARE ACCEPTED IN CONFIDENCE AND MAY NOT BE PUBLISHED. MANUFACTURERS' IDENTIFICATION CODES SHOWN BELOW ARE TAKEN FROM TABLE 3. AN "X" SIGNIFIES THAT THE MANUFACTURER DID NOT CONSENT TO HIS IDENTIFICATION WITH THE DESIGNATED PRODUCT]

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC | |
| 6-Acetoxy-2,4-dimethyl-1,3-dioxane - - - - - | GIV. |
| Acetylcyclohexane sulfonyl peroxide - - - - - | WTL. |
| Alkylphenolalkylenepolyamine formaldehyde copolymer | X. |
| Alkylphenol formaldehyde condensate, alkoxylated - - - | X. |
| Alkylphenol formaldehyde copolymer - - - - - | X. |
| 1-(2-Aminoethyl)piperazine - - - - - | TX, UCC. |
| 3-Aminopropylcyclohexylamine - - - - - | ABB. |
| 1-(3-Aminopropyl)morpholine - - - - - | TX. |
| Amyl p-dimethylaminobenzoate - - - - - | VND. |
| BENZOIC ACID SALTS: | |
| *Sodium benzoate, U.S.P. - - - - - | KLM, MAL, PFZ. |
| *Sodium benzoate, tech. - - - - - | HCP, HN, PFZ. |
| Benzoic acid salts, all other - - - - - | PFZ, SCM. |
| p-Benzoquinone (p-Quinone) - - - - - | EKT. |
| Benzothiazole - - - - - | ACY, RCI. |
| Benzotriazole, substituted - - - - - | CGY. |
| *Benzoyl peroxide - - - - - | AZT, CAD, NOC, WTC, WTL. |
| Benzyl alcohol - - - - - | KLM, SFS. |
| Benzyl alkyl pyridinium chloride - - - - - | BAK. |
| Benzyl cocoalkyl dimethyl ammonium chloride - - - - - | BAK. |
| Bis(2,4-dichlorobenzoyl) peroxide - - - - - | CAD, WTL. |
| Bis(α,α-dimethylbenzyl)peroxide - - - - - | WTL. |
| Boron fluoride - phenol complex - - - - - | ACS. |
| Butyl benzoate - - - - - | CIN, RPC, TCC. |
| tert-Butyl cumene hydroperoxide - - - - - | CAD. |
| 4-tert-Butylcyclohexyl peroxydicarbonate - - - - - | CAD. |
| tert-Butylhydroquinone - - - - - | EKT. |
| 2-(and 3)-tert-Butyl-4-methoxyphenol (BNA) - - - - - | EKT. |
| tert-Butyl peroxybenzoate - - - - - | AZT, WTC, WTL. |
| 4-tert-Butylpyrocatechol - - - - - | BKL, CRZ, DOW. |
| Camphene - - - - - | HPC, SCM. |
| *Caprolactam (2-Oxohexamethylenimine) - - - - - | AFP, CNP, DBC. |
| Cellulose acetate hexahydrophthalate - - - - - | X. |
| Cellulose acetate phthalate - - - - - | EK. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| 1-(3-Chloroallyl)3,5,7-triaza-1-azoniaadamantane chloride | DOW. |
| Cresyl glycidyl ether | WLM. |
| Cumene hydroperoxide | CLK, USS, WTC. |
| Cyanuric acid | FMB, MON. |
| Cyclohexane dimethanol diglycidyl ether | WLM. |
| Cyclohexanethiol | PAS. |
| Cyclohexanone peroxide | AZT. |
| CYCLOHEXENE-1,2-DICARBOXYLIC ACID (TETRAHYDROPHTHALIC ACID), DISUBSTITUTED, POLYESTER SALTS: | |
| Cyclohexene-1,2-dicarboxylic acid (Tetrahydrophthalic acid), disubstituted, | |
| polyester salts, tin salt | X. |
| 1,4-Cyclohexylenedimethanol | EKT. |
| Cyclopropane | OH. |
| Decabromobiphenyl or ether | DOW, GTL. |
| Decahydronaphthalene (Decalin) | DUP. |
| Dehydroacetic acid or sodium salt | EKT, GAN, GLY. |
| Dialkyl naphthalene | X. |
| 1,4-Diazobicyclo(2.2.2)octane | TX, X. |
| Diazodinitrophenol | HPC. |
| 2,5-Di(benzoyl peroxy)-2,5-dimethylhexane | WTL. |
| 2,5-Di-tert-butylhydroquinone | EKT. |
| 2,4-Di-t-butyl phenyl 3,5-di-t-butyl hydroxybenzoate | FER. |
| Dichloro-s-triazine-2,4,6(1H,3H,5H)trione (Dichloroisocyanuric acids and salts) | FMB, OMC. |
| 4,4'-Dichloro-3-(trifluoromethyl)carbanilide | CGY. |
| N,N'-Diethyl-N,N'-diphenylurea | VDM. |
| Di-2-ethylhexyl chloroformate | VEL. |
| 2,5-Dihydrothiophene-1,1-dioxide (Sulfolene) | PLC. |
| 3,5-Dihydroxy-3,5-dimethyl-1,2-peroxycyclopentane | WTC, WTL. |
| 2,2'-Dihydroxy-4-methoxybenzophenone | ACY. |
| Diiodomethyl-p-tolyl sulphone | ABB. |
| Diisopropylbenzene hydroperoxide | HPC. |
| Diketene | BRD, EKT. |
| p-Dimethoxybenzene (Dimethyl ether of hydroquinone) | ASL, EKT. |
| 4,4-Dinitrocarbanilide-4,6-dimethyl-2-pyrimidinol | MRK, SDW. |
| *Dioxane (1,4-Diethylene oxide) | DOW, FER, UCC. |
| 1,3-Dioxolane | FER. |
| 2,6-DI-TERT-BUTYL-P-CRESOL (BHT): | |
| *2,6-Di-tert-butyl-p-cresol, (BHT), Food grade | KPT, SHC, SW, USR. |
| *2,6-Di-tert-butyl-p-cresol, (BHT), Technical grade | KPT, SHC, SHX, SW, USR. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| Dodecyldiphenyl oxide- - - - - | X. |
| 4-(Dodecyloxy)-2-hydroxybenzophenone - - - - - | EKT. |
| 2-Ethylhexyl benzoate- - - - - | TCC. |
| 2-Ethylhexyl-p-dimethylaminobenzoate - - - - - | VMD. |
| 2-Ethylhexyl tallate - - - - - | CHP. |
| Ethylidene norbornene- - - - - | UCC. |
| 4-Ethylmorpholine- - - - - | TX. |
| Ferrocene polymer with 2-propanone, in chlorinated wax | ARA. |
| FURAN DERIVATIVES: | |
| 2-Furaldehyde (Furfural) - - - - - | QKO. |
| Tetrahydrofurfuryl alcohol - - - - - | QKO. |
| *Furan derivatives, all other - - - - - | CPS, GLY, SAR. |
| Gallic acid, tech. - - - - - | MAL. |
| Glyceryl p-aminobenzoate - - - - - | VND. |
| Hexabromocyclodecane - - - - - | GTL, VEL. |
| *Hexamethylenetetramine, tech. - - - - - | BOR, HKD, HMP, HN, PLS, WCL. |
| Homomenthyl salicylate - - - - - | WTC. |
| Hydrindantin - - - - - | PIC. |
| Hydroquinone, di(β-hydroxyethyl) ether - - - - - | EKT. |
| p-Hydroxybenzoic acid, butyl ester - - - - - | HN. |
| p-Hydroxybenzoic acid, ethyl ester - - - - - | HN. |
| p-Hydroxybenzoic acid, methyl ester - - - - - | HN, HXL, LEM. |
| p-Hydroxybenzoic acid, propyl ester - - - - - | HN, HXL, LEM. |
| N-(Hydroxyethyl)piperazine - - - - - | TCH, TX. |
| 2-Hydroxy-4-methoxybenzophenone- - - - - | ACY, GLY. |
| 2-Hydroxy-4-methoxy-5-sulfobenzophenone trihydrate | ACY. |
| 2-Hydroxy-4-N-octoxybenzophenone - - - - - | ACY. |
| 2-(2-Hydroxy-5-tert-octylphenyl)benzotriazole - - - - - | ACY. |
| 1,2,3-Indantrione monohydrate (Minhydrin)- - - - - | PIC. |
| LACTONES: | |
| Butyrolactone- - - - - | GAF. |
| Caprolactone - - - - - | UCC. |
| Glucono-δ-lactone- - - - - | PFF. |
| Lanolin acetate- - - - - | CRN. |
| Lanolin alcohol acetate- - - - - | CRN. |
| Lanolin, chemically modified - - - - - | CRN. |
| Lanolin oil- - - - - | CRN. |
| Lactones, all other- - - - - | PFF. |
| *Maleic anhydride - - - - - | AMO, ASH, DKA, HN, KPT, MOM, RCI, USS. |
| p-Menthane - - - - - | HPC. |
| 8-p-Menthyl hydroperoxide- - - - - | HPC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| CYCLIC--CONTINUED | |
| 4-Methoxyphenol- - - - - | ASL, EKT. |
| Methylaziridine- - - - - | ARS. |
| 2,2'-Methylenebis[4-chlorophenol] (Dichlorophene) | GIV. |
| 2,2'-Methylenebis-(4-methyl-6-tert-butylphenol)- - - | SW. |
| 2,2'-Methylenebis[3,4,6-trichlorophenol] (Hexachlorophene)- - - - - | GIV. |
| 4-Methylmorpholine - - - - - | TX. |
| 1-Methyl-2-pyrrolidone, monomer- - - - - | GAF. |
| 5-Methyl resorcinol (Orcinol)- - - - - | PD. |
| Methyltetrahydrophthalic anhydride - - - - - | MIL. |
| Morpholine - - - - - | DOW, TX. |
| Morpholine salt of p-toluene sulfonic acid - - - - - | AMB. |
| Neopentyl glycol dibenzoate- - - - - | VEL. |
| Octabromodiphenyl oxide- - - - - | GTL. |
| Oxalyl bis(benzylidene hydrazide)- - - - - | EKT. |
| Pentaerythritol tribenzoate- - - - - | VEL. |
| Phenothiazine- - - - - | WAG. |
| 2-Phenoxyethanol (Ethylene glycol monophenyl ether) | DOW, TCH. |
| 2-(2-Phenoxyethoxy)ethanol (Diethylene glycol phenyl ether) - - - - - | DOW. |
| 3-Phenyl-7-(1'-diazo-2'-naphthylamine)-coumarin- - - | S. |
| Phenyl glycidyl ether- - - - - | WLN. |
| Phenyl hydrogen phosphate- - - - - | SM. |
| Phenyl mercuric borate - - - - - | FER. |
| Phthalic acid, lead salt, (Dibasic)- - - - - | ALI. |
| Picramic acid, sodium salt - - - - - | SDC. |
| Pinane - - - - - | SCM. |
| Pinane hydroperoxide - - - - - | SCM. |
| 2-Pinanol (cis and trans)- - - - - | SCM. |
| * α -Pinene - - - - - | ARZ, NCI, RCI, SCM. |
| * β -Pinene - - - - - | ARZ, HPC, NCI, RCI, SCM. |
| Pinene, sulfate- - - - - | ARZ, HPC. |
| Pinene, wood - - - - - | HPC. |
| Poly-4-(2-acryloxyethoxy)-2-hydroxybenzophenone- - - | ACY. |
| Poly(dibromophenylene oxide) - - - - - | GTL, VEL. |
| Polyethylene glycol, α -nonylphenyl ether - - - - - | BAK. |
| Polypropylene glycol glycerol triether and epichlorohydrin bisphenol epoxy resin- - - - - | BAK. |
| Propyl gallate - - - - - | EKT. |
| Resorcinol diglycidyl ether- - - - - | WLN. |
| Resorcinol monobenzoate- - - - - | EKT. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| CYCLIC--CONTINUED | |
| ROSIN ACID SALTS: | |
| Calcium resinate | CBY. |
| Rosin acid salts, all other | ALI. |
| Stannous octyl phthallate | X. |
| Styrene oxide | UCC. |
| Succinic anhydride | ORO. |
| Sucrose benzoate | VEL. |
| *Tall oil, chemically modified | ARC, FOC, WVA, ZGL, X. |
| Tall oil dimer acid, methyl esters | X. |
| TALL OIL SALTS (LINOLEIC-ROSIN ACID SALTS): | |
| Calcium manganese tallate | MCI, SHP. |
| Calcium tallate | CCA, HN, MCI, X. |
| Cobalt tallate | HN, MCI, SHP. |
| Copper tallate | MCI. |
| Lead manganese tallate | SHP. |
| Lead tallate | HN, MCI. |
| Manganese tallate | HN, MCI, SHP. |
| Tallow alkyl tallate | X. |
| Zinc tallate | MCI. |
| Tall oil salts, all other (Linoleic-rosin acid salts) | ARC, CBY, GCM, MCI, SHP, TX, WVA. |
| Tannic acid, U.S.P. | MAL. |
| *Terpene hydrocarbons, monocyclic (Solvenol) | HPC, NCI, SCM. |
| Tetrabromobisphenol A | GTL. |
| n-Tetradecenylsuccinic anhydride | HMY, MIL. |
| 1,2,3,4-Tetrahydronaphthalene (Tetralin) | DUP. |
| Tetrahydrothiophene | PAS. |
| Tetrahydrothiophene-1,1-dioxide (Sulfolane) | PLC. |
| [2,2'-Thiobis(4-octylphenolate)]-n-butylamine nickel salt | ACY. |
| Thiophene | CPS, PAS. |
| Triallyl cyanurate | ACY. |
| 3,4,4'-Trichlorocarbaniide | MON. |
| 1,3,5-Trichloro-s-triazine-2,4,6-(1H,3H,5H)trione (Trichloroisocyanuric acid) | MON, OMC. |
| 3,3,5-Trimethylcyclohexanol (m-homomenthol) | ARS. |
| 3,5,5-Trimethyl-2-cyclohexene-1-one (Isophorone) | ENJ, UCC. |
| 2,4,6-Trinitroresorcinol and lead derivative | REM. |
| Triphenyltin hydroxide | X. |
| 1-Vinyl-2-pyrrolidinone--ether copolymers | GAF. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| CYCLIC--CONTINUED | |
| 1-Vinyl-2-pyrrolidinone-methylacrylic acid, dimethylamine ethyl ester, copolymer - - - - - | GAF. |
| 1-Vinyl-2-pyrrolidinone, monomer - - - - - | GAF. |
| 1-Vinyl-2-pyrrolidinone-vinyl acetate copolymer - - - - - | GAF. |
| Cyclic chemicals, all other- - - - - | ALB, ALD, AMB, ARA, BAK, BKL, BOC, CAD, CGY, CHP, COS, CRM, CWN, DIX, DOW, DUP, EK, EVN, FMT, GAF, GIV, GTL, HEX, HK, KCH, LEM, MIL, MMC, MON, NES, PAC, PD, PEN, PFN, PIC, RBC, REG, RSA, SAR, SBC, SCM, SFS, SK, SM, STC, SW, TCC, TLC, TNA, TNI, TX, USR, VEL, VIK, WCC, WTC, WTL, X, X, X, X. |
| ACYCLIC | |
| *NITROGENOUS COMPOUNDS: | |
| Acetamidine hydrochloride- - - - - | WTC. |
| Acetamidoethanol (N-Acetyl-ethanolamine) - - - - - | SBC. |
| 2-Amino-1-butanol- - - - - | IMC. |
| 2-Aminoethanol hydrochloride - - - - - | OMC. |
| 2-Aminoethanol (Monoethanol amine) sulfite - - - - - | EVN. |
| Aminoethoxyethanol - - - - - | TX. |
| 2-(2-Aminoethylamino)ethanol (Aminoethylethanolamine) - - - - - | DOW, UCC. |
| 2-Aminoethyl mercaptoacetate (Monoethanolamine thioglycolate) - - - - - | EVN. |
| 2-Amino-2-ethyl-1,3-propanediol- - - - - | IMC. |
| 2-Amino-2-(hydroxymethyl)-1,3-propanediol [Tris(hydroxymethyl)aminomethane]- - - - - | IMC. |
| 2-Aminomalonate hydrochloride- - - - - | ABB. |
| 2-Amino-2-methyl-1,3-propanediol - - - - - | IMC. |
| 2-Amino-2-methyl-1-propanol- - - - - | IMC. |
| 2-Amino-2-methyl-1-propanol hydrochloride- - - - - | CCC. |
| *AMIDES: | |
| Acetamide- - - - - | ACS. |
| *Acrylamide monomer - - - - - | ACY, DOW, X. |
| N-2-aminoethyl-N'-2-hydroxyethyloleamide - - - - - | S. |
| 1,1'-Azobisisoxanamide - - - - - | FMT, OMC, USR. |
| 2-Chloro-N-(hydroxymethyl)-acetamide - - - - - | SDW. |
| Coconut oil amide- - - - - | ARC, FTX. |
| N,N-Diethyldodecanamide- - - - - | UPJ. |
| N,N-Dimethylacetamide- - - - - | DUP, MON. |
| N,N-Dimethylacetoacetamide - - - - - | EKT. |
| Dimethylaminoethylmethacrylate acrylamide- - - - - | X. |
| N,N-Dimethylformamide- - - - - | AIP, DUP. |
| Erucamide- - - - - | ARC, HXL, WTC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *NITROGENOUS COMPOUNDS--CONTINUED | |
| *AMIDES--CONTINUED | |
| Erucamide - lauramide - - - - - | HXL. |
| N,N'-Ethylenebis-oleamide (Oleic acid- ethylenediamine condensate (Amine/acid ratio = 1/2))- - - - - | GLY, WTC. |
| N,N'-Ethylenebis(stearamide) - - - - - | CCW, GLY, WTC. |
| Ethylmonoethanolamide - - - - - | DA, GAF. |
| Fish oil fatty acid amide - - - - - | WTC. |
| Formamide - - - - - | X. |
| Hexamethyl phosphoric triamide - - - - - | ALD, X. |
| 4-Hydroxy-4-methyl-2-pentanone acrylamide (Diacetone acrylamide) - - - - - | ACY. |
| 12-Hydroxystearamide - - - - - | CCW. |
| Methacrylamide - - - - - | DUP. |
| N-Methylacetamide - - - - - | EKT. |
| N,N'-Methylenebis(acrylamide) - - - - - | ACY. |
| Oleamide (Octadecene amide) - - - - - | ARC, HXL, WTC. |
| Oleoylpalmitamide - - - - - | HXL, X. |
| Ricinolamide - - - - - | TKL. |
| Stearamide (Octadecane amide) - - - - - | ARC, WTC. |
| Stearylceramide - - - - - | HXL. |
| Tallow amide, hydrogenated - - - - - | ARC. |
| Amides, all other - - - - - | ALD, AMD, CMP, COS, EK, HAL, HML, HXL, PAC, PIC, S, TX. |
| *AMINES: | |
| Allylamines - - - - - | SHC, VGC. |
| 1,3-bis(3-Chloro-2-hydroxypropylamino)propane - - - - - | S. |
| Bis-hexamethylenetriamine amine - - - - - | DUP. |
| n-Butylethylamine - - - - - | AIP, PAS, VGC. |
| 1-Deoxy-1-(n-octylamino)-d-glucitol - - - - - | ARA. |
| Di-amine derivatives of dimer acids - - - - - | SCP. |
| *BUTYLAMINES: | |
| *n-Butylamine, mono - - - - - | AIP, PAS, VGC. |
| sec-Butylamine, mono - - - - - | PAS. |
| tert-Butylamine, mono - - - - - | MON. |
| *Di-n-butylamine - - - - - | AIP, PAS, VGC. |
| Diisobutylamine - - - - - | AIP, VGC. |
| *Tri-n-butylamine - - - - - | AIP, PAS, VGC. |
| Di-tert-butylethyldiamine - - - - - | VGC. |
| Diethylenetriamine - - - - - | DOW, UCC. |
| *Diisopropylamine - - - - - | AIP, PAS, UCC, VGC. |
| Dimethylaminopropylamine - - - - - | ABB, TX. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *NITROGENOUS COMPOUNDS--CONTINUED | |
| *AMINES--CONTINUED | |
| ETHYLAMINES: | |
| *Diethylamine - - - - - | AIP, PAS, UCC, VGC. |
| Ethylamine, mono- - - - - | AIP, PAS, UCC, VGC. |
| *Triethylamine- - - - - | AIP, PAS, UCC, VGC. |
| Ethylenediamine- - - - - | DOW, TX, UCC. |
| (2-Ethylhexyl)amine, mono- - - - - | ARC, VGC. |
| *1,6-Hexanediamine (Hexamethylenediamine) - - - - - | CEL, DUP, MON. |
| n-Hexylamine - - - - - | PAS. |
| 3,3'-Iminobispropylamine - - - - - | TX. |
| *Isopropylamine, mono - - - - - | AIP, PAS, UCC, VGC. |
| *METHYLAMINES: | |
| *Dimethylamine- - - - - | AIP, DUP, GAF, IMC. |
| *Methylamine, mono- - - - - | AIP, DUP, GAF, IMC, X. |
| *Trimethyl amine- - - - - | AIP, DUP, GAF, IMC. |
| Mixed primary T-alkylamines- - - - - | RH. |
| tert-Octylamine- - - - - | RH. |
| n-Octylamine, mono - - - - - | VGC. |
| Pentaethylenhexamine- - - - - | UCC. |
| PENTYLAMINES (AMYLAMINES): | |
| Dipentylamine- - - - - | PAS. |
| Pentylamine, mono- - - - - | PAS. |
| Tripentylamine - - - - - | PAS. |
| Polyalkylene polyamine - - - - - | X. |
| 1,3-Propanediamine (1,3-Diaminopropane)- - - - - | TX. |
| PROPYLAMINES: | |
| *Dipropylamine- - - - - | AIP, PAS, VGC. |
| Propylamine, mono- - - - - | AIP, PAS. |
| Tripropylamine - - - - - | PAS, VGC. |
| Tetraethylenepentamine - - - - - | DOW, UCC. |
| N,N,N',N'-Tetramethyl-1,3-butanediamine- - - - - | UCC. |
| Tetramethylethylenediamine - - - - - | BKM, RH. |
| Triethylenetetramine - - - - - | DOW, UCC. |
| Amines, all other- - - - - | ALB, ALD, COS, DOW, EK, EKT, MCP, NXL, MIL, MON, PAC, RBC, RSA, SDW, SOL, TX, UCC, USR, X. |
| Bis(perfluoroalkyl) phosphate, ammonium salt - - - - - | DUP. |
| Bis(perfluoroalkyl)phosphate diethanolamine salt - - - - - | DUP. |
| tert-Butyldiethanolamine - - - - - | PAS. |
| 1-Butyl-3-ethyl-2-thiourea - - - - - | PAS. |
| Butyl isocyanate - - - - - | UPJ, X. |
| 2-Chloro-N,N-diethylethylamine hydrochloride - - - - - | SOL. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *NITROGENOUS COMPOUNDS--CONTINUED | |
| *AMINES--CONTINUED | |
| 2-Chloro-N,N-dimethylethylamine (Dimethylamino ethyl chloride) hydrochloride | SOL. |
| 2-Chloro-N,N-dimethylpropylamine hydrochloride | SOL. |
| 3-Chloro-2-hydroxypropyltrimethyl ammonium chloride | DOW. |
| Choline base | HFT, RH. |
| Choline bisulfite | WAY. |
| N-Cocoamidopropyl-N,N-dimethyl-N-sodium acetate, ammonium salt | BAK. |
| Cyanoacetic acid | KF. |
| 1-(2-Cyanoethyl)ethyl urea | GAF. |
| 2-Dibutylaminoethanol | PAS. |
| Dibutylaminomethanol | X. |
| 1,3-Dibutyl-3-thiourea | ARC. |
| 1,4-Dicyanobutene | DUP. |
| 2-Diethylaminoethanol (N,N-Diethylethanolamine) | PAS, STC, UCC. |
| 2-(2-Diethylaminoethoxy)ethanol | STC, UCC. |
| 2-Diethylaminoethyl acrylate | BLM, CPS. |
| Diethylaminoethylacrylate, dimethyl sulfate, quaternary salt | BLM, CPS. |
| *2-Diethylaminoethyl methacrylate | BLM, CPS, DUP. |
| Diethylcarbamoyl chloride | GAF. |
| Diethylhydroxylamine | PAS. |
| 1,3-Diethyl-2-thiourea | PAS. |
| 2-Diisopropylaminoethanol (N,N-Diisopropylethanolamine) | PAS. |
| 2-Diisopropylaminoethyl methacrylate | DUP. |
| Dimer acid isocyanates | SCP. |
| Dimethylamine epichlorohydrin copolymer | X. |
| Dimethylamine sulfate | RH. |
| 2-Dimethylaminoethanethiol hydrochloride | EVN. |
| *2-Dimethylaminoethanol (N,N-Dimethylethanolamine) | PAS, TX, UCC. |
| Dimethylaminoethyl acrylate | BLM. |
| *Dimethylaminoethyl methacrylate | AAC, BLM, CPS, RH. |
| Dimethylaminoethylmethacrylate, dimethyl sulfate, quaternary salt | BLM, CPS. |
| *Dimethylaminoethylmethacrylate, methyl chloride, quaternary salt | AAC, BLM, CPS. |
| Dimethylaminomethanol | X. |
| Dimethylamino-2-propanol | PAS. |
| 1,1-Dimethylhydrazine | OMC, USR. |
| 2,5-Dithiobiurea | GAF. |
| Dithiooxamide | RBC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *NITROGENOUS COMPOUNDS--CONTINUED | |
| *AMINES--CONTINUED | |
| tert-Dodecylidissuccinamide - - - - - | CPS, GAF. |
| *ETHANOLAMINES: | |
| *2,2'-Aminodiethanol (Diethanolamine) - - - - - | DOW, OMC, TX, UCC. |
| *2-Aminoethanol (Monoethanolamine) - - - - - | DOW, GLY, OMC, TX, UCC. |
| *2,2',2''-Nitrilotriethanol (Triethanolamine) - - - - - | DOW, OMC, TX, UCC. |
| 2-Ethylaminoethanol (Ethylmonoethanolamine) - - - - - | PAS, UCC. |
| Ethyl cyanoacetate - - - - - | KF. |
| 5-(N-Ethyl-N-hydroxyethylamino)-2-pentanone - - - - - | SDW. |
| Glycine ethyl ester hydrochloride - - - - - | SFS. |
| Hexamethylenediamine adipate (Nylon salt) - - - - - | CEL, DUP, MON. |
| 2-(Hydroxymethyl)-2-nitro-1,3-propanediol (Tris- (hydroxymethyl)nitromethane) - - - - - | IMC. |
| Iminodiacetic acid - - - - - | HMP. |
| ISOPROPANOLAMINES: | |
| 1-Amino-2-propanol (Monoisopropanolamine) - - - - - | DOW. |
| 1,1'-Iminodi-2-propanol (Diisopropanolamine) - - - - - | DOW, X. |
| 1,1',1''-Nitrilotri-2-propanol (Triisopropanolamine) - - - - - | DOW. |
| 2-Isopropylaminoethanol - - - - - | PAS. |
| Isopropyl ethylthionocarbamate - - - - - | ESX. |
| Ketimine, tetrafunctional - - - - - | SM. |
| 3-Methoxypropylamine - - - - - | ABB, TX. |
| 2-Methylaminoethanol (N-Methylethanolamine) - - - - - | PAS, UCC. |
| Methyl carbamate - - - - - | BKL. |
| Methyl cyanoacetate - - - - - | KF. |
| Methyl α -cyanoacrylate - - - - - | EKT. |
| 2,2'-(Methylimino)diethanol (Methyldiethanolamine) - - - - - | DOW, PAS, UCC. |
| Methyl isocyanate - - - - - | UCC. |
| Nitrated lard oil - - - - - | SM. |
| *NITRILES: | |
| *Acetonitrile - - - - - | DUP, MON, SOH, X. |
| *Acrylonitrile, monomer - - - - - | ACY, DUP, MON, SOH. |
| Adiponitrile - - - - - | DUP, MON. |
| n-Butyronitrile - - - - - | EKX, WYT. |
| 3-Ethoxypropionitrile - - - - - | DIX. |
| 2-Ethylhexyl nitrate - - - - - | X. |
| Ethyl methyl ketone aminonitrile - - - - - | HMP. |
| Glycolonitrile - - - - - | KF. |
| Isobutyronitrile - - - - - | AIP, EKX. |
| Lactonitrile - - - - - | MON. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *NITROGENOUS COMPOUNDS--CONTINUED | |
| *NITRILES--CONTINUED | |
| Methacrylonitrile- | DOW. |
| 3-Methoxypropionitrile- | ABB. |
| Methylisobutyl ketone aminonitrile- | HMP. |
| *2-Methylactonitrile (Acetone cyanohydrin)- | CYR, DUP, MON, RH. |
| Propionitrile- | MON. |
| Stearonitrile (Octadecane nitrile)- | SBC, SHX. |
| Tallow nitrile- | SHX. |
| Tallow nitrile, hydrogenated- | SHX, WYC. |
| 3,3'-Thiodipropionitrile- | EVN. |
| Vinylacetonitrile- | RBC. |
| Nitriles, all other- | ALD, COC, DUP, HMP, TNA, X. |
| Nitroethane- | IMC. |
| Nitromethane- | IMC. |
| 1-Nitropropane- | IMC. |
| 2-Nitropropane- | IMC. |
| Octadecyl isocyanate- | MOB. |
| Pentaerythritol tetranitrate- | DUP, HPC. |
| n-Propylaminoethanol- | PAS, X. |
| n-Propyl carbamate- | BKL. |
| n-Propyldiethanolamine- | PAS. |
| Propylisocyanate- | HPC. |
| Sarcosine (N-Methylaminoacetic acid)- | HMP. |
| Semicarbazide hydrochloride- | FMT. |
| Tetramethylguanidine- | ACY. |
| Thiosemicarbazide- | FMT. |
| Trimethyl aminoethyl ethanolamine- | EKT. |
| Nitrogenous compounds, acyclic, all other- | AAC, ABB, ALB, ALD, AMD, BKL, EK, EVN, FKE, HEX, HLI, OMC, PAS, PEL, PFN, PFZ, PIC, RBC, REG, REM, RH, SBC, SCP, SK, SOI, STC, TKL, TX, UCC, VAL, X, X, X, X. |
| *ACIDS, ACID ANHYDRIDES, AND ACYL HALIDES: | |
| ACETIC ACID, 100%: | |
| *Acetic acid, recovered (100%)- | AIP, CEL, EKT, MON, RDA, UCC, USI. |
| *Acetic acid, synthetic (100%)- | ARC, BOR, CEL, EKT, FMP, MON, UCC. |
| *ACETIC ANHYDRIDE, 100%: | |
| Acetic anhydride from acetaldehyde (100%)- | EKT. |
| Acetic anhydride from acetic acid, other than recovered, by the vapor-phase process (100%)- | CEL, UCC. |
| Acetic anhydride from acetic acid, recovered, by vapor-phase process- | CEL. |
| Acetyl chloride- | WCC. |
| *Acrylic acid- | CEL, DBC, RH, UCC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *ACIDS, ACID ANHYDRIDES, AND ACYL HALIDES--CONTINUED | |
| *Adipic acid | AFP, CEL, DUP, MON. |
| Azelaic acid | EMR. |
| 2,2-bis(Hydroxy-methyl)-propionic acid | IMC. |
| Bromoacetyl bromide | WCC. |
| Bromobutyric acid | GTL. |
| tert-Butylperoxy maleic acid | WTC, WTL. |
| Butyric acid | CEL, EKT, EKX. |
| Butyric anhydride | EKT. |
| Butyryl chloride | WCC. |
| β -Carbethoxypropionyl chloride (Mono-ethyl malonate acid chloride) | ABB. |
| Castor oil fatty acids, dehydrated | NTL. |
| Chloroacetic acid, mono- | BUK, DOW, PFZ. |
| Chloroacetyl chloride | DOW, MON. |
| α -Chloropropionic acid, mono | DOW. |
| Citric acid | MLS, PFZ. |
| Crotonic acid (2-Butenoic acid) | EKT. |
| Decanoyl chloride | WTL. |
| 2,2-dichloroacetyl chloride | RDA. |
| Dimer acid (C-36 Aliphatic dibasic acid) | CBY, EMR. |
| Dithiodipropionic acid | EVN. |
| Dodecanedioic acid | DUP. |
| *Dodecenylsuccinic anhydride | BCC, DIX, HMY, MIL, X. |
| 2-Ethylbutyric acid (Diethylacetic acid) | UCC. |
| 2-Ethylhexanoic acid (α -Ethylcaproic acid) | EKT, UCC. |
| 2-Ethylhexanoyl chloride | WCC, WTL. |
| Fatty acids, hydrogenated | GLY. |
| Fatty acids, partially hydrogenated | GLY, SHX. |
| Formic acid, 90% | CEL, MON, UCC. |
| *Fumaric acid | AGC, HN, MON, PFZ, USS. |
| Gluconic acid, technical | PFZ. |
| Glutaric anhydride | UCC. |
| Glycolic acid (Hydroxyacetic acid) | DUP. |
| Heptanoic acid | CEL. |
| n-Hexadecenylsuccinic anhydride | HMY. |
| Isethionic acid (2-Hydroxyethanesulfonic acid) | WTC. |
| Isoascorbic acid (Erythorbic acid) | PFZ. |
| Isobutyric acid | EKX. |
| Isobutyric anhydride | EKT. |
| Iso-octadecenoic acid | CBY. |
| Iso-octadecenylsuccinic anhydride | HMY. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| ACYCLIC--CONTINUED | |
| *ACIDS, ACID ANHYDRIDES, AND ACYL HALIDES--CONTINUED | |
| Itaconic acid (Methylenesuccinic acid)- - - - - | PFZ. |
| LACTIC ACID: | |
| Lactic acid, edible, 100%- - - - - | CLN, MON. |
| Lauroyl chloride - - - - - | WCC, WTL. |
| Levulinic acid - - - - - | CCA, SOL. |
| Maleic acid- - - - - | ACS, PFN, PFZ. |
| Malic acid - - - - - | AGC. |
| Mercaptoacetic acid (Thioglycolic acid) - - - - - | EVN. |
| 3-Mercaptopropionic acid - - - - - | EVN. |
| Mercaptosuccinic acid (Thiomalic acid)- - - - - | EVN. |
| Methacrylic acid - - - - - | DUP, RH. |
| Methanesulfonic acid - - - - - | PAS. |
| Methanesulfonyl chloride - - - - - | PAS. |
| Neodecanoic acid - - - - - | ENJ. |
| Neopentanoic acid- - - - - | ENJ. |
| Nonanoic acid (Pelargonic acid) - - - - - | CEL, EMR, GIV. |
| Nonenylsuccinic anhydride- - - - - | HMY. |
| Octanoyl chloride- - - - - | WCC. |
| Oleic acid - - - - - | ARC, GLY. |
| Oleoyl chloride- - - - - | CCC, HRT. |
| Oxalic acid- - - - - | ACS, HK. |
| Oxidized fischer tropach wax - - - - - | SNW. |
| Palmitoyl chloride - - - - - | WCC, X. |
| Peroxyacetic acid- - - - - | FMB, UCC. |
| Pivaloyl chloride- - - - - | AZT, COC, WCC. |
| Polyacrylic acid - - - - - | BFG, DA, RH, SNW. |
| *Propionic acid - - - - - | CEL, EKT, UCC. |
| Propionic anhydride- - - - - | EKT. |
| Sebacic acid - - - - - | WTH. |
| Sebacoyl chloride- - - - - | WTL. |
| Sorbic acid (2,4-Hexadienoic acid)- - - - - | MON. |
| Stearoyl chloride- - - - - | WCC. |
| Succinic acid- - - - - | ACS. |
| Tallow fatty acid- - - - - | ARC. |
| Thioacetic acid- - - - - | EVN. |
| 3,3'-Thiodipropionic acid- - - - - | EVN. |
| Thiolactic acid- - - - - | EVN. |
| Valeric acid - - - - - | UCC. |
| Acids, acid anhydrides, and acyl halides, all other | ALD, AMD, BCC, COC, CRN, EK, ENJ, EVN, HMY, PD, PIC, SM, TX, UCC, WCC, WTL, WVA, X. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *SALTS OF ORGANIC ACIDS: | |
| *ACETIC ACID SALTS: | |
| Aluminum acetate - - - - - | NCC. |
| Ammonium acetate - - - - - | ACS, BKC. |
| Barium acetate - - - - - | BKC. |
| Butyltin acetate (Dibutyltin diacetate)- - - - - | COS, X. |
| Calcium acetate - - - - - | ACS, HFT. |
| Chromium acetate - - - - - | SHP. |
| Cobalt acetate - - - - - | HSB, SHP, UCC. |
| Copper acetate - - - - - | BKC. |
| Lead acetate - - - - - | BKC. |
| Lead subacetate - - - - - | BKC. |
| *Magnesium acetate - - - - - | BKC, HCP, SHP. |
| Manganese acetate - - - - - | HSB, SHP. |
| Mercuric acetate - - - - - | COS. |
| Nickel acetate - - - - - | BKC, HSB, SHP. |
| *Potassium acetate - - - - - | ACS, BKC, HCP, NCC, X. |
| *Sodium acetate - - - - - | ACS, ATL, BKC, DAN, EKT, HCP, MAL, NCC. |
| *Sodium diacetate - - - - - | HCP, MAL, NCC. |
| *Zinc acetate - - - - - | ACS, BKC, CCC, NCC, SHP. |
| Zirconium acetate - - - - - | CCC, TZC. |
| Acetic acid salts, all other - - - - - | DA, SHP, X. |
| Adipic acid, ammonium salt - - - - - | SOL. |
| Allylsulfonic acid, sodium salt - - - - - | IOC. |
| CITRIC ACID SALTS: | |
| Ammonium citrate - - - - - | PFZ. |
| Calcium citrate - - - - - | PFZ. |
| Ferric ammonium citrate - - - - - | PFZ. |
| Potassium citrate - - - - - | HXL, MLS, PFZ. |
| Sodium citrate - - - - - | HXL, MLS, PFZ. |
| Citric acid salts, all other - - - - - | X. |
| *2-ETHYLHEXANOIC ACID (ALPHA-ETHYLCAPROIC ACID) SALTS: | |
| Aluminum 2-ethylhexanoate - - - - - | DA, WTC. |
| Barium 2-ethylhexanoate - - - - - | CCA. |
| Bismuth 2-ethylhexanoate - - - - - | SHP. |
| Cadmium 2-ethylhexanoate - - - - - | CCA. |
| *Calcium 2-ethylhexanoate - - - - - | CCA, COS, FER, HN, MCI, TRO, WTC. |
| *Cobalt 2-ethylhexanoate - - - - - | CCA, COS, FER, HN, MCI, SHP, TRO, WTC. |
| Copper 2-ethylhexanoate - - - - - | CCA. |
| Dibutyltin di-2-ethylhexanoate - - - - - | COS. |
| Iron 2-ethylhexanoate - - - - - | CCA, HN. |
| *Lead 2-ethylhexanoate - - - - - | CCA, COS, FER, HN, SHP, TRO, WTC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *SALTS OF ORGANIC ACIDS--CONTINUED | |
| *2-ETHYLHEXANOIC ACID (ALPHA-ETHYLCAPROIC ACID) | |
| SALTS--CONTINUED | |
| *Manganese 2-ethylhexanoate - - - - - | CCA, FER, HN, MCI, TRO, WTC. |
| *Nickel 2-ethylhexanoate - - - - - | MCI, SHP, WTC. |
| Potassium 2-ethylhexanoate - - - - - | CCA, MCI, WTC. |
| Rare earths 2-ethylhexanoate - - - - - | CCA, MCI. |
| Stannous 2-ethylhexanoate - - - - - | FER, WTC. |
| *Zinc 2-ethylhexanoate - - - - - | CCA, COS, FER, HN, MCI, OMC, SHP, WTC. |
| *Zirconium 2-ethylhexanoate - - - - - | CCA, COS, FER, HN, MCI, TRO, WTC. |
| 2-Ethylhexanoic acid salts, all other - - - - - | LIL, MCI, SHP. |
| FORMIC ACID SALTS: | |
| Potassium formate - - - - - | HCP. |
| *Sodium formate, refined - - - - - | BKC. |
| *Sodium formate, technical - - - - - | CEL, IMC, PST. |
| Formic acid salts, all other - - - - - | IMC. |
| Fumaric acid, lead salt - - - - - | ALI. |
| GLUCOHEPTANOIC ACID SALTS: | |
| Calcium glucoheptanoate - - - - - | PFN. |
| Sodium glucoheptanoate - - - - - | PFN, RPC. |
| Glucoheptanoic acid salts, all other - - - - - | PFN. |
| GLUCONIC ACID SALTS: | |
| Sodium gluconate - - - - - | PFN, PFZ, SFI. |
| Humic acids, sodium salts - - - - - | X. |
| Isoascorbic acid, sodium salt (Sodium erythorbate) - - - - - | PFZ. |
| Lanolin acid, barium salt - - - - - | CRN. |
| Mercaptopropionic acid, dibutyltin salt - - - - - | GCM. |
| Potassium glycolate - - - - - | X. |
| Sodium glycolate - - - - - | HCP. |
| TERTIARY-ALPHA-ALKYLCARBOXYLIC ACID SALTS | |
| (ISOCARBOXYLIC ACID SALTS): | |
| Calcium t- α -alkylcarboxylate - - - - - | MCI. |
| Cobalt t- α -alkylcarboxylate - - - - - | MCI. |
| Iron t- α -alkylcarboxylate - - - - - | MCI. |
| Isononanoic acid, lead salt - - - - - | CCA. |
| Lead t- α -alkylcarboxylate - - - - - | MCI. |
| Manganese t- α -alkylcarboxylate - - - - - | MCI. |
| t- α -Alkylcarboxylic acid salts (Isocarboxylic acid salts), all other - - - - - | HCP, MCI. |
| LACTIC ACID SALTS: | |
| Sodium lactate (Nalac) - - - - - | PFN. |
| Lactic acid salts, all other - - - - - | PFN, SM. |
| LAURIC ACID SALTS: | |
| Dibutyltin dilaurate - - - - - | GCM. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *SALTS OF ORGANIC ACIDS--CONTINUED | |
| LAURIC ACID SALTS--CONTINUED | |
| Lauric acid, barium-cadmium salt - - - - - | FER. |
| Lauric acid salts, all other - - - - - | FER. X. |
| LINOLEIC ACID SALTS: | |
| Calcium linoleate - - - - - | CCA, WTC. |
| *MALEIC ACID SALTS: | |
| Dibutyltin maleate - - - - - | CCA, FER. |
| Tribasic lead maleate - - - - - | ALI. |
| Maleic acid salts, all other - - - - - | GCM, X. |
| MERCAPTOACETIC ACID (THIOGLYCOLIC ACID) SALTS: | |
| Ammonium mercaptoacetate - - - - - | EVM. |
| Calcium mercaptoacetate - - - - - | EVM. |
| Sodium mercaptoacetate - - - - - | EVM. |
| Mercaptoacetic acid (Thioglycolic acid) salts, all other - - - - - | CCA. |
| NEODECANOIC ACID SALTS: | |
| *Calcium neodecanoate - - - - - | CCA, MCI, SHP. |
| Cobalt neodecanoate - - - - - | MCI, SHP, UCC. |
| Lead-cobalt neodecanoate - - - - - | MCI. |
| Lead neodecanoate - - - - - | MCI. |
| Lithium neodecanoate - - - - - | MCI. |
| Manganese neodecanoate - - - - - | MCI, SHP. |
| Zirconium neodecanoate - - - - - | MCI, SHP, WTC. |
| Neodecanoic acid salts, all other - - - - - | MCI, SHP, WTC. |
| OCTANOIC-ACID (CAPRYLIC ACID) SALTS: | |
| Stannous octanoate - - - - - | GCM. |
| Octanoic acid (Caprylic acid) salts, all other - - - - - | ALI, WTC. |
| OLEIC ACID SALTS: | |
| Calcium oleate - - - - - | TCC. |
| Copper oleate - - - - - | WTC. |
| Oleic acid salts, all other - - - - - | RPC, SHP. |
| *OXALIC ACID SALTS: | |
| Ammonium oxalate - - - - - | ACS, BKC, HML. |
| Potassium oxalate - - - - - | BKC, HML. |
| Sodium oxalate - - - - - | BKC, DA, HML. |
| PALMITIC ACID SALTS: | |
| Calcium palmitate - - - - - | SYL. |
| PHOSPHORODITHIOIC ACID SALTS (DITHIOPHOSPHATES): | |
| Sodium di-sec-butyl/diethyl phosphorodithioate - - - - - | ACY. |
| Sodium di-sec-butyl phosphorodithioate - - - - - | ACY. |
| Sodium diethyl phosphorodithioate - - - - - | ACY. |
| Sodium dihexyl phosphorodithioate - - - - - | ACY. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *SALTS OF ORGANIC ACIDS--CONTINUED | |
| PHOSPHORODITHIOIC ACID SALTS | |
| (DITHIOPHOSPHATES)--CONTINUED | |
| Sodium diisopropyl phosphorodithioate - - - - - | ACY. |
| Phosphorodithioic acid salts (Dithiophosphates), all other - - - - - | ACY. |
| Cinchonidine mono-propionate - - - - - | ARA. |
| PROPIONIC ACID SALTS: | |
| *Calcium propionate - - - - - | HFT, MAL, NCC, PFZ. |
| *Sodium propionate - - - - - | HFT, MAL, PFZ. |
| Propionic acid salts, all other - - - - - | DUP. |
| RICINOLEIC ACID SALTS: | |
| Lithium ricinoleate - - - - - | NIL. |
| Sodium sorbitol borate - - - - - | ICI. |
| *STEARIC ACID SALTS: | |
| ALUMINUM STEARATES: | |
| *Aluminum distearate - - - - - | DA, KCH, NOC, SYP, WTC. |
| *Aluminum monostearate - - - - - | DA, MAL, NOC, SYP, WTC. |
| *Aluminum tristearate - - - - - | NOC, SYP, WTC. |
| Ammonium stearate - - - - - | DA, HN, WPG. |
| *Barium stearate - - - - - | HN, NOC, SYP, WTC. |
| Cadmium stearate - - - - - | WTC. |
| *Calcium stearate - - - - - | DA, FER, GCM, HN, MAL, NOC, SNW, SYP, WTC. |
| Cobalt stearate - - - - - | FER, MCI, SHP. |
| Ferric stearate - - - - - | WTC. |
| Lead stearate - - - - - | ALI, FER, WTC. |
| Lead stearate, dibasic - - - - - | ALI. |
| *Lithium stearate - - - - - | NOC, SYP, WTC. |
| *Magnesium stearate - - - - - | ALI, DA, HN, MAL, NOC, SYP, WTC. |
| Nickel stearate - - - - - | WTC. |
| *Zinc stearate - - - - - | CCC, DA, FER, HN, MAL, NOC, PLS, SYP, WTC. |
| Stearic acid salts, all other - - - - - | MAL, NOC, WTC. |
| TARTARIC ACID SALTS: | |
| Potassium sodium tartrate - - - - - | PFZ. |
| XANTHIC ACID SALTS: | |
| Lead salts of menhaden fish oil, c-14 to c- 22(lead fishate) - - - - - | ELC, MCI. |
| Potassium pentylxanthate - - - - - | ACY. |
| Sodium n-butylxanthate - - - - - | USR. |
| Xanthic acid salts, all other - - - - - | PFN. |
| Salts of organic acids, all other - - - - - | ALD, ARA, CCA, EK, MON, PD, PIC, RPC, SDN, SOL, STC, WPG, WTC, X. |
| ALDEHYDES: | |
| Acetaldehyde - - - - - | ACS, CEL, EKX, UCC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *ALDEHYDES--CONTINUED | |
| Acrolein (Acrylaldehyde)- - - - - | : UCC. |
| *Butyraldehyde- - - - - | : CEL, DBC, EKK, UCC. |
| Chloral (Trichloroacetaldehyde)- - - - - | : MTO. |
| Crotonaldehyde - - - - - | : EKT, UCC. |
| 2-Ethylbutyraldehyde - - - - - | : UCC. |
| 2-Ethylhexanal (α -Ethylcaproaldehyde)- - - - - | : EKK, UCC. |
| 2-Ethyl-2-hexen-1-al (2-Ethyl-3-propylacrolein)- - - - - | : UCC. |
| *Formaldehyde (37% HCHO by Weight)- - - - - | : ARC, BOR, CBD, CEL, DUP, GAF, GOC, GP, HKD, HN, HPC, IMC. : MON, RCI, WCL. |
| Glutaraldehyde - - - - - | : UCC. |
| Glyoxal- - - - - | : ACY. |
| *Isobutyraldehyde - - - - - | : CEL, DBC, EKK, UCC. |
| Isopentaldehyde, mixed isomers - - - - - | : UCC. |
| 2-Methylvaleraldehyde (2-Methylpentanaldehyde)- - - - - | : UCC. |
| *Propionaldehyde- - - - - | : CEL, EKK, UCC. |
| Valeraldehyde (Pentanal)- - - - - | : UCC. |
| Aldehydes, acyclic, all other- - - - - | : RDA, UCC. |
| *KETONES: | |
| ACETONE: | |
| *Acetone from cumene- - - - - | : AFP, CLK, DOW, GE, GP, GYR, MON, SHC, SKO, SOC, UCC, : USS. |
| *Acetone from isopropyl alcohol- - - - - | : EKT, ENJ, SHC, UCC. |
| Acetone, all other - - - - - | : ALD, ATR. |
| *2-Butanone (Methyl ethyl ketone)- - - - - | : ATR, CEL, ENJ, SHC, UCC. |
| 5-Chloro-2-pentanone - - - - - | : SDW. |
| 1-Chloro-1-penten-3-one (β -Chlorovinyl ethyl ketone)- - - - - | : ABB. |
| Chloro-2-propanone (Chloroacetone)- - - - - | : EK, MRK. |
| Diisomyl ketone - - - - - | : EKT. |
| Diisopropyl ketone (2,4-Dimethyl-3-pentanone)- - - - - | : EKK. |
| 2-Heptanone (Methyl amyl ketone)- - - - - | : EKT. |
| 3-Heptanone (Ethyl butyl ketone)- - - - - | : UCC. |
| 2,5-Hexanedione (Acetylacetone)- - - - - | : ARS. |
| 2-Hexanone (methyl butyl ketone)- - - - - | : EKT. |
| *4-Hydroxy-4-methyl-2-pentanone (Diacetone alcohol)- - - - - | : CEL, SHC, UCC. |
| Isovalerone (Diisobutyl ketone)- - - - - | : EKT, UCC. |
| Lactide (3,6-Dimethyl-2,5-p-dioxanedione)- - - - - | : CLN. |
| 4-Methoxy-4-methyl-2-pentanone - - - - - | : SHC. |
| 5-Methyl-2-hexanone (Methyl isoamyl ketone)- - - - - | : EKT. |
| *4-Methyl-2-pentanone (Methyl isobutyl ketone)- - - - - | : EKT, ENJ, SHC, UCC. |
| *4-Methyl-3-penten-2-one (Mesityl oxide)- - - - - | : ENJ, SHC, UCC. |
| 2-Octanone (Hexyl methyl ketone)- - - - - | : WTH. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER,
1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *KETONES--CONTINUED | |
| 3-Octanone (Ethyl amyl ketone)- - - - - | SHC. |
| 2,4-Pentanedione (Acetylacetone)- - - - - | UCC. |
| 2-Pentanone- - - - - | EKT. |
| 3-Pentanone (Diethyl ketone)- - - - - | ORT, UCC. |
| Pseudoionone - - - - - | NCI, SCM. |
| 2,6,8-Trimethyl-4-nonanone (Isobutyl heptyl ketone) | UCC. |
| Ketones, all other - - - - - | ALD, CHG, PFZ, SDW. |
| *ALCOHOLS, MONOHYDRIC, UNSUBSTITUTED: | |
| *ALCOHOLS, C11 OR LOWER, UNMIXED (95% OR MORE PURE): | |
| Allyl alcohol- - - - - | FMP, SHC. |
| 1-Decanol- - - - - | CO, TNA. |
| AMYL ALCOHOLS: | |
| 2-Methyl-1-butanol - - - - - | UCC. |
| 1-Pentanol - - - - - | UCC. |
| *BUTYL ALCOHOLS: | |
| *n-Butyl alcohol (n-Propylcarbinol)- - - - - | ARC, CEL, CO, DBC, EKX, GAF, SHC, TNA, UCC. |
| sec-Butyl alcohol (Methylethylcarbinol) - - - - - | ENJ, SHC. |
| tert-Butyl alcohol (Trimethylcarbinol)- - - - - | ATR, SHC. |
| *Isobutyl alcohol (Isopropylcarbinol)- - - - - | CEL, CPS, DBC, EKX, SHC, UCC. |
| *Ethyl alcohol, synthetic only- - - - - | CEL, CO, EKX, PUB, SHC, SM, UCC, USI. |
| *2-Ethyl-1-hexanol- - - - - | DBC, EKX, SHC, UCC. |
| n-Heptyl alcohol - - - - - | EKX. |
| *n-Hexyl alcohol- - - - - | CO, ENJ, TNA, UCC. |
| Isodecyl alcohol - - - - - | ENJ, USS. |
| Isoheptyl alcohol- - - - - | ENJ. |
| Isononyl alcohol - - - - - | ENJ, USS. |
| Iso-octadecyl alcohol- - - - - | SHX. |
| Iso-octyl alcohol- - - - - | ENJ, USS. |
| *Isopropyl alcohol- - - - - | ARC, ATR, ENJ, SHC, UCC. |
| *Methanol, synthetic only - - - - - | AIP, ALM, BOR, CEL, DUP, GP, HN, IMC, MON. |
| 2-Methyl-1-pentanol- - - - - | UCC. |
| 4-Methyl-2-pentanol (1-Methylisobutylcarbinol) | SHC, UCC. |
| 1-Octanol- - - - - | CO, TNA. |
| 2-Octanol (sec-Capryl alcohol)- - - - - | ALD, WTH. |
| *Propyl alcohol (Propanol)- - - - - | CEL, EKX, UCC. |
| 2-Propyn-1-ol (Propargyl alcohol)- - - - - | ARC, GAF. |
| Alcohols, unmixed C11 or lower, all other- - - - - | ALD, DUP, RDA, SCM. |
| *ALCOHOLS C12 OR HIGHER, UNMIXED (95% OR MORE PURE): | |
| Dodecyl alcohol (Lauryl alcohol)- - - - - | CO, TNA. |
| 1-Hexadecanol (Cetyl alcohol)- - - - - | CO, CRM, PG. |
| 2-Hexyl-1-decanol- - - - - | SCP. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *ALCOHOLS, MONOHYDRIC, UNSUBSTITUTED--CONTINUED | |
| *ALCOHOLS, C12 OR HIGHER, UNMIXED (95% OR MORE PURE)--CONTINUED | |
| Isohexacosanol | SCP. |
| 1-Octadecanol (Stearyl alcohol) | CO, CRN, PG. |
| cis-9-Octadecen-1-ol (Oleyl alcohol) | SHX. |
| 2-Octyl dodecan-1-ol | SCP. |
| 1-Tetradecanol (Myristyl alcohol) | CO. |
| 1-Tridecanol | ENJ. |
| 2,6,8-Trimethyl-4-nonanol | UCC. |
| *MIXTURES OF ALCOHOLS: | |
| *Alcohol mixtures, other | CO, CPS, ENJ, SCP, TNA. |
| *Alcohol mixtures, C-11 or lower only | CO, CXI, EKX, NCI, SHC, TNA, UCC. |
| *Alcohol mixtures, C-12 through C-18 only | CO, PG, SHC, TNA, WTH. |
| *ESTERS OF MONOHYDRIC ALCOHOLS: | |
| Acrylic monomers, mixed | AAC. |
| C8-C18 Alcohol esters of fumaric acid | SM. |
| Allyl methacrylate | AAC, BLM, CPS, GLY, SAR, SHC, UCC. |
| AMYL ACETATES: | |
| Amyl acetate (n-Pentyl acetate) | UCC. |
| BUTYL ACETATES: | |
| *n-Butyl acetate | CEL, EKT, UCC. |
| *Isobutyl acetate | CEL, EKT, EKX, UCC. |
| Bis(2-[bis(2-hydroxyethyl)amino]ethyl)diisopropyl titanate | DUP. |
| *Butyl acrylate | CEL, DBC, RH, UCC. |
| sec-Butyl chloroformate | PPG. |
| 3-(2-Butyl)-1-ethyl thiodicarbonate | ESX. |
| Butyl maleate | TCH. |
| Butyl mercaptopropionate | EVN. |
| Butyl methacrylate | DUP, RH. |
| *tert-Butyl peroxyacetate | AZT, TX, WTL. |
| tert-Butyl peroxy-2-ethylhexanoate | AZT, WTC, WTL. |
| tert-Butyl peroxyisobutyrate | AZT, WTL. |
| *tert-Butyl peroxyisopropylcarbonate | CAD, PPG, WTL. |
| tert-Butyl peroxyneodecanoate | WTC, WTL. |
| *tert-Butyl peroxyvalerate | AZT, WTC, WTL. |
| Butyl stearate | CRN. |
| Cetylcicosyl methacrylate | RH. |
| Cetyl lactate | CYL, SBC, VND. |
| Decyl methacrylate | DUP. |
| Diallyl maleate | AAC, FMP. |
| Dibutyl fumarate | RCI. |
| Dibutyl maleate | HN, RCI, TCH, USS. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *ESTERS OF MONOHYDRIC ALCOHOLS--CONTINUED | |
| Diethyl carbonate (Ethyl carbonate) | PPG. |
| Diethyl dipropylmalonate | ABB. |
| Diethyl(ethoxymethylene)malonate | KF. |
| Di(2-ethyl-1-hexyl) chloroformate | ESX, WTC. |
| *Di(2-ethyl-1-hexyl) maleate | CCC, CHP, CIN, DAN, FTX, RPC. |
| Diethyl maleate | ACY. |
| Diethyl malonate (Malonic ester) | KF. |
| Diethyl oxalate (Ethyl oxalate) | PFZ. |
| Diethyl thiodicarbonate | ESX. |
| Diisobutyl maleate | CPS. |
| Diiso-nonyl maleate | RPC. |
| Diisopropyl peroxydicarbonate (Isopropyl percarbonate) | EKX, PPG. |
| *Dilauryl-3,3'-thiodipropionate | ACY, CCW, EVN. |
| Dimethyl carbonate | PPG. |
| Dimethyl maleate | AAC, BLM. |
| Dimethyl malonate | KF. |
| Diocetyl maleate | RCI, USS. |
| *Distearyl-3,3'-thiodipropionate | ACY, CCW, EVN. |
| Dithiobis(stearyl propionate) | EVN. |
| Di(tridecyl) maleate | EFH. |
| Di(tridecyl)-3,3'-thiodipropionate | ACY, EVN. |
| Dodecylpentadecyl methacrylate | RH. |
| 2-Ethoxyethyl acetate | EKX, UCC. |
| *Ethyl acetate (85%) | CEL, EKT, EKX, MON, UCC. |
| Ethyl acetoacetate | BRD, EKT. |
| *Ethyl acrylate | CEL, RH, UCC. |
| Ethyl chloroacetate | SK. |
| Ethyl chloroformate | ESX, PPG. |
| 1-Ethyl-3-(1,2-dimethylpropyl) thiodicarbonate | ESX. |
| Ethylene carbonate | TX. |
| 2-Ethyl-1-hexyl acetate | EKT. |
| 2-Ethyl-1-hexyl acrylate | CEL, DBC, UCC. |
| 2-Ethyl-1-hexyl methacrylate | DUP. |
| 2-Ethylhexyl titanate | KF. |
| 1-Ethyl-3-(2-methylpropyl) thiodicarbonate | ESX. |
| Ethyl silicate | KF, SFS. |
| Ethyl sulfate (Diethyl sulfate) | UCC. |
| *FATTY ACID ESTERS, NOT INCLUDED WITH PLASTICIZERS OR SURFACE ACTIVE AGENTS: | |
| Butyl myristate | CRN. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *ESTERS OF MONOHYDRIC ALCOHOLS--CONTINUED | |
| *FATTY ACID ESTERS, NOT INCLUDED WITH PLASTICIZERS OR SURFACE ACTIVE AGENTS--CONTINUED | |
| Cetyl palmitate - - - - - | ARC. |
| Dimethyl brassylate - - - - - | EMR. |
| Hexadecyl stearate - - - - - | CYL. |
| Isopropyl linoleate - - - - - | VND. |
| Isopropyl myristate - - - - - | CRN. |
| Isopropyl palmitate - - - - - | CRN. |
| Methyl esters of coconut oil - - - - - | FTX, PG, WTC. |
| Methyl esters of tallow - - - - - | CHL, FER, WTC. |
| Methyl 12-hydroxystearate - - - - - | NTH, WTH. |
| Methyl stearate - - - - - | CHL, CIN. |
| *Myristyl myristate - - - - - | CYL, SBC, VND. |
| Propyl oleate - - - - - | CHP. |
| Tridecyl stearate - - - - - | CIN, RPC. |
| Fatty acid esters, not included with plasticizers surface-active agents, all other - - - - - | ALD, CBY, CCW, CRN, CYL, FER, RPC, SBC, VND, WTC. |
| Hexyl acetate - - - - - | X. |
| Hexyl acrylate - - - - - | CPS. |
| Isobutyl acrylate - - - - - | UCC. |
| Isobutyl chloroformate - - - - - | PPG. |
| Isobutyl isobutyrate - - - - - | EKX. |
| Isobutyl methacrylate - - - - - | RH. |
| Isodecyl acrylate - - - - - | CPS. |
| Isodecyl methacrylate - - - - - | RH. |
| Isodecyl thioglycolate - - - - - | EVN. |
| Iso-octyl mercaptoacetate - - - - - | CCW, EVN, GCM. |
| Iso-octyl-3-mercaptopropionate - - - - - | EVN. |
| Isopropyl acetate - - - - - | EKT, UCC. |
| Isopropyl chloroformate - - - - - | PPG. |
| Isostearyl neopentanoate - - - - - | SBC, VND. |
| Lauryl acetate - - - - - | CPS. |
| Lauryl lactate - - - - - | CYL, VND. |
| Lauryl methacrylate - - - - - | CPS, RH, TX. |
| Laurylstearyl methacrylate - - - - - | RH. |
| Maleic esters and copolymers - - - - - | GAF. |
| Menthallylidene diacetate - - - - - | RDA. |
| 2-Methoxyethyl acrylate - - - - - | CPS. |
| Methyl acetate - - - - - | EKT, GRD, MON. |
| Methyl acetoacetate - - - - - | BRD, EKT. |
| Methyl acrylate, monomer - - - - - | CEL. |
| Methyl borate - - - - - | SFS. |
| Methyl butyrate - - - - - | WCC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| *ESTERS OF MONOHYDRIC ALCOHOLS--CONTINUED | |
| Methyl chloroformate - - - - - | ESX, PPG. |
| Methyl formate - - - - - | CEL. |
| *Methyl methacrylate, monomer - - - - - | CYR, DUP, RH. |
| Methyl pivaloylacetate - - - - - | EKT. |
| Methyl sulfate (Dimethyl sulfate) - - - - - | DUP. |
| Myristyl lactate - - - - - | VND. |
| Octadecyl-3-mercaptopropionate - - - - - | EVN. |
| *PHOSPHORUS ACID ESTERS: | |
| Bis (2-Chloroethyl)-2-chloroethylphosphonate - - - | SM. |
| 2,2-bis(Chloromethyl)-1,3-propanediyl tetra bis chloroethyl phosphate - - - - - | MIL. |
| Bis(2-ethylhexyl) hydrogen phosphate - - - - - | SM. |
| Bis(2-ethylhexyl)hydrogen phosphite - - - - - | SM. |
| Butyl acid phosphate - - - - - | HK. |
| Dibutyl butylphosphonate - - - - - | SM. |
| Dibutyl hydrogen phosphite - - - - - | SM. |
| Dibutyl pyrophosphate - - - - - | SM. |
| Diethyl chlorophosphate - - - - - | SFA. |
| Diethyl hydrogen phosphite - - - - - | SM. |
| Diethyl phosphorochloridothionate - - - - - | SFA. |
| Dimethyl hydrogen phosphite - - - - - | SM. |
| Dimethyl methylphosphonate - - - - - | SM. |
| Dimethyl phosphoridothionate - - - - - | SFA. |
| 2-Ethylhexyl hydrogen phosphate - - - - - | SM. |
| Iso-octyl hydrogen phosphate - - - - - | SM. |
| Methyl dihydrogen phosphate - - - - - | HK. |
| Mixed dialkyl hydrogen phosphates - - - - - | ELC. |
| Mixed dialkyl hydrogen phosphates, amine salts | ELC. |
| Tetrakis(2-chloroethyl)ethylene diphosphate - - - | OMC. |
| Trialkyl phosphite - - - - - | MCB. |
| Tri(butoxyethyl)phosphate - - - - - | FMP, SM. |
| Tributyl phosphate - - - - - | FMP, SFS, SM. |
| Triethyl phosphite - - - - - | SFA, SM. |
| Triiso-octyl phosphite - - - - - | MCB, SM. |
| Triisopropyl phosphite - - - - - | SM. |
| Trimethyl phosphite - - - - - | SFA, SM. |
| Tris(butyl ethyl)phosphate - - - - - | HN. |
| Tris(2-chloroethyl) phosphite - - - - - | SM. |
| Tris(chloroisopropyl)thionophosphate - - - - - | SM. |
| Tris(2-ethylhexyl)phosphite - - - - - | SM. |
| Phosphorus acid esters, all other - - - - - | ALD, GAF, HK, MON, SM, USS, X, X. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *ESTERS OF MONOHYDRIC ALCOHOLS--CONTINUED | |
| *Propyl acetate - - - - - | CEL, EKT, UCC. |
| Propylene carbonate - - - - - | TX. |
| Stearyl methacrylate - - - - - | RH, TX. |
| Tetraethyl orthosilicate (Tetraethyl silicate) - - - - - | UCC. |
| Tetraethyl silicate, condensed - - - - - | ADC, UCC. |
| Tetraoctyl orthosilicate - - - - - | MON. |
| TITANIC ACID ESTERS: | |
| Di(hydroxy)bis(ammoniumlactate)titanium - - - - - | DUP. |
| Diisopropyl titanate acetylacetonate - - - - - | DUP. |
| Diisopropyltitanate bis(ethyl-3-oxobutanoate) - - - - - | DUP. |
| Tetrabutyl titanate - - - - - | DUP. |
| Tetraisopropyl titanate - - - - - | DUP. |
| Tetrakis(2-ethylhexyl)titanate - - - - - | DUP. |
| Triethanolamine titanate - - - - - | KF. |
| Titanic acid esters, all other - - - - - | DUP, X. |
| Triethyl orthoacetate - - - - - | KF. |
| Triethyl orthoformate - - - - - | KF. |
| Triethyl orthopropionate - - - - - | KF. |
| Trimethyl orthoacetate - - - - - | KF. |
| Trimethyl orthoformate - - - - - | KF. |
| *Vinyl acetate, monomer - - - - - | BOR, CEL, DUP, UCC, USI. |
| Monohydric alcohol esters, all other - - - - - | ABB, AMD, EK, ESX, FER, MON, PIC, RRC, REG, SNW, TUL, UCC, USR, VND, WPG, WTL, X, X. |
| *POLYHYDRIC ALCOHOLS: | |
| 2,2-Bis(bromomethyl)-1,3-propanediol - - - - - | DOW. |
| 1,2(and 1,3)-Butanediol - - - - - | CEL, DUP. |
| *1,4-Butanediol - - - - - | BAS, GAF, X. |
| 2-Butene-1,4-diol - - - - - | GAF. |
| 2-Butyne-1,4-diol - - - - - | BAS, GAF. |
| 3-Chloro-1,2-propanediol (Glycerol α -chlorohydrin) - - - - - | DIX, EVN. |
| 2,2-Dimethyl-1,3-propanediol (Neopentyl glycol) - - - - - | DBC, EKX. |
| *Ethylene glycol - - - - - | BAS, CAU, CEL, DIX, DOW, EKX, HCF, ICI, NWP, OMC, PPG, SHC, TX, UCC. |
| 2-Ethyl-1,3-hexanediol - - - - - | UCC. |
| 2-Ethyl-2-(hydroxymethyl)-1,3-propanediol (Trimethylolpropane) - - - - - | CEL, GLY. |
| Glycerol, natural - - - - - | ARC. |
| *Glycerol, synthetic only - - - - - | ARC, DOW, FMP, SHC. |
| 1,6-Hexanediol - - - - - | CEL. |
| Mannitol - - - - - | ICI. |
| 3-Mercapto-1,2-propanediol (Thioglycerol) - - - - - | EVN. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *POLYHYDRIC ALCOHOLS--CONTINUED | |
| 2-Methyl-2,4-pentanediol (Hexylene glycol)- - - - - | : SHC, UCC. |
| 2-Methyl-2-propyl-1,3-propanediol- - - - - | : BKL. |
| *Pentaerythritol- - - - - | : CEL, HPC, IMC, PST. |
| *Propylene glycol (1,2-Propanediol)- - - - - | : ATR, DOW, OMC, TX, UCC. |
| *Sorbitol (70% by Weight)- - - - - | : BRD, EHC, ICI, MRK, PFZ. |
| Trimethylolethane- - - - - | : IMC. |
| 2,2,4-Trimethyl-1,3-pentanediol- - - - - | : EKX. |
| Polyhydric alcohols, all other- - - - - | : ALD, EK, EKX, SHC, TX. |
| ESTERS AND ETHERS OF POLYHYDRIC ALCOHOLS: | |
| *POLYHYDRIC ALCOHOL ESTERS: | |
| 1,3-Butanediol dimethacrylate- - - - - | : SAR. |
| 2-(2-Butoxyethoxy)ethyl acetate- - - - - | : EKT, UCC. |
| 2-Butoxyethyl acetate- - - - - | : UCC. |
| 1,3-Butyleneglycol diacetate- - - - - | : VAL. |
| Diethylene glycol adipate- - - - - | : DIX. |
| Diethylene glycol, borated- - - - - | : OMC. |
| Diethylene glycol chloroformate- - - - - | : PPG. |
| Diethylene glycol dimethacrylate- - - - - | : SAR. |
| Dihydromyrcene- - - - - | : X. |
| 2-(2-Ethoxyethoxy)ethyl acetate- - - - - | : EKT, TKL, UCC. |
| Ethylene glycol diacetate- - - - - | : EKT. |
| Ethylene glycol dimercaptoacetate- - - - - | : EVN. |
| Ethylene glycol dimethacrylate- - - - - | : SAR. |
| Ethylene glycol hydroxyacetate- - - - - | : CCA. |
| 2-Ethyl-2-(hydroxymethyl)-1,3-propanediol trioleate- - - - - | : WM. |
| Glyceryl diacetate (Diacetin)- - - - - | : ARC, HAL. |
| Glyceryl monoacetate (Monoacetin)- - - - - | : ARC, HAL. |
| Glyceryl monothioglycolate- - - - - | : EVN. |
| Glyceryl triacetate (Triacetin)- - - - - | : ARC, EKT, UCC. |
| Glycol adipate- - - - - | : WM. |
| 1,6-Hexanediol diacrylate- - - - - | : CEL, SAR. |
| Hexylene glycol diacetate- - - - - | : UCC. |
| Hydroxyethyl acrylate- - - - - | : DOW, RH. |
| Hydroxypropyl acrylate- - - - - | : DOW. |
| Hydroxypropyl methacrylate- - - - - | : RH. |
| 2-Methoxyethyl acetate- - - - - | : UCC. |
| Neopentyl glycol diglycidyl ether- - - - - | : WLN. |
| Pentaerythritol stearate- - - - - | : GLY, TCH, X, X. |
| Pentaerythritol tetraacrylate- - - - - | : CEL, SAR, TKL. |
| Pentaerythritol tetrakis (3-Mercaptopropionate)- - - - - | : EVN. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|--|
| ACYCLIC--CONTINUED | |
| ESTERS AND ETHERS OF POLYHYDRIC ALCOHOLS--CONTINUED | |
| *POLYHYDRIC ALCOHOL ESTERS--CONTINUED | |
| Polyethylene glycol dimethacrylate - - - - - | SAR. |
| Polyethylene polypropylene glycol glyceryl triether maleate - - - - - | BAK. |
| Sucrose octa-acetate - - - - - | HFT, PD. |
| 2-Sulfoethyl methacrylate - - - - - | DOW. |
| Tetraethylene glycol diacrylate - - - - - | CEL, SAR. |
| Tetraethylene glycol diheptanoate - - - - - | WM. |
| Triethylene glycol diacetate - - - - - | EKT. |
| Triethylene glycol diacrylate - - - - - | CEL, HMY, PLC. |
| Triethylene glycol dimethacrylate - - - - - | SAR. |
| Trimethylolpropane triacrylate - - - - - | CEL, SAR. |
| Trimethylolpropane trimethacrylate - - - - - | CEL, SAR. |
| 2,2,3-Trimethyl-1,3-pentanediol monoisobutyrate | EKX. |
| Tripropylene glycol diacrylate - - - - - | CEL. |
| Polyhydric alcohol esters, all other - - - - - | BAK, CCW, CEL, CYL, DA, DUP, EVN, PG, RPC, SAR, SK, SNW, TKL, UCC, USB, WM, WTC. |
| *POLYHYDRIC ALCOHOL ETHERS: | |
| Bis(2-butoxyethyl)ether (Diethylene glycol di-n-butyl ether) - - - - - | ASL, FER. |
| Bis(2-ethoxyethyl)ether (Diethylene glycol diethyl ether) - - - - - | ASL, FER. |
| Bis(hydroxyethyl)ether butynediol - - - - - | EFH, UCC. |
| Bis[2-(2-methoxyethoxy)ethyl] ether (Tetraethylene glycol dimethyl ether) - - - - - | ASL. |
| Bis(2-methoxyethyl)ether (Diethylene glycol dimethyl ether) - - - - - | ASL, FER. |
| *2-Butoxyethanol (Ethylene glycol monobutyl ether) | DOW, EKX, OMC, SHC, TX, UCC. |
| *2-(2-Butoxyethoxy)ethanol (Diethylene glycol monobutyl ether) - - - - - | DOW, EKX, OMC, SHC, TX, UCC. |
| *2-[2-(2-Butoxyethoxy)ethoxy]ethanol (Triethylene glycol monobutyl ether) - - - - - | DOW, OMC, UCC. |
| 1-Butoxyethoxy-2-propanol - - - - - | UCC. |
| Butyl ethers of tetra- and higher ethylene glycols (high boiling) - - - - - | EKX. |
| *Diethylene glycol - - - - - | BAS, CEL, DIX, DOW, EKX, ICI, NWP, OMC, PPG, SHC, TX, UCC. |
| Dimethoxyethane (Ethylene glycol dimethyl ether) | ASL, FER. |
| *Dipropylene glycol - - - - - | ATR, DOW, OMC, TX, UCC. |
| Dipropylene glycol monomethyl ether - - - - - | OMC. |
| *2-Ethoxyethanol (Ethylene glycol monoethyl ether) | DOW, EKX, ICI, OMC, SHC, TX, UCC. |
| *2-(2-Ethoxyethoxy)ethanol (Diethylene glycol monoethyl ether) - - - - - | DOW, EKX, ICI, OMC, SHC, TX, UCC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|---|
| ACYCLIC--CONTINUED | |
| ESTERS AND ETHERS OF POLYHYDRIC ALCOHOLS--CONTINUED | |
| *POLYHYDRIC ALCOHOL ETHERS--CONTINUED | |
| *2-[2-(2-Ethoxyethoxy)ethoxy]ethanol (Triethylene glycol monoethyl ether)- - - - - | DOW, OMC, UCC. |
| Ethylene glycol di-tributyl ether- - - - - | EKK. |
| Ethylene glycol di-triethyl ether- - - - - | EKK. |
| Ethylene glycol ethers, mixed- - - - - | OMC. |
| Ethylene glycol monoisobutyl ether- - - - - | OMC. |
| Ethyl ethers of tetra- and higher ethylene glycols(high boiling)- - - - - | EKK. |
| 2-[2-(Hexyloxy)ethoxy]ethanol- - - - - | OMC, UCC. |
| 1-Isobutoxy-2-propanol (Propylene glycol isobutyl ether)- - - - - | DOW. |
| *2-Methoxyethanol (Ethylene glycol monomethyl ether)- - - - - | DOW, OMC, PPG, TX, UCC. |
| *2-(2-Methoxyethoxy)ethanol (Diethylene glycol monomethyl ether)- - - - - | DOW, OMC, PPG, TX, UCC. |
| *2-[2-(2-Methoxyethoxy)ethoxy]ethanol (Triethylene glycol monomethyl ether)- - - - - | DOW, OMC, UCC. |
| 2-(2-Methoxyethoxy)ethyl-2-methoxyethyl ether (Triethylene glycol dimethyl ether)- - - - - | ASL, OMC, SHX. |
| Methoxypolyethylene glycol - - - - - | DUP, UCC. |
| 1-Methoxy-2-propanol - - - - - | DOW. |
| 3-(3-Methoxypropoxy)propanol - - - - - | DOW. |
| 3-[3-(3-Methoxypropoxy)propoxy]propanol- - - - - | DOW. |
| Paraformaldehyde - - - - - | CEL. |
| *Polyethylene glycol- - - - - | ABB, CAU, DA, DOW, DUP, HDG, ICI, OMC, S, TX, UCC, WTC, X. |
| Polyethylene glycol dimethyl ether - - - - - | X. |
| Polyethylene glycol mono decyl ether - - - - - | BAK. |
| Polyglycols, ethylene glycol and glycol ether, mixed- - - - - | DOW, UCC. |
| Polymethylvinyl ether monoethylmaleate - - - - - | TNI. |
| Polyoxyalkylene glycol - - - - - | OMC. |
| Polyoxyethylene glycol hydrogenated tallow ester - - - - - | WPG. |
| *POLYPROPPOXY ETHERS: | |
| Polypropoxybutyl ether - - - - - | DA, TX, UCC. |
| Polypropoxy ethers, all other- - - - - | DUP, ICI, TX, UCC. |
| Polyoxypropylene polyoxyethylene glycol, mixed - - - - - | ICI, PEL, UCC. |
| *Polypropylene glycol - - - - - | CXI, DOW, HDG, OMC, PEL, TX, UCC, WTC. |
| Polypropylene glycol glycerol tri-ether- - - - - | BAK. |
| Polytetramethylene glycol ether- - - - - | DUP, QKO. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| ESTERS AND ETHERS OF POLYHYDRIC ALCOHOLS--CONTINUED | |
| *POLYHYDRIC ALCOHOL ETHERS--CONTINUED | |
| Poly(1,1,1-trichlorobutane-2-ol)ethylene glycol dextrose ether - - - - - | OMC. |
| Propoxyethanol (Ethylene glycol monopropyl ether) | EKX. |
| Propoxyethoxyethanol (Diethylene glycol monopropyl ether)- - - - - | EKX. |
| Propylene glycol, mixed ethers - - - - - | DOW, UCC. |
| Propylene glycol monomethyl ether - - - - - | OMC. |
| Sorbitol, ethoxylated- - - - - | GLY, ICI. |
| Sorbitol, propoxylated - - - - - | ICI. |
| *Tetraethylene glycol - - - - - | DOW, EKX, UCC. |
| 1,1,3,3-Tetramethoxypropane- - - - - | KF. |
| 2,2'-Thiodiethanol (Thiodiglycol) - - - - - | MET. |
| *Triethylene glycol - - - - - | CEL, DIX, DOW, EKX, ICI, OMC, SHC, TX, UCC. |
| Tripropylene glycol- - - - - | DOW, OMC, UCC. |
| Tripropylene glycol monomethyl ether - - - - - | OMC. |
| Tri- and tetraethylene glycol monoethyl ethers, borate ester s - - - - - | OMC. |
| Polyhydric alcohol ethers, all other - - - - - | CRN, EKX, GAF, OMC, TX, UCC, X, X. |
| *HALOGENATED HYDROCARBONS: | |
| BROMINATED (INCLUDING BROMOCHLORINATED) HYDROCARBONS: | |
| 1-Bromobutane (n-Butyl bromide) - - - - - | WCC. |
| 2-Bromobutane (sec-Butyl bromide) - - - - - | COC. |
| Bromochlorinated paraffin C ₁₀ -C ₂₀ - - - - - | FER. |
| Bromochloromethane - - - - - | DOW. |
| Bromoethane (Ethyl bromide)- - - - - | DOW, GTL. |
| 1-Bromo-octadecane - - - - - | HMY. |
| 2-Bromopentane (sec-Pentyl bromide)- - - - - | GTL. |
| 1-Bromopropane (n-Propyl bromide) - - - - - | WCC. |
| 2-Bromopropane (Isopropyl bromide)- - - - - | WCC. |
| Bromotrichloromethane- - - - - | OMC. |
| 2,2-Dibromo-2-cyanoacetamide - - - - - | DOW. |
| Dibromomethane (methylene bromide) - - - - - | DOW. |
| 1,1,2,2-Tetrabromoethane (Acetylene tetrabromide) | DOW. |
| Vinyl bromide (Bromoethylene) - - - - - | TNA. |
| Brominated (Including bromochlorinated) hydrocarbons, all other- - - - - | ALD, HMY. |
| *CHLORINATED (NOT OTHERWISE HALOGENATED) HYDROCARBONS: | |
| *Carbon tetrachloride - - - - - | ACS, DA, DOW, DUP, FRO, LCP, SFI. |
| CHLORINATED PARAFFINS (C ₁₀ -C ₃₀): | |
| *Chlorinated paraffins, 35-64% chlorine - - - - - | DA, DVC, FER, ICI, NEV, X. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *HALOGENATED HYDROCARBONS--CONTINUED | |
| *CHLORINATED (NOT OTHERWISE HALOGENATED) HYDROCARBONS--CONTINUED | |
| CHLORINATED PARAFFINS--CONTINUED | |
| Chlorinated paraffins, less than 35% chlorine | FER. |
| *Chlorinated paraffins, 65% or more chlorine | DA, DVC, FER, NEV. |
| 1-Chlorobutane (n-Butyl chloride) | PUB, UCC. |
| *Chloroethane (Ethyl chloride) | DOW, DUP, HPC, PPG, SFF, TNA. |
| *Chloroform | DA, DOW, FRO, LCP, SFI. |
| *Chloromethane (Methyl chloride) | CO, DCC, DOW, LCP, TNA, UCC. |
| 2-Chloro-2-methylpropane (tert-Butyl chloride) | COC. |
| 3-Chloro-2-methyl-1-propene (Methallyl chloride) | FMP. |
| 3-Chloropropene (Allyl chloride) | DOW, SHC. |
| 1,4-Dichlorobutene | ALD, COC, DUP. |
| 1,4-Dichloro-2-butyne | TRN. |
| *1,2-Dichloroethane (Ethylene dichloride) | ATR, BFG, CO, DA, DOW, FOR, FRO, OMC, PPG, SFF, SHC, TNA, UCC. |
| *Dichloromethane (Methylene chloride) | DA, DOW, FRO, LCP, SFI. |
| 1,2-Dichloropropane (Propylene dichloride) | DOW, OMC. |
| 2,3-Dichloropropene | COC, DOW. |
| 2,2-Dimethylchloropropane (neopentyl chloride) | TNA. |
| Lauryl chlorides | TNA. |
| Octyl chloride | TNA. |
| *Tetrachloroethylene (Perchloroethylene) | DA, DOW, DUP, FRO, PPG, SFI, TNA. |
| *1,1,1-Trichloroethane (Methyl chloroform) | DOW, FRO, PPG. |
| 1,1,2-Trichloroethane (Vinyl trichloride) | DOW. |
| *Trichloroethylene | DOW, PPG, TNA. |
| 1,2,3-Trichloropropane | DOW, SHC. |
| 1,2,3-Trichloropropene | DOW. |
| *Vinyl chloride, monomer (Chloroethylene) | BFG, BOR, CO, DA, DOW, FOR, GP, MNO, PPG, SFF, SHC, TNA, USR. |
| Vinylidene chloride, monomer (1,1-Dichloroethylene) | DOW, PPG. |
| Chlorinated (Not otherwise halogenated) hydrocarbons, all other | ALD, RH, TNA, WCC, X. |
| *FLUORINATED (INCLUDING OTHER FLUOROHALOGENATED) HYDROCARBONS: | |
| Bromotrifluoromethane | DUP, ICI. |
| 1-Chloro-1,1-difluoroethane | PAS. |
| *Chlorodifluoromethane (F-22) | ACS, DUP, KAI, PAS, RCN. |
| Chloropentafluoroethane | DUP. |
| Chlorotrifluoroethylene (Trifluorovinyl chloride) | ACS. |
| Chlorotrifluoromethane | DUP. |
| *Dichlorodifluoromethane (F-12) | ACS, DUP, KAI, PAS, RCN. |
| Dichlorotetrafluoroethane | ACS, DUP, PAS. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *HALOGENATED HYDROCARBONS--CONTINUED | |
| *FLUORINATED (INCLUDING OTHER FLUOROHALOGENATED) | |
| HYDROCARBONS--CONTINUED | |
| 1,1-Difluoroethane - - - - - | DUP. |
| Hexafluoropropylene, monomer - - - - - | DUP. |
| 1-Iodoperfluorohexane - - - - - | DUP. |
| Polytetrafluoroethylene ethyl iodine - - - - - | DUP. |
| Tetrafluoroethylene, monomer - - - - - | DUP, ICI, SCH. |
| Tetrafluoromethane - - - - - | DUP. |
| *Trichlorofluoromethane (F-11) - - - - - | ACS, DUP, KAI, PAS, RCM. |
| Trichlorotrifluoroethane - - - - - | ACS, DUP. |
| Trifluoroethyl trichloromethane sulfonate - - - - - | OMC. |
| Vinyl fluoride, monomer - - - - - | DUP. |
| Vinylidene fluoride, monomer - - - - - | PAS. |
| Fluorinated (Including other fluorohalogenated) | |
| hydrocarbons, all other - - - - - | DUP, ICI. |
| *IODINATED (NOT OTHERWISE HALOGENATED) HYDROCARBONS: | |
| Diiodomethane (Methylene iodide) - - - - - | NTB, RSA. |
| Iodoethane (Ethyl iodide), non-medical - - - - - | COC, FMT, RSA. |
| Iodoform (Triiodomethane) - - - - - | NTB. |
| Iodomethane (Methyl iodide) - - - - - | COC, DPW, FMT, RSA. |
| Iodinated (Not otherwise halogenated) | |
| hydrocarbons, all other - - - - - | ALD, COC, RSA. |
| Halogenated hydrocarbons, all other - - - - - | PEL. |
| *OTHER MISCELLANEOUS ACYCLIC CHEMICALS: | |
| Acetyl peroxide - - - - - | WTL. |
| Aluminum isopropoxide (Aluminum isopropylate) - - - - - | CHT, KCH. |
| *2-Butanone peroxide - - - - - | CAD, NOC, RCI, WTC, WTL. |
| tert-Butyl hydroperoxide - - - - - | AZT, WTC, WTL. |
| tert-Butyl peroxide (Di-tert-butyl peroxide) - - - - - | AZT, SHC, WTL. |
| *Carbon disulfide - - - - - | FMB, PAS, PPG, SFI. |
| Decanoyl peroxide - - - - - | WTC, WTL. |
| 2,3-Dibromopropanol - - - - - | GTL. |
| Diethylphosphorous chloride - - - - - | TNA. |
| 2,5-Dimethyl-2,5-bis(2-ethyl-1-hexanoyl peroxy) | |
| hexane - - - - - | WTL. |
| 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane - - - - - | WTL. |
| 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3 - - - - - | WTL. |
| *EPOXIDES, ETHERS, AND ACETALS: | |
| Alkyl glycidyl ethers, C ₁₁ -C ₁₄ - - - - - | WLM. |
| Alkyl glycidyl ethers, C ₈ -C ₁₀ - - - - - | WLM. |
| 1-(Allyloxy)-2,3-epoxypropane (Allyl glycidyl ether) - - - - - | AAC, BLM, CPS. |
| Bis(2-chloroethoxy)methane (Dichloroethylformal) - - - - - | TKL. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *OTHER MISCELLANEOUS ACYCLIC CHEMICALS--CONTINUED | |
| *EPOXIDES, ETHERS, AND ACETALS--CONTINUED | |
| Bis(2-chloroethyl)ether (Dichlorodiethyl ether) | BKM, DOW. |
| Bis(2-chloro-1-methylethyl)ether (Dichloroisopropyl ether)- | DOW. |
| 1,4-Butanediol diglycidyl ether- | WLN. |
| Butylene oxide - | DOW. |
| Butyl ether (Di-n-butyl ether)- | PUB. |
| Butyl glycidyl ether - | WLN. |
| tert-Butyl glycidyl ether- | AAC, WLN. |
| Butyl vinyl ether- | GAF. |
| 2-Chloroethyl vinyl ether- | AAC. |
| Chloromethyl methyl ether- | RH. |
| 2,2-Dichloro-1,1-difluoroethyl methyl ether- | DOW. |
| Dimercaptodiethyl ether- | USR. |
| Epichlorohydrin- | DOW, SHC. |
| *Ethylene oxide - | BAS, CAU, CEL, CO, DOW, EKX, ICI, OMC, PPG, SHC, SNO, TX, UCC. |
| Ethyl ether, U.S.P. - | USI. |
| Ethyl ether, absolute- | EKX, USI. |
| Ethyl ether, tech. - | PUB, USI. |
| 2-Ethylhexyl glycidyl ether- | WLN. |
| Ethyl vinyl ether- | GAF. |
| Glycidol (2,3-Epoxy-1-propanol) - | DIX. |
| Isopropyl ether - | ENJ, SHC. |
| Methylal (Dimethoxymethane) - | CEL. |
| Methyl ether (Dimethyl ether) - | DUP. |
| Methyl vinyl ether - | GAF, UCC. |
| Propylene oxide- | ATR, DOW, OMC, TX. |
| Epoxides, ethers, acetals, all other - | ALD, COC, CPS, FRE, MMC, PG, UCC, VIK, X, X. |
| 1,2-Ethanedithiol - | RBC. |
| Ethyl chlorothiolfornate - | SFA. |
| FATS AND OILS, CHEMICALLY MODIFIED: | |
| Hydrogenated tallow glycerides - | CHL, CRN. |
| Stearic acid glycerides and oxidized stearic acid glycerides - | SDW. |
| Fats and oils, chemically modified, all other- | DOM, SM. |
| Glutaraldehyde bis(sodium bisulfite) - | EK, FMT. |
| Hexachlorodimethyl sulfone - | SFS. |
| n-Hexadecyl disulfide- | PAS. |
| HYDROCARBONS: | |
| 3,3-Dimethylbutene - | PLC. |
| n-Dodecane - | HMY, PLC. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *OTHER MISCELLANEOUS ACYCLIC CHEMICALS--CONTINUED | |
| *HYDROCARBONS--CONTINUED | |
| Hexadecane | HMY. |
| Myrcene | SCM. X. |
| n-Nonane | PLC. |
| n-Octadecane | HMY. |
| n-Octane | HMY. |
| Hydrocarbons, all other | HMY, SCM, SFS. |
| Lauroyl peroxide | WTC, WTL. |
| 2-Mercaptoethanol | MET, PLC. |
| Methyl sulfide (Dimethyl sulfide) | CRZ, PAS. |
| Methyl sulfoxide (Dimethyl sulfoxide) | ALD, CRZ. |
| ORGANO-ALUMINUM COMPOUNDS: | |
| Diethylaluminum chloride | TNA, TSA. |
| Diethylaluminum iodide | TNA, TSA. |
| Diisobutylaluminum chloride | TNA, TSA. |
| Diisobutylaluminum hydride | TNA, TSA. |
| Ethylaluminum dichloride | TNA, TSA. |
| Ethylaluminum sesquichloride | TNA, TSA. |
| Isopropenylaluminum | TSA, X. |
| Methylaluminum sesquichloride | TNA. |
| Triethylaluminum | TNA, TSA. |
| Triisobutylaluminum | TNA, TSA. |
| Tri-oxyaluminum tri-isopropoxide | KCH. |
| Organo-aluminum compounds, all other | KCH, REH, TNA, TSA. |
| ORGANO-BORON COMPOUNDS: | |
| Boron fluoride-ethyl ether complex | ACS. |
| Chromium acetylacetonate complex | HSN, SHP. |
| Cobalt acetylacetonate complex | HSN, SHP. |
| 1-Hexyl-1,2-dicarbadodecaborane | X. |
| Iron acetylacetonate complex | HSN, SHP. |
| N-Methyl-methanamine with borane (1:1) | X. |
| 2-Methyl-2-propanamine with borane (1:1) | X. |
| Triethylborane | X. |
| Trimethoxyboroxine | CLC. |
| Trimethyl borate | MHI. |
| N,N,N-Trimethyl methanaminium octahydrotriborate | X. |
| Organo-boron compounds, all other | ACS, ADC, ALD, PIC, TSA, X. |
| ORGANO-LITHIUM COMPOUNDS: | |
| n-Butyllithium | FTE. |
| sec-Butyllithium | FTE. |
| ORGANO-MAGNESIUM COMPOUNDS: | |
| Methylmagnesium bromide | ARA. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|---|---|
| ACYCLIC--CONTINUED | |
| *OTHER MISCELLANEOUS ACYCLIC CHEMICALS--CONTINUED | |
| ORGANO-MAGNESIUM COMPOUNDS--CONTINUED | |
| Methylmagnesium chloride | ARA. |
| Organo-magnesium compounds, all other | TNA, TSA. |
| ORGANO-SILICON COMPOUNDS: | |
| N-(β -Aminoethyl)-7-aminopropyltriethoxysilane | UCC. |
| 7-Aminopropyltriethoxysilane | UCC. |
| Amyltriethoxysilane | UCC. |
| α -Chloropropyltriethoxysilane | DCC. |
| Chloropropyltrimethoxysilane | DCC. |
| Chlorotrimethylsilane | DCC. |
| Dichlorodimethylsilane | DCC. |
| Dichloromethylsilane | DCC. |
| Dichloromethylvinylsilane | DCC, UCC. |
| Ethyltriethoxysilane | UCC. |
| α -Glycidyloxypropyltrimethoxysilane | UCC. |
| Hexamethyldisilazane | SCM. |
| Mercaptopropyltrimethoxysilane | UCC. |
| α -Methacryloxypropyltrimethoxysilane | UCC. |
| Methyltrimethoxysilane and polymethyltrisiloxane | DCC, UCC. |
| Polyoxymethylene silicones | DCC, UCC. |
| *Silicone fluids | DCC, SCM, SPD, SWS, UCC. |
| Trichloromethylsilane | DCC. |
| Trichloropropylsilane | DCC. |
| Trichlorovinylsilane | UCC. |
| Tris(2-methoxyethoxy)vinyl silane | UCC. |
| Vinyltriethoxysilane | UCC. |
| Organo-silicone compounds, all other | ALD, CNI, EKT, PIC, SPD, UCC. |
| *ORGANO-TIN COMPOUNDS: | |
| Bis(tributyltin)oxide | X. |
| Dibutyltin bis(isooctylmercaptoacetate) | CCW, FER, GCM, X. |
| Dibutyltin bis(mercaptolaurate) | X. |
| Dibutyltin dichloride | GCM, X. |
| Dibutyltin oxide | X. |
| Ester tin mercaptoesters | X. |
| Monobutyltin oxide | GCM. |
| Monobutyltin thioanhydride | GCM. |
| Monobutyltin tris(isooctylmercaptoacetate) | GCM. |
| Octyltin | X. |
| Titanium acetylacetonate complex | KF. |
| Tributyltin chloride | GCM, X. |
| Tributyltin fluoride | X. |
| Tributyltin propylene glycol maleate | CCA. |

TABLE 2.--MISCELLANEOUS CHEMICALS FOR WHICH U.S. PRODUCTION AND/OR SALES WERE REPORTED, IDENTIFIED BY MANUFACTURER, 1981--CONTINUED

| MISCELLANEOUS CHEMICALS | MANUFACTURERS' IDENTIFICATION CODES (ACCORDING TO LIST IN TABLE 3) |
|--|--|
| ACYCLIC--CONTINUED | |
| *OTHER MISCELLANEOUS ACYCLIC CHEMICALS--CONTINUED | |
| *ORGANO-TIN COMPOUNDS--CONTINUED | |
| Organo-tin compounds, all other- - - - - | CCA, CCA, CCW, COS, MMI, WTC, X, X. |
| ORGANO-ZINC COMPOUNDS: | |
| Diethylzinc- - - - - | TSA. |
| Perchloromethanethiol (Perchloromethyl mercaptan) | SFC. |
| Perfluoroalkyl polyether - - - - - | X. |
| *Phosgene (Carbonyl chloride) - - - - - | ACS, DUP, MOB, OMC, PPG, RUC, UCC, UPJ, VDM. |
| *Pine oil, synthetic- - - - - | ARZ, NCI, SCM. |
| Potassium 2-methyl-2-butanol - - - - - | X. |
| Potassium 2-methyl-2-propanol- - - - - | X. |
| Sodium formaldehyde bisulfite- - - - - | DAM, EK. |
| Sodium formaldehyde sulfoxylate- - - - - | DA. |
| *Sodium methoxide (Sodium methylate) - - - - - | DA, HSH, OMC, RBC. |
| Succinyl peroxide- - - - - | WTL. |
| Miscellaneous acyclic chemicals, all other- - - - - | AAC, ALD, ARA, ARZ, BKL, CAD, CCL, COS, EK, EKT, GCM, GLY, HCF, HMY, NCI, PEL, PIC, RBC, RPC, TMA, USR, WTL, X, X. |
| MIXTURES NOT SPECIFICALLY ITEMIZED: | |
| Polymethacrylic acid esters- - - - - | DUP. |
| Mixtures of miscellaneous acyclic chemicals not specifically itemized - - - - - | ABB, ACS, ALX, CCW, CEL, CMP, CRN, DRC, EKX, ICI, MAL, MIL, MON, NCI, OMC, PFZ, PG, PLC, PMP, RPC, SHP, SYP, TX, UCC, VND, WCC, WPG. |

TABLE 3.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: DIRECTORY OF MANUFACTURERS, 1981

ALPHABETICAL DIRECTORY BY CODE

[Names of manufacturers that reported production and/or sales of miscellaneous cyclic and acyclic chemicals to the U.S. International Trade Commission for 1981 are listed below in the order of their identification codes as used in table 2]

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|---|
| AAC | Alcolac, Inc. | CHP | C. H. Patrick & Co., Inc. |
| ABB | Abbott Laboratories | CHT | Chattem, Inc. |
| ACS | Allied Corp., Allied Chemicals Co. | CIN | Stockhausen, Inc. |
| ACY | American Cyanamid Co. | CLC | Callery Chemical Co. Div. of Mine Safety Appliances Co. |
| ADC | Anderson Development Co. | CLK | Clark Oil & Refining Corp. |
| AFP | Allied Corp., Fibers & Plastics Co. Div. | CLN | Clinton Corn Processing Co. Sub. of Nabisco Products Co. |
| AGC | Alberta Gas Chemicals, Inc. | CMP | Commercial Products Co., Inc. |
| AIP | Air Products & Chemicals, Inc. | CNI | Frye Copysystems, Inc., Conap Div. |
| ALB | Ames Laboratories, Inc. | CNP | Nipro Inc. |
| ALD | Aldrich Chemical Co., Inc. | CO | Conoco, Inc. |
| ALI | Associated Lead, Inc. | COC | Columbia Organic Chemicals Co., Inc. |
| ALM | Allemania Chemical Co. | COS | Cosan Chemical Corp. |
| ALX | Alox Corp. | CPS | CPS Chemical Co. |
| AMB | American Bio-Synthetics Corp. | CRN | CPC International, Inc., Amerchol Corp. |
| AMD | Cyclo Chemicals Corp. | CRZ | Crown Zellerbach Corp. |
| AMO | Standard Oil Co. (Indiana) | CWN | Upjohn Co., Fine Chemical Div. |
| ARA | Arapahoe Chemicals, Inc., Sub/Syntex U.S.A., Inc. | CXI | Chemical Exchange Industries, Inc. |
| ARC | Armak Co., Industrial Chemical Div. | CYL | Cyclo Chemicals Corp. |
| ARS | Arsynco, Inc. | CYR | CYRO Industries, Inc. |
| ARZ | Arizona Chemical Co. | DA | Diamond Shamrock Corp. |
| ASH | Ashland Oil, Inc. | DAN | Dan River, Inc., Chemical Products Div. |
| ASL | The Ansul Co. | DBC | Badische Co. |
| ATL | Atlantic Chemical Corp. | DCC | Dow Corning Corp. |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | DFW | Deepwater Chemical Co., Ltd. |
| AZT | Dart & Kraft, Inc., Aztec Chemicals Div. | DIX | Dixie Chemical Co., Inc. |
| BAK | Baker International - Magna Corp. | DKA | Denka Chemical Corp. |
| BAS | BASF Wyandotte Corp. | DOM | Dominion Products |
| BCC | Buffalo Color Corp. | DOW | Dow Chemical Co. |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical Group | DRC | Dock Resins Corp. |
| BKC | J. T. Baker Chemical Co. | DUP | E. I. duPont de Nemours & Co., Inc. |
| BKL | Millmaster Onyx Group, Millmaster Chemical Co. Div. | DVC | Dover Chemical Corp. Sub. of ICC Industries, Inc. |
| BKM | Buckman Laboratories, Inc. | EFH | E. F. Houghton & Co. |
| BLM | Balchem Corp. | EHC | EthiChem Corp. |
| BOC | Biocrafts, Inc. | EK | Eastman Kodak Co. |
| BOR | Borden Co., Borden Chemical Div. | EKT | Tennessee Eastman Co. Div. |
| BRD | Lonza, Inc. | EKK | Texas Eastman Co. Div. |
| BUC | Synalloy Corp., Blackman-Uhler Chemicals Div. | EMR | Emery Industries, Inc. |
| BUK | Buckeye Cellulose Corp. | ENJ | Exxon Chemical Americas |
| CAD | Noury Chemical Corp. | ESX | Essex Industrial Chemicals, Inc., Essex Chemical Corp. |
| CAU | Calcasieu Chemical Corp. | EVN | W.R. Grace & Co., Organic Chemicals Div., Evans Chemetics |
| CBD | Chembond Corp. | FER | Ferro Corp. |
| CBY | Crosby Chemicals, Inc. | | Ferro Chemical Div. |
| CCA | Interstab Chemicals, Inc. | | Grant Chemical Div. |
| COC | C.N.C. Chemical Corp. | | Keil Chemical Div. |
| CCL | Catawba-Charlab, Inc. | FKE | Frank Enterprises, Inc. |
| CCW | Carstab Corp. | | FMC Corp. |
| CEL | Celanese Corp. | FMB | Industrial Chemical Group |
| | Celanese Chemical Co., Inc. | | Specialty Chemicals Group |
| | Celanese Fibers Co. | FMP | Industrial Chemical Group |
| | Celanese Plastics & Specialties Co. | FMT | Fairmount Chemical Co., Inc. |
| CGY | Ciba-Geigy Corp. | FOC | Handschy Industries, Inc., Farac Oil & Chemical Div. |
| CHG | Mobay Chemical Corp., Agricultural Chemicals Div. | | |
| CHL | Chemol, Inc. | | |

TABLE 3.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|--|------|---|
| FRE | Freeman Chemical Corp. | NCC | Niacet Corp. |
| FRO | Vulcan Materials Co., Chemicals Div. | NCI | Union Carbide Corp., Terpenes & Aromatics Div. |
| FTE | Foot Mineral Co. | NES | Ruetgers-Nease Chemical Co. |
| FTX | Finetex, Inc. | NEV | Neville Chemical Co. |
| GAF | GAF Corp. | NOC | Norac Co., Inc. and Mathe Div. |
| GAN | Gane's Chemicals, Inc. | NTB | National Biochemical Co. |
| GCM | Cardinal Chemical Co. | NTL | NL Industries, Inc. |
| GE | General Electric Co. | NWP | Northern Petrochemicals Co. |
| GIV | Givaudan Corp. | OH | Airco, Inc., Ohio Medical Products Div. |
| GLY | Glyco, Inc. | OMC | Olin Corp. |
| GP | Georgia-Pacific Corp.: Plaquemine Div. Resins Operations | ORA | M & T Chemicals, Inc. |
| GRD | W. R. Grace & Co., Polymers & Chemical Div. | ORO | Chervon Chemical Co. |
| GTL | Great Lakes Chemical Corp. | ORT | Roehr Chemicals, Inc. |
| GYR | Goodyear Tire & Rubber Co. | PAC | Pacific Anchor Chemical Corp. |
| HAL | C.P. Hall Co. | PAS | Pennwalt Corp. |
| HCF | Hercofina | PD | Warner-Lambert Co. |
| HCP | Honig Chemical & Processing Corp. | PEL | Pelron Corp. |
| HDG | Hodag Chemical Corp. | PEN | CPC International, Inc., Penick Corp. |
| HEX | Hexagon Laboratories, Inc. | PFN | Pfanstiehl Laboratories, Inc. |
| HFT | Syntex Agribusiness, Inc. | PFZ | Pfizer, Inc. & Pfizer Pharmaceuticals, Inc. |
| | Hooker Chemical Corp.: Hooker Chemicals & Plastics Corp.: Industrial Chemicals Group | PG | Procter & Gamble Co., Procter & Gamble Manufacturing Co. |
| HK | Durez Div. | PIC | Pierce Chemical, Inc. |
| HKD | Onyx Chemical Co. | PLC | Phillips Petroleum Co. |
| HML | Hummel Chemical Co. | PLS | Plastics Engineering Co. |
| HMP | W. R. Grace & Co., Organic Chemicals Div. | PMP | Premier Malt Products, Inc. |
| HMY | Humphrey Chemical Co. | PPG | PPG Industries, Inc. |
| HN | Tenneco Chemicals, Inc. | PST | Perstorp, Inc. |
| HPC | Hercules, Inc. | PUB | Publicker Industries, Inc. |
| HRT | Hart Products Corp. | QKO | Quaker Oaks Co. |
| HSH | Harshaw Chemical Co. | RBC | Fike Chemicals, Inc. |
| HXL | Hexcel Corp., Hexcel Chemical Products | RCI | Reichhold Chemicals, Inc. |
| ICI | ICI Americas, Inc. & Chemical Specialties Group | RCN | Racon, Inc. |
| IMC | International Minerals & Chemicals Corp., IMC Chemical Group | RDA | Rhone-Poulenc, Inc. |
| IOC | Sybron Chemical Div. of Sybron Corp. | REG | Regis Chemical Co. |
| KAI | Kaiser Aluminum & Chemical Corp., Kaiser Chemical Div. | REH | Reheis Chemical Co. Div. of Armour Pharmaceutical Co. |
| KCH | Joseph Ayers, Inc. | REM | Remington Arms Co., Inc. |
| KF | Kay-Fries Inc., Member Dynamit Nobel Group | RH | Rohm & Haas Co. |
| KLM | Kalama Chemical, Inc. | RPC | Millmaster Onyx Group, Kewanee Industries Inc. |
| KPT | Koppers Co., Inc. | RSA | R.S.A. Corp. |
| LCP | LCP Chemicals - West Virginia, Inc. | RUC | Rubicon Chemicals, Inc. |
| LEM | Napp Chemicals, Inc. | S | Sandoz, Inc., Colors & Chemicals Div. |
| LIL | Eli Lilly & Co. | SAR | Leski, Inc. |
| MAL | Mallinckrodt, Inc. | SBC | Scher Chemicals, Inc. |
| MCB | Borg-Warner Corp., Borg-Warner Chemicals | SCM | SCM Corp.: Organic Chemicals Div. PCR, Inc. |
| MCI | Mooney Chemicals, Inc. | SCP | Henkel Corp. |
| MHI | Thiokol Corp., Ventron Div. | SDC | Martin-Marietta Corp., Sodeyco Div. |
| MIL | Milliken & Co., Milliken Chemical Co. | | Sterling Drug, Inc.: |
| MLS | Miles Laboratories, Inc. Biotechnology Group | SDH | Hilton Davis Chemical Co. Div. |
| MMC | EM Industries, Inc., EM Science Div. | SDW | Sterling Organics Div. |
| MNO | Monochem, Inc. | | Stauffer Chemical Co.: Agricultural Div. |
| MOB | Mobay Chemical Corp., Pittsburgh Div. | SFA | Calbio Chemicals, Inc. |
| MON | Monsanto Co. | SFC | Industrial Div. |
| MRK | Merck & Co., Inc. | SFI | Plastics Div. |
| MTO | Montrose Chemical Corp. of California | SFP | Specialty Chemical Div. |
| | | SFS | Shell Oil Co., Shell Chemical Co. Div. |
| | | SHC | |

TABLE 3.--MISCELLANEOUS CYCLIC AND ACYCLIC CHEMICALS: DIRECTORY OF MANUFACTURERS, 1981--CONTINUED

| CODE | NAME OF COMPANY | CODE | NAME OF COMPANY |
|------|---|------|--|
| SHP | Shepherd Chemical Co. | UCC | Union Carbide Corp. |
| SHX | Sherex Chemical Co., Inc. | UPJ | Upjohn Co. |
| SK | SmithKline Beckman Corp., SmithKline Chemicals Div. | USB | U.S. Borax & Chemical Corp. |
| SKO | Getty Refining & Marketing Co. | USI | National Distillers & Chemicals Corp., U.S. Industrial Chemicals Co. |
| SM | Mobil Oil Corp., Mobil Chemical Co.: Chemical Coatings Div. Phosphorus Div. | USR | Uniroyal, Inc., Uniroyal Chemical Div. |
| SNO | SunOlin Chemical Co. | USS | USS Chemicals Div. of U.S. Steel Corp. |
| SNW | Sun Chemical Corp., Chemicals Div. | VAL | Valchem Div. of United Merchants & Manufactures, Inc. |
| SOC | Standard Oil Co. of California, Chevron Chemical Co. | VDM | Van De Mark Chemical Co., Inc. |
| SOH | Vistron Corp. | VEL | Velsicol Chemical Corp. |
| SOI | Specialty Organics, Inc. | VGC | Virginia Chemicals, Inc. |
| SOL | Southland Corp., Fine Chemical Div. | VIK | Viking Chemical Co. |
| SPD | General Electric Co., Silicone Products Dept. | VND | Van Dyk & Co., Inc. |
| STC | American Hoechst Corp., Sou-Tex Works | WAG | West Agro-Chemical, Inc. |
| SW | Sherwin-Williams Co. | WAY | Phillip A. Hunt Chemical Corp., Organic Chemical Div. |
| SWS | Stauffer Chemical Co., SWS Silicones Div. | WCC | White Chemical Corp. |
| SYL | Sylvachem Corp. | WCL | Wright Chemical Corp. |
| SYP | Dart & Kraft, Inc., Synthetic Products Co. Div. | WLN | Wilmington Chemical Corp. |
| TOC | Sybron Corp., Chemical Division/Tanatex | WM | American Can Co., Inolex Chemicals Div. |
| TCH | Emery Industries Inc., Trylon Div. | WPG | West Point-Pepperell, Inc., Grifftex Chemical Co. Sub. |
| TKL | Thiokol Corp., Specialty Chemicals Div. | WTC | Witco Chemical Corp. |
| TLC | Twin Lake Chemical, Inc. | WTH | Union Camp Corp. |
| TNA | Ethyl Corp. | WTL | Pennwalt Corp., Lucidol Div. |
| TNI | The Gillette Co., Chemical Div. | WVA | Westvaco Corp., Polychemicals Dept. |
| TRN | Trinity Chemical Corp. | WYC | Wycon Chemical Co. |
| TRO | Troy Chemical Corp. | WYT | Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp. |
| TSA | Texas Alkyls, Inc. | ZGL | Carolina Processing Corp. |
| TUL | Tull Chemical Co., Inc. | | |
| TX | Texaco, Inc. | | |
| TZC | Magnesium Elektron, Inc. | | |

Note.—Complete names, telephone number, and addresses of the above reporting companies are listed in table 1 of the appendix. The above codes identify those of the 282 reporting companies and company divisions for which permission to publish was not restricted.

APPENDIX

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981

[Names of synthetic organic chemicals manufacturers that reported production and/or sales to the U.S. International Trade Commission for 1981 are listed below alphabetically, together with their identification codes as used in table 2 of the 15 individual sections of this report]

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------------------|---|
| AEP | A & E Plastik Pak Co., Inc., A & E Plastics, Inc. | 213-968-3801 | 14505 Proctor Ave., Industry, CA 91749. |
| AZS | AZS Corp.: AZ Products Co. Div----- AZS Chemical Co. Div----- | 813-665-6226 404-873-1851 | 2525 So. Combee Rd., Lakeland, FL 33801. 762 Marietta Blvd., Atlanta, GA 30318. |
| ABB | Abbott Laboratories----- | 312-937-7262 | 14th St. and Sheridan Rd., N. Chicago, IL 60064. |
| ABS | Abex Corp., Friction Products Group----- | 212-560-3200 | P. O. Box 3250, Winchester, VA 22601. |
| ACO | Adco Chemical Co----- | 201-589-0880 | Rutherford and Delaney Sts. Newark, NJ 07105. |
| WLC | Agrico Chemical Co----- | 918-588-2000 | P. O. Box 3166, Tulsa, OK 74101. |
| AGY | Agway, Inc., Olean Nitrogen Complex----- | 315-477-6566 | 1446 Buffalo St., Olean, NY 14760. |
| OH | Airco, Inc., Ohio Medical Products Div. | 201-573-0800 | 3030 Airco Dr., Madison, WI 53701. |
| AIP | Air Products & Chemicals, Inc----- | 215-481-4911 | P. O. Box 538, Allentown, PA 18105. |
| AIC | Albany International Corp----- | 614-876-3637 | 1979 Atlas St., Columbus, OH 43228. |
| AGC | Alberta Gas Chemicals, Inc----- | 201-267-1400 | 7 Century Dr., Parsippany, NJ 07054. |
| ALC | Alco Chemical Corp----- | 615-629-1405 | 909 Mueller Dr., Chattanooga, TN 37406. |
| AAC | Alcolac, Inc----- | 301-355-2600 | 3440 Fairfield Rd., Baltimore, MD 21226. |
| ALD | Aldrich Chemical Co., Inc----- | 414-273-3850 | 940 W. St. Paul Ave., Milwaukee, WI 53233. |
| ALE | Alex Chemical Co----- | 717-462-3500 | 119 N. Union St., Shenandoah, PA 17976. |
| ALG | Allegheny Chemical Corp----- | 814-776-1186 | Gillis Ave., Ridgway, PA 15853. |
| ALM | Allemania Chemical Co----- | 504-687-6311 | P. O. Box 716, Plaquemine, LA 70764. |
| ALL | Alliance Chemical, Inc----- | 201-945-5400 | 33 Avenue P, Newark, NJ 07105. |
| ALS | Allied Corp----- | 201-455-2000 | P. O. Box 1079-R, Morristown, NJ 07960. |
| ACS | Allied Chemicals Co----- | 201-455-2351 | P. O. Box 2251-R, Morristown, NJ 07960. |
| AFP | Allied Fibers & Plastics Co----- | 212-391-5200 | 1411 Broadway, New York, NY 10018. |
| ACU | Union Texas Petroleum Co----- | 713-960-7500 | P. O. Box 2120, Houston, TX 77001. |
| APA | Allied Products Corp., Acme Chemicals & Insulation Div. | 203-562-2171 | P. O. Box 1404, 166 Chapel St., New Haven, CT 06505. |
| ALX | Alox Corp----- | 716-282-1295 | 3943 Buffalo Ave., Niagara Falls, NY 14303. |
| APH | Alpha Corp----- | 901-853-2450 | P. O. Drawer A, 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.). | 201-636-3000 | 1 Hess Plaza, Woodbridge, NJ 07095. |
| AMB | American Bio-Synthetics Corp----- American Can Co.: | 414-384-7017 | 710 W. National Ave., P. O. Box # 04275, Milwaukee, WI 53204. |
| WM | Inolex Chemicals Co----- | 215-271-6400 | Jackson & Swanson Sts., Philadelphia, PA 19148. |
| MAR | Lignin Chemicals Div----- | 203-552-2000 | GOP #8, P. O. Box 3650, Greenwich, CT 06830. |
| AC | American Color & Chemical Corp----- | 704-364-3270 | 6525 Morrison Blvd., Charlotte, NC 28211. |
| ACY | American Cyanamid Co----- | 201-831-2000 | Wayne, NJ 07470. |
| HST | American Hoechst Corp: Industrial Chemicals Div----- Petrochemicals Div----- | 401-823-2000 201-231-2299 | 129 Quidnick St., Coventry, RI 02816. Route 202-206 North, Somerville, NJ 08876. |
| STC | Sou-Tex Works----- | 704-827-7531 | P. O. Box 886, Mount Holly, NC 28052. |
| ASY | American Synthetic Rubber Corp----- | 502-448-2761 | P. O. Box 32960, Louisville, KY 40232. |
| ALB | Ames Laboratories, Inc----- | 203-874-2463 | 200 Rock Lane, Milford, CT 06460. |
| HVG | Ametek, Inc., Haveg Div----- | 302-995-0410 | 900 Greenbank Rd., Wilmington, DE 19808. |
| AMV | Amvac Chemical Corp----- | 213-264-3910 | 4100 E. Washington Blvd., Los Angeles, CA 90023. |
| ADC | Anderson Development Co----- | 517-263-2121 | 1415 E. Michigan St., Adrian, MI 49221. |
| ASL | Ansul Co----- | 715-735-7411 | 1 Stanton St., Marinette, WI 54143. |
| APX | Apex Chemical Co., Inc----- | 201-354-5420 | 200 S. 1st St., Elizabethport, NJ 07206. |
| ARO | Apollo Colors, Inc----- | 312-564-9190 | 899 Skokie Blvd., Northbrook, IL 60062. |
| ARA | Arapahoe Chemicals, Inc., Sub/Syntex U.S.A., Inc. | 303-442-7926 | 2075 N. 55th St., Boulder, CO 80302. |
| ARN | Arenol Chemical Corp----- | 212 784-0948 | 40-33 23d St., Long Island City, NY 11101. |
| ARZ | Arizona Chemical Co----- | 201-794-3200 | Berdan Ave., Wayne, NJ 07470. |
| AKS | Arkansas Co., Inc----- | 201-589-0516 | 185 Foundry St., Newark, NJ 07105. |
| ARC | Arnak Co., Industrial Chemical Div----- | 312-786-0400 | 300 S. Wacker Dr., Chicago, IL 60606. |
| AGP | Armour-Dial, Inc----- | 312-892-4381 | 2000 Aucutt Rd., Montgomery, IL 60545. |
| ARP | Armour Pharmaceutical Co----- | 815-932-6771 | P. O. Box 511, Kankakee, IL 60901. |
| ARK | Armstrong World Industries, Inc----- | 217-397-0611 | Charlotte & Liberty Sts., Lancaster, PA 17604. |
| ARO | ARNCO----- | 213-557-1378 | 5141 Firestone Place, South Gate, CA 90280. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|---|
| ARL | Arol Chemical Products Co. | 201-344-1510 | 649 Ferry St., Newark, NJ 07105. |
| ARS | Araynco, Inc. | 212-898-2300 | 126-02 Northern Blvd., Flushing, NY 11368. |
| ASH | Ashland Oil Inc. | 606-329-3333 | P. O. Box 391, Ashland, KY 41101, and P. O. Box 2219, Columbus, OH 43216. |
| ALI | Associated Lead, Inc. | 215-427-4600 | 2545 Aramingo Ave., Philadelphia, PA 19125. |
| BLA | Astor Products, Inc., Blue Arrow Div. | 904-783-5000 | 5244 Edgewood Ct., Jacksonville, FL 32205. |
| ATL | Atlantic Chemical Corp. | 201-235-1800 | 10 Kingsland Rd., Nutley, NJ 07110. |
| ATR | Atlantic Richfield Co., Arco Chemical Co. | 213-486-3511 | 515 S. Flower St., Los Angeles, CA 90064. |
| APD | Atlas Powder Co., Sub. of Tyler Corp. | 417-624-0212 | P. O. Box 87, Joplin, MO 64801. |
| APR | Atlas Processing Co. | 318-636-2711 | P. O. Box 3099, Shreveport, LA 71103. |
| ARI | Atlas Refinery, Inc. | 201-589-2002 | 142 Lockwood St., Newark, NJ 07105. |
| AUX | Auralux Corp. | 401-539-2306 | Main St., Hope Valley, RI 02832. |
| KCH | Joseph Ayers, Inc. | 215-837-1808 | 275 Keystone Dr., Bethlehem, PA 18017. |
| BAS | BASF Wyandotte Corp. | 201-263-3400 | 100 Cherry Hill Rd., Parsippany, NJ 07054. |
| FSN | Pigments Div. | 616-392-2391 | 491 Columbia Ave., Holland, MI 49423. |
| FSN | BFC Chemicals, Inc. | 302-575-7850 | 4311 Lancaster Pike, P. O. Box 2867, Wilmington, DE 19805. |
| DBC | Badische Corp. | 804-887-6000 | 602 Copper Rd., Freeport, TX 77541. |
| BKC | J. T. Baker Chemical Co. | 201-859-2151 | 50 Central Ave., Kearny, NJ 07032. |
| BAK | Baker International - Magna Corp. | 713-795-4270 | 222 Red School Lane, Phillipsburg, NJ 08865. |
| BLM | Balchem Corp. | 914-355-2861 | P. O. Box 33387, Houston, TX 77033. |
| ELC | Ball Chemical Co. | 412-486-1111 | P. O. Box 175, Slate Hill, NY 10973. |
| BAX | Baxter Travenol Laboratories, Inc. | 312-948-2000 | 1486 Butler Plank Rd., Glenshaw, PA 15116. |
| BCK | Beckman Microbics | 714-438-9151 | 6301 N. Lincoln Ave., Morton Grove, IL 60053. |
| BEE | Beecham, Inc., Beecham Laboratories Div. | 201-469-5200 | 6200 El Camino Rd., Carlsbad, CA 92008. |
| BCM | Belding Corticelli Industries | 212-944-6040 | 101 Possumtown Rd., Piscataway, NJ 08854. |
| BLZ | Belzak Corp. | 201-773-0602 | 1430 Broadway, New York, NY 10018. |
| BNE | Bendix Corp., FM Div. | 518-273-6550 | 850 Bloomfield Ave., Clifton, NJ 07012. |
| BEN | Bennett's | 801-486-2211 | P. O. Box 238, Troy, NY 12180. |
| PDC | Berncolors-Poughkeepsie, Inc. | 914-454-6700 | P. O. Box 1320, Salt Lake City, UT 84110. |
| BTS | Bethlehem Steel Corp. | 215-694-4522 | 75 N. Water St., Poughkeepsie, NY 12601. |
| BDS | Biddle Sawyer Corp. | 212-736-1580 | Martin Tower, Bethlehem, PA 18016. |
| BNS | Binney and Smith, Inc. | 215-253-6271 | 2 Penn Plaza - Suite 2355, New York, NY 10121. |
| BOC | Biocraft Laboratories, Inc. | 201-796-3434 | P. O. Box 431, 1100 Church Lane, Easton, PA 18042. |
| BNP | Bison Nitrogen Products Co. | 712-277-1340 | 12 Industrial Way, Waldwick, NJ 07463. |
| LAK | Bofors Nobel, Inc. and Lakeway, Inc. | 616-788-2341 | P. O. Box 1828, Sioux City, IA 51102. |
| BHA | Boots Hercules Agrochemicals Co. | 302-575-7850 | 5025 Evanston Ave., Muskegon, MI 49443. |
| BOR | Borden, Inc.: Borden Chemical Div. | 614-225-4000 | 4311 Lancaster Pike, P. O. Box 2867, Wilmington, DE 19805. |
| MCB | Printing Ink Div., Pigments Div. | 513-782-6200 | 180 E. Broad St., Columbus, OH 43215. |
| BFP | Borg Warner Corp., Borg Warner Chemicals. | 304-424-5664 | 630 Glendale-Milford Rd., Cincinnati, OH 45215. |
| BRS | Breddo Food Products Corp., Inc. | 913-321-5300 | International Center, Parkersburg, WV 26101. |
| BRU | Bristol-Meyers Co. | 212-546-4000 | 18th and Kansas Avenue, Kansas City, KS 66105. |
| BRU | M. A. Bruder & Sons, Inc. | 215-353-5100 | 345 Park Ave., New York, NY 10022. |
| BUK | Buckeye Cellulose Corp. | 901-454-8100 | 52d St. and Grays Ave., Philadelphia, PA 19143. |
| BKM | Buckman Laboratories, Inc. | 901-278-0330 | 2899 Jackson Ave., Memphis, TN 38108. |
| BCC | Buffalo Color Corp. | 716-827-4500 | 1256 N. McLean Blvd., Memphis, TN 38108. |
| BJL | Burdick & Jackson Laboratories, Inc. | 616-726-3171 | 340 Elk St., Buffalo, NY 14210. |
| BUR | Burroughs Wellcome Co. | 919-541-9090 | 1953 S. Harvey St., Muskegon, MI 49442. |
| CLF | CF & I Steel Corp., Pueblo Plant | 303-561-6100 | 3030 Cornwallis Rd., Research Triangle Park, NC 27709. |
| CPI | CF Industries, Inc. | 312-438-4500 | P. O. Box 316, Pueblo, CO 81002. |
| CCC | C.N.C. Chemical Corp. | 401-751-7711 | Salem Lake Dr., Long Grove, IL 60047. |
| ACR | CPC International, Inc. | 312-771-9680 | P. O. Box 997, Annex Station, Providence, RI 02901. |
| CRN | Acme Resin Corp. | 201-894-4000 | 1401 S. Circle Avenue, Forest Park, IL 60130. |
| PEN | Amerchol Corp. | 201-935-6600 | International Plaza, Englewood Cliffs, NJ 07632. |
| CPS | Penick Corp. | 201-727-3100 | 1050 Wall St. W., Lyndhurst, NJ 07071. |
| CYR | CPS Chemical Co., Inc. | 201-365-6700 | P. O. Box 162, Old Bridge, NJ 08857. |
| | CYRO Industries | | 697 Route 46, Clifton, NJ 07015. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|--|--|
| CAU | Calcasieu Chemical Corp----- | 918-561-2700 | P. O. Box 1522, Lake Charles, LA 70602. |
| CRC | California Resin and Chemical Co., Inc. | 707-552-3500 | 501 Green Island Rd., Vallejo, CA 94590. |
| CLC | Callery Chemical Co. Div. of Mine Safety Appliances Co. | 412-273-5000 | Callery, PA 16024. |
| CRB | Caribe Isoprene Corp----- | 809-843-8686 | Firm Delivery, Ponce, PR 00731. |
| GCM | Cardinal Chemical Co----- | 803-799-7190 | P. O. Box 345, Columbia, SC 29202. |
| CGL | Cargill, Inc----- | 612-475-7637 | P. O. Box 9300 CPD/30, Minneapolis, MN 55440. |
| GOR | Carl Gordon Industries, Inc----- | 617-798-8721 | 1001 Southbridge St., Worcester, MA 01610. |
| ZGL | Carolina Processing Corp----- | 203-329-7100 | P. O. Box 195, Severn, NC 27877. |
| CNC | Carpenter Chemical Co----- | 804-233-8391 | P. O. Box 27205, Richmond, VA 23261. |
| CCW | Carstab Corp----- | 513-733-2100 | West St., Reading, OH 45215. |
| BSC | Cascade Resins, Inc----- | 503-343-2111 | P.O. Box 1989, Eugene, OR 97440. |
| DOL | Castle & Cooke, Inc., Castle & Cooke Foods, Hawaii Pineapple Div. | 808-536-3411 | 650 Iwilei Rd., Honolulu, HI 96801. |
| CCL | Catawba-Chariab, Inc----- | 704-523-4242 | 5046 Old Pineville Rd., Charlotte, NC 28224. |
| CEL | Celanese Corp.: Celanese Chemical Co., Inc----- Celanese Fibers Co----- Celanese Plastics & Specialties Co. | 214-689-4890 704-554-2000 502-585-8011 | 1250 W. Mockingbird Lane, Dallas, TX 75247. P. O. Box 1414, Charlotte, NC 28201. 12 Main St., Chatham, NJ 07928, and One Riverfront Plaza, Louisville, KY 40202. |
| CNT | Certainteed Corp----- | 215-687-5000 | P. O. Box 860, Valley Forge, PA 19482. |
| CPR | Certified Processing Corp----- | 201-923-5200 | U.S. Highway #22, Hillside, NJ 07205. |
| GRS | Champlin Petroleum Co----- | 512-882-8871 | P. O. Box 9176, Corpus Christi, TX 78408. |
| SOG | Charter International Oil Co----- | 904-358-4579 | P. O. Box 5008, Houston, TX 77012. |
| CHT | Chattrem, Inc----- | 615-821-4571 | 1715 W. 38th St., Chattanooga, TN 37409. |
| CBD | Chembond Corp----- | 503-746-6501 | P. O. Box 270, Springfield, OR 97477. |
| GRL | Chemed Corp, Vestal Laboratories Div. | 314-535-1810 | 5035 Manchester Ave., St. Louis, MO 63110. |
| CI | Chem-Fleur, Inc----- | 201-589-4266 | 200 Pulaski St., Newark, NJ 07105. |
| CXI | Chemical Exchange Industries, Inc----- | 713-526-8291 | P. O. Box 812, Houston, TX 77001. |
| CMT | Chemithon Corp----- | 206-937-9954 | 5430 W. Marginal Way, S.W., Seattle, WA 98106. |
| CHL | Chemol, Inc----- | 919-272-3121 | P. O. Box 20687, Greensboro, NC 27420. |
| CPX | Chemplex Co----- | 312-437-7800 | 3100 Golf Rd., Rolling Meadows, IL 60008. |
| ORO | Chevron Chemical Co----- | 415-894-7700 | 575 Market St., Rm. 3280, San Francisco, CA 94105. |
| CHH | CHR. Hansen's Laboratory, Inc----- | 414-476-3630 | 9015 W. Maple St., West Allis, WI 53214. |
| CGY | Ciba-Geigy Corp----- Agricultural Div----- Resin Dept----- Cities Service Co.: | 914-478-3131 919-292-7100 914-478-3131 | 444 Saw Mill River Rd., Ardsley, NY 10502. P. O. Box 18300, 410 Swing Rd., Greensboro, NC 27419. 444 Saw Mill River Rd., Ardsley, NY 10502. |
| CBN | Columbian Chemicals Co----- | 918-744-1770 | P. O. Box 37, Tulsa, OK 74102. |
| TEN | Copperhill Operations----- | 615-496-3331 | Copperhill, TN 37317. |
| CRN | Petrochemicals Div----- | 918-561-2700 | P. O. Box 1522, Lake Charles, LA 70602, and 250 North Belt East, Houston, TX 77060. |
| CSO | Petroleum Products Group----- | 318-491-6011 | P. O. Box 1562, Lake Charles, LA 70602. |
| CLK | Clark Chemical Corp. Sub. of Clark Oil & Refining Corp. | 312-385-5000 | 131st St. & Kedzie Ave., Blue Island, IL 60406. |
| CLY | W. A. Clearly Corp----- | 201-247-8000 | P. O. Box 10, Somerest, NJ 08873. |
| CLN | Clinton Corn Processing Co. Sub. of Nabisco Products Co. | 212-759-4400 | 1251 Beaver Channel Pkwy., Clinton, IA 52732. |
| CLI | Clintwood Chemical Co----- | 312-927-1071 | 4341 S. Wolcott Ave., Chicago, IL 60609. |
| CSP | Coastal Corp., Coastal States Petroleum Co. | 512-887-4100 | P. O. Drawer 521, Corpus Christi, TX 78403. |
| CP | Colgate-Palmolive Co----- | 212-310-2000 | 300 Park Ave., New York, NY 10022. |
| CLD | Colloids, Inc----- | 201-926-6100 | 394 Frelinghuysen Ave., Newark, NJ 07114. |
| CCS | Colorado Chemical Specialties, Inc----- | 303-278-1963 | 4295 McIntyre St., Golden, CO 80401. |
| CLO | Colorado Organic Chemical Co., Inc----- | 303-571-1895 | 5321 Dahlia St., Commerce City, MO 80022. |
| CNC | Columbia Nitrogen Corp----- | 404-823-4000 | P. O. Box 1483, Augusta, GA 30913. |
| COC | Columbia Organic Chemicals Co., Inc----- | 803-776-4990 | P. O. Box 9096, Columbia, SC 29290. |
| CAC | Cominco American, Inc., Camex Operations | 509-747-6111 | P. O. Box 5067, Borger, TX 79007. |
| CMP | Commercial Products Co., Inc----- | 201-427-6887 | 117 Ethel Ave., Hawthorne, NJ 07506. |
| COR | Commonwealth Oil Refining Co., Inc----- | 809-843-3030 | Petrochemical Complex, Ponce, PR 00731. |
| CPI | Commonwealth Petrochemical, Inc----- | 809-843-3030 | Petrochemical Complex, Ponce, PR 00731. |
| CON | Concord Chemical Co., Inc----- | 609-966-1526 | 17th & Federal Sts., Camden, NJ 08105. |
| CO | Conoco, Inc----- | 405-767-3456 | P. O. Box 1267, 100 S. Pine, Ponca City, OK 74603. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|--|
| CWP | Consolidated Papers, Inc. | 715-422-3111 | 231 1st Ave. N., Wisconsin Rapids, WI 54494. |
| CTL | Continental Chemical Co. | 201-472-5000 | 270 Clifton Blvd., Clifton, NJ 07015. |
| CTP | Continental Polymers, Inc. | 213-637-2103 | 2225 E. Del Amo Blvd., Compton, CA 90220. |
| CPV | Cook Paint & Varnish Co. | 816-391-6100 | 919 E. 14th Ave., N. Kansas City, MO 64116. |
| CFA | Cooperative Farm Chemicals Association. | 913-843-7300 | P. O. Box 308, Lawrence, KS 06044. |
| COP | Coopers Creek Chemical Corp. | 215-828-0375 | River Rd., W. Conshohocken, PA 19428. |
| CFY | Copolymer Rubber & Chemical Corp. | 504-355-5655 | P. O. Box 2591, Baton Rouge, LA 70821. |
| SWC | Corco Cyclohexane, Inc. | 809-843-3030 | Petrochemical Complex, Ponce, PR 00731. |
| CLU | Core-Lube, Inc. | 217-662-2136 | P. O. Box 811, Danville, IL 61832. |
| CRP | Corpus Christi Petrochemicals Co. | 713-751-7100 | 707 McKinney St., SW Tower, Suite 1400, Houston, TX 77002. |
| COS | Cosan Chemical Corp. | 201-400-9300 | 400 - 14th St., Carlstadt, NJ 07072. |
| CSD | Cosden Oil & Chemical Co. | 214-750-2400 | 8350 N. Central, Dallas, TX 75206. |
| CRT | Crest Chemical Corp. | 201-623-3334 | 225 Emmet St., Newark, NJ 07114. |
| CRD | Croda, Inc. | 212-683-3089 | 51 Madison Ave., New York, NY 10010. |
| CK | Crompton & Knowles Corp., Dyes & Chemical Div. | 215-376-6731 | 500 Pear St., Reading, PA 19603. |
| CBY | Crosby Chemicals, Inc. | 601-798-6902 | P. O. Box 460, Picayune, MS 39466. |
| CCP | Crown Central Petroleum Corp. | 301-539-7400 | 1 N. Charles St., Baltimore, MD 21203. |
| USM | Crown Metro, Inc. | 803-277-1870 | P. O. Box 5696, Greenville, SC 29606. |
| CRZ | Crown Zellerbach Corp. | 415-951-5000 | P. O. Box 4266, Vancouver, WA 98662. |
| CYT | Crystall Chemical Co. | 713-682-1221 | 1523 N. Post Oak Rd., Houston, TX 77055. |
| CUS | Custom Pigments Corp. | 312-252-7273 | 2125 W. Rice St., Chicago, IL 60622. |
| CTR | Custom Resins Div. of Bemis Co., Inc. | 502-826-7641 | P. O. Box 933, Henderson, KY 42420. |
| AMD | Cyclo Chemical Corp. | 213-582-6411 | 1922 E. 64th St., Los Angeles, CA 90001, and |
| CYL | | 305-592-6700 | 7500 N.W. 66th St., Miami, FL 33166. |
| DAT | Daitom, Inc. | 913-371-1452 | 5200 Speaker Rd., Kansas City, KS 66101. |
| DAN | Dan River, Inc., Chemical Products Div. | 803-298-9000 | P. O. Box 261, Danville, VA 24540. |
| | Dart & Kraft, Inc.: | | |
| AZT | Aztec Chemicals Div. | 312-498-8000 | P. O. Box 250, Elyria, OH 44035. |
| SYN | Synthetic Products Co. Div. | 216-531-6010 | 1636 Wayside Rd., Cleveland, OH 44112. |
| DYS | Davies-Young Co. | 314-291-1900 | 2700 Wagner Place, Maryland Heights, MO 63043. |
| DGO | Day-Glo Color Corp. | 216-391-7070 | 4515 St. Clair Ave., Cleveland, OH 44103. |
| DPW | Deepwater Chemical Co., Ltd. | 714-751-3522 | P. O. Box 17599, Irvine, CA 92713. |
| DEG | Degen Oil & Chemical Co., Inc. | 201-432-1192 | 200 Kellogg St., Jersey City, NJ 07305. |
| DGC | Degussa Corp. | 205-653-7933 | Theodore Industrial Park, P. O. Box 606, Theodore, AL 36582. |
| DKA | Denka Chemical Corp. | 713-477-8821 | 8701 Park Place Blvd., Houston, TX 77017. |
| DNS | Dennis Chemical Co. | 314-771-1800 | 2701 Papin St., St. Louis, MO 63103. |
| DRB | The Derby Co., Inc. | 617-881-3160 | P. O. Box 146, Megunco Rd., Ashland, MA 01721. |
| DSO | DeSoto, Inc. | 312-391-9000 | 1700 S. Mt. Prospect Ave., Des Plaines, IL 60018. |
| DEX | Dexter Chemical Corp. | 212-542-7700 | 845 Edgewater Rd., Bronx, NY 10474. |
| HYC | Hysol Div. | 213-968-6511 | 15051 E. Don Julian Rd., Industry, CA 91749 |
| MID | Midland Div. | 203-623-9801 | 1-7 E. Water St., Waukegan, IL 60085. |
| DA | Diamond Shamrock Corp. | 214-745-2000 | 717 N. Harwood St., Dallas, TX 75201. |
| | Diamond Shamrock Agricultural Chemicals, Inc.: | | |
| | Cresylic | 205-556-3500 | P. O. Box H, Tuscaloosa, AL 35404. |
| | Phenoxy Plant | 205-556-3500 | P. O. Box H, Tuscaloosa, AL 35404. |
| PLN | Disogrin Industries Corp. | 603-669-4050 | Grenier Industrial Airpark, Manchester, NH 03130. |
| DIX | Dixie Chemical Co., Inc. | 713-526-2604 | 3635 W. Dallas Ave., Houston, TX 77019. |
| DPP | Dixie Pine Chemicals, Inc. | 601-584-6221 | P. O. Box 470 Hattiesburg, MS 39401. |
| DRC | Dock Resins Corp. | 201-862-2351 | 1512 W. Elizabeth Ave., Linden, NJ 07036. |
| DOM | Dominion Products | 212-489-3050 | 882 3d Ave., Brooklyn, NY 11232. |
| DHC | Donner-Hanna Coke Joint Venture | 716-822-1600 | P. O. Box A, S. Paul Station, Buffalo, NY 14220 |
| DVC | Dover Chemical Corp., Sub. of ICC Industries, Inc. | 216-343-7711 | W. 15th & Davis Sts., P. O. Box 40, Dover, OH 44622. |
| DOW | Dow Chemicals Co. | 517-636-1000 | 2020 Dow Center, Midland, MI 48650. |
| DCC | Dow Corning Corp. | 517-496-4000 | P. O. Box 1767, Mail Code #C02216, Midland, MI 48640. |
| DUP | E. I. duPont de Nemours & Co., Inc. | 302-774-2421 | DuPont Bldg., Wilmington, DE 19898. |
| BAL | Dutch Boy Paints, Consumer Div., Sherwin-Williams Co. | 312-441-6650 | 2325 Hollins Ferry Rd., Baltimore, MD 21230. |
| DSC | Dye Specialties, Inc. | 201-866-9504 | 100 Plaza Center, Box 1532, Secaucus, NJ 07094. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------|--|
| MMC | : EM Industries, Inc., EM Science Div | : 609-423-6300 | : 2909 Highland Ave., Cincinnati, OH 45212. |
| EPI | : Eagle Pitcher Industries, Ohio | : 817-387-0585 | : P. O. Box 1398, Denton, TX 76201. |
| | : Rubber Co. Div. | | |
| 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 | : 615-246-2111 | : P. O. Box 511, Kingsport, TN 37662. |
| EKX | : Texas Eastman Co. Div | : 214-757-6611 | : P. O. Box 511, Kingsport, TN 37662. |
| ESA | : East Shore Chemical Co., Inc | : 616-726-3106 | : 1221 E. Barney Ave., Muskegon, MI 49443. |
| EPP | : Eaton Corp., EPP Div | : 216-523-5000 | : Main & Orchard, Mantua, OH 44255. |
| ELN | : Elan Chemical Co | : 201-344-8014 | : 268 Doremus Ave., Newark, NJ 07105. |
| ELC | : Elco Corp., Sub. of Detrex Industries, Inc. | : 313-358-5800 | : P. O. Box 09168, Cleveland, OH 44109. |
| ELP | : EL Paso Polyolefins Co | : 201-262-6500 | : W. 115 Century Rd., Paramus, NJ 07652. |
| ELP | : El Paso Products Co | : 915-333-7200 | : P. O. Box 3986, Odessa, TX 79760. |
| EMR | : Emery Industries, Inc | : 513-762-6200 | : 1300 Carew Tower, Cincinnati, OH 45202. |
| TCH | : Trylon Div | : 803-963-4031 | : P. O. Box 628, Mauldin, SC 29662. |
| USM | : Euhart Corp., Bostik Div | : 617-777-0100 | : Boston St., Middleton, MA 01949. |
| EMK | : Emkay Chemical Co | : 201-352-7053 | : 319 2d St., Elizabeth, NJ 07206. |
| EN | : Endo Laboratories, Inc | : 516-832-2002 | : 1000 Stewart Ave., Garden City, NY 11743. |
| ENO | : Enenco, Inc | : 201-573-2800 | : P. O. Box 125, Memphis, TN 38101. |
| EPC | : Enterprise Products Co., Enterprise Petrochemicals Co., Sub. | : 713-880-6500 | : P. O. Box 4324, Houston, TX 77210. |
| SWT | : Eschem, Inc., Swift Technical Products Div. | : 219-836-2468 | : 419 Ridge Rd., Suite M, Munster, IN 46321. |
| ESS | : Essential Chemicals Group | : 414-691-3000 | : 28391 Essential Rd., Merton, WI 53056. |
| ESX | : Essex Chemical Corp., Essex Industrial Chemicals, Inc. | : 201-773-6300 | : 1401 Broad St., Clifton, NJ 07015. |
| EHC | : Ethichem Corp | : 201-933-7881 | : 150 Grand St., Carlstadt, NJ 07072. |
| TNA | : Ethyl Corp | : 804-788-5000 | : 330 S. 4th St., Richmond, VA 23231. |
| TNA | : Polymer Div | : 804-644-6081 | : 8000 G.S.R.I. Rd., Baton Rouge, LA 70808. |
| ENJ | : Exxon Chemical Americas | : 713-870-6184 | : P. O. Box 3272, Houston, TX 77001. |
| | : FMC Corp.: | | |
| FMN | : Agricultural Chemical Group | : 215-299-6000 | : 2000 Market St., Philadelphia, PA 19103. |
| FMB | : Industrial Chemical Group | : 215-299-6000 | : 2000 Market St., Philadelphia, PA 19103. |
| FMP | : Industrial Chemical Group | : 215-299-6000 | : 2000 Market St., Philadelphia, PA 19103. |
| FMB | : Specialty Chemicals Div | : 215-299-6000 | : Sawyer Ave. & River Rd., Town of Tonawanda, NY 14150. |
| FRP | : FRP Co | : 912-367-3616 | : P. O. Box 349, Baxley, GA 31513. |
| 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 | : 816-459-6407 | : P. O. Box 7305, Kansas City, MO 64116. |
| FEL | : Felton International, Inc | : 212-497-4664 | : 599 Johnson Ave., Brooklyn, NY 11237. |
| FER | : Ferro Corp.: | | |
| | : Ferro 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. |
| | : Ottawa Chemical Div | : 419-691-3507 | : 700 N. Wheeling St., Toledo, OH 43605. |
| | : Productol Chemical Div | : 213-945-3401 | : 10051 Romandel Ave., Santa Fe Springs, CA 90670. |
| FND | : Fiber Industries, Inc | : 704-554-2731 | : P. O. Box 10038, Charlotte, NC 28201. |
| RBC | : Fike Chemicals, Inc | : 304-755-3336 | : P. O. Box 546, Nitro, WV 25143. |
| PTX | : Finetex, Inc | : 201-797-4686 | : 418 Falmouth Ave., Elmwood Park, NJ 07407. |
| | : Firestone Tire & Rubber Co.: | | |
| FRF | : Firestone Fibers & Textile Co | : 216-379-7000 | : P. O. Box 450, Hopewell, VA 23869. |
| FRS | : Firestone Synthetic Rubber & Latex Co. Div. | : 216-379-7000 | : P. O. Box 2786, Akron, OH 44301. |
| FST | : First Chemical Corp | : 601-762-0870 | : P. O. Box 1427, Pascagoula, MS 39567. |
| FPC | : Flambeau Paper Corp | : 715-762-3231 | : 200 First Ave., N., Park Falls, WI 54552. |
| FLM | : Fleming Laboratories, Inc | : 704-372-5613 | : 2205 Thrift Rd., P. O. Box 34384, Charlotte, NC 28234. |
| CIK | : Flint Ink Corp., Cal/Ink Div | : 415-525-1188 | : 1404 4th St., Berkeley, CA 94710. |
| FTE | : Foote Mineral Co | : 215-363-6500 | : Route #100, Exton, PA 19341. |
| FOM | : Formica Corp., Sub. of American Cyanamid Co. | : 201-831-2000 | : 10155 Reading Dr., Cincinnati, OH 45241. |
| FDM | : Formosa Plastic Corp., Baton Rouge Site. | : 504-356-3341 | : P. O. Box 271, Gulf State Rd., Baton Rouge, LA 70821. |
| FJI | : Foy-Johnston, Inc | : 513-631-4270 | : 1776 Mentor Ave., Cincinnati, OH 45212. |
| FKE | : Frank Enterprises, Inc | : 614-253-5519 | : 700 Rose Ave., Columbus, OH 43219. |
| FLN | : Franklin Chemical Industries | : 614-443-0241 | : 2020 Bruck St., Columbus, OH 43207. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|--|
| FRE | Freeman Chemical Corp----- | 414-284-5541 | P. O. Box 247, Port Washington, WI 53074. |
| FB | Fritzsche Dodge & Olcott, Inc----- | 212-929-4100 | 76 9th Ave., New York, NY 10011. |
| CNI | Frye Copysystems, Inc., Conap Div----- | 716-372-9650 | 1405 Buffalo St., Olean, NY 14760. |
| FLH | H. B. Fuller Co----- | 513-891-6513 | 4450 Malsbary Rd., Blue Ash, OH 45242. |
| GAF | GAF Corp., Chemical Group----- | 201-862-2600 | P. O. Box 12, Linden, NJ 07036. |
| GBF | GB Fermentation Industries, Inc----- | 704-527-9000 | 5550 77 Center Dr., P. O. Box 241068, Charlotte, NC 28224. |
| GLX | Galaxie Chemical Corp----- | 201-279-0558 | 26 Piercy St., Paterson, NJ 07524. |
| GAN | Gane's Chemicals, Inc----- | 212-391-2580 | 1144 Avenue of the Americas, New York, NY 10036. |
| GE | General Electric Co----- | 614-622-5310 | 1350 S. Second St., Coshocton, OH 43812, and |
| | | 413-494-4747 | 1 Plastics Ave., Pittsfield, MA 01201. |
| GEI | Laminated & Insulating Materials Business Dept. | 518-385-2211 | 1 Campbell Rd., Schenectady, NY 12306. |
| SPD | Silicone Products Dept----- | 518-237-3330 | Mechanicville Rd., Bldg. 11-24, Waterford, NY 12188. |
| GNF | General Foods Corp., Maxwell House Coffee Div. | 201-420-3300 | 1125 Hudson St., Hoboken, NJ 07030. |
| GLC | General Latex & Chemical Corp----- | 617-864-7750 | 666 Main St., Cambridge, MA 02139. |
| GNT | General Tire & Rubber Co., Chemical Div. | 216-798-3305 | 1 General St., Akron, OH 44329. |
| GRG | P. D. George Co----- | 314-621-5700 | 5200 N. 2d St., St. Louis, MO 63147. |
| | Georgia-Pacific Corp.: | | |
| PSP | Bellingham Div----- | 206-733-4410 | P. O. Box 1236, Bellingham, WA 98225. |
| GP | Houston Div----- | 503-222-5561 | P. O. Box 1959, Pasadena, TX 77501. |
| GP | Plaquemine Div----- | 504-687-6321 | P. O. Box 629, Plaquemine, LA 70764. |
| GP | Resins Operations----- | 404-491-1244 | P. O. Box 105042, Atlanta, GA 30348. |
| SKO | Getty Refining & Marketing Co----- | 918-560-6000 | P. O. Box 1650, Oil Center Bldg., Tulsa, OK 74102. |
| TID | Delaware Refinery----- | 918-560-6010 | Delaware City, DE 19706. |
| TNI | The Gillette Co., Chemical Div----- | 617-421-7000 | 3500 W. 16th St., N. Chicago, IL 60064. |
| GIV | Givaudan Corp----- | 201-365-8000 | 100 Delawanna Ave., Clifton, NJ 07014. |
| GLY | Glyco, Inc----- | 203-622-1500 | 51 Weaver St., Greenwich, CT 06830. |
| GPI | Goodpasture, Inc----- | 806-637-2541 | P. O. Drawer 921, Brownfield, TX 79316. |
| BFG | B. F. Goodrich Co., B. F. Goodrich Chemical Group. | 216-447-6000 | 6100 Oak Tree Blvd., Cleveland, OH 44131. |
| GYR | Goodyear Tire & Rubber Co----- | 216-796-2121 | 1144 E. Market St., Akron, OH 44316. |
| | W. R. Grace & Co.: | | |
| GCC | Agricultural Chemicals Group, Memphis Plant. | 901-357-2311 | P. O. Box 27147, Memphis, TN 38127. |
| HMP | Organic Chemicals Div----- | 617-861-6600 | 55 Hayden Ave., Lexington, MA 02173. |
| EVN | Evans Chemetics----- | 203-655-8741 | 90 Tokeneke Rd., Darien, CT 06820. |
| GRD | Polymers & Chemicals Div----- | 617-861-6600 | 55 Hayden Ave., Lexington, MA 02173. |
| GPC | Grain Processing Corp----- | 319-264-4211 | P. O. Box 349, Muscatine, IA 52761. |
| CPC | Grant Chemical Co----- | 201-791-6700 | P. O. Box 360, Elmwood Park, NJ 07407. |
| GRA | Great American Chemical Corp----- | 617-343-6973 | P. O. Box 2150, Fitchburg, MA 01420. |
| GTL | Great Lakes Chemical Corp----- | 317-463-2511 | P. O. Box 2200, Highway 52 NW., West Lafayette, IN 47906. |
| GNW | Greenwood Chemical Co----- | 703-456-6832 | P. O. Box 26 - State Highway #690, Greenwood, VA 22943. |
| GDC | Gresto, Inc----- | 919-475-8101 | 216 E. Holly Hill Rd., Thomasville, NC 27360. |
| GRO | A. Gross & Co., Millmaster Onyx Group, Kewanee Industries, Inc. | 201-344-3216 | 625 Doremus Ave., Newark, NJ 07105. |
| GRV | Guardman Chemical, Inc----- | 616-452-5181 | 1350 Steele Ave., S.W., Grand Rapids, MI 49507. |
| GOC | Gulf Oil Corp., Gulf Oil Chemicals Co.-U.S. | 713-754-2973 | P. O. Box 3766, Houston, TX 77001. |
| GTH | Guth Corp----- | 312-547-7030 | 322 S. Center St., Hillside, IL 60162. |
| HNC | H & N Chemicals Co----- | 201-256-7777 | 90 Maltese Dr., Totowa, NJ 07512. |
| HAR | Haarmann and Reimer Corp----- | 201-686-3132 | 111 Route 22, Springfield, NJ 07081. |
| HAL | C. P. Hall Co----- | 312-767-4600 | 7300 S. Central Ave., Chicago, IL 60638. |
| FOC | Handschy Industries, Inc., Farac Oil and Chemical Div. | 312-468-4900 | 13601 S. Ashland Ave., Riverdale, IL 60627. |
| HAN | Hanna Chemical Coatings Corp----- | 614-294-3361 | 1313 Windsor Ave., P. O. Box 147, Columbus, OH 43216. |
| HSB | Harshaw Chemical Co----- | 216-721-8300 | 1945 E. 97th St., Cleveland, OH 44106. |
| HRT | Hart Products Corp----- | 201-433-6639 | 173 Sussex St., Jersey City, NJ 07302. |
| HCC | Hatco Chemical Corp----- | 201-738-1000 | King George Post Rd., Fords, NJ 08863. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------|---|
| HKY | Hawkeye Chemical Co----- | 319-243-5800 | P. O. Box 899, Clinton, IA 52733. |
| HAP | Helmerich and Payne, Inc., Natural Gas Odorizing Div.----- | 713-424-5568 | 3601 Decker Dr., P. O. Box 4176, Baytown, TX 77520. |
| SCP | Henkel Corp----- | 612-830-7831 | 4620 W. 77th St., Minneapolis, MN 55435. |
| HCF | Hercofina----- | 919-343-1150 | 310 N. Front St., Wilmington, DE 28402. |
| HCR | Herco Chemical Corp----- | 809-843-3030 | Petrochemical Complex, Ponce, PR 00731. |
| HPC | Hercules, Inc----- | 302-575-5000 | 910 Hercules Tower, Wilmington, DE 19899. |
| PFW | PFW Div----- | 914-343-1900 | 33 Sprague Ave., Middletown, NY 10940. |
| HER | Heresite-Saekaphen, Inc----- | 414-684-6646 | 822 S. 14th St., Manitowoc, WI 54220. |
| HTN | Heterene Chemical Co----- | 201-278-2000 | 790 21st Ave., Paterson, NJ 07513. |
| HET | Heterochemical Corp----- | 516-561-8225 | 111 E. Hawthorne Ave., Valley Stream, NY 11582. |
| HEC | Hewchem----- | 601-863-6600 | 2500 - 33d Ave., P. O. Box 188, Gulfport, MS 39501. |
| HEW | Hewitt Soap Co., Inc----- | 513-253-1151 | 333 Linden Ave., Dayton, OH 45403. |
| HEX | Hexagon Laboratories, Inc----- | 212-324-7550 | 4166 Boston Rd., Bronx, NY 10475. |
| HXL | Hexcel Corp., Hexcel Chemical Products.----- | 201-472-6800 | 205 Main St., Lodi, NJ 07644. |
| HIP | High Point Chemical Corp----- | 919-883-1433 | P. O. Box 2316, High Point, NC 27261. |
| HOG | Hodag Chemical Corp----- | 312-675-3950 | 7247 N. Central Park Ave., Skokie, IL 60076. |
| HOF | Hoffman-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. |
| HK | Hooker Chemical Corp.: Hooker Chemicals & Plastics Corp.:----- | | |
| HKD | Durez Div----- | 716-696-6000 | Walck Rd., N. Tonawanda, NY 14121. |
| HK | Industrial Chemicals Group----- | 716-286-3000 | 360 Rainbow Blvd. S., Niagara Falls, NY 14303. |
| HKP | PVC Div----- | 215-326-2000 | P. O. Box 699, Pottstown, PA 19464. |
| EFH | E. F. Houghton & Co----- | 215-666-4000 | Madison & Van Buren Aves., P. O. Box 930, Valley Forge, PA 19482. |
| HML | Hummel Chemical Co----- | 201-754-1800 | P. O. Box 250, So. Plainfield, NJ 07080. |
| HMY | Humphrey Chemical Co----- | 203-281-0012 | P. O. Box 325, North Haven, CT 06473. |
| WAY | Philip A. Hunt Chemical Corp., Organic Chemical Div.----- | 201-944-4000 | One Wellington Rd., Lincoln, RI 02865. |
| HNT | Huntington Laboratories, Inc----- | 219-356-8100 | 970 E. Tipton St., Huntington, IN 46750. |
| HGC | Huntsman Goodson Chemical Corp----- | 801-278-5311 | 3760 Highland Dr., Suite #500, Salt Lake City, UT 84106. |
| HUS | Husky Industries, Inc----- | 404-393-1430 | 62 Perimeter Center East, Atlanta, GA 30346. |
| HYN | Hynson, Westcott & Dunning, Inc----- | 301-837-0890 | Charles and Chase Sts., Baltimore, MD 21202. |
| ICI | ICI Americas, Inc----- | 302-575-3000 | Wilmington, DE 19897. |
| | Chemical Specialties Co----- | 302-575-3000 | Wilmington, DE 19897. |
| RAY | ITT Rayonier, Inc----- | 203-348-7000 | 1177 Summer St., Stamford, CT 06904. |
| IRC | Independent Refining Corp----- | 713-974-1878 | 1502 Augusta Dr., Houston, TX 77057. |
| IGC | Indiana Gas & Chemical Corp----- | 812-232-0231 | 1341 Hulman St., Terre Haute, IN 47808. |
| IND | Indol Color Co., Inc----- | 201-242-1300 | Leffert St., Carteret, NJ 07008. |
| IDC | Industrial Color, Inc----- | 815-722-7402 | Industry Ave., Joliet, IL 60435. |
| INL | Inland Steel Co., Inland Steel Container Co.----- | 312-368-3535 | 4300 W. 130th St., Chicago, IL 60658. |
| ICF | Inmont Corp----- | 201-365-3400 | 1255 Broad St., Clifton, NJ 07015. |
| ICC | Inmont Corp. Div. of United Technologies Corp.----- | 201-427-6700 | 150 Wagaraw Rd., Hawthorne, NJ 07506. |
| SPC | Insilco Corp., Sinclair Paint Co. Div.----- | 213-268-2511 | 3960 Washington Blvd., Los Angeles, CA 90023. |
| IFF | International Flavor and Fragrances, Inc.----- | 212-765-5500 | 521 W. 57th St., New York, NY 10019. |
| IMC | International Minerals & Chemical Corp.----- | 812-232-0121 | P. O. Box 207, Terra Haute, IN 47808, and P. O. Box 149, Orrington, ME 04474. |
| | Foundry Products Div----- | 312-564-8600 | 17350 Ryan Rd., Detroit, MI 48200. |
| | IMC Chemical Group----- | 312-564-8600 | 666 Garland Pl., Des Plaines, IL 60016. |
| IPP | International Pigment Processing Corp.----- | 201-595-8181 | 200 Sheridan Ave., Paterson, NJ 07502. |
| IPC | Interplastic Corp----- | 612-331-6850 | 2015 N.E. Broadway St., Minneapolis, MN 55413. |
| CCA | Interstab Chemicals, Inc----- | 201-247-2202 | 500 Jersey Ave., New Brunswick, NJ 08903. |
| IRI | Ironsides Co----- | 614-224-2228 | 270 W. Mount St., Columbus, OH 43215. |
| ISM | Isochem Resins Co----- | 401-723-2100 | 99 Cook St., Lincoln, RI 02865. |
| JFR | George A. Jeffreys & Co., Inc----- | 703-389-8220 | P. O. Box 709, Salem, VA 24153. |
| JEN | Jennison-Wright Corp----- | 419-382-3411 | P. O. Box 691, Toledo, OH 43694. |
| JRG | Andrew Jergens Co----- | 513-421-1400 | 2535 Spring Grove Ave., Cincinnati, OH 45214. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------|--|
| JTO | Jetco Chemicals, Inc----- | 214-872-3011 | P. O. Box 1898, Corsicana, TX 75110. |
| UPF | Jim Walker Resources, Inc----- | 205-254-7882 | P. O. Box 5327, Birmingham, AL 35215. |
| JNS | S. C. Johnson & Son, Inc----- | 414-631-2000 | 1525 Howe St., Racine, WI 52403. |
| JOB | Jones-Blair Co----- | 214-353-1600 | 2728 Empire Central, Dallas, TX 75235. |
| JLS | Jones & Laughlin Steel Corp----- | 412-227-4286 | 1600 W. Carson St., Pittsburgh, PA 15263. |
| JOR | Jordan Chemical Co----- | 215-583-7000 | 1830 Columbia Ave., Folcroft, PA 19032. |
| | Kaiser Aluminum & Chemical Corp.: | | |
| SNI | Kaiser Agricultural Chemicals Div-- | 912-964-4311 | Highway 21, Pt. Wentworth, GA 31407. |
| KAI | Kaiser Chemicals----- | 415-271-5580 | P. O. Box 337, Gramercy, LA 70052. |
| KLM | Kalama Chemical, Inc----- | 206-682-7890 | Suite 1110, Bank of California Center, Seattle, WA 98164. |
| KF | Kay-Fries Inc., Member Dynamit Nobel Group | 201-784-0200 | 10 Link Dr., Rockleigh, NJ 07647. |
| KMP | Kelly-Moore Paint Co., Inc----- | 415-592-8337 | 987 Commercial St., San Carlos, CA 94070. |
| CBM | Kennecott Corp----- | 716-297-2000 | P. O. Box 477, Niagara Falls, NY 14302. |
| | Kennecott Minerals Co.: | | |
| KCU | Utah Copper Div----- | 801-322-6123 | P. O. Box 6500, Salt Lake City, UT 84106. |
| KPT | Kenrich Petrochemicals, Inc----- | 201-436-5702 | P. O. Box 32, Bayonne, NJ 07002. |
| KYS | Keysor 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 671, Nitro, WV 25143. |
| KNP | Knapp Products, Inc----- | 201-478-7945 | 187 Garibaldi Ave., Lodi, NJ 07644. |
| KHI | Koch Industries, Inc., Koch Refining Co. | 316-832-5496 | P. O. Box 2302, Wichita, KS 67201. |
| KON | H. Kohnstamm & Co., Inc----- | 212-620-4800 | 161 Avenue of the Americas, New York, NY 10013. |
| KMC | Komac Paint, Inc----- | | P. O. Box 546, Denver, CO 80201. |
| KPT | Koppers Co., Inc----- | 412-227-2000 | Koppers Bldg., Pittsburgh, PA 15219. |
| LCP | LCP Chemicals-West Virginia, Inc----- | 304-843-1310 | P. O. Drawer "J", Moundsville, WV 26041. |
| LKY | Lake States Div. of Rhineland Paper Co. | 715-369-4356 | 515 W. Davenport St., Rhineland, WI 54501. |
| LUR | Laurel Products Corp----- | 215-423-5300 | 2600 E. Tioga St., Philadelphia, PA 19134. |
| LEA | Leatex Chemical Co----- | 215-739-6324 | 2722 N. Hancock St., Philadelphia, PA 19133. |
| LLI | Lee Laboratories, Inc----- | 804-862-1990 | 2999 Frontage Rd., P. O. Box 1658, Petersburg, VA 23805. |
| SAR | Leksi, Inc----- | 215-521-3800 | Gov. Printz Blvd. & Wanamaker Ave., P. O. Box 56, Essington, PA 19029. |
| LEL | Leland Chemical Co----- | 704-623-1731 | P. O. Box 399, Salisbury, NC 28144. |
| LEV | Lever Brothers Co----- | 212-688-6000 | 390 Park Ave., New York, NY 10022. |
| LVR | C. Lever Co., Inc----- | 215-639-8640 | 736 Dunks Ferry Rd., Bensalem, PA 19020. |
| BLS | Life Savers, Inc----- | 212-621-7500 | Eric St., Canajoharie, NY 13317. |
| LIL | Eli Lilly & Co----- | 317-261-0111 | 307 E. McCarty St., Indianapolis, IN 46285, and G.P.O. Box 4388, San Juan, PR 00936. |
| LIC | Lilly Industrial Coatings, Inc----- | 317-634-8512 | 546 Abbott St., Indianapolis, IN 46225. |
| BRD | Lonza, Inc----- | 201-794-2400 | 22-10 Route 208, Fair Lawn, NJ 07410. |
| LC | Lord Corp., Chemical Products Group-- | 814-868-3611 | 2000 W. Grandview Blvd., P. O. Box 10038, Erie, PA 16514. |
| MAK | MAK Chemical Corp----- | 317-288-4464 | 1200 Rochester Ave., P. O. Box 2423, Muncie, IN 47302. |
| ORA | M & T Chemicals, Inc----- | 201-499-0200 | P. O. Box 889, Laurens, SC 29360. |
| SOR | MW Manufacturing, Southern Resin Div. | 703-483-0211 | P. O. Box 68, Thomasville, NC 27360. |
| TZC | Magnesium Elektron, Inc----- | 201-782-5800 | Star Route A, Box 202-1, Flemington, NJ 08822. |
| MGR | Magruder Color Co., Inc----- | 201-242-1300 | 1029 Newark Ave., Elizabeth, NJ 07201. |
| MAL | Mallinckrodt, Inc----- | 314-895-2496 | 675 McDonnell Blvd., P. O. Box 5480, St. Louis, MO 63134. |
| MOR | Marathon Morco Co----- | 713-337-1534 | P. O. Drawer C, Dickinson, TX 77539. |
| MOC | Marathon Oil Co., Texas Refining Div. | 419-422-2121 | 539 S. Main St., Findlay, OH 48540. |
| MRD | Marden-Wild Corp----- | 617-666-0400 | P. O. Box 499, 500 Columbia St., Somerville, MA 02143. |
| MRV | Marlowe-Van Loan Corp----- | 919-886-7126 | P. O. Box 1851, High Point, NC 27261. |
| SDC | Martin-Marietta Corp., Sodyeco Div-- | 704-827-9657 | P. O. Box 33429, Charlotte, NC 28233. |
| MRX | Max Marx Color & Chemical Co----- | 201-373-7801 | 192 Coit St., Irvington, NJ 07111. |
| MCA | Masonite Corp., Alpine Chemical Div-- | 601-863-5772 | P. O. Box 2392, Gulfport, MS 39503. |
| MYO | Mayo Chemical Co----- | 404-696-6711 | 5544 Oakdale Rd., Smyrna, GA 30080. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|--|
| MCC | McCloskey Varnish Co----- | 215-624-4400 | 7600 State Rd., Philadelphia, PA 19136. |
| MCC | McCloskey Varnish Co. of the Northwest. | 503-226-3751 | 4155 N.W. Yeon Ave., Portland, OR 97210. |
| MCC | McCloskey Varnish Co. of the West----- | 213-726-7272 | 5501 E. Slauson, Los Angeles, CA 90040. |
| STG | McCormick & Co., Inc., McCormick/Stange Flavor Div. | 312-733-6945 | 342 N. Western Ave., Chicago, IL 60612. |
| MGK | McLaughlin Gormley King Co----- | 612-544-6341 | 8810 10th Ave. N., Minneapolis, MN 55427. |
| MLC | Melamine Chemicals, Inc----- | 504-473-3121 | P. O. Box 748, Donaldsonville, LA 70346. |
| MRK | Merck & Co., Inc----- | 201-574-4000 | 126 E. Lincoln Ave., P. O. Box 2000, Rahway, NJ 07065. |
| MER | Merichem Co----- | 713-455-1311 | 1914 Haden Rd., Houston, TX 77015. |
| LKL | Merrell Dow Pharmaceuticals, Inc | 513-948-9111 | 2110 E. Galbraith Rd., Cincinnati, OH 45215. |
| MLS | Miles Laboratories, Inc., Biotechnology Group. | 219-264-8111 | P. O. Box 932, Elkhart, IN 46515. |
| MIL | Milliken & Co., Milliken Chemical Co. | 803-472-9041 | P. O. Box 817, Inman, SC 29349. |
| | Millmaster Onyx Corp.: | | |
| BKL | Millmaster Chemical Co. Div----- | 212-687-2757 | 99 Park Ave., New York, NY 10016. |
| RPC | Kewanee Industries, Inc----- | 212-687-2757 | Coronet Dr., Dalton, GA 30720. |
| MMM | Minnesota Mining & Manufacturing Co----- | 612-736-0940 | 3M Center, St. Paul, MN 55144. |
| MIR | Miranol Chemical Co., Inc----- | 201-329-3900 | P. O. Box 411, Dayton, NJ 08810. |
| MSC | Mississippi Chemical Corp----- | 601-746-4131 | P. O. Box 388, Yazoo City, MS 39194. |
| | Mobay Chemical Corp.: | | |
| CHG | Agricultural Chemicals Div----- | 816-242-2000 | P. O. Box 4913, Hawthorne Rd., Kansas City, MO 64120. |
| VPC | Dyes & Pigments Div----- | 201-686-3700 | Iorio Ct., Union, NJ 07083. |
| HRC | Pigments Dept----- | 412-777-2000 | P. O. Box 419, Hawthorne, NJ 07507. |
| MOB | Pittsburgh Div----- | 412-777-2000 | Penn Lincoln Pkwy. W., Pittsburgh, PA 15205. |
| SM | Mobil Oil Corp.: | | |
| | Gas Liquids Dept----- | 703-849-3000 | P. O. Box 900, Dallas, TX 75221. |
| | Mobil Chemical Co----- | 212-883-4242 | P. O. Box 726, Paramus, NJ 07652. |
| | Chemical Coatings Div----- | 201-467-8500 | P. O. Box M-1, Short Hills, NJ 07078. |
| | Petrochemicals Div----- | 713-871-5802 | One Greenway Plaza - Suite 1100, Houston, TX 77046. |
| | Phosphorus Div----- | 804-798-2327 | P. O. Box 26683, Richmond, VA 23261. |
| MOA | Monsanto Industries, Inc----- | 201-345-8220 | 76 E. 24th St., Paterson, NJ 07544. |
| MNO | Monochem, Inc----- | 504-673-6161 | P. O. Box 488, Geismar, LA 70734. |
| MON | Monsanto Co----- | 314-694-1000 | 800 N. Lindbergh Blvd., St. Louis, MO 63166. |
| MTO | Montrose Chemical Corp. of California. | 201-964-3250 | 2401 Morris Ave., P. O. Box 219, Union, NJ 07083. |
| 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., P. O. Box 1799, Spartanburg, SC 29304. |
| | Morton Norwich Products, Inc.: | | |
| MRT | Morton Chemicals Co. Div----- | 312-621-5555 | 2 N. Riverside Plaza, Chicago, IL 60606. |
| NOR | Norwich Eaton Pharmaceutical Div----- | 607-335-2111 | 17 Eaton Ave., Norwich, NY 13815. |
| TCI | Texize Div----- | 803-963-4261 | P. O. Box 368, Greenville, SC 29602. |
| MOT | Motomco, Inc----- | 608-244-2904 | P. O. Box 8422, Madison, WI 53704. |
| MTP | Mount Pleasant Chemical Co----- | 615-379-5531 | Mt. Joy Rd., P. O. Box 69, Mt. Pleasant, TN 38474. |
| PNX | Murphy-Phoenix Co----- | 216-831-0404 | P. O. Box 22930, Beechwood, OH 44122. |
| | | | |
| NTL | NL Industries, Inc----- | 212-621-9400 | 1230 Avenue of the Americas, New York, NY 10020. |
| CHN | N-ReN Corp., Cherokee Nitrogen Div----- | 513-871-8800 | P. O. Box 429, Pryor, OK 74361. |
| LEM | Napp Chemicals, Inc----- | 201-773-3900 | 199 Main St., Lodi, NJ 07644. |
| NTB | National Biochemical Co----- | 312-722-0120 | 3127 W. Lake St., Chicago, IL 60612. |
| NTC | National Casein Co----- | 312-846-7300 | 601 W. 80th St., Chicago, IL 60620. |
| NCJ | National Casein of New Jersey----- | 609-829-1880 | P. O. Box 226, Riverton, NJ 08077. |
| USI | National Distillers & Chemicals Corp.: | | |
| | U.S. Industrial Chemicals Co----- | 212-949-5000 | 99 Park Ave., New York, NY 10016. |
| | National Petro Chemicals Corp----- | 212-949-5000 | 99 Park Ave., New York, NY 10016. |
| NMC | National Milling & Chemical Co----- | 215-482-6600 | 4601 Flat Rock Rd., Philadelphia, PA 19127. |
| NSC | National Starch & Chemical Corp----- | 201-685-5000 | 10 Finderne Ave., Bridgewater, NJ 08876. |
| NTS | National Steel Corp., Great Lakes Plant. | 313-297-2100 | Foot of Tecumseh, Ecorse, MI 48229. |
| NEP | Nepera Chemical Co., Inc----- | 914-782-8171 | Route 17, Harriman, NY 10926. |
| NEV | Neville Chemical Co----- | 412-331-4200 | Neville Island P. O., Pittsburgh, PA 15225. |
| NCC | Niacet Corp----- | 716-285-1474 | 400 47th St., Niagara Falls, NY 14302. |
| NLO | Niklor Chemical Co., Inc----- | 213-830-2253 | 2060 E. 220th St., Long Beach, CA 90810. |
| NCP | Niles Chemical Paint Co----- | 616-683-3377 | 225 Fort St., Niles, MI 49120. |
| | Kordell Industries Div----- | 219-255-9678 | P. O. Box 930, Mishawaka, IN 46544. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|---|
| NIL | Nilok Chemicals, Inc----- | 513-841-4000 | 2235 Langdon Farm Rd., Cincinnati, OH 45230. |
| CNP | Nipro, Inc----- | 404-823-4000 | P. O. Box 1483, Augusta, GA 30903. |
| NOC | Norac Co., Inc----- | 213-334-2908 | 405 S. Motor Ave., Azusa, CA 91703. |
| | Mathe Div----- | 201-779-4981 | 169 Kennedy Dr., P. O. Box 2230, Lodi, NJ 07644. |
| LMI | North American Chemical Co----- | 617-686-2907 | 19 S. Canal St., Lawrence, MA 01843. |
| NWP | Northern Petrochemical Co----- | 402-633-5682 | 2223 Dodge St., Omaha, NE 68102. |
| NW | Northwestern Chemical Co----- | 312-231-6111 | 120 N. Aurora St., W. Chicago, IL 60185. |
| NPC | Northwest Petrochemical Corp----- | 206-293-3176 | P. O. Box 99, Anacortes, WA 98221. |
| NCW | Nostrup Chemical Works, Inc----- | 690-299-5600 | P. O. Box 160, Pedricktown, NJ 08067. |
| CAD | Noury Chemical Corp----- | 716-778-8554 | 2153 Lockport-Olcott Rd., Burt, NY 14028. |
| NUT | Nutrius, Inc----- | 216-589-4400 | 1100 Superior Ave., Cleveland, OH 44114. |
| OBC | O'Brien Corp----- | 415-761-2300 | 450 E. Grand Ave., S. San Francisco, CA 94080. |
| OMC | Olin Corp----- | 203-356-2000 | 120 Long Ridge Rd., Stamford, CT 06904. |
| | Specialty Chemicals Dept----- | 203-356-2000 | P. O. Box 991, Little Rock, AR 72203. |
| HLI | Onyx Chemical Co----- | 312-371-2000 | 14000 S. Seeley Ave., Blue Island, IL 60406. |
| ONX | Onyx Chemical Co----- | 201-434-1700 | 190 Warren St., Jersey City, NJ 07302. |
| OPC | Orbis Products Corp----- | 201-824-3144 | 140 Route 10, E. Hanover, NJ 07936. |
| ORG | Organics, Inc./LaGrange Labs, Inc----- | 312-764-6700 | 7125 N. Clark St., Chicago, IL 60626. |
| 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 08109. |
| OCF | Owens-Corning Fiberglas Corp----- | 419-248-8000 | Fiberglas Tower, Toledo, OH 43659. |
| PBI | PBI/Gordon Corp----- | 816-421-4070 | 1217 W. 12th St., Kansas City, MO 64101. |
| PLB | P-L Biochemicals, Inc----- | 414-347-7300 | 1037 W. McKinley Ave., Milwaukee, WI 53201. |
| PPG | PPG Industries, Inc----- | 412-434-3131 | 1 Gateway Center, Pittsburgh, PA 15222. |
| PAC | Pacific Anchor Chemical Corp----- | 213-725-1800 | 6055 E. Washington Blvd., Suite 700, Los Angeles, CA 90040. |
| AMR | Pacific Resins & Chemicals, Inc----- | 206-572-8181 | 1754 Thorne Rd., Tacoma, WA 93421. |
| PNT | Pantasote, Inc., Film/Compound Div----- | 201-777-8500 | 26 Jefferson St., Passaic, NJ 07056. |
| 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. |
| PEK | Peck's Products Co----- | 314-385-5454 | 610 E. Clarence Ave., St. Louis, MO 63147. |
| PWL | Pelron Corp----- | 312-442-9100 | 7847 W. 47th St., Lyons, IL 60534. |
| AES | Penetone Corp----- | 201-567-3000 | 74 Hudson Ave, Tenafly, NJ 07670. |
| PAS | Pennwalt Corp----- | 215-587-7000 | 3 Parkway, Philadelphia, PA 19102. |
| WTL | Lucidol Div----- | 716-877-1740 | 1740 Military Rd., Buffalo, NY 14240. |
| PAR | Pennzoil Co., Penreco Div----- | 412-283-5600 | Union Bank Bldg., Butler, PA 16001. |
| PER | Perry & Derrick Co., Inc----- | 513-351-5800 | 2510 Highland Ave., Norwood, OH 45212. |
| PST | Perstorp, Inc----- | 413-584-2472 | 238 Nonotuck St., Florence, MA 01060. |
| UDI | Petrochemicals Co., Inc----- | 817-625-2111 | 600 E. Central St., P. O. Box 2199, Fort Worth, TX 76113. |
| PTT | Petro-Tex Chemical Corp----- | 713-477-9211 | P. O. Box 2584, Houston, TX 77001. |
| PFN | Pfanstiehl Laboratories, Inc----- | 312-623-0370 | 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. 42d St., New York, NY 10017. |
| | Pfizer Pharmaceuticals, Inc----- | 809-846-4300 | P. O. Box 628, Barceloneta, PR 00617. |
| PHR | Pharmachem Corp----- | 215-867-4654 | Stefko Blvd., Bethlehem, PA 18018. |
| PDI | Phelps Dodge Industries, Inc., Phelps Dodge Magnet Wire Co. Div. : | 219-456-4444 | 132 E. Creighton Ave., Fort Wayne, IN 46861. |
| PPX | Phillips Paraxylene, Inc----- | 809-864-1515 | G.P.O. Box 4129, San Juan, PR 00936. |
| PLC | Phillips Petroleum Co----- | 918-661-6600 | 15 Al Phillips Bldg., Bartlesville, OK 74004. |
| PPR | Phillips Puerto Rico Core, Inc----- | 809-864-1515 | G.P.O. Box 4129, San Juan, PR 00936. |
| PHC | Phthalchem, Inc----- | 513-681-0099 | 6675 Beechlands Dr., Cincinnati, OH 45237. |
| PIC | Pierce Chemical Co----- | 815-968-0747 | 3747 N. Meridian Rd., Rockford, IL 61103. |
| PIL | Pilot Chemical Co----- | 213-723-0036 | 11756 Burke St., Santa Fe Springs, CA 90670. |
| PPL | Pioneer Plastics Div. of LOP Plastics, Inc. : | 207-784-9111 | Pionite Rd., Auburn, ME 04210. |
| PIT | Pitt-Consol Chemical Co----- | 405-767-3456 | P. O. Box 1267, Ponca City, OK 74601. |
| PKL | Plaskolite, Inc----- | 216-294-3281 | 1770 Joyce Ave., Columbus, OH 43216. |
| PKP | Plaskon Products, Inc----- | 419-389-5600 | 2829 Glendale Ave., Toledo, OH 43614. |
| PSL | Plaslok Corp----- | 716-681-7755 | 3155 Broadway, Buffalo, NY 14227. |
| 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 75224. |
| PLX | Plex Chemical Corp----- | 415-471-6555 | 1205 Atlantic St., Union City, CA 94487. |
| PTC | Polycast Technology Corp----- | 203-327-6010 | 69 Southfield Ave., Stamford, CT 06902. |
| PCL | Polychemical Laboratories, Inc----- | 212-893-0333 | 490 Hunts Point Ave., Bronx, NY 10474. |
| PAI | Polymer Applications, Inc----- | 716-875-0775 | 3445 River Rd., Tonawanda, NY 14150. |
| PYZ | Polyrez Co., Inc----- | 609-845-1813 | P. O. Box 320, Woodbury, NJ 08096. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---|------------------|---|
| PLR | : Polysar, Inc----- | : 617-537-9901 | : 29 Fuller St., Leominster, MA 01453. |
| | : Latex Div----- | : 216-836-0451 | : 1705 W. Market St., Akron, OH 44313. |
| | : Polysar Latex Div----- | : 615-892-4131 | : 2200 Polymer Dr., Chattanooga, TN 37421. |
| PVI | : Polyvinyl Chemical Industries----- | : 617-658-6600 | : 730 Main St., Wilmington, MA 01887. |
| POP | : Pope Chemical Corp----- | : 201-279-2702 | : 33 6th Ave., Paterson, NJ 07524. |
| PRT | : Pratt & Lambert, Inc----- | : 916-873-6000 | : P. O. Box 22, Buffalo, NY 14240. |
| PMP | : Premier Malt Products, Inc----- | : 414-347-7300 | : 1000 N. Market St., Milwaukee, WI 53201. |
| PG | : Procter & Gamble Co., Procter & Gamble Mfg. Co.----- | : 513-763-5194 | : P. O. Box 599, Cincinnati, OH 45201. |
| PC | : Proctor Chemical Co----- | : 704-633-1731 | : P. O. Box 399, Salisbury, NC 28144. |
| PRC | : Products Research & Chemical Corp----- | : 213-240-2060 | : 5430 San Fernando Rd., P. O. Box 1800, Glendale, CA 91209. |
| PUB | : Publicker Industries, Inc----- | : 203-531-4500 | : 777 W. Putnam Ave., Greenwich, CT 06830. |
| PRX | : Purex Corp----- | : 213-630-7487 | : 5101 Clark Ave., Lakewood, CA 90712. |
| QCP | : Quaker Chemical Corp----- | : 215-828-4250 | : Lime & Elm Sts., Conshohocken, PA 19428. |
| QKO | : Quaker Oats Co----- | : 312-222-7111 | : 345 Merchandise Mart Plaza, Chicago, IL 60654. |
| QUN | : K. J. Quinn & Co., Inc----- | : 617-321-3200 | : 195 Canal St., Malden, MA 02148. |
| QH | : Quintana Petrochemical Co----- | : 512-289-2600 | : P. O. Box 4656, Corpus Christi, TX 78408. |
| RSA | : R.S.A. Corp----- | : 914-693-1818 | : 690 Saw Mill River Rd., Ardsley, NY 10502. |
| RLS | : Rachelle Laboratories, Inc----- | : 213-432-3956 | : 700 Henry Ford Ave., Long Beach, CA 90801. |
| RCN | : Racon, Inc----- | : 316-524-3245 | : P. O. Box 198, Wichita, KS 67201. |
| RAS | : Raffi and Swanson, Inc----- | : 617-658-3364 | : 100 Eames St., Wilmington, MA 01887. |
| RAB | : Raybestos Manhattan, Industrial Div----- | : 203-371-0101 | : 75 E. Main St., Stratford, CT 06497. |
| REG | : Regis Chemical Co----- | : 312-967-6000 | : 8210 Austin Ave., Morton Grove, IL 60053. |
| REH | : Reheis Chemical Co. Div. of Armour Pharmaceutical Co.----- | : 201-464-1500 | : 235 Snyder Ave., Berkeley Hgts., NJ 07922. |
| RCI | : Reichhold Chemicals, Inc----- | : 914-682-5700 | : 525 N. Broadway, White Plains, NY 10603. |
| RIL | : Reilly Tar & Chemical Corp----- | : 312-247-8141 | : 1510 Market Square Center, 151 N. Delaware St., Indianapolis, IN 46204. |
| REL | : Reliance Universal, Inc., Louisville Resins Operation.----- | : 502-459-9110 | : P. O. Box 37510, Louisville, KY 40233. |
| REM | : Remington Arms Co., Inc----- | : 203-333-1112 | : 939 Barnum Ave., Bridgeport, CT 06601. |
| RSC | : Republic Steel Corp----- | : 216-622-4650 | : P. O. Box 6778, Cleveland, OH 44101. |
| RDA | : Rhone-Poulenc, Inc----- | : 201-846-7700 | : 120 Jersey Ave., New Brunswick, NJ 08903. |
| RCD | : Richardson Co----- | : 312-297-3570 | : 2400 E. Devon Ave., Des Plaines, IL 60018. |
| RCO | : Rico Chemical Corp----- | : 203-245-0441 | : 15 Meigs Ave., Madison, CT 06443. |
| AMS | : Ridgway Color Co----- | : 809-843-0020 | : P. O. Box 387, Magas Ward, Guayanilla, PR 00656. |
| RTC | : Riegel Textile Corp., H.I.T. Chemicals Div.----- | : 803-242-6050 | : 75 Front St., Ridgway, PA 15853. |
| RIK | : Riker Laboratories, Inc., Sub. of 3M Co.----- | : 213-341-1300 | : 19901 Nordhoff St., Northridge, CA 91324. |
| RSN | : Rilsan Corp----- | : 201-447-3300 | : 139 Harristown Rd., Glen Roc, NY 07452. |
| RT | : Ritter International----- | : 213-245-6886 | : 4001 Goodwin, Los Angeles, CA 90039. |
| RIV | : Riverdale Chemical Co----- | : 312-756-2010 | : 220 E. 17th St., Chicago Heights, IL 60411. |
| ROB | : Robeco Chemicals, Inc----- | : 212-986-6410 | : 99 Park Ave., New York, NY 10016. |
| ORT | : Roehr Chemicals, Inc----- | : 212-784-8473 | : 52-20 37th St., Long Island City, NY 11101. |
| RGC | : Rogers Corp., Molding Materials Div----- | : 203-774-9605 | : P. O. Box 550, Rogers, CT 06263. |
| RH | : Rohm & Haas Co----- | : 215-592-3000 | : Independence Mall West, Philadelphia, PA 19105. |
| ROM | : Roma Chemical, Inc----- | : 617-676-3481 | : 749 Quequechan St., Fall River, MA 02722. |
| RUC | : Rubicon Chemicals, Inc----- | : 504-673-6141 | : P. O. Box 517, Geismar, LA 70734. |
| NES | : Ruetgers-Nease Chemical Co----- | : 814-238-2424 | : P. O. Box 221, State College, PA 16801. |
| SCM | : SCM Corp.: Glidden Coatings & Resin Div----- | : 216-344-8000 | : 900 Union Commerce Bldg., Cleveland, OH 44115. |
| | : Organic Chemicals Div----- | : 904-764-1711 | : P. O. Box 389, Jacksonville, FL 32201. |
| | : PCR, Inc----- | : 904-376-8246 | : P. O. Box 1466, Gainesville, FL 32602. |
| SOS | : SSC Industries, Inc----- | : 404-762-9651 | : P. O. Box 90987, East Point, GA 30344. |
| NPR | : Safeway Stores, Inc----- | : 415-944-4000 | : 2800 Ygnacio Valley Rd., Walnut Creek, CA 94621. |
| STX | : St. Croix Petrochemical Corp----- | : 809-773-6400 | : P. O. Box 6801, Christainsted, St. Croix, U.S., VI 00820. |
| SLM | : Salem Oil & Grease Co----- | : 617-745-0585 | : 60 Grove St., Salem, MA 01970. |
| SAL | : Salisbury Laboratories, Inc----- | : 515-257-2422 | : 2000 Rockford Rd., Charles City, IA 50616. |
| SBG | : Samuel Bingham Co----- | : 312-726-6711 | : 11101 W. Franklin Ave., Franklin Park, IL 60131. |
| S | : Sandoz, Inc.: Colors & Chemicals Div----- | : 201-386-7500 | : Route #10, E. Hanover, NJ 07936. |
| | : Crop Protection----- | : 714-298-4343 | : 480 Camino Del Rio South, San Diego, CA 92108. |
| SCN | : Schenectady Chemicals, Inc----- | : 518-346-8711 | : P. O. Box 1046, Schenectady, NY 12301. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------|---|
| SBC | Scher Chemicals, Inc. | 201-471-1300 | 1 Styertowne Rd., Clifton, NJ 07012. |
| SCH | Schering Corp. | 201-558-4000 | 1011 Morris Ave., Union, NJ 07083. |
| SCO | Scholler, Inc. | 215-739-0900 | Collins and Westmoreland Sts., Philadelphia, PA 19134. |
| SPR | Scientific Protein Laboratories, Inc. | 608-849-5944 | P. O. Box 158, Waunakee, WI 53597. |
| SPA | Scott Paper Co. | 215-521-5000 | P. O. Box 925, Everett, WA 98206. |
| SEA | Seaboard Chemicals, Inc. | 617-745-1915 | 30 Foster St., P. O. Box 707, Salem, MA 01970. |
| SRL | G. D. Searle & Co., Searle Chemicals, Inc. | 312-982-7000 | 4901 Searle Pkwy., Skokie, IL 60077. |
| SKP | Shakespeare Co., Monofilament Div. | 803-754-7011 | P. O. Box 246, Columbia, SC 29204. |
| SHO | Shell Oil Co. | 713-241-6161 | P. O. Box 2463, Houston, TX 77001. |
| SHC | Shell Chemical Co. Div. | 713-241-6161 | P. O. Box 2463, Houston, TX 77001. |
| SGO | Shenango, Inc. | 412-771-4400 | 200 Neville Rd., Neville Island, Pittsburgh, PA 15225. |
| SHP | Shepherd Chemical Co. | 513-731-1110 | 4900 Beech St., Cincinnati, OH 45212. |
| SHX | Sherex Chemical Co., Inc. | 614-764-6531 | P. O. Box 646, Dublin, OH 43017. |
| SW | Sherwin-Williams Co., Chemical Div. | 216-566-2000 | P. O. Box 6520, Cleveland, OH 44113. |
| SHT | Shintech, Inc. | 713-965-0713 | 3800 Buffalo Speedway - Suite 210, Houston, TX 77098. |
| SID | George F. Siddal Co., Inc. | 803-576-1556 | P. O. Box 925, Spartanburg, SC 29304. |
| VLN | SimCal Chemical Co. | 208-336-2110 | 2222 W. Shaw Ave., Fresno, CA 93721. |
| SMP | J. R. Simplot Co., Minerals & Chemical Div. | 208-232-6620 | P. O. Box 912, Pocatello, ID 83210. |
| SIM | Simpson Timber Co., Oregon Overlay Div. | 503-289-1111 | 2301 N. Columbia Blvd., Portland, OR 97217. |
| GFS | G. Frederick Smith Chemical Co. | 614-224-5343 | 867 McKinley Ave., P. O. Box 23214, Columbia, OH 43223. |
| SK | SmithKline Beckman Corp., SmithKline Chemicals Div. | 215-278-7000 | 900 River Rd., P. O. Box 900, Conshohocken, PA 19428. |
| SLT | Soltex Polymer Corp. | 713-522-1781 | P. O. Box 1000, Deer Park, TX 77536. |
| SLC | Soluol Chemical Co., Inc. | 401-821-8100 | Green Hill and Market Sts., Box 112, W. Warwick, RI 02893. |
| SAC | Southeastern Adhesive Co. | 704-754-3493 | P. O. Box 791, Lenoir, NC 28645. |
| SOP | Southern Chemical Products Co., Inc. Southland Corp. | 912-746-5147 | 430 Lower Boundary St., Macon, GA 31202. |
| ACT | Chemical Div. | 214-331-8391 | 7666 W. 63d St., Summit, IL 60501. |
| SOL | Fine Chemical Div. | 214-331-8391 | 5801 Marvin D. Lane Freeway, Dallas, TX 75233. |
| SWR | Southwestern Refining Co., Inc. | 512-884-8863 | P. O. Box 9217, Corpus Christi, TX 78408. |
| SPL | Spaulding Fibre Co., Inc., Industrial Plastics Div. | 716-692-2000 | 310 Wheeler St., Tonawanda, NY 14150. |
| SOI | Specialty Organics, Inc. | 213-962-2008 | 5623 N. 4th St., Irwindale, CA 91706. |
| OMS | E. R. Squibb & Sons, Inc. | 609-921-4000 | P. O. Box 4000, Route 206 & Provinceline Rd., Princeton, NJ 08540. |
| TRD | Squibb Manufacturing, Inc., Renesa, Inc., Ersana, Inc. | 809-852-1255 | P. O. Box 609, Humacao, PR 00661. |
| SCC | Standard Chlorine of Delaware, Inc. | 201-997-1700 | 1035 Belleville Turnpike, Kearny, NJ 07032. |
| SOC | Standard Oil Co. of California, Chevron Chemical Co. | 415-894-0850 | 575 Market St., San Francisco, CA 94105. |
| AMO | Standard Oil Company (Indiana) | 312-856-6111 | P. O. Box 5910-A, Mail Code 3501, Chicago, IL 60680. |
| SIO | Standard Oil of Ohio | 216-575-4643 | 307 Midland Bldg., Cleveland, OH 44115. |
| STI | Standard T Chemical, Inc. Stauffer Chemical Co. | 312-754-4471 | P. O. Box A-3351, Chicago, IL 60690. |
| SFA | Agricultural Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SFC | Calhio Chemicals, Inc. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SFF | Food Ingredients Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SFI | Industrial Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SFP | Plastics Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SFS | Specialty Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| SWS | SWS Silicones Div. | 415-544-9000 | 636 California St., San Francisco, CA 94108. |
| STP | Stepan Chemical Co. | 312-446-7500 | RR #1, Elwood, IL 60421, and 100 West Hunter Ave., Maywood, NJ 07607. |
| | Sterling Drug, Inc. | 201-845-3030 | |
| SDH | Hilton Davis Chemical Co. Div. | 212-907-2000 | 2235 Langdon Farm Rd., Cincinnati, OH 45237. |
| SDW | Sterling Organics Div. | 212-907-2000 | 90 Park Ave., New York, NY 10016. |
| TMS | Thomasset Colors Div. | 212-907-2000 | 2235 Langdon Farm Rd., Cincinnati, OH 45237. |
| CIN | Stockhausen, Inc. | 919-378-9393 | P. O. Box 16025, Greensboro, NC 27406. |
| SVC | Stokely-Van Camp, Inc., Industrial Products Group. | 317-631-2251 | 15395 Jackson St., Janesville, WI 53545. |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|---------------------------------------|------------------|---|
| SBP | Sugar Beet Products Co----- | 517-799-4941 | 302 Waller St., P. O. Box 1387, Saginaw, MI 48605. |
| SNA | Sun Chemical Corp----- | 212-986-5500 | 411 Sun Ave., Cincinnati, OH 45232. |
| SNW | Chemicals Div----- | 201-224-4600 | P. O. Box 70, Chester, SC 29706. |
| SUN | Sun Company, Inc----- | 215-293-6699 | 100 Matsonford Rd., Radnor, PA 19087. |
| SKG | Sunkist Growers, Inc----- | 213-986-9800 | 14130 Riverside Dr., Sherman Oaks, CA 91432. |
| SNO | SunOlin Chemical Co----- | 215-485-0761 | P. O. Box F, Claymont, DE 19703. |
| | Sybron Corp.: | | |
| TCC | Chemical Div/Tanatex----- | 716-546-4040 | P. O. Box 125, Wellford, SC 29385. |
| IOC | Sybron Chemical Div----- | 609-894-8211 | Birmingham, NJ 08011. |
| JSC | Sybron Chemical Div----- | 609-894-8211 | Birmingham Rd., Birmingham, NJ 08011. |
| SYL | Sylvachem Corp----- | 904-769-7651 | 2110-A W. 23d St., Panama City, FL 32405. |
| INP | Synair Corp----- | 615-698-8801 | 2003 Amnicola Highway, P. O. Box 5269, Chattanooga, TN 37406. |
| BUC | Synalloy Corp., Blackman Uhler | 803-585-3661 | P. O. Box 5627, Spartanburg, SC 29304. |
| | Chemical Div. | | |
| FAR | Syncon Resins, Inc----- | 201-589-1070 | 77 Jacobus Ave., S. Kearny, NJ 07032. |
| PCD | Synres Chemical Corp----- | 201-964-5280 | 209 N. Michigan Ave., Kenilworth, NJ 07032. |
| HFT | Syntex Agribusiness, Inc----- | 417-866-7291 | P. O. Box 1246 S.S.S., Springfield, MO 65805. |
| SYT | Synthron, Inc----- | 704-437-8611 | P. O. Box 1111, Morganton, NC 28655. |
| | | | |
| TRA | Talleyrand Chemicals, Inc----- | 617-998-2100 | 129 John Ventente Blvd., New Bedford, MA 02745. |
| TEK | Teknor Apex Co----- | 401-725-8000 | 505 Central Ave., Pawtucket, RI 02661. |
| HN | Tenneco Chemicals, Inc----- | 201-981-5000 | P. O. Box 365, Piscataway, N.J. 08854. |
| TOC | Tenneco Oil Co., P & M----- | 713-757-2635 | P. O. Box 2511, Houston, TX 77001. |
| TVA | Tennessee Valley Authority, Chemical | 205-386-2377 | Muscle Shoals, AL 35660. |
| | Accounting Brand. | | |
| TER | Terra Chemicals International, Inc--- | 712-277-1340 | P. O. Box 1828, Sioux City, IA 51102. |
| TER | Terra Nitrogen, Inc----- | 712-277-1340 | P. O. Box 1828, Sioux City, IA 51102. |
| COO | Terrell Corp----- | 616-658-3351 | 820 Woburn St., Wilmington, MA 01887. |
| TX | Texaco, Inc----- | 713-666-8000 | P. O. Box 430, Bellaine, TX 77401. |
| TUS | Texaco Butadiene Co----- | 713-666-8000 | P. O. Box 430, Bellaine, TX 77401. |
| TSA | Texas Alkyls, Inc----- | 713-479-8411 | P. O. Box 600, Deer Park, TX 77536. |
| TCR | Texas City Refining, Inc----- | 713-945-4451 | P. O. 1271, Texas City, TX 77590. |
| TXS | Textstyrene Plastics, Inc----- | 817-831-0533 | 3607 N. Sylvania Ave., Fort Worth, TX 76111. |
| SKT | Textron, Inc., Spencer Kellogg Div--- | 716-852-5850 | 120 Delaware Ave., Buffalo, NY 14240. |
| TKL | Thiokol Corp., Specialty Chemicals | 215-968-5911 | P. O. Box 1000, Newtown, PA 18940. |
| | Div. | | |
| MHI | Ventron Div----- | 617-774-3100 | 150 Andovin St., Danvers, MA 01923. |
| TMH | Thompson Hayward Chemical Co----- | 913-321-3131 | 5200 Speaker Rd., Kansas City, MO 66110. |
| TRC | Toms River Chemical Corp----- | 201-349-5200 | P. O. Box 71, Tom River, NJ 08753. |
| TRI | Triad Chemical----- | 504-473-9231 | P. O. Box 310, Donaldsonville, LA 70346. |
| TRN | Trinity Chemical Corp----- | 512-341-6371 | 130 W. Rhapsody, San Antonio, TX 78216. |
| TRO | Troy Chemical Co----- | 201-589-2500 | One Avenue L, Newark, NJ 07105. |
| TUL | Tull Chemical Co----- | 205-831-1154 | P. O. Box 3246, Oxford, PA 36203. |
| TLC | Twin Lake Chemical, Inc----- | 716-433-3824 | P. O. Box 411, Lockport, NY 14094. |
| | | | |
| UPM | UOP, Inc., UOP Process Div----- | 312-391-2000 | 10 UOP Plaza, Des Plaines, IL 60016. |
| UHL | Paul Uhlich & Co., Inc----- | 914-478-2000 | 1 Railroad Ave., Hastings-on-Hudson, NY 10706. |
| UNG | Ungerer & Co----- | 201-628-0600 | 4 Bridgewater Lane, P. O. Box U, Lincoln Park, NJ 07035. |
| | | | |
| WTH | Union Camp Corp----- | 201-628-9000 | P. O. Box 220, Dover, OH 44622. |
| NCI | Chemical Products Div----- | 201-628-9000 | 1600 Valley Rd., Wayne, NJ 07470. |
| NCI | Terpene & Aromatics Div----- | 201-628-9000 | P. O. Box 60369, Jacksonville, FL 32236. |
| UCC | Union Carbide Corp----- | 304-747-3255 | P. O. Box 8004, S. Charlestown, WV 25303. |
| UOC | Union Oil Co. of California----- | 213-977-7746 | 461 S. Baylston St., Los Angeles, CA 90017. |
| | Union Chemicals Div----- | 213-977-6898 | P. O. Box 60455, Los Angeles, CA 90060. |
| USR | Uniroyal, Inc., Uniroyal Chemical--- | 203-723-2000 | Emic Bldg., Spencer St., Naugatuck, CT 06770. |
| | Div. | | |
| UNN | United Chemical Corp. of Norwood----- | 617-762-4057 | Endicott St., Norwood, MA 02062. |
| UNO | United-Erie, Inc----- | 814-456-7561 | 438 Huron St., Erie, PA 16512. |
| USB | U.S. Borax & Chemical Corp----- | 213-381-5311 | 3075 Wilshire Blvd., Los Angeles, CA 90005. |
| USO | U.S. Oil Co----- | 401-434-3000 | P. O. Box 4228, E. Providence, RI 02914. |
| | | | |

TABLE 1.--SYNTHETIC ORGANIC CHEMICALS: ALPHABETICAL DIRECTORY OF MANUFACTURERS, BY COMPANY, 1981--CONTINUED

| IDENTIFICATION CODE | NAME OF COMPANY | TELEPHONE NUMBER | OFFICE ADDRESS |
|---------------------|--|------------------|---|
| | U.S. Steel Corp.: | | |
| USS | Clairton Plant----- | 412-433-1121 | 600 Grant St., Rm. 2316, Pittsburgh, PA 15230. |
| USS | Fairfield Plant----- | 412-433-1121 | 600 Grant St., Rm. 2316, Pittsburgh, PA 15230. |
| USS | Gary Plant----- | 412-433-1121 | 600 Grant St., Rm. 2325, Pittsburgh, PA 15230. |
| USS | Genova Plant----- | 412-433-1121 | 600 Grant St., Rm. 2316, Pittsburgh, PA 15230. |
| ARM | USS Agri-Chemicals Div----- | 404-572-4000 | 233 Peachtree St., Atlanta, GA 30301. |
| USS | USS Chemicals Div----- | 412-433-1121 | 600 Grant St., Rm. 2880, Pittsburgh, PA 15230. |
| UPJ | Upjohn Co----- | 616-323-4000 | 7000 Portage Rd., Kalamazoo, MI 49002. |
| CWN | Fine Chemical Div----- | 203-281-2722 | 410 Sackett Point Rd., North Haven, CT 06473. |
| | | | |
| VAL | Valchem Div. of United Merchants & Manufacturers, Inc.: | 212-930-3900 | 1407 Broadway, New York, NY 10018. |
| VSV | Valentione Sugars, Inc., Valite Div.: | 504-943-2459 | 726 Whitney Bldg., New Orleans, LA 70130. |
| MNP | The Valspar Corp----- | 612-332-7371 | 1101 S. 3d St., Minneapolis, MN 55440. |
| 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, and Rt. 2 - Box 54, Murray, KY 42071. |
| | | 203-853-1400 | |
| VND | Van Dyk & Co., Inc----- | 201-759-3225 | Main and Williams Sts., Belleville, NJ 07109. |
| VEL | Velsicol Chemical Corp----- | 312-670-4500 | 341 E. Ohio St., Chicago, IL 60611. |
| VTC | Vertac Chemical Corp----- | 901-767-6851 | P. O. Box 3, Vicksburg, MS 39180. |
| VIK | Viking Chemical Co----- | 612-333-0394 | 838 Baker Bldg., Minneapolis, MN 55402. |
| VIN | Vineland Chemical Co., Inc----- | 609-691-3535 | W. Wheat Rd., Vineland, NJ 08360. |
| VCC | Vinings Chemical Co----- | 404-436-1542 | 2555 Cumberland Pkwy., Suite 200, Atlanta, GA 30339. |
| | | | |
| VGC | Virginia Chemicals, Inc----- | 804-483-7000 | 3340 W. Norfolk Rd., Portsmouth, VA 23703. |
| SOH | Vistron Corp----- | 216-575-4141 | 1899 Guild Hall, Cleveland, OH 44126. |
| SIC | Silmar Div----- | 213-757-5141 | 12333 S. Van Ness Ave., Hawthorne, CA 90250. |
| VTM | Vitamins, Inc----- | 312-861-0700 | 200 E. Randolph Dr., Chicago, IL 60601. |
| PRO | Vulcan Materials Co., Chemicals Div.: | 205-877-3000 | P. O. Box 7689, Birmingham, AL 35223. |
| | | | |
| WJ | Warner-Jenkinson Co----- | 314-889-7600 | 2526 Baldwin St., St. Louis, MO 63106. |
| PD | Warner-Lambert----- | 201-540-2000 | 201 Tabor Rd., Morris Plains, NJ 07950. |
| WAG | West Agro-Chemical, Inc----- | 913-384-1660 | P. O. Box 1386, Shawnee Mission, KS 66222. |
| WCA | West Coast Adhesives Co----- | 503-286-3515 | 11104 N.W. Front Ave., Portland, OR 97231. |
| EW | Westinghouse Electric Corp., Industrial Materials Div.: | 402-373-4622 | Manor, PA 15665. |
| WPG | West Point-Pepperell, Inc., Griffitex Chemical Co. Sub.: | 205-745-5767 | 1900 Cunningham Dr., Opelika, AL 36801. |
| | | | |
| WVA | Westvaco Corp., Polychemicals Dept----- | 803-554-8350 | P. O. Box 70848, Charleston Heights, SC 29405. |
| WRD | Weyerhaeuser Co----- | 715-384-2141 | 1185 Palmetto Ave., Marshfield, WI 54449. |
| WBG | The White and Bagley Co----- | 617-791-3201 | P. O. Box 706, Worcester, MA 01613. |
| WHI | White and Hodges, Inc----- | 617-453-5192 | 576 Lawrence St., Lowell, MA 01852. |
| WCC | White Chemical Corp----- | 201-437-0050 | Foot of E. 22d St., Bayonne, NJ 07002. |
| WHL | Whitmoyer Laboratories, Inc----- | 717-866-2151 | 19 N. Railroad St., Myerstown, PA 17067. |
| APT | Whittaker Corp., Whittaker Coatings & Chemicals.: | 213-475-9411 | 3134 California St., NE., Minneapolis, MN 55418. |
| | | | |
| WHW | Whittemore-Wright Co., Inc----- | 617-242-1180 | 62 Alford St., Boston, MA 02129. |
| WLN | Wilmington Chemical Corp----- | 302-658-3515 | P. O. Box 66, Wilmington, DE 19899. |
| WTC | Witco Chemical Corp----- | 201-573-2800 | 155 Tice Blvd., Woodcliff Lake, NJ 07675. |
| WBC | Worthington Diagnostics Div. of Millipore Corp.: | 201-462-3838 | Halls Mill Rd., Freehold, NJ 07728. |
| | | | |
| WCL | Wright Chemical Corp----- | 919-655-2263 | Acme Station, Riegelwood, NC 28456. |
| WYC | Wycon Chemical Co----- | 713-877-6450 | 9 Greenway Plaza, Houston, TX 77046. |
| WYT | Wyeth Laboratories, Inc., Wyeth Laboratories Div. of American Home Products Corp.: | 215-688-4400 | P. O. Box 831, Paoli, PA 19301. |
| | | | |

U.S. IMPORTS OF BENZENOID CHEMICALS AND PRODUCTS

U.S. general imports of benzenoid chemicals and products entered under the Tariff Schedules of the United States (TSUS), schedule 4, part 1, subparts B and C are analyzed by the U.S. International Trade Commission annually and published in detail in a separate report.¹ General imports of benzenoid items entered in parts 1B and 1C totaled 6,581 million pounds with an entered value of \$1,205.9 million in 1981 compared with 5,591 million pounds with a foreign invoice value of \$1,075.6 million in 1980.² Details are shown in table 2.

Industrial organic chemicals that are entered under part 1B consist chiefly of benzenoid intermediates and small quantities of acyclic compounds which are derived in whole or in part from benzenoid compounds. Also included are mixtures and small quantities of finished products not specially provided for in part 1C (e.g., rubber-processing chemicals). In terms of value, 27.9 percent of all the benzenoid imports under part 1B in 1981 came from West Germany; 23.2 percent, from Japan; 9.8 percent, from the United Kingdom; and 7.1 percent, from Switzerland.

Finished organic chemical products entered under part 1C include dyes, pigments, medicinals, flavor and perfume materials, pesticides, plastics materials, and certain other specified products. In terms of value 21.7 percent of all finished benzenoid imports under part 1C in 1981 came from West Germany; 19.9 percent, from Japan; 15.1 percent, from the United Kingdom; and 13.4 percent, from Switzerland.

¹*Imports of Benzenoid Chemicals and Products, 1981*, USITC Publication 1272, July 1982.

²Entered value and foreign invoice value are comparable for 1980-81.

TABLE 2.--BENZENOID CHEMICALS AND PRODUCTS: SUMMARY OF U.S.
GENERAL IMPORTS ENTERED UNDER SCHEDULE 4,
PARTS 1B AND 1C, OF THE TSUS, 1981

| Part | QUANTITY | PERCENT OF TOTAL QUANTITY | ENTERED VALUE | PERCENT OF ENTERED VALUE | UNIT ENTERED VALUE |
|--|-------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------|
| | <u>1,000</u> <u>pounds</u> | | <u>1,000</u> <u>pounds</u> | | <u>Per</u> <u>pound</u> |
| Schedule 4, Part 1B and: 1C, total----- | 658,076 | 100.0 | 1,205,910 | 100.0 | \$1.83 |
| Schedule 4, Part 1B-- | 378,576 | 57.5 | 437,266 | 36.3 | 1.16 |
| Schedule 4, Part 1C-- | 279,500 | 42.5 | 768,644 | 63.7 | 2.75 |

Source: Compiled by the U.S. International Trade Commission from records of the U.S. Customs Service.

Note--The totals shown in this table differ from those given in the official statistics of the U.S. Department of Commerce chiefly because of differences in coverage and in the methods used in compiling the data.

TABLE 3.--CYCLIC INTERMEDIATES: GLOSSARY OF SYNONYMOUS NAMES

| COMMON NAME | STANDARD (CHEMICAL ABSTRACTS) NAME |
|-------------------------------------|--|
| 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. |
| Aminoepilson 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. |
| Anthrarufin----- | 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----- | α,α -Dichlorotoluene. |
| Benzanthrone----- | 7H-Benz[de]anthracen-7-one. |
| Benzotrichloride----- | α,α,α -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 (Cassella 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. |
| 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'-k]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'-Dianthrime----- | 1,1'-Iminodianthraquinone. |
| Dibenzanthrone----- | Violanthrone. |
| Dichlone----- | 2,3-Dichloro-1,4-naphthoquinone. |
| 4,4'-Dihydroxydiphenylsulfone----- | 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. |
| F Acid----- | 7-Hydroxy-2-naphthalenesulfonic acid. |
| Fast Red G base----- | 2-Nitro-p-toluidine [$\text{NH}_2=1$]. |
| Fast Scarlet R base----- | 5-Nitro-o-anisidine [$\text{NH}_2=1$]. |
| Fischer's aldehyde----- | 1,3,3-Trimethyl- δ^2 , α -indolineacetaldehyde. |
| Fischer's base----- | 1,3,3-Trimethyl-2-methyleneindoline. |
| Freund's acid----- | 4-Amino-2,7-naphthalenedisulfonic acid. |

TABLE 3.--CYCLIC INTERMEDIATES: GLOSSARY OF SYNONYMOUS NAMES--CONTINUED

| COMMON NAME | STANDARD (CHEMICAL ABSTRACTS) NAME |
|-------------------------------|--|
| G salt | 7-Hydroxy-1,3-naphthalenedisulfonic acid. |
| 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. |
| β-Naphthol | 2-Naphthol, tech. |
| Naphthol AS | 3-Hydroxy-2-naphthanilide. |
| α-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. |
| Pyrazoleanthrone yellow | [3,3'-Bianthra[1,9-cd]pyrazole]-6,6'-(2H,2'H)dione. |
| Pyrazolone T | 5-Oxo-1-(p-sulphophenyl)-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. |

TABLE 3.--CYCLIC INTERMEDIATES: GLOSSARY OF SYNONYMOUS NAMES--CONTINUED

| COMMON NAME | STANDARD (CHEMICAL ABSTRACTS) NAME |
|--------------------------------|---|
| Tetralin----- | 1,2,3,4-Tetrahydronaphthalene. |
| Thioindoxyl----- | 3(2H)-Thianaphthanone. |
| Thiosalicylic acid----- | o-Mercaptobenzoic acid. |
| Tobias Acid----- | 2-Amino-1-naphthalenesulfonic acid. |
| TODI----- | Bitolylene diisocyanate. |
| o-Tolidine----- | 3,3'-Dimethylbenzidine. |
| o-Toluic acid----- | Phenylacetic acid. |
| o-Tolunitrile----- | Phenylacetoneitrile. |
| 4-m-Tolylenediamine----- | 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. |
| Vinyltoluene----- | ar-Methylstyrene. |
| Violet acid (RG Acid)----- | 4-Hydroxy-2,7-naphthalenedisulfonic acid. |

